RESORT HOTEL & MARINA
EMBARCADERO

Agenda C.2.G
Public Comment

Economic Impact of Loss of or Severe Cuts in Commercial and Charter Ground Fishing

The Embarcadero Resort Hotel & Marina estimates 1,650 occupied rooms would be lost to the Resort with severe cuts or complete stoppage of ground fishing. This would further impact the restaurant with local fishing families no longer being able to have a night out, come for Sunday brunch, or have banquets. In addition, the transient tourist who does charter fishing would not be dining either, nor would some of the groups come who focus on fishing as their extracurricular activity.

Economic Impact:

Lost Rooms occupied		1,650
Lost Room Revenue	$	206,250
Lost Room Tax to City	$	14,437
Lost Food Revenue	$	75,000
Lost Beverage Revenue	$	32,000
Lost Trade in Store	$	6,000

Jobs lost - one cook, two room cleaner, one desk clerk, one restaurant host, one dishwasher

Payroll lost is.............. $ 88,200

Total Economic Loss $ 421,887

Quite an impact to what you know will devastate the economy of Newport, Lincoln County, the Oregon Coast, Oregon, the Northwest, and the West Coast. It is obvious the disaster ahead and the many who will suffer.

Respectfully Submitted:

Paul Haggerty

Paul Haggerty
General Manager - Embarcadero Resort Hotel & Marina

1000 SE Bay Blvd., Newport, Oregon 97365 • (541) 265-8521 • (800) 547-4779 • Fax (541) 265-7844

Agenda C.2.G
Public Comment

GREATER NEWPORT CHAMBER OF COMMERCE
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FAX: (541) 265-5589
Toll-Free: 1-800-COAST44

Groundfish Issue

We, the undersigned citizens and business people of the City of Newport and members of the Greater Newport Chamber of Commerce, notify the Pacific Fisheries Management Council that the reduction in fish harvest levels have had a drastic impact to our community and that further reduction in groundfish harvest levels will continue to adversely effect every business and family in Newport. The reduction in harvest levels means direct jobs are lost, not only in the commercial fishing industry but also in the recreation fishing industry, processing plants, boat repair businesses and gear shops. However, the impact doesn't end there. The repercussions trickle down to the lodging, restaurant, attraction, entertainment, and retail industries. And when these tourism based businesses lay off employees due to reduced revenues, this has an effect on other local businesses such as car dealers, doctors, dentists, veterinarians, attorneys, accountants, etc. It would be difficult to measure the numbers of jobs and revenues lost to the whole business community. We urge the PFMC to seriously reconsider the social and economic impacts their decision will have to coastal communities dependent on the fishing industry.

Signature	Print Name	Business	Phone
Colleen Cockrell	COLLEEN COCKRELL	NEWPORT CHAMBER	541-265-8801
Mark D Jones	MARK D JONES	Mayor City of Newport	541-265-5114
Toni Brodie	TONI BRODIE	WESTERN TITLE & ESCROW	265 2288
Raquell Teague	RAQUELL TEAGUE	Western Title + Escrow Co.	265-2288
Debra J Griffin	DEBRA GRIFFIN	Key Communication	574-6587
John A Rehfuss	JOHN REHFUSS	Retired	2657301
Carol Jones	CAROL JONES	Ret. RE Broker	(541) 265-2559
Fern Ramberg	FERN RAMBERG	PROP. MGT.	541-265-5871

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Signature	Print Name	Business	Phone
Christine Sellers	Christine Sellers	Newport Chamber	(541)265-8801
Saundra Mies-Grantham	Saundra Mies-Grantham	OED Employment Dep	574-2309
Shirley A. Miller	Shirley A. Miller	Copy Stop-Newport	574-8929
Chris Chandler DiTomica	Chris Chandler DiTomica		765-4380
Gabrielle McEntee Wilson	Gabrielle McEntee Wilson	Mo's	265-7512
Dylan McEntee	Dylan McEntee	Mo's	265-7512
Don Lindly	DON LINDLY	LINCOLN COUNTY	265-4100

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Signature	Print Name	Business	Phone
Martha Wenger	MARTHA WENGER	Newport Chamber	265-8801
Diana Martin	DIANA MARTIN	Coast Arts & Graphic Design	265-4655
Gerald A. White	GERALD A. WHITE	914 S.W. 12th St	265-8440
Scott D. Albright	SCOTT D. ALBRIGHT	WEST COAST FINANCIAL GROUP	574-2971
Thomas M Wilson	Thomas M Wilson	Tom Wilson Accounting + Tax	265-8431
Darlene C Webster	Darlene C. Webster	Tom Wilson Accounting + Tax	265-8431
Jeannie Painter	Jeannie Painter	Tom Wilson Accounting + Tax	265-8431

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Signature	Print Name	Business	Phone
Denise Lopez	DENISE LOPEZ	Newport Chamber	265-8801
Larry Henson	LARRY HENSON	Longview Hills	265-3576
John W. Forscott	JOHN W. FORSCOTT	PAPER CHASE PLACE	265-2181
Stan Bishop	STAN BISHOP	CENTRAL LINCOLN PUD	265-3211
Neal Henning	NEAL HENNING	MARINER SQUARE	265 2206
Wanda Henning	Wanda Henning	Creditors Collection	265-8846

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Signature	Print Name	Business	Phone
Kenneth Peyton	Kenneth Peyton	Sylvia Beach Hotel	541/265-5428
NFerber	NORM FERBER	FAIRHAVEN VAC RENTAL	541 574 0951
C. Lanegan	CARMEN LANEGAN	Curves for Women	265-75
Sheila M Flowers	Sheila Flowers	Dolphin Real Estate	265-6638
Lillie M. Patrick	Lillie M. PATRICK	Dolphin REAL ESTATE	265-6638

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Signature	Print Name	Business	Phone
Lee R. Ritzman	LEE R. RITZMAN	CITY OF NEWPORT	541-574-3375
B Haggerty	Brian Haggerty	attorney	541-265-8888
Victoria D. Spencer	Victoria D. Spencer	BANKING	541-265-9000

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Signature	Print Name	Business	Phone
[signature]	David J Miller	KYTE/KNPT/KNCU/KCRF/KBCH	541 265-22

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Signature	Print Name	Business	Phone
Lisa Noah	LISA NOAH	NEWPORT CHAMBER	541-265-8801
Richard N Patino	Richard N Patino	Washington Mutual	541-265-4571
Leona L Heckert	Leona Heckert	Shangri-la	541-~~265~~-867-6683
Wendy E Thomas	Wendy Thomas	CellularOne	541-270-2000
A.T. Rowe	A.T. Rowan	OCCC	541-574-7131
LORETTA HARRISON	LORETTA HARRISON	OCHC	541-265-7509

EXTENSION SERVICE
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Agenda C.2.G
Public Comment

September 3, 2002

TO: Dr. Hans Radtke, PFMC Council Chair
Dr. Donald O. McIsaac, PFMC Executive Director

FROM: Ginny Goblirsch. Oregon Sea Grant *Ginny Goblirsch*
Heather Munro, Oregon Sea Grant (on contract) *Heather Munro*

SUBJECT: Summary of Public Comments from Oregon Community Meetings

Thank you for this opportunity to present information gathered at four Community Leader Meetings held in Newport, Astoria, Brookings and North Bend over a two-week period in August. The goal of these meetings was to inform community leaders, business owners and the public about groundfish issues and challenges and to answer questions and solicit comments regarding expected socio-economic impacts resulting from the proposed groundfish management decisions for 2003.

Information gathered at these meetings is directly related to National Standard 8 - the requirement that management measures shall, consistent with the conservation requirements of the Magnuson Act, "take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities." Several comments also relate to National Standard 10 (Safety).

These meetings were organized by Oregon Sea Grant in association with the Oregon Department of Fish and Wildlife (ODFW) (Attachment B). We especially appreciated all the help we received from Patty Burke and her staff from ODFW.

Following these community meetings, ODFW conducted meetings specifically for members of the fishing industry. They are reporting separately on those meetings.

We met with a variety of community leaders, business owners, family members, agency representatives and the public. These included: Chamber of Commerce Board Members and Directors; County Commissioners; Port Managers and Commissioners; Community Service Agency Personnel; Coastal Legislators, Congressional Aides; Mayors, Gear Suppliers, Net Maker, Insurance Agent, Radio Station Owner, University and Community College Administrators; Oregon Groundfish Disaster Outreach Program

(GDOP) Peers and Coordinator; Trucker; Chamber, County and State Economic Development Personnel; Local Media; Fishing Family Members; Fishery Agencies; Oregon State Police; Sport Fishermen; Charter Boat Owners; RV Park Manager; ODFW Personnel; PFMC Staff ; Oregon Sea Grant Marine Agents; Processor Representative; Marine Insurer; Local Residents; City Manager; Crab, Albacore, Trawl Commodity Commission Managers; U.S. Coast Guard.

Some important issues and recommendations were clearly identified by meeting participants:

1) **Many community leaders were unaware of the important role they have in the management process.**
They were surprised to learn that they did have a role in the management process. We discussed the opportunity to comment on management proposals and the need to document or foresee socio-economic impacts. They were unaware of any effort to gather socio-economic information as no one had visited with them requesting this kind of information. They did not know what kind of information was being sought, how it would be gathered, and how it would be used.

2) **Significant socio-economic impacts are already occurring.**
Community fisheries infrastructure is eroding and all fisheries are being impacted by the reductions in groundfish. Trickle down effects should be considered and are already occurring. The Council should assess the impacts to secondary and tertiary businesses.

3) **Groundfish management cannot be considered in isolation.**
For the same reasons as #2 above.

4) **Landings and value should not be the only data considered in any socio-economic impact analysis.**
This will not give you an accurate picture of what is happening at the ground level in coastal communities as a result of management decisions. Landings and value data alone do not reflect the negative impacts occurring to individuals and businesses.

The attached listing of comments (Attachment A) is anecdotal but serves to illustrate community concerns and some of the impacts already being felt. It is clear that a wide range of information should be included in any socio-economic impact analysis. We would be happy to work with the Council and NMFS on these important recommendations.

As stated earlier, many attendees were unaware that socio-economic data was being sought under National Standard 8. We know that some communities and businesses have taken the opportunity to respond to you directly as a result of these meetings.

Some other observations surfaced at the meetings that you should know about.

Many fishermen fervently feel that fisheries management agencies have an agenda to close down the industry. Many no longer go to meetings because they feel it makes no difference, they won't be listened to anyway and decisions have been made ahead of time. The few active fishermen at Council and other industry meetings are the exception rather than the rule. They are very frustrated with the management process. Most fishermen and their families cannot afford the travel time and expense away from home. That's unfortunate since so much is at stake. Don't take non-participation by fishermen in meetings as a sign they don't care. They feel betrayed by the system.

The Council is considering moving to a multi-year system. This is critical for business planning. It is now impossible to make good business decisions based on the current system. People need information so they can make adjustments to their business strategies now rather than after all their resources are used up trying to hang on. Many of the public comments touched on this important point. The statement from the gear store owner makes this point very clear. He needs at least a year lead-time.

These meetings were more than just informative. They were a disturbing look at the reality of what is already occurring in coastal communities as well as a glimpse of the future if significant changes are not made in our fisheries management system.

<u>ATTACHMENT A</u>
Summary of Public Comments

The statements that follow are not verbatim. They are examples of the kinds of comments we heard directly and indirectly.

<u>Comments From Community Leaders, Businesses and Ports</u>

I haven't sold a vehicle to a fisherman in 2 years. salesman, auto dealer

We are losing family wage jobs on the coast and we can't afford to do that. Consider the trickle down effect that is now occurring. Advertising is down at my radio station due to the shrinking base of family wage jobs – fishing is critical to our communities. radio station owner

How will the full range of economic impacts be considered? We've had a fire disaster in our region this summer and we're already hurting badly from that. county commissioner

Coastal communities have don't have many opportunities for family wage jobs like we see in the valley. Fishing is critical to us here. mayor

The Council and NMFS should try harder to do a better job of releasing information to the media. People think that because there are recreational closures in California, that Brookings is closed also – not true. If the south coast is the most restricted by salmon regulations, then make groundfish less restrictive. R/V park manager

We need to fight to save coastal family wage jobs. mayor

More vessels are now operating without insurance. That could easily ruin the family business. Ports and communities will have to respond and pay for things like clean up. Plus, there are significant costs associated with Coast Guard search and rescue. When maintenance is put off, more accidents happen and taxpayers will have to cover the costs. port manager

The local jewelry store laid off 4 workers. They don't have the business they need anymore from fishermen and their families. port commissioner

The industry isn't collapsing but we need help right now with readjustment initiatives. We are a community of survivors. Rural communities need to remain independent. Don't take that away. port manager

There are limited jobs you can retrain for in our community which will support a family. port manager
A buyback program will help some fishermen but won't help other businesses. radio station owner

Shipyard business is way down. Many fishermen are going on a 3-year haul out schedule instead of a 1-year schedule. We are concerned about safety. insurance agent

<u>Comments From Fishing Families and Businesses</u>

The local fuel dock is ready to shut down. fishing family member

Consider the time and goods and services involved in getting ready for fishing seasons that don't happen. This is significant lost revenue for my store. gear store manager

I couldn't get ice this summer so even though we had a good salmon fishery, we couldn't get the ice to hold the fish. My fish plant closed. salmon troller

My firm is cutting back and may go out of business. I can hardly afford to keep working because of the reduced demand for trucking. There's now only a few months of work. trucker for firm that transports product from fish plants

Our fish plant closed and we couldn't get a market with another plant. So we've moved our fishing business out of state. fisherman's wife

I quit buying groundfish because I couldn't get the mix I needed for my market. I laid off 15 workers. fish buyer

The local grocery store used to carry lots of boat accounts – those are way down now and there are more and more accounts in arrears. fishing family member

In fact, lots of associated businesses are being hit – marine electronics included. Business is down and what business they have, its hard to get folks to keep their accounts current. fishing family member

It isn't reasonable for NMFS to seek to enact regulations that will eradicate family businesses without a specific economic plan in place to assist those businesses and replace those jobs . And I'm not talking about 10 dollar an hour jobs- I'm talking about jobs for crewmen who earn between $35,000-40,000 per year. fisherman's wife

Families are so frustrated – we feel we never know what's next. No one can plan a successful fishing business with so many unknowns. Who will be in, who will be out. If you are out then what – nothing. Nothing is clear-cut. We won't even know next year's restrictions until just before the season actually starts – and that's if we are "lucky". Our financial reserves are gone – what can we do? fisherman's wife

Two of my friends are now getting divorces. The financial stress was too much – that and husbands always being angry, moody, and withdrawn. After 4 years of that, they (the wives) couldn't take it anymore. fisherman's wife

I'm very concerned about the crumbling infrastructure – its worse in some ports than others but all are experiencing it. Processors, fuel docks, gear suppliers – they are shutting down. Once that happens, I fear we won't be able to go back and rebuild. There may well be no infrastructure left to support the industry of the future. gear store owner

I have $90,000 worth of netting on order – I had to place the order 6 to 8 months ago in order for it to be here for the 2003 season (needs 1 year lead time). The order has been shipped - it's on a ship in a container. I fear once it gets here it will be illegal and I won't be able to sell it. I can't send it back – it's happened to me before. I need to be able to plan my business better than the current management system allows. Seems like I could at least get a tax credit for merchandise I can no longer sell. I have to assume full liability. gear store owner

Economic data mainly focuses on commercial sector not recreational. We need more recreational data. charter boat owner

Oregon's economy is a mess and the coastal economy is even worse. If you'd just let us work, we have a lot to contribute. fisherman

Other fisheries are already being negatively impacted by the groundfish crisis – more pressure in albacore tuna specialty markets for example – only so much room on the shelf and existing businesses are being pushed aside. fisherman

Groundfish issues are of great concern to crabbers. There already have been impacts. There's now more pressure on the resource and there may be gear and habitat conflicts when we start implementing area closures. We're losing processing capacity. commodity commission manager

What are the community impacts of fish businesses using less water and power? This translates to less income for city/county. processor representative

Fishermen are treated as criminals by NMFS for even small overages. And this on top of everything else! Decriminalize the system and us! fisherman

The Magnuson Act should be the Sustainable Fishing Community Act. fisherman's wife

Comments from Agencies and Education:

I'm very concerned about our crumbling infrastructure – once existing support facilities, like fueling stations and fish processing plants, are gone, environmental rules will make it hard for new ones to come in, even when fishing improves. Sea Grant marine agent

We are also concerned about the distances fishermen (sport and commercial) might have to travel to get to the grounds. Increased distance = increased potential for accidents. Coast Guard

The local women's shelter is full – families are breaking up – this thing has gone on so long and there are so many uncertainties that it's tearing some families apart. You can imagine how it gets at home when money is tight. GDOP peer

Remember we are dealing with people here. Consider the full range of consequences when decisions are made. GDOP peer

How will NMFS gather community impact data such as business impacts? GDOP peer

You'd think that all the news about sardines is helping the local fleet (Astoria) – no – no local fishermen have the gear or permits to benefit from the fishery. Much of the benefit from that fishery is going out of state. GDOP peer

ATTACHMENT B

Agenda

Community Fisheries Crisis Meeting

North Bend Library
August 15, 2002
North Bend, Oregon

10:00 **Welcome** *Heather Munro, Oregon Sea Grant*

Introductions: Council Members, Speakers, Audience
Purpose of Meeting
Inform/Gather Community Feedback/ Suggestions
Partnership Building/Getting Involved
Groundfish Basics

10:15 **Overview** *Ginny Goblirsch, Oregon Sea Grant*

Some Community/Industry Fishery-Related Impacts and Perspectives

10:30 **What Got Us Here?** *Steve Copps, National Marine Fisheries Service*

The Magnuson Act
Legal, Biological and Socio-Economic Mandates
General Rebuilding Parameters
Management Trends/Challenges

10:45 **Where Are We Headed?** *Mark Saelens, Oregon Department of Fish and Wildlife*

Pacific Fishery Management Council
Proposed 2003 Management Options
Potential Impacts – all fisheries

11:00 **Question and Answer Period** *Ginny Goblirsch, Heather Munro*

11:15 **What Do You See Happening in Your Community?**

Audience Observations/Concerns
Brainstorm/Collecting Socio-Economic Information

11:45 **Where Do We Go From Here?**

Participation in Management Process
Ongoing Initiatives – Fleet Reduction, Magnuson Act Reauthorization, Groundfish Disaster Outreach Program, Oregon Ports Initiative
New Initiatives: e-mail list

12:00 **Adjourn**

Quileute Natural Resources
QUILEUTE INDIAN TRIBE

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Phone: (360) 374-5695 • Fax: (360) 374-9250

Agenda C.3.h
Revised Proposed Treaty Indian Management Measures
September 2002

Revised Quileute Tribal Proposal Regarding 2003 Groundfish Harvests

Black Rockfish- The 2003 tribal harvest guidelines will be set at 20,000 pounds for the Management area between the US/Canada border and Cape Alava, and 10,000 pounds for the management area located between Destruction Island and Leadbetter Point. No tribal harvest restrictions are proposed for the management area between Cape Alava and Destruction Island.

Sablefish- The 2003 tribal set aside for sablefish will be set at 10 percent of the Monterey through Vancouver area OY minus 3 percent to account for expected discard mortality. This would be equivalent to 630 mt based on the Ad Hoc Committee's recommendation. Allocations among the tribes and among gear types, if any, will be determined by the tribes.

Lingcod- Tribal fisheries will be restricted to 300 lbs. per day and 900 lbs. per week limits for all fisheries.

Rockfish Taken During Competitive Halibut Fisheries- To provide for full retention and utilization during directed, fully competitive treaty longline fisheries for halibut, there will be no trip limit on the retention of incidental harvests of rockfish. However, appropriate management actions will be taken in season, if necessary, to restrict incidental harvests of rockfish, so that tribal fisheries do not exceed the estimated tribal impacts levels.

For all other tribal groundfish longline fisheries the following trip limits will apply:

Thornyhead rockfish- Tribal fisheries will be restricted to a 300 pound per trip limit. This trip limit will be short and longspine thornyheads combined.

Canary rockfish- Tribal fisheries will be restricted to a 300 pound per trip limit.

Other Minor Nearshore, Shelf and Slope Rockfish- Tribal fisheries will be restricted to a 300 lbs. per trip limit for each species group, or the limitede entry trip limits if they are less restrictive than the 300 lbs. per trip limit.

Yelloweye Rockfish- The tribes will continue to work on developing depth, area, and time restrictions in their directed halibut fishery to minimize impacts on yelloweye rockfish. Tribal fisheries will be restricted to 100 lb per trip limit except that full retention of incidental catch will allowed during the competitive portion of the treaty halibut fishery.

These proposed management measures would be expexted to result in catches as referenced in Table 4.3.5-1 in exhibit C.3 Attachment 1 (the annual specifications EIS/RIR). It should be noted that the catch levels in this table represent the upper end of the range of expexted catches for these fisheries.

In light of the conservation issue regarding several rockfish species, the Quileute Tribe would like to advise all other tribes to utilize more species selective gear.

Agenda C.3. j

Laura Deach
318 Shark Reef Rd.
Lopez, WA 98261

2 September 2002

Dr. Donald McIsaac, Executive Director
Pacific Fishery Management Council
7700 N.E. Ambassador Place, Suite 200
Portland, Oregon 97220-1384

Dear Dr. McIsaac,

Please enter the following letter into the council record for the September 9-13, 2002 council meeting for the issue of 2003 Groundfish Mngmnt Measure: Tentative Adoption for Analysis.

Original Sin

This depth mngmnt may work to get the fleet out fishing in 2003. But, what are you going to do in 2004 when china or quillback hit the list? What will you do in 2005 when red-banded hit the list? What will you do in 2006 when rougheye or shortraker hit the list? It might not be these particular species, but you can't tell me that more species won't hit the list because all I have to do is look at the history of your mngmnt to know they will. Within three years you will have no more depths to close. What will you do then? What should be done today. This depth mngmnt does not function towards long-term permanent sustainability. It does not actively reduce capacity and it does not reduce discards. It is business as usual as far as I can tell. This depth mngmnt functions only to eek out one more year of fishing. Why and when would you use depth closure mngmnt? You would close a depth to: 1) protect a juvenile/nursery ground 2) during spawning periods 3) for less desirable marketable fish like soft dover and jelly black cod coming out of the deep (My processor doesn't want these fish. He wants the firm white bellies we catch up shallow in Aug.). These are conservation reasons to use depth mngmnt. These are proper reasons.

The west coast fishery currently takes from both ends: juveniles and mature adults. This is a quick and sure way to kill a resource. I believe this is the primary cause of the CA boccacio decline (coupled with erroneous total mortality figures and a poor ocean regime and you have what you have: zero). I fear this depth closure mngmnt will increase the catch of juveniles and exacerbate this problem. This mngmnt and almost all your mngmnt does not address the problem.

The problem was, "What fleet do you need and want to harvest the resource?" The biological and economic information was never obtained, and you could never have made this decision based on those two principles. But, you never made that decision based on anything. By not answering that question, you created all the other problems we have today. You focused exclusively on managing people, and more people, and more people, and what you would allow them to catch.

The problem now is very different. You have shifted from what we can catch to what we can't catch. This requires completely different mngmnt, but all I am hearing from you is business as usual: cumulative limits coupled with OYs, not enough observers to quantify total mortality, the rest of the usual restrictions and now depth closures.

Lies Men in Suits Have Told

1. "We manage and fish within our OYs." Please. OTC ran an observer program to prove how clean they fish under cumulative mngmnt. These were not randomly drawn boats. They were hand picked, the best of the best, I imagine. In the raw data I saw discards of 30-70% sablefish. Yes, I remember that data can't be used because it wasn't statistically analyzed, and/or the sample size wasn't statistically valid. Does that mean this discarding never happened? Does it mean it is still not happening? I bet you have never or rarely stayed within your OYs. I have pitched as many dead sablefish overboard as I have kept while fishing those DTLs. I have been telling you this for years. These small DTLs are a waste of the resource. But, you won't get rid of them.

2. "Individual quotas create property rights and the fish in the ocean are a public resource." When you create a limited entry program, you "recognize the fleet." Once you recognize the fleet, you create the illusion of ownership: For fishermen, a limited entry permit instills a feeling of property rights. So do trip limits. Certainly the "fishers" in open access feel this property right, even without a permit, and express it as such: "It has always bothered me that the Open Access blackcod allocation is viewed to be a bycatch fishery by those involved in the political process. Last year, while none of us were paying attention, huge portion of the Open Access blackcod allocation was given to the shrimp trawlers..."(Don Standley, PFMC Public Comment, June 1998). Although destructive, you can't get rid of them because you'll get sued.

3. "Cumulative/Trip limits control the catch." They do not. They control landings. The continued use and expansion of cumulative limits and particularly the small poundage DTLs have helped over-drive the over-capacity problem. A glaring example of this can be seen in the spike in FG yelloweye landings for 1999 and 2000 seasons (Attached Graph). This catch increase corresponds directly to the 500-pound Jan-May limit followed by an increase to 1500 pounds for May-Sept. Yet, three years ago, when the council instituted this trip limit they knew that yelloweye rockfish were in trouble. This trip limit drove catch up. Don Standley, an open access "fisher" poignantly expresses this driving the overcapacity problem when he states, "Only when the 300 lb. Blackcod trip limit breathed life into the Open Access fishery, did the allocation get met and monthly cumulative limit was imposed." (PFMC, Public Comment F. 10. June 1998).

4. "Maintaining year-round harvesting and processing opportunity remains the councils highest priority." This year-round goal also drives the decline. Cumulative limits and DTLs create target species discards. They also do not control capacity: "Although licenses and trip limits together may appear to reach the root of the excess capacity problem, they do not." (Amend. 6, PFMC, Sept. 1991). In addition to carrying capacity and natural population density cycles, there is a season for harvest, and it is almost never, in nature, year round. This goal must be modified to match the current trends. "Clarence Birdseye had perfected and patented a process for quick-freezing foods in 1923. Frozen foods wrought great and good changes in the American diet."(Schremp, Kitchen Culture, 1991). Well frozen quality fish, vacuumed-packed, is a lovely year-round product. It is

also clear that the year-round opportunity created a proliferation in the number of buyers that mirrors the proliferation in the number of boats. The data show that there were a total of 1780 buyers on the west coast in the year 2000. 1234 of them had expenditures of less than $20,000. (Option Analysis, Backround Tables, Table 3.3.3-1. 8/28/02). I believe these buyers are creating an economic loss by spreading the resource too thin.

I have come to learn that it was not the naked emperor, and that it doesn't matter that he is naked. He will always be naked. It was the men in suits who had the control. But, you men in suits blew it. You wanted to include everybody, now you will get nobody. It is over. No More. You should not be allowed to destroy the last that is left. There can be no more lies.

Other Random Thoughts

1. The individual states must be granted increased authority off their respective coasts beyond the 3/12-mile limit. If you have to, do it as emergency rule for 2003. At the 29 Aug. Ad-Hoc committee meeting, if I understood correctly, I heard that NMFS is working their butts off to get out from under a zero bocaccio catch. They are going to try and scrounge 20 MT for CA. But, LB wasn't satisfied: more, more, more was what I heard him say. I have to wonder, where is his gratitude? I am sick of you people (most of the voting members of the PFMC) managing my life. Do you know what Chuck and I did this year? We put in 340,000 pounds of an underutilized specie of fish. This was on a longline snap gear boat with a crew of 2 (3 total). Your 300 pounds are an insult to our abilities as fishermen. I am tired of being drug down to the lowest common denominator. I choose Phil to manage my life because he is the only one who makes sense to me now. He speaks towards rational and sustainable mngmnt.
2. A comprehensive IQ program is no longer feasible. I could not support the expansion of IQ's on the west coast anymore. You don't have enough of the we "can't catch fish" to do a comprehensive IQ program with the LE fleet you have built. OA is an impossible dilemma.
3. What is ecosystem mngmnt? In Dr. Seuss's words, "You are trying to ascertain who swims with who, how many of who swims with how many of who, where and why they swim where they do and doing all this by catching them too." In science words, I guess this would mean something like gaining the knowledge of the natural spp. compositions within assemblages, depth and water column range, feeding patterns, spawning periods, the effects of current, terrain preferences, and ??? You then build and structure the harvest and fleet around that knowledge (The IPHC has done this and we have what we have: too many!). But, you had better define this term quick before someone else does.
4. This might be a low estimate both in time and number, but 12 months from now you will have a hundred Shindler's Lists on the west coast. They are called EFPs. So, you had better define what an EFP is, too. An EFP should be an experiment to gain the data necessary to move the fleet to ecosystem mngmnt. EFPs are not another method to keep the fleet fishing. They cannot be conducted like business as usual. Remember, the E stands for experimental, not usual and accustom practices. The best I can see at this point, is that you need to shut almost everything down, run your EFPs, gain the knowledge you lack and then build the

fleet back in. Exactly opposite of what you have been doing. This would be the best use of the we "can't catch fish."

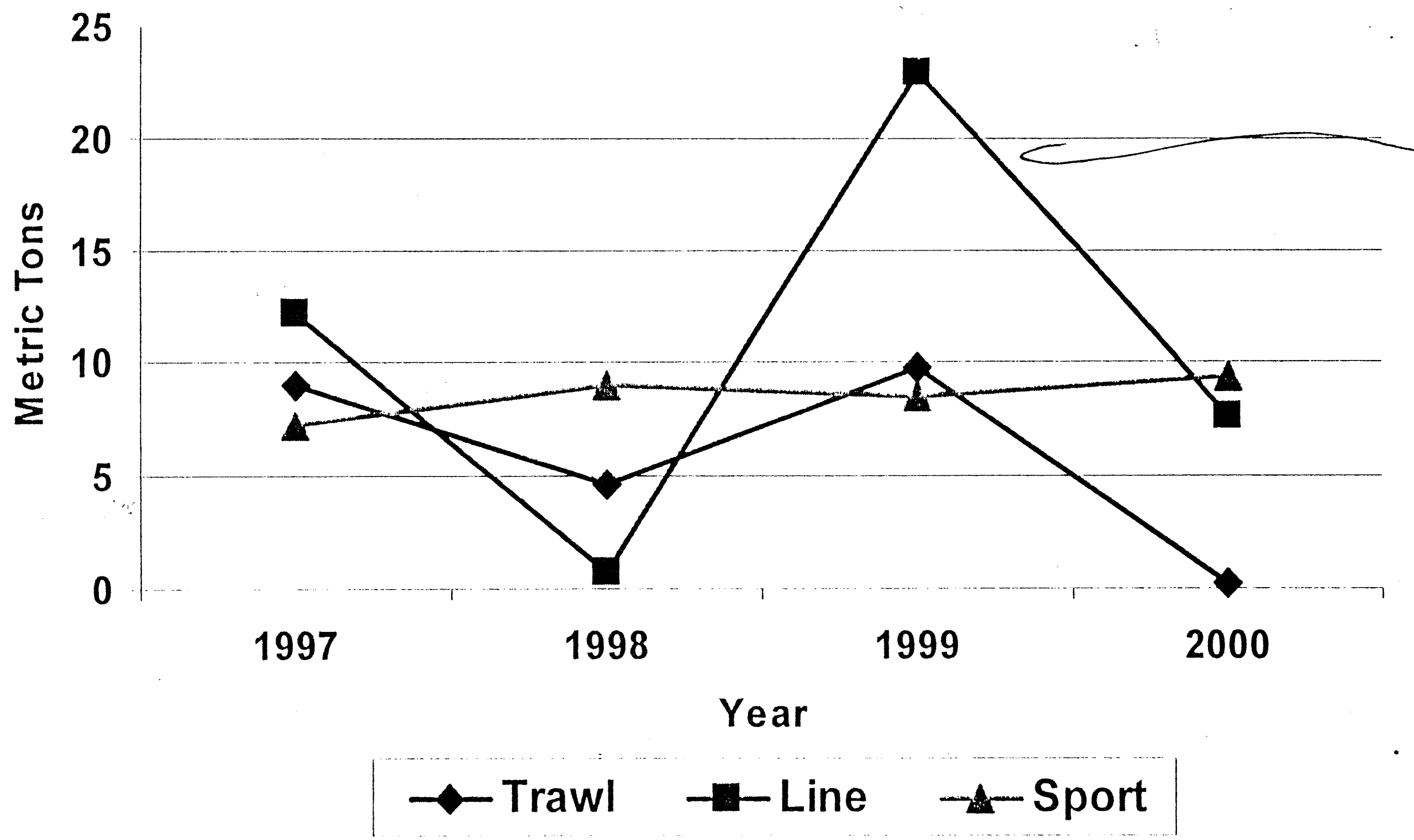
5. I have no rationale for this other than my gut feeling, but I think you put back in salmon troll, crab pot, FG 3-tier (the only rational groundfish mngmnt on this coast), the EFPs the states choose to run (with NMFS approval) and then depending on how much fish you can spread: shrimp trawl, whiting, trawl DTS.
6. If we fish under depth mngmnt in 2003, I don't think you will be able to salvage this much by 2005. That REALLY scares me. Then, it's not just over, it's all over. That can't be allowed to happen, do you know this?
7. Optimal fleet size is a dynamic number that changes in balance with/ according to the stock level, ocean conditions, individual vessel fishing pressure, mngmnt choices, and a multitude of other variables. IQs are the only tool I see that can maintain the dynamic part: constant change within the fleet without constant change in management.

That would be all, Thank You,

Laura Deach

Laura Deach

Washington Yelloweye Rockfish Landings by Gear



WDFW 7/02

5

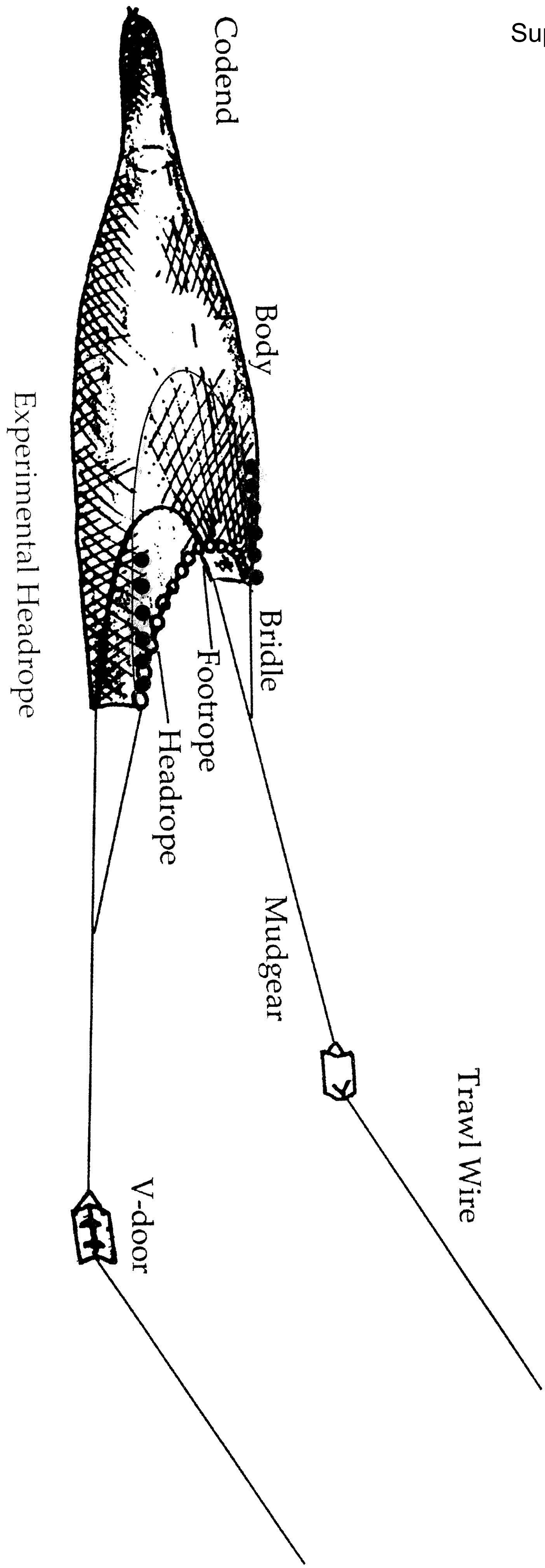


Illustration of a typical sole net, with a simplified view of the experimental modified headrope in red.

NATIONAL MARINE FISHERIES SERVICE REPORT ON GROUNDFISH MANAGEMENT

Situation: The National Marine Fisheries Service (NMFS) will report on its regulatory activities, developments relevant to groundfish fisheries, and other issues of interest to the Council.

Council Task:

1. Discussion.

Reference Materials:

1. None.

Agenda Order:

a. Agendum Overview — Bill Robinson
b. Reports and Comments of Advisory Bodies
c. Public Comment
d. Council Discussion

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

This agenda item is not expected to require Council decision making that raises issues of consistency with the GFSP.

PFMC
08/20/02

Exhibit C.1
Supplemental NMFS News Release
September 2002

UNITED STATES DEPARTMENT OF
COMMERCE
[redacted] WASHINGTON, D.C. 20230

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Contact: Jim Milbury
(310) 245-7114 (cell)
(562) 980-4006

NOAA
FOR IMMEDIATE RELEASE
September 10, 2002

NOAA Relaxes Regulations to Give Fishermen Access to Healthy Stocks While Protecting Dark Blotched Rockfish

In efforts to keep Pacific fishermen working while providing a necessary safeguard for darkblotched rockfish, emergency regulations – effective today through Dec. 31 – create a temporary conservation area for the species and give fishermen alternative fishing opportunities, today announced the Commerce Department's National Oceanic and Atmospheric Administration (NOAA).

"Today's action provides a win-win solution to overfishing by ensuring that darkblotched rockfish remain on target with its rebuilding schedule while minimizing economic hardship to fishermen," said Bill Hogarth, director of NOAA Fisheries. "These temporary, critical measures will help us rebuild the fishery and will lead to more plentiful and sustainable fish harvests in the future."

NOAA Fisheries scientists have determined that the change in regulations will still allow darkblotched rockfish to rebuild within the approved rebuilding schedule.

Darkblotched rockfish are managed along with 80 other groundfish species off the coasts of Washington, Oregon and California by NOAA's National Marine Fisheries Service (NOAA Fisheries) and the Pacific Fishery Management Council, located in Portland, Oregon. Currently overfished, the species is regulated under a 34-year rebuilding program that prohibits fishermen from targeting it but allows for a small trip limit in surrounding groundfish fisheries. The trip limit is intended to allow fishermen to land darkblotched rockfish that is caught incidental to their primary fishery. This year, however, darkblotched rockfish harvest rates have been higher than expected. In June, coastwide commercial landings of darkblotched rockfish represented up to 75 percent of the 2002 allowable harvest.

-more-

Projections showed that, if further action were not taken, the catch would exceed allowable landings by up to 40 metric tons, thus throwing off the rebuilding schedule.

In order to avoid exceeding the 2002 allowable catch of darkblotched rockfish, this emergency rule establishes a darkblotched rockfish conservation area where darkblotched rockfish are commonly found, south from the U.S./Canada border (48°30' N. latitude) to 40°10' N. latitude, bordered by straight-line coordinates on the east (at approximately the 100 fathom depth contour) and on the west (at approximately the 250 fathom depth contour). The area between 100-250 fathoms is closed to all bottom trawling.

To offset economic impacts to fishermen, the rule also reopens fishing grounds, seaward of 250 fathoms, that were closed earlier this month. This action will allow limited entry trawl access to healthy deepwater groundfish in an area where darkblotched rockfish are not aggregated in great abundance. The area inside 100 fathoms will reopen on October 1.

More detailed information about this announcement, including the trip limit adjustments, can be found online at:
http://www.nwr.noaa.gov/1sustfsh/groundfish/public2002/SepEmerAdjustments.pdf

NOAA Fisheries is dedicated to protecting and preserving our nation's living marine resources through scientific research, management, enforcement and the conservation of marine mammals and other protected marine species and their habitat. To learn more about NOAA Fisheries, please visit http://www.nmfs.noaa.gov.

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Fact Sheet

Pacific Groundfish Emergency Rule, 9/10/02

The emergency rule, effective 9/10/02, establishes the following temporary measures aimed at providing necessary protections for the Pacific groundfish fishery:

Darkblotched Rockfish Conservation Area

- The conservation area extends south from the U.S./Canada border (48°30' N. latitude) to 40°10' N. latitude and is bordered by straight-line coordinates on the east (at approximately the 100 fathom depth contour) and on the west (at approximately the 250 fathom depth contour).

- The conservation area is closed to limited entry groundfish trawl fishing and fishing with limited entry groundfish trawl gear is prohibited within the conservation area. It is unlawful to take and retain, possess, or land groundfish taken with limited entry groundfish trawl gear in the conservation area. Limited entry groundfish trawl vessels may transit through the conservation area, with or without groundfish on board, provided all groundfish trawl gear is stowed either: (1) below deck; or (2) if the gear cannot readily be moved, in a secured and covered manner, detached from all towing lines, so that it is rendered unusable for fishing.

- Trawling shoreward of the conservation area during is permitted October - December and trawling seaward of the conservation area is permitted September - December. Small footrope gear is required shoreward of the conservation area and large footrope gear is permitted seaward of the conservation area.

Trip Limit Reductions in the Pacific Groundfish Fishery

- ***Limited Entry Trawl Fishery in the Area North of 40°10' N. Latitude***
  Trip limits are reduced for the following species and/or species groups: minor shelf rockfish, Pacific ocean perch, sablefish, longspine thornyhead, shortspine thornyhead, Dover sole, all other flatfish, petrale sole, rex sole, arrowtooth flounder, minor shelf rockfish, canary rockfish, yellowtail rockfish, and lingcod.

- ***Limited Entry Trawl Fishery in the Area South of 40°10' N. Latitude***
  Trip limits are reduced for minor slope rockfish in the area between 40°10' N. latitude and 36° N. latitude and for canary rockfish in the area south of 40°10' N. latitude.

- ***Limited Entry Fixed Gear Fishery and Open Access Fisheries***
  Pacific whiting will be closed for limited entry fixed gear and open access fisheries.

More information can be found online at:
http://www.nwr.noaa.gov/1sustfsh/groundfish/public2002/SepEmerAdjustments.pdf

National Marine Fisheries Service, Northwest Region
7600 Sand Point Way NE, Seattle, WA 98115

PUBLIC NOTICE

For Information Contact:
Bill Robinson (206) 526-6140
Svein Fougner (562) 980-4000

NMFS-SEA-02-11
FOR IMMEDIATE RELEASE
September 10, 2002

EMERGENCY RULE IMPLEMENTED IN PACIFIC COAST GROUNDFISH FISHERY AND TRIP LIMIT ADJUSTMENTS OFF WASHINGTON, OREGON, AND CALIFORNIA

EFFECTIVE SEPTEMBER 10, 2002

Adjustments to trip limits for groundfish taken off Washington, Oregon, and California are announced by the National Marine Fisheries Service (NMFS). These changes are **effective September 10, 2002**, unless otherwise specified and are intended to protect overfished and depleted stocks. Trip limit changes that are effective September 10, 2002, for the trawl "A" platoon and are effective September 15, 2002, for the "B" platoon. The "B" platoon can fish July - August limits until September 15, 2002, in areas that are open following implementation of this rulemaking .

NMFS is implementing an emergency rule to establish new depth-based management measures in the Pacific Coast groundfish fishery for September - December 2002 in order to allow the harvest of healthy groundfish stocks while protecting darkblotched rockfish. In response to higher than expected landings of darkblotched rockfish, an overfished species, during the first few months of 2002, the limited entry trawl fishery north of 40° 10' N. latitude closed on September 1, 2002. At its June 17 - 21, 2002, meeting in Foster City, California, the Pacific Fishery Management Council (Council) felt the economic need to keep the limited entry trawl fishery open during September was great and requested that NMFS establish new depth-based management measures via emergency rulemaking. This emergency rule establishes a darkblotched rockfish conservation area (DBCA) extending from the U.S./Canada border to 40° 10' N. latitude and between approximately 100 fathoms and 250 fathoms. This emergency rule maintains the closure to trawling with groundfish gear where darkblotched rockfish are commonly found, but allows limited entry trawl access to healthy deepwater groundfish (seaward of 250 fathoms) and nearshore groundfish (shoreward of 100 fathoms) stocks outside of the DBCA.

Following the Council's June meeting, NMFS drafted an Environmental Assessment/Regulatory Impact Review to evaluate the effects of this emergency rule. With that analysis, NMFS estimated the total catch of darkblotched rockfish associated with the Council's September implementation request to be approximately 96% - 99% of the OY. This is due, in part, to the estimated bycatch of darkblotched rockfish that would be caught shoreward of 100 fathoms with nearshore flatfish during September and October. Given the uncertainties in estimating the catch of darkblotched rockfish, particularly shoreward of 100 fathoms, NMFS believes a more conservative action than that proposed by the Council is necessary to assure the darkblotched rockfish OY is not exceeded. Therefore, NMFS will continue to prohibit limited entry trawl fishing shoreward of the DBCA during September, but re-open that area during October - December with reduced flatfish trip limits during October. Limited entry trawl access seaward of the DBCA will be re-opened for September - December. This modification of the Council's request is expected to reduce the incidental catch of darkblotched rockfish with nearshore flatfish during the months of September and October and provide greater assurance that neither the darkblotched rockfish OY, nor the OY of any other groundfish species will be exceeded.

NMFS also determined that some of the flatfish limits recommended by the Council for the September - December periods were too liberal to adequately prevent the overharvest of overfished species. With this emergency rule, NMFS sets trip limits for groundfish, including flatfish, at levels that are expected to protect overfished species from overharvest. In addition, NMFS is correcting limited entry fixed gear and open access limits for Pacific whiting during the September - December periods to reflect the closure of Pacific whiting announced in the July inseason action (67 FR 44778, July 5, 2002).

DARKBLOTCHED ROCKFISH CONSERVATION AREA (DBCA)

The DBCA extends south from the U.S./Canada border (48°30' N. latitude) to 40°10' N. latitude and is bordered by straight-line coordinates on the east (at approximately the 100 fathom depth contour) and on the west (at approximately the 250 fathom depth contour).

The DBCA is closed to limited entry groundfish trawl fishing and fishing with limited entry groundfish trawl gear is prohibited within the DBCA. It is unlawful to take and retain, possess, or land groundfish taken with limited entry groundfish trawl gear in the DBCA. Limited entry groundfish trawl vessels may transit through the DBCA, with or without groundfish on board, provided all groundfish trawl gear is stowed either: (1) below deck; or (2) if the gear cannot readily be moved, in a secured and covered manner, detached from all towing lines, so that it is rendered unusable for fishing.

Trawling shoreward of the DBCA during is permitted October - December and trawling seaward of the DBCA is permitted September - December. Small footrope gear is required shoreward of the DBCA and large footrope gear is permitted seaward of the DBCA.

TRIP LIMITS CHANGES IN THE GROUNDFISH FISHERY

Limited Entry Trawl Fishery in the Area North of 40°10' N. Latitude

Trip limits will change for the following species and/or species groups: minor shelf rockfish, Pacific ocean perch, sablefish, longspine thornyhead, shortspine thornyhead, Dover sole, all other flatfish, petrale sole, rex sole, arrowtooth flounder, minor shelf rockfish, canary rockfish, yellowtail rockfish, and lingcod.

Limited Entry Trawl Fishery in the Area South of 40°10' N. Latitude

Trip limits will change for minor slope rockfish in the area between 40°10' N. latitude and 36° N. latitude and for canary rockfish in the area south of 40°10' N. latitude.

Limited Entry Fixed Gear Fishery and Open Access Fisheries

Pacific whiting will be closed for limited entry fixed gear and open access fisheries.

Coordinates for the DBCA and an updated set of trip limit tables, effective September 10, 2002, are included in this notice.

To improve the quality of transmissions and conserve resources, we are also now able to send Pacific Coast Groundfish public notices via e-mail in addition to fax.
To be added to our e-mail list and removed from our fax list, please e-mail your request to westcoastgroundfish@noaa.gov

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For more information contact: NMFS Northwest Region at 206-526-6140 or visit our website at http://www.nwr.noaa.gov, click on "Pacific Coast Groundfish;" NMFS Southwest Region at 562-980-4000; Washington Department of Fish and Wildlife at 360-249-4628; Oregon Department of Fish and Wildlife at 541-867-4741; or the California Department of Fish and Game at 707-441-5797 (Eureka), 510-581-7358 (Belmont), 562-342-7185 (Los Alamitos), 858-546-7167 (La Jolla).

COORDINATES FOR THE DBCA

100 FATHOMS -	250 FATHOMS -
48°23' N. lat., 125°60' W. long.;	48°25' N. lat, 125°71' W. long.;
48°13' N. lat., 125°63' W. long.;	48°22' N. lat., 125°65' W. long.;
47°95' N. lat., 125°50' W. long.;	48°14' N. lat., 125°75' W. long.;
48°33' N. lat., 125°30' W. long.;	48°10' N. lat., 125°78' W. long.;
48°33' N. lat., 125°05' W. long.;	48°06' N. lat., 125°62' W. long.;
48°38' N. lat., 124°83' W. long.;	48°03' N. lat., 125°67' W. long.;
48°28' N. lat., 124°94' W. long.;	47°95' N. lat., 125°62' W. long.;
48°10' N. lat., 125°00' W. long.;	47°93' N. lat., 125°48' W. long.;
48°15' N. lat., 125°30' W. long.;	47°97' N. lat., 125°42' W. long.;
48°10' N. lat., 125°30' W. long.;	48°01' N. lat., 125°41' W. long.;
47°98' N. lat., 125°27' W. long.;	48°06' N. lat., 125°35' W. long.;
47°82' N. lat., 125°05' W. long.;	48°03' N. lat., 125°33' W. long.;
47°70' N. lat., 125°08' W. long.;	48°00' N. lat., 125°35' W. long.;
47°52' N. lat., 124°90' W. long.;	47°97' N. lat., 125°33' W. long.;
47°40' N. lat., 124°77' W. long;	47°97' N. lat., 125°30' W. long.;
47°31' N. lat., 124°75' W. long;	47°87' N. lat., 125°28' W. long.;
47°14' N. lat., 124°93' W. long;	47°82' N. lat., 125°18' W. long.;
47°01' N. lat., 124°91' W. long;	47°77' N. lat., 125°10' W. long.;
47°02' N. lat., 124°98' W. long;	47°74' N. lat., 125°13' W. long.;
46°95' N. lat., 124°91' W. long;	47°70' N. lat., 125°10' W. long.;
47°00' N. lat., 124°82' W. long.;	47°63' N. lat., 125°12' W. long.;
46°90' N. lat., 124°80' W. long.;	47°50' N. lat., 125°00' W. long.;
46°91' N. lat., 124°88' W. long.;	47°47' N. lat., 124°98' W. long.;
46°69' N. lat., 124°72' W. long.;	47°38' N. lat., 124°85' W. long.;
46°58' N. lat., 124°48' W. long.;	47°28' N. lat., 124°88' W. long.;
46°48' N. lat., 124°50' W. long.;	47°25' N. lat., 125°00' W. long.;
46°33' N. lat., 124°61' W. long.;	47°13' N. lat., 124°98' W. long.;
46°30' N. lat., 124°63' W. long.;	47°02' N. lat., 125°00' W. long.;
46°28' N. lat., 124°59' W. long.;	46°92' N. lat., 125°03' W. long.;
46°28' N. lat., 124°38' W. long.;	46°85' N. lat., 124°95' W. long.;
46°27' N. lat., 124°33' W. long.;	46°68' N. lat., 124°85' W. long.;
46°20' N. lat., 124°58' W. long.;	46°57' N. lat., 124°63' W. long.;
46°18' N. lat., 124°65' W. long.;	46°51' N. lat., 124°68' W. long.;
46°15' N. lat., 124°65' W. long.;	46°55' N. lat., 124°53' W. long.;
46°02' N. lat., 124°64' W. long.;	46°48' N. lat., 124°53' W. long.;
45°95' N. lat., 124°61' W. long.;	46°33' N. lat., 124°65' W. long.;
45°90' N. lat., 124°67' W. long.;	46°27' N. lat., 124°62' W. long.;
45°79' N. lat., 124°59' W. long.;	46°26' N. lat., 124°45' W. long.;
45°70' N. lat., 124°47' W. long.;	46°22' N. lat., 124°63' W. long.;
45°57' N. lat., 124°40' W. long.;	46°22' N. lat., 124°65' W. long.;
45°45' N. lat., 124°36' W. long.;	46°18' N. lat., 124°70' W. long.;
45°29' N. lat., 124°30' W. long.;	46°10' N. lat., 124°70' W. long.;
44°99' N. lat., 124°32' W. long.;	46°05' N. lat., 124°84' W. long.;
44°82' N. lat., 124°50' W. long.;	45°95' N. lat., 124°76' W. long.;
44°76' N. lat., 124°56' W. long.;	45°72' N. lat., 124°77' W. long.;

100 FATHOMS -	250 FATHOMS -
44°55' N. lat., 124°61' W. long.;	45°60' N. lat., 124°76' W. long.;
44°47' N. lat., 124°75' W. long.;	45°60' N. lat., 124°71' W. long.;
44°22' N. lat., 124°94' W. long.;	45°41' N. lat., 124°64' W. long.;
43°94' N. lat., 124°93' W. long.;	45°19' N. lat., 124°66' W. long.;
43°94' N. lat., 124°58' W. long.;	44°97' N. lat., 124°62' W. long.;
43°71' N. lat., 124°54' W. long.;	44°74' N. lat., 124°85' W. long.;
43°52' N. lat., 124°57' W. long.;	44°54' N. lat., 124°90' W. long.;
43°29' N. lat., 124°69' W. long.;	44°39' N. lat., 124°83' W. long.;
43°12' N. lat., 124°69' W. long.;	44°22' N. lat., 124°98' W. long.;
43°06' N. lat., 124°74' W. long.;	43°97' N. lat., 124°97' W. long.;
43°07' N. lat., 124°85' W. long.;	43°84' N. lat., 124°89' W. long.;
42°93' N. lat., 124°88' W. long.;	43°83' N. lat., 124°73' W. long.;
42°90' N. lat., 124°79' W. long.;	43°71' N. lat., 124°69' W. long.;
42°73' N. lat., 124°71' W. long.;	43°40' N. lat., 124°71' W. long.;
42°64' N. lat., 124°69' W. long.;	43°33' N. lat., 124°75' W. long.;
42°55' N. lat., 124°71' W. long.;	43°33' N. lat., 124°88' W. long.;
42°53' N. lat., 124°70' W. long.;	43°29' N. lat., 124°88' W. long.;
42°50' N. lat., 124°71' W. long.;	42°82' N. lat., 124°92' W. long.;
42°47' N. lat., 124°78' W. long.;	42°78' N. lat., 124°89' W. long.;
42°42' N. lat., 124°73' W. long.;	42°73' N. lat., 124°86' W. long.;
42°32' N. lat., 124°63' W. long.;	42°76' N. lat., 124°82' W. long.;
42°27' N. lat., 124°60' W. long.;	42°73' N. lat., 124°77' W. long.;
42°09' N. lat., 124°58' W. long.;	42°65' N. lat., 124°72' W. long.;
42°00' N. lat., 124°59' W. long.;	42°58' N. lat., 124°78' W. long.;
42°00' N. lat., 124°58' W. long.;	42°52' N. lat., 124°78' W. long.;
41°78' N. lat., 124°46' W. long.;	42°52' N. lat., 124°74' W. long.;
41°55' N. lat., 124°48' W. long.;	42°49' N. lat., 124°78' W. long.;
41°17' N. lat., 124°34' W. long.;	42°47' N. lat., 124°83' W. long.;
40°86' N. lat., 124°39' W. long.;	42°44' N. lat., 124°79' W. long.;
40°68' N. lat., 124°51' W. long.;	42°33' N. lat., 124°72' W. long.;
40°60' N. lat., 124°62' W. long.;	42°23' N. lat., 124°67' W. long.;
40°54' N. lat., 124°64' W. long.;	42°09' N. lat., 124°65' W. long.;
40°39' N. lat., 124°53' W. long.;	42°00' N. lat., 124°63' W. long.;
40°40' N. lat., 124°47' W. long.;	41°99' N. lat., 124°63' W. long.;
40°37' N. lat., 124°40' W. long.;	41°80' N. lat., 124°53' W. long.;
40°35' N. lat., 124°46' W. long.;	41°36' N. lat., 124°51' W. long.;
40°31' N. lat., 124°43' W. long.;	41°12' N. lat., 124°42' W. long.;
40°32' N. lat., 124°38' W. long.;	40°96' N. lat., 124°50' W. long.;
40°25' N. lat., 124°43' W. long.;	40°68' N. lat., 124°55' W. long.;
40°28' N. lat., 124°57' W. long.;	40°56' N. lat., 124°71' W. long.;
40°17' N. lat., 124°35' W. long.	40°38' N. lat., 124°53' W. long.;
	40°28' N. lat., 124°53' W. long.;
	40°31' N. lat., 124°84' W. long.;
	40°17' N. lat., 124°47' W. long.

Table 3. Trip Limits[1] and Gear Requirements[2] for Limited Entry Trawl Gear

Other Limits and Requirements Apply – Read Sections IV. A. and B. NMFS Actions before using this table

NOTE FOR **NORTH OF 40°10' N. LAT: ALL **TRAWLING WITH GROUNDFISH GEAR IS PROHIBITED** WITHIN THE DBCA[11], ALL **TRAWLING IS PROHIBITED** SHOREWARD OF THE DBCA DURING SEPTEMBER, **SMALL FOOTROPE GEAR[5] IS REQUIRED** SHOREWARD OF THE DBCA OCT - DEC, AND **LARGE FOOTROPE GEAR IS PERMITTED** SEAWARD OF THE DBCA SEPT - DEC. **PROHIBITION AGAINST TRAWLING** SHOREWARD OF THE DBCA ALSO APPLIES TO THE "B" PLATOON FISHING AGAINST JULY - AUGUST LIMITS.

NOTE FOR **SOUTH OF 40°10' N. LAT: AS OF JULY 1, 2002, ALL **TRAWLING FOR GROUNDFISH IS PROHIBITED** EXCEPT FOR DTS COMPLEX, SLOPE ROCKFISH SPECIES, AND SPECIFIED FLATFISH AND GRENADIER TAKEN INCIDENTALLY IN THOSE FISHERIES.

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North	1,800 lb/ 2 months				600 lb / 2 months	300 lb / month
3	South						
4	40°10' - 36° N. lat.	50,000 lb/ 2 months		5,000 lb/ 2 months			
5	South of 36° N. lat.	50,000 lb/ 2 months				15,000 lb/ 2 months	
6	**Splitnose - South**						
7	40°10' - 36° N. lat.	25,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb / 2 months	
8	South of 36° N. lat.	25,000 lb/ 2 months				15,000 lb/ 2 months	
9	**Pacific ocean perch - North[6]**	2,000 lb/ month		4,000 lb/ month	4,000 lb/ 2 months		2,000 lb / month
10	**Chilipepper - South[6]**						
11	mid-water trawl	25,000 lb/ 2 months			CLOSED[7]		
12	small footrope trawl	7,500 lb/ 2 months		4,000 lb/ 2 months			
13	large footrope trawl	500 lb/ trip, not to exceed small footrope cumulative 2-month limits at any time during the year					
14	**DTS complex - North[11]**	ALL TRAWLING IS PROHIBITED SHOREWARD OF THE DBCA DURING SEPTEMBER Small footrope required Oct - Dec shoreward of DBCA; large footrope permitted Sept - Dec seaward of DBCA					
15	Sablefish	6,000 lb/ 2 months		3,500 lb/ 2 months	3,000 lb/ 2 months	In times and areas where open - 3,500 lb/ 2 months	1,250 lb / month
16	Longspine thornyhead	10,000 lb/ 2 months		6,000 lb/ 2 months	1,500 lb/ 2 months	In times and areas where open - 10,000 lb/ 2 months	1,000 lb / month
17	Shortspine thornyhead	2,600 lb/ 2 months		2,000 lb/ 2 months	1,500 lb/ 2 months	In times and areas where open - 2,600 lb/ 2 months	750 lb / month
18	Dover sole	30,000 lb/ 2 months	28,000 lb/ 2 months	14,000 lb/ 2 months		In times and areas where open - 20,000 lb/ 2 months	7,000 lb/ month
19	**DTS complex - South**						
20	Sablefish[9]	4,500 lb/ 2 months					
21	Longspine thornyhead	10,000 lb/ 2 months					
22	Shortspine thornyhead	2,600 lb/ 2 months					
23	Dover sole	22,000 lb/ 2 months					
24	**Flatfish - North[11]**	ALL TRAWLING IS PROHIBITED SHOREWARD OF THE DBCA DURING SEPTEMBER Small footrope required Oct - Dec shoreward of DBCA; large footrope permitted Sept - Dec seaward of DBCA					
25	All other flatfish [3]	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits, includes arrowtooth flounder. SMALL FOOTROPE: 15,000 lb/ month	35,000 lb/ month	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits. Retention of **petrale and rex sole** prohibited if large footrope gear is onboard. SMALL FOOTROPE: 30,000 lb/ month, no more than 10,000 of which may be petrale sole	SMALL FOOTROPE REQUIRED: 40,000 lb/ month, no more than 15,000 of which may be petrale sole	In times and areas where open - 25,000 lb/ month, no more than 10,000 of which may be petrale sole.	50,000 lb/ month, no more than 20,000 lb / month of which may be petrale
26	Petrale sole	Not limited, large footrope allowed					
27	Rex sole						
28	Arrowtooth flounder	LARGE FOOTROPE: included in "all other flatfish" limit. SMALL FOOTROPE: 30,000 lb/ trip		SMALL FOOTROPE REQUIRED: 7,500 lb/ trip, no more than 30,000 lb/ month; large footrope prohibited		In times and areas where open - 3,500 lb/ trip, no more than 15,000 / month.	30,000 lb/ trip
29	**Flatfish - South**						
30	All other flatfish [3]	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits, includes arrowtooth flounder. SMALL FOOTROPE: 70,000 lb/ month, no more than 40,000 lb of which may be species other than Pacific Pacific sandabs.		LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits. Retention of **petrale and rex sole** prohibited if large footrope gear is onboard. SMALL FOOTROPE: 70,000 lb/ month, no more than 40,000 lb of which may be species other than Pacific sandabs. Of the species other than Pacific sandabs, no more than 15,000 lb may be petrale sole.	CLOSED[7] With the exception of 1,000 lb/ trip of rex sole, petrale sole, English sole, and arrowtooth flounder combined when landed with DTS complex. The amount of per trip flatfish landings must not exceed the amount of DTS landed. Landings can be made with small or large footrope gear.		
31	Petrale sole	Not limited, large footrope allowed					
32	Rex sole						
33	Arrowtooth flounder	LARGE FOOTROPE: included in "all other flatfish" limit. SMALL FOOTROPE: 30,000 lb/ trip		SMALL FOOTROPE REQUIRED: 7,500 lb/ trip, no more than 30,000 lb/ month; large footrope prohibited			
35	**Whiting[4]**	20,000 lb/ trip		Primary Season		CLOSED[7]	

Table 3. (CONTINUED) Trip Limits[1] and Gear Requirements[2] for Limited Entry Trawl Gear

Other Limits and Requirements Apply -- Read Sections IV. A. and B. NMFS Actions before using this table

<table>
<tr><th>line</th><th>Species/groups</th><th>JAN-FEB</th><th>MAR-APR</th><th>MAY-JUN</th><th>JUL-AUG</th><th>SEP-OCT</th><th>NOV-DEC</th></tr>
<tr><td colspan="8">**NOTE FOR NORTH OF 40°10' N. LAT: ALL TRAWLING WITH GROUNDFISH GEAR IS PROHIBITED WITHIN THE DBCA11/, ALL TRAWLING IS PROHIBITED SHOREWARD OF THE DBCA DURING SEPTEMBER, SMALL FOOTROPE GEAR5/ IS REQUIRED SHOREWARD OF THE DBCA OCT - DEC, AND LARGE FOOTROPE GEAR IS PERMITTED SEAWARD OF THE DBCA SEPT - DEC. PROHIBITION AGAINST TRAWLING SHOREWARD OF THE DBCA ALSO APPLIES TO THE "B" PLATOON FISHING AGAINST JULY - AUGUST LIMITS.</td></tr>
<tr><td colspan="8">**NOTE FOR SOUTH OF 40°10' N. LAT: AS OF JULY 1, 2002, ALL TRAWLING FOR GROUNDFISH IS PROHIBITED EXCEPT FOR DTS COMPLEX, SLOPE ROCKFISH SPECIES, AND SPECIFIED FLATFISH AND GRENADIER TAKEN INCIDENTALLY IN THOSE FISHERIES.</td></tr>
<tr><td>37</td><td>Minor shelf rockfish</td><td colspan="6"></td></tr>
<tr><td>38</td><td>North</td><td colspan="2">300 lb/ month</td><td colspan="2">1,000 lb/ month, no more than 300 lb of which may be yelloweye rockfish</td><td>CLOSED[7]</td><td>300 lb / month</td></tr>
<tr><td>39</td><td>South</td><td colspan="2">500 lb/ month</td><td>1,000 lb/ month, no more than 300 lb of which may be yelloweye rockfish</td><td colspan="3">CLOSED[7]</td></tr>
<tr><td>40</td><td>Canary rockfish</td><td colspan="6"></td></tr>
<tr><td></td><td>North</td><td colspan="2" rowspan="2">200 lb/ 2 months</td><td rowspan="2">600 lb/ 2months</td><td>600 lb/ 2 months</td><td rowspan="2">CLOSED[7]</td><td rowspan="2">200 lb / month</td></tr>
<tr><td></td><td>South</td><td>CLOSED[7]</td></tr>
<tr><td></td><td>Widow rockfish</td><td colspan="6"></td></tr>
<tr><td>41</td><td>North</td><td colspan="6"></td></tr>
<tr><td>42</td><td>mid-water trawl</td><td colspan="2">CLOSED[7]</td><td colspan="2">During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative widow limit of 1,500 lb/ month</td><td colspan="2">CLOSED[7]</td></tr>
<tr><td>43</td><td>small footrope trawl</td><td colspan="4">1,000 lb/ month</td><td colspan="2">CLOSED[7]</td></tr>
<tr><td></td><td>South</td><td colspan="6"></td></tr>
<tr><td></td><td>mid-water trawl</td><td colspan="2">CLOSED[7]</td><td>During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative widow limit of 1,500 lb/ month</td><td colspan="3">CLOSED[7]</td></tr>
<tr><td></td><td>small footrope trawl</td><td colspan="3">1,000 lb/ month</td><td colspan="3">CLOSED[7]</td></tr>
<tr><td>44</td><td>Yellowtail - North[6]</td><td colspan="6"></td></tr>
<tr><td>45</td><td>mid-water trawl</td><td colspan="2">CLOSED[7]</td><td colspan="2">During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative yellowtail limit of 2,000 lb/ month</td><td colspan="2">CLOSED[7]</td></tr>
<tr><td>46</td><td>small footrope trawl</td><td colspan="4">In landings without flatfish, 1,000 lb/ month. As flatfish bycatch, per trip limit is the sum of 33% (by weight) of all flatfish except arrowtooth flounder, plus 10% (by weight) of arrowtooth flounder. Combined with and without flatfish, not to exceed 30,000 lb/ 2 months.</td><td>CLOSED[7]</td><td>As flatfish bycatch, per trip limit is the sum of 33% (by weight) of all flatfish except arrowtooth flounder, plus 10% (by weight) of arrowtooth flounder not to exceed 4,500 lb/ month.</td></tr>
<tr><td>47</td><td>Bocaccio - South[6]</td><td colspan="2">600 lb/ 2 months</td><td>1,000 lb/ 2 months</td><td colspan="3">CLOSED[7]</td></tr>
<tr><td>48</td><td>Cowcod</td><td colspan="6">CLOSED[7]</td></tr>
<tr><td>49</td><td>Minor nearshore rockfish</td><td colspan="6"></td></tr>
<tr><td>50</td><td>North</td><td colspan="4">300 lb/ month</td><td colspan="2">CLOSED[7]</td></tr>
<tr><td>51</td><td>South</td><td colspan="3">300 lb/ month</td><td colspan="3">CLOSED[7]</td></tr>
<tr><td></td><td>Lingcod[8]</td><td colspan="6"></td></tr>
<tr><td></td><td>North</td><td colspan="2" rowspan="2">800 lb/ 2 months</td><td colspan="2">1,000 lb/ 2 months</td><td colspan="2">500 lb / month</td></tr>
<tr><td></td><td>South</td><td>1,000 lb/ 2 months</td><td colspan="3">CLOSED[7]</td></tr>
<tr><td>52</td><td>Other Fish[10]</td><td colspan="3">Not limited</td><td>Grenadier retention</td><td colspan="2">CLOSED[7]</td></tr>
</table>

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ Gear requirements and prohibitions are explained above. See IV.A.(14).

3/ "Other" flatfish means all flatfish at 50 CFR 660.302 except those in this Table 3 with species specific management measures, including trip limits.

4/ The whiting "per trip" limit in the Eureka area inside 100 fm is 10,000 lb/ trip from January 1 - August 31, 2002. From September 1 - December 31, 2002, the whiting fishery is closed.

5/ Small footrope trawl means a bottom trawl net with a footrope no larger than 8 inches (20 cm) in diameter. In areas where trawl gear is restricted, only one type of trawl gear is allowed on board at ony one time. See above.

6/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

7/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

8/ The minimum size limit for lingcod is 24 inches (61 cm) total length.

9/ The minimum size requirement for sablefish is 22 inches (56 cm) total length. No more than 500 lb of undersized sablefish may be landed per trip.

10/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

11/ All trawling is prohibited within the DBCA ; gear must be covered and stowed when transiting through the area. See IV.A.(22).

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 4. Trip Limits[1/] for Limited Entry Fixed Gear
Other Limits and Requirements Apply -- Read Sections IV. A. and B. NMFS Actions before using this table

<table>
<tr><th>line</th><th>Species/groups</th><th>JAN-FEB</th><th>MAR-APR</th><th>MAY-JUN</th><th>JUL-AUG</th><th>SEP-OCT</th><th>NOV-DEC</th></tr>
<tr><td colspan="8">**NOTE FOR FISHING SOUTH OF 40°10': ALL GROUNDFISH FISHING IS CLOSED SEAWARD OF THE 20 FATHOM DEPTH CONTOUR, EXCEPT FOR SABLEFISH, THORNYHEADS, AND SLOPE ROCKFISH.</td></tr>
<tr><td>1</td><td>Minor slope rockfish</td><td colspan="6"></td></tr>
<tr><td>2</td><td>North</td><td colspan="2">1,000 lb/ month</td><td colspan="3">5,000 lb/ 2 months</td><td>2,000 lb/ 2 months</td></tr>
<tr><td>3</td><td>South</td><td colspan="6"></td></tr>
<tr><td>4</td><td>40°10' - 36° N. lat.</td><td colspan="2">25,000 lb/ 2 months</td><td colspan="2">5,000 lb/ 2 months</td><td colspan="2">1,800 lb/ 2 months</td></tr>
<tr><td>5</td><td>South of 36° N. lat.</td><td colspan="4">25,000 lb/ 2 months</td><td colspan="2">15,000 lb/ 2 months</td></tr>
<tr><td>6</td><td>Splitnose - South</td><td colspan="6"></td></tr>
<tr><td>7</td><td>40°10' - 36° N. lat.</td><td colspan="2">25,000 lb/ 2 months</td><td colspan="2">5,000 lb/ 2 months</td><td colspan="2">1,800 lb/ 2 months</td></tr>
<tr><td>8</td><td>South of 36° N. lat.</td><td colspan="4">25,000 lb/ 2 months</td><td colspan="2">15,000 lb / 2 months</td></tr>
<tr><td>9</td><td>Pacific ocean perch - North[5/]</td><td>2,000 lb/ month</td><td colspan="2">4,000 lb/ month</td><td colspan="2">4,000 lb/ 2 months</td><td>2,000 lb/ month</td></tr>
<tr><td>10</td><td>Sablefish</td><td colspan="6"></td></tr>
<tr><td>11</td><td>North of 36° N. lat.[8/]</td><td colspan="6">300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months</td></tr>
<tr><td>12</td><td>South of 36° N. lat.</td><td colspan="2">350 lb/ day, or 1 landing per week of up to 1,050 lb</td><td colspan="4">300 lb/ day, or 1 landing per week of up to 900 lb</td></tr>
<tr><td>13</td><td>Longspine thornyhead</td><td colspan="6">9,000 lb/ 2 months</td></tr>
<tr><td>14</td><td>Shortspine thornyhead</td><td colspan="6">2,000 lb/ 2 months</td></tr>
<tr><td>15</td><td>Dover sole</td><td colspan="3" rowspan="5">5,000 lb/ month (all flatfish)</td><td colspan="3" rowspan="5">North of 40°10': 5,000 lb/ month (all flatfish). South of 40°10': Shoreward of 20 ftm depth, 5,000 lb/month, otherwise CLOSED[4/]</td></tr>
<tr><td>16</td><td>Arrowtooth flounder</td></tr>
<tr><td>17</td><td>Petrale sole</td></tr>
<tr><td>18</td><td>Rex sole</td></tr>
<tr><td>19</td><td>All other flatfish[2/]</td></tr>
<tr><td>20</td><td>Whiting[3/]</td><td colspan="4">20,000 lb/ trip</td><td colspan="2">CLOSED[4/]</td></tr>
<tr><td>21</td><td colspan="7">Shelf rockfish, including minor shelf rockfish, widow and yellowtail rockfish[5/]</td></tr>
<tr><td>22</td><td>North</td><td colspan="6">200 lb/ month</td></tr>
<tr><td>23</td><td>South</td><td colspan="6"></td></tr>
<tr><td>24</td><td>40°10' - 34°27' N. lat.</td><td>200 lb/ month</td><td>CLOSED[4/]</td><td>Shoreward of 20 ftm depth, 200 lb/ month, otherwise CLOSED[4/]</td><td colspan="3" rowspan="2">CLOSED[4/]</td></tr>
<tr><td>25</td><td>South of 34°27' N. lat.</td><td>CLOSED[4/]</td><td colspan="2">1,000 lb/ month</td></tr>
<tr><td>26</td><td>Canary rockfish</td><td colspan="6">CLOSED[4/]</td></tr>
<tr><td>27</td><td>Yelloweye rockfish</td><td colspan="6">CLOSED[4/]</td></tr>
<tr><td>28</td><td>Cowcod</td><td colspan="6">CLOSED[4/]</td></tr>
<tr><td>29</td><td>Bocaccio - South[5/]</td><td colspan="6"></td></tr>
<tr><td>30</td><td>40°10' - 34°27' N. lat.</td><td>200 lb/ month</td><td colspan="2">CLOSED[4/]</td><td colspan="3" rowspan="2">CLOSED[4/]</td></tr>
<tr><td>31</td><td>South of 34°27' N. lat.</td><td>CLOSED[4/]</td><td colspan="2">200 lb/ month</td></tr>
<tr><td>32</td><td>Chilipepper - South[5/]</td><td colspan="6"></td></tr>
<tr><td>33</td><td>40°10' - 34°27' N. lat.</td><td>500 lb/ month</td><td colspan="2">CLOSED[4/]</td><td colspan="3" rowspan="2">CLOSED[4/]</td></tr>
<tr><td>34</td><td>South of 34°27' N. lat.</td><td>CLOSED[4/]</td><td colspan="2">2,500 lb/ month</td></tr>
<tr><td>35</td><td>Minor nearshore rockfish</td><td colspan="6"></td></tr>
<tr><td>36</td><td>North</td><td colspan="2">5,000 lb/ month, no more than 2,000 lb of which may be species other than black or blue rockfish[6/]</td><td colspan="4">6,000 lb/ 2 months, no more than 3,000 lb of which may be species other than black or blue rockfish[6/]</td></tr>
<tr><td>37</td><td>South</td><td colspan="6"></td></tr>
<tr><td>38</td><td>40°10' - 34°27' N. lat.</td><td>1,600 lb/ 2 months</td><td>CLOSED[4/]</td><td colspan="2">Shoreward of 20 ftm depth, 1,600 lb/ 2 months, otherwise CLOSED[4/]</td><td colspan="2" rowspan="2">CLOSED[4/]</td></tr>
<tr><td>39</td><td>South of 34°27' N. lat.</td><td>CLOSED[4/]</td><td colspan="2">2,000 lb/ 2 months</td><td>Shoreward of 20 ftm depth, 2,000 lb/ 2 months, otherwise CLOSED[4/]</td></tr>
<tr><td>40</td><td>Lingcod[7/]</td><td colspan="6"></td></tr>
<tr><td>41</td><td>North</td><td colspan="2">CLOSED[4/]</td><td colspan="3">400 lb/ month</td><td>CLOSED[4/]</td></tr>
<tr><td>42</td><td>South</td><td colspan="6"></td></tr>
<tr><td>43</td><td>40°10' - 34°27' N. lat.</td><td colspan="2" rowspan="2">CLOSED[4/]</td><td>Shoreward of 20 ftm depth, 400 lb/ month, otherwise CLOSED[4/]</td><td colspan="2" rowspan="2">Shoreward of 20 ftm depth, 400 lb/ month, otherwise CLOSED[4/]</td><td rowspan="2">CLOSED[4/]</td></tr>
<tr><td>44</td><td>South of 34°27' N. lat.</td><td>400 lb/ month</td></tr>
</table>

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 4 with species specific management measures, including trip limits.

3/ The whiting "per trip" limit in the Eureka area inside 100 fm is 10,000 lb/ trip throughout the year. Outside Eureka area, the 20,000 lb/ trip limit applies.

4/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

5/ Yellowtail rockfish and widow rockfish coastwide and bocaccio and chilipepper rockfishes in the north are included in the trip limits for shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

6/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

7/ The minimum size limit for lingcod is 24 inches (61 cm) total length.

8/ The minimum size requirement for sablefish is 22 inches (56 cm) total length between 40°10' N. lat. and 36° N. lat.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 5. Trip Limits[1] for Open Access Gears

Other Limits and Requirements Apply -- Read Sections IV. A. and C. NMFS Actions before using this table

Exceptions for exempted gears at Section IV.C.

NOTE FOR FISHING **SOUTH OF 40°10': ALL GROUNDFISH FISHING IS **CLOSED** SEAWARD OF THE 20 FATHOM DEPTH CONTOUR, EXCEPT SABLEFISH AND SLOPE ROCKFISH.

** NOTE: EFFECTIVE JULY 1, 2002, THERE IS NO RETENTION OF GROUNDFISH WITH EXEMPTED TRAWL GEAR.

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North	Per trip, no more than 25% of weight of the sablefish landed					
3	South						
4	40°10' - 36° N. lat.	10,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb/ 2 months	
5	South of 36° N. lat.	10,000 lb/ 2 months					
6	**Splitnose - South**	200 lb/ month					
7	**Pacific ocean perch - North[4]**	100 lb/ month					
8	**Sablefish**						
9	North of 36° N. lat.[7]	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months					
10	South of 36° N. lat.	350 lb/ day, or 1 landing per week of up to 1,050 lb	300 lb/ day, or 1 landing per week of up to 900 lb				
11	**Thornyheads**						
12	North of 34° 27' N. lat.	CLOSED[3]					
13	South of 34° 27' N. lat.	50 lb/ day, no more than 2,000 lb/ 2 months					
14	**Dover sole**	3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sandabs			North of 40°10': 3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sandabs. South of 40°10': Shoreward of 20 ftm, 3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sandabs, otherwise CLOSED[3]		
15	**Arrowtooth flounder**						
16	**Petrale sole**						
17	**Rex sole**						
18	**All other flatfish[2]**						
19	**Whiting**	300 lb/ month				CLOSED[3]	
20	**Shelf rockfish, including minor shelf rockfish, widow and yellowtail rockfish[4]**						
21	North	200 lb/ month					
22	South						
23	40°10' - 34°27' N. lat.	200 lb/ month	CLOSED[3]	Shoreward of 20 ftm depth, 200 lb/ month, otherwise CLOSED[3]	CLOSED[3]		
24	South of 34°27' N. lat.	CLOSED[3]	500 lb/ month				
25	**Canary rockfish**	CLOSED[3]					
26	**Yelloweye rockfish**	CLOSED[3]					
27	**Cowcod**	CLOSED[3]					
28	**Bocaccio - South[4]**						
29	40°10' - 34°27' N. lat.	200 lb/ month	CLOSED[3]		CLOSED[3]		
30	South of 34°27' N. lat.	CLOSED[3]	200 lb/ month				
31	**Chilipepper - South[4]**						
32	40°10' - 34°27' N. lat.	500 lb/ month	CLOSED[3]		CLOSED[3]		
33	South of 34°27' N. lat.	CLOSED[3]	2,500 lb/ month				
34	**Minor nearshore rockfish**						
35	North	3,000 lb/ 2 months, no more than 1,200 lb of which may be species other than black or blue rockfish[5]	6,000 lb/ 2 months, no more than 3,000 lb of which may be species other than black or blue rockfish[5]				
36	South						
37	40°10' - 34°27' N. lat.	1,200 lb/ 2 months	CLOSED[3]	Shoreward of 20 ftm depth, 1,200 lb/ 2 months, otherwise CLOSED[3]	Shoreward of 20 ftm depth, 1,200 lb/ 2 months, otherwise CLOSED[3]	CLOSED[3]	
38	South of 34°27' N. lat.	CLOSED[3]	1,200 lb/ 2 months				
39	**Lingcod[6]**						
40	North	CLOSED[3]		300 lb/ month			CLOSED[3]
41	South						
42	40°10' - 34°27' N. lat.	CLOSED[3]		Shoreward of 20 ftm depth, 300 lb/ month, otherwise CLOSED[3]	Shoreward of 20 ftm depth, 300 lb/ month, otherwise CLOSED[3]		CLOSED[3]
43	South of 34°27' N. lat.			300 lb/ month			

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. To the U.S.-Canada border. "South" means 40°10' N. lat. To the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 5 with species specific management measures, including trip limits.

3/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

4/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. Pop in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

5/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

6/ The size limit for lingcod is 24 inches (61 cm) total length.

7/ The minimum size requirement for sablefish is 22 inches (56 cm) total length between 40°10' N. lat. and 36° N. lat.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Bocaccio Rebuilding Analysis for 2002 (final revised version)

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Introduction

In 1998, the PFMC adopted Amendment 11 of the Pacific Coast Groundfish Fishery Management Plan, which established a minimum stock size threshold of 25% of unfished biomass. Based on the stock assessment by Ralston et al. (1996), bocaccio was declared formally to be overfished, thereby requiring development of a rebuilding plan for consideration by the Council in the fall of 1999. A new stock assessment (MacCall et al. 1999) found that under continuing recruitment failure, the index of bocaccio spawning output was about half the estimate made in 1996, but at that time preliminary indications of a strong 1999 year class allowed some optimism.

The most recent stock assessment (MacCall 2002) is based on a wide variety of information from both Central and Southern California. The new estimate of the strength of the 1999 year class is at or below the low end of the range considered in the 1999 analyses. An initial 2002 bocaccio rebuilding analysis (dated June, 2002) was conducted using the SSC Rebuilding Analysis (V1.5) developed by Andre Punt of the PFMC-SSC. That analysis incorporated information developed in the 2002 bocaccio stock assessment, but used the entire time series of recruitments and recruits per spawners to do the rebuilding projections, giving an estimated rebuilding OY of 5.8 tons and a maximum rebuilding time of 106 years. That scenario was associated with a 50% probability of successful rebuilding on or before calendar year 2109; a 60% rebuilding probability was not feasible even with elimination of all fishing. (Note: The June 2002 rebuilding analysis is no longer valid, and is superseded by this document.)

At the June 2002 meeting of the PFMC, the Scientific and Statistical Committee recommended that the bocaccio rebuilding analysis separate the time periods used for estimation of unfished biomass (the early portion of the series) from the time period of recruitment successes used for projecting future recruitments (the recent portion of the series), according to the default procedure recommended in the SSC's rebuilding guidelines. The Council subsequently directed the authors to bring the rebuilding analysis into compliance with the SSC's recommendation.

The following rebuilding analysis utilizes a newer version of the SSC Rebuilding Analysis (V2.1) and attempts to comply with the SSC guidelines and Council instructions.

Management Reference Points

$B_{unfished}$. Unfished biomass is estimated by multiplying average recruitment (R) by the spawning output per recruit achieved when the fishing mortality rate is zero ($SPR_{F=0}$ = 1.3806, spawning output in billion eggs, recruitment in thousand fish at age 1). The estimated unfished spawning output (S) is 19849 billion eggs, based on the average recruitment between 1953 and 1985. This time period was chosen as representing a presumably "natural" range of stock abundance. Beginning in 1986, abundance was lower than at any earlier time in the history of biomass estimates (Figure 1). Because recruitment is highly variable, this calculation of unfished abundance is imprecise (CV = 31%) as can be seen in Figure 2.

B_{msy}. The rebuilding target is the spawning abundance level that produces MSY. This value cannot be determined directly for bocaccio, so we use the proxy value of 40% of estimated unfished spawning abundance. Estimated B_{msy} is 7939 billion eggs.

Current status: Current spawning output is 720 billion eggs, which is 3.6% of the estimated unfished abundance, and 9.1% of estimated **B_{msy}**.

Mean generation time. Mean generation time of bocaccio is estimated from the net maternity function, and is 12 years.

Simulation Model

The rebuilding model tracks male and female abundances at age, with an accumulator at age 21+. Values of weights at age, composite selectivity and fecundity are taken from MacCall (2002), and are given in Appendix 1. Population simulations begin with the 2002 age composition. Subsequent recruitments are generated by a random draw of one of the historical values of R/B (from 1953 to 1999[1]), which is multiplied by current spawning output (S) to obtain the following year's recruitment. Resampling R/S is supported by the nearly constant pattern of historical R/S values (Figure 3), whereas the strong historical decline in recruitment strengths argues against resampling recruitments directly (Figure 4). Simulations extend to a maximum of 500 years, and the maximum number of simulations allowed by the program (N=10000) was used to minimize the imprecision in the analysis.

[1] The SSC guidelines indicate a preference for resampling R/S from the more recent portion of the time series, thus better representing current expectations. This rebuilding analysis does not conform to that guideline, and resamples values from the full time series. The rationale is that there is no trend with either time or biomass in the historical R/S values, indicating that they are all equally likely under current conditions. Moreover, if the high 1963 value is not included in the resampling pool, abundance does not tend to increase even in the absence of fishing.

Rebuilding is assumed to have begun in 2000. The new SSC Rebuilding Analysis (V2.1) projects a zero catch scenario forward from the 1999 starting conditions as re-estimated in the most recent stock assessment in order to determine $\mathbf{T_{min}}$ (this is another source of difference from the previous rebuilding analysis). The model assumes a 2002 catch of 100MT.

The distribution of simulated times (number of years) to reach the rebuilding target at F=0 ($\mathbf{T_{min}}$) is wide, ranging from about 20 years to over 500 years, which is the maximum length of time considered in the simulations (Figure 5). The mode (most frequent) rebuilding time is about 60 years. The median (50% probability) rebuilding time is 98 yr (SE = 1 yr). The maximum length of time to rebuild ($\mathbf{T_{max}}$) is this value plus one mean generation time (12 yr). The maximum allowable fishing mortality rate is that which would allow the stock to achieve the target abundance by calendar year 2109 with a probability of 50%. **This fishing rate, and the associated rebuilding catch is zero**, as there is no level of fishing that accomplishes rebuilding at any time between $\mathbf{T_{min}}$ and $\mathbf{T_{max}}$.[2] In most rebuilding analyses, options with a higher probability of success (e.g., 60%) and/or earlier rebuilding times are considered, but these probability levels and rebuilding schedules are not feasible or resolvable in this case.

Simulated individual rebuilding trajectories are erratic (Figure 6). The time series of percentiles of simulated trajectories (Figure 7) is more informative. A peculiar feature of the bocaccio simulations is that the median abundance (dark line in Figure 7) does not reach the target level after 106 years ($\mathbf{T_{max}}$). Although 50% of the simulations achieved the target level <u>at some time</u> on or before 106 years (thus qualifying as having been rebuilt), many of those trajectories subsequently declined so that only about 40% are currently at or above the target after 106 years. This property is consistent with the erratic behavior of individual abundance trajectories (Figure 6). Note that the rebuilding fishing rate is maintained throughout the simulation, and the fishing rate is not reset to $\mathbf{F_{msy}}$ upon rebuilding. If the fishing rate is reset to $\mathbf{F_{msy}}$, a larger portion of the simulations decline after rebuilding is achieved.

Consideration of Alternative Natural Mortality Rate

There is uncertainty regarding the best value of natural mortality rate to use in the bocaccio stock assessment. The assessment approved by the 2002 STAR Panel was based on M=0.2 (the same value that was used in the 1999 assessment). The justification for an alternative value of M=0.15 is given by Ralston et al. (1996), and that value was used in the 1996 assessment. Rebuilding projections based on M=0.15 are presented here in association with the sensitivity analysis in the 2002 assessment, and use the newest version (V2.1) of the Rebuilding Analysis. For the case of M=0.15, the minimum rebuilding time, $\mathbf{T_{min}}$, is 58 years, and $\mathbf{T_{max}}$ is 68 years. The maximum probability of rebuilding by $\mathbf{T_{max}}$ is 53.6%, and the 2003 catch corresponding to a fishing rate with a 50% probability of rebuilding by $\mathbf{T_{max}}$ is 4.4 tons.

---

[2] It is possible that some very small level of fishing may satisfy a 50% probability of rebuilding by $\mathbf{T_{max}}$, but the imprecision of the simulations (even at N=10,000) does not allow resolution of the effect of very small catches.

Analysis of Sustainability

Bocaccio occur as by-catch in many fisheries, not all of which are managed by the PFMC. Thus it may not be possible to achieve a fishing rate that is truly zero. The following analysis (Table 1) describes the projected long-term effects of various low levels of fishing on the bocaccio stock. The simulations are based on constant fishing rates (associated with corresponding catch levels for 2003) that result in various probabilities of "no further stock decline" in 100 years, i.e., the projected spawning output is at least 720 billion eggs (the 2002 value) as of calendar year 2102. Probability levels range from 50% to 90%; the latter is the highest probability that can be achieved, given a zero fishing rate. Also associated with these results are probability levels of rebuilding on or before $\mathbf{T_{max}}$, or calendar year 2109. Even though the stock may be projected to increase, the high degree of variability results in some "worst case" risk of decline. The risk of decline is measures by the five percentile level of abundance at the end of 25 years and 100 years. These values are also expressed as percentages of the current abundance.

References

MacCall, A.D., S. Ralston, D. Pearson, and E. Williams. 1999. Status of bocaccio off California in 1999 and outlook for the next millennium. *In:* Appendix to Status of the Pacific Coast groundfish fishery through 1999 and recommended acceptable biological catches for 2000. Stock Assessment and Fishery Evaluation. Pacific Fishery Management Council, Portland, OR.

MacCall, A.D. 2002. Status of bocaccio off California in 2002. *In* Volume 1: Status of the Pacific Coast groundfish fishery through 2002. Stock Assessment and Fishery Evaluation. (*In press* or available online at *http://www.pcouncil.org/groundfish/gfstocks.html*). Pacific Fishery Management Council, Portland, OR.

Ralston, S., J.N. Ianelli, D.E. Pearson, M.E. Wilkins, R.A. Miller, and D. Thomas. 1996. Status of bocaccio in the Conception/Monterey/Eureka INPFC areas in 1996 and recommendations for management in 1997. *In* Appendix Vol. 1: Status of the Pacific Coast groundfish fishery through 1996 and recommended acceptable biological catches for 1997: stock Assessment and Fishery Evaluation. Pacific Fishery Management Council, Portland, OR.

Table 1. Results of bocaccio sustainability analysis.

Probability (%) of No Decline by 2102	Catch in 2003	Fishing Mortality Rate	Percent of Cases Rebuilt by 2109	Risk (five percentile of abundance)			
				after 25 years		after 100 years	
				Spawning Output (billion eggs)	2027 Abundance Relative to 2002	Spawning Output (billion eggs)	2102 Abundance Relative to 2002
50%	79	0.094	7%	73.1	10%	2.5	0%
60%	61	0.071	12%	85.8	12%	5.5	1%
70%	42	0.049	21%	102.6	14%	13.3	2%
80%	22	0.026	33%	126.1	18%	30.7	4%
85%	11	0.012	41%	145.2	20%	52.7	7%
90%	0	0.000	49%	157.5	22%	86.3	12%

Appendix: Input file for SSC rebuilding analysis.

```
#Title
Bocaccio - default new1 - B0 <=1986
# Number of sexes
2
# Age range to consider (minimum age; maximum age)
1 21
# First year of projection
2002
# Year declared overfished
1999
# Is the maximum age a plus-group (1=Yes;2=No)
1
# Generate future recruitments using historical recruitments (1), historical
recruits/spawner (2), or a stock-recruitment (3)
2
# Constant fishing mortality (1) or constant Catch (2) projections
1
# Pre-specify the year of recovery (or -1) to ignore
-1
# Fecundity-at-age
#  3  4  5  6  7  8  9 10
0.0000      0.0018      0.0242      0.1224      0.3104      0.5362
      0.7541      0.9552      1.1442      1.3211      1.4838      1.6315
      1.7634      1.8796      1.9808      2.0683      2.1428      2.2060
      2.2594      2.3042      2.4610
# Age specific information (Females then males), M, weight, selectivity and
numbers
# Females
0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2
0.2 0.2
0.2142      0.4922      0.8601      1.2841      1.7392      2.1965
      2.6236      3.0185      3.3812      3.7072      3.9958      4.2487
      4.4677      4.6563      4.8176      4.9551      5.0713      5.1692
      5.2516      5.3206      5.5526
0.297077    0.843938    0.999140    0.899828    0.730868    0.559329
      0.420034    0.312984    0.235168    0.181857    0.145744    0.121238
      0.103611    0.091574    0.082545    0.075666    0.070937    0.067068
      0.064058    0.061479    0.055460
158.2 35.4  251.7 8.8   6.7   38.8  4.0   34.8  36.7  1.7   63.3  16.2  23.2
      63.5  13.1  6.2   2.9   25.6  4.6   0.1   87.8
# Males
0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2
0.2 0.2
0.2154      0.4451      0.7275      1.0347      1.3451      1.6467
      1.9313      2.1867      2.4054      2.5913      2.7515      2.8888
      3.0058      3.1046      3.1874      3.2567      3.3144      3.3625
      3.4021      3.4348      3.5419
0.300086    0.782029    1.000000    0.974205    0.881771    0.767412
      0.654342    0.558899    0.483663    0.424334    0.376182    0.337059
      0.306105    0.281599    0.262683    0.248065    0.236457    0.226999
      0.219690    0.213672    0.198624
158.2 35.4  255.2 8.9   6.6   37.2  3.8   32.3  33.2  1.5   55.1  13.4  18.2
      46.4  8.7   3.7   1.5   11.1  1.8   0     20.4
# Initial age-structure (for Tmin)
25.0  21.0  118.0 11.0  90.0  88.0  4.0   135.0 33.0  47.0  126.0 26.0  12.0
```

```
      6.0   49.0  9.0   0.0   2.0   5.0   16.0  144.0
25.0  21.0  118.0 11.0  93.0  91.0  4.0   137.0 32.0  42.0  105.0 19.0  8.0
      3.0   24.0  4.0   0.0   1.0   1.0   4.0   36.0
# Year for Tmin Age-structure
1999
# Number of simulations
10000
# Recruitment and Spawner biomasses
# Number of historical assessment years
49
# Historical data: Year, Recruitment, Spawner biomass, Used to compute B0,
Used to project based
# on R, Used to project based on R/S
1954      50   10537  1  0  0
1955      50   11402  1  0  0
1956      50   11324  1  0  1
1957      96   10133  1  0  1
1958   53201    8365  1  0  1
1959    9922    6296  1  0  1
1960     580    5135  1  0  1
1961     769    5166  1  0  1
1962    8713    5538  1  0  1
1963  169111    5526  1  0  1
1964     388    5066  1  0  1
1965     232    6006  1  0  1
1966     219    9753  1  0  1
1967     256   14630  1  0  1
1968     478   17909  1  0  1
1969    7360   18927  1  0  1
1970   92424   18429  1  0  1
1971     154   17121  1  0  1
1972      50   16216  1  0  1
1973   31983   16526  1  0  1
1974    1752   16808  1  0  1
1975   15045   16150  1  0  1
1976    2955   14840  1  0  1
1977     455   13233  1  0  1
1978   44923   11621  1  0  1
1979    1779   10731  1  0  1
1980   10397   10065  1  0  1
1981    2660    9678  1  0  1
1982    1127    9459  1  0  1
1983      50    8735  1  0  1
1984    3053    7666  1  0  1
1985   12986    6629  1  0  1
1986    1170    5699  1  0  1
1987    1801    4867  0  0  1
1988    2587    4249  0  0  1
1989    8436    3846  0  0  1
1990    2078    3222  0  0  1
1991     998    2703  0  0  1
1992    2732    2466  0  0  1
1993      50    2239  0  0  1
1994     795    1976  0  0  1
1995     569    1749  0  0  1
1996      50    1556  0  0  1
1997     379    1383  0  0  1
1998      52    1217  0  0  1
```

```
1999      50    1089  0  0  1
2000     971     961  0  0  1
2001      93     832  0  0  0
2002     316     720  0  0  0
# Number of years with pre-specified catches
1
# catches for years with pre-specified catches
2002 100.0
# Number of future recruitments to override
0
# Process for overriding (-1 for average otherwise index in data list)
# Which probability to product detailed results for (1=1.5,2=0.6,etc.)
5
# Steepness and sigma-R
0.5 0.5
# Target SPR rate (FMSY Proxy)
0.5
# Target SPR information: Use (1=Yes) and power
0 20
# Discount rate (for cumulative catch)
0.1
# Truncate the series when 0.4B0 is reached (1=Yes)
0
# Set F to FMSY once 0.4B0 is reached (1=Yes)
0
# Percentage of FMSY which defines Ftarget
0.9
# Maximum possible F for projection (-1 to set to FMSY)
2
# Conduct MacCall transition policy (1=Yes)
0
# Definition of recovery (1=now only;2=now or before)
2
# Results for rec probs by Tmax (1) or 0.5 prob for various Ttargets
1
# Produce the risk-reward plots (1=Yes)
0
# Calculate coefficients of variation (1=Yes)
0
# Number of replicates to use
10
# First Random number seed
-89102
# User-specific projection (1=Yes); Output replaced (1->6)
1 5
# Catches and Fs (Year; ½ (F or C); value); Final row is -1
2003 2 0.0
2004 1 0.0
2104 1 0.0
-1 -1 -1
```

Table 1. Results of bocaccio sustainability analysis.

					Risk (five percentile of abundance)			
Probability (%) of No Decline by 2102	Catch in 2003	Fishing Mortality Rate	Percent of Cases Rebuilt by 2109	Median Rebuilding Year	after 25 years		after 100 years	
					Spawning Output (billion eggs)	2027 Abundance Relative to 2002	Spawning Output (billion eggs)	2102 Abundance Relative to 2002
50%	79	0.094	7%	14% by 2602	73.1	10%	2.5	0%
60%	61	0.071	12%	31% by 2602	85.8	12%	5.5	1%
70%	42	0.049	21%	50% by 2367	102.6	14%	13.3	2%
80%	22	0.026	33%	50% by 2172	126.1	18%	30.7	4%
85%	11	0.012	41%	50% by 2135	145.2	20%	52.7	7%
90%	0	0.000	49%	50% by 2111	157.5	22%	86.3	12%

Status of Yelloweye Rockfish off the U.S. West Coast in 2002

Richard Methot, NMFS
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EXECUTIVE SUMMARY

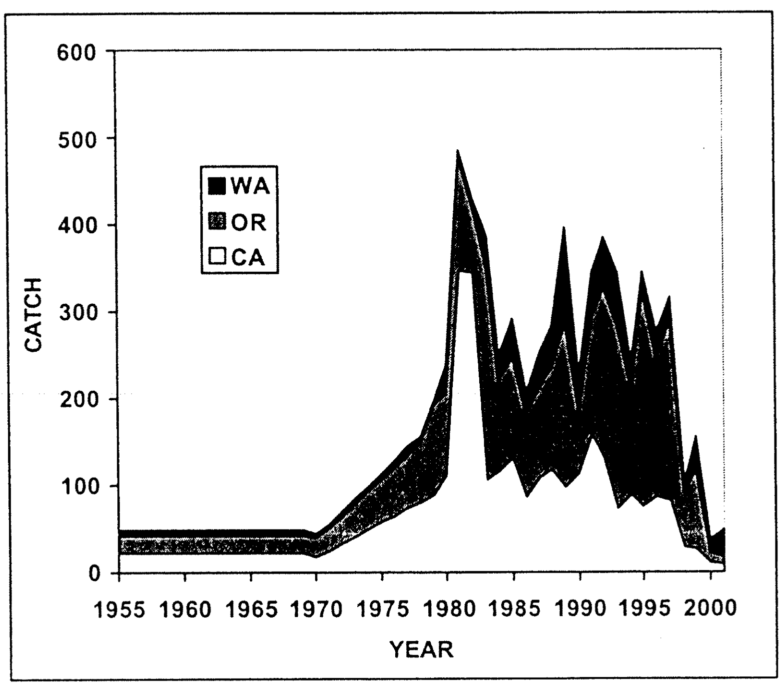
This assessment of yelloweye rockfish is designed to determine the historical and current abundance, productivity and fishing mortality of this stock off the U.S. west coast. The results will be used by the Pacific Fishery Management Council to recommend future harvest levels that will meet national and Council standards to obtain optimum yield, prevent overfishing, and rebuild overfished stocks to levels that can support an optimum sustainable fishery.

Stock

Yelloweye rockfish (*Sebastes ruberrimus*) range from northern Baja to the Aleutian Islands inhabiting high-relief rocky areas in depths of 15 to 550 meters. The assessment covers U.S. waters off Washington, Oregon and California (WOC). Catch rates in the fishery and in the trawl survey fall off south of about Monterey, CA but catch rates are high off northern Washington suggesting some degree of connection with yelloweye stocks off Canada. In this assessment, the primary result is from a combined WOC model and supporting analyses show little difference in the coastwide total when each state is analyzed independently.

Catches

Yelloweye rockfish are highly prized by sport fishers due to their size, beauty and quality and by commercial fishers due to high market demand and ex-vessel value. Coastwide landed catch averaged 320 mt per year from 1981 to 1997. In the early years most catch was off California and Oregon, but beginning in 2000 the greatest fraction of the declining coastwide catch has been off Washington.



Year	S. California (1A) Trawl	Line+ Other	Sport	N. California Trawl	Line+ Other	Sport	Oregon Trawl	Line+ Other	Sport	Washington Trawl	Line+ Other	Sport	U.S. Total
1990	0.1	3.2	0.8	11.1	53.8	42.9	48.0	1.7	22.5	32.0	1.7	6.5	224.3
1991	0.0	7.4	0.5	12.8	105.8	30.2	82.6	31.8	22.8	37.7	1.8	11.8	345.2
1992	0.0	5.3	0.3	16.9	89.7	17.4	88.6	77.2	31.6	44.2	3.3	10.6	385.1
1993	0.7	7.7	0.0	8.1	42.6	14.1	90.9	92.4	25.0	44.7	9.0	9.2	344.5
1994	0.1	25.5	0.0	5.6	40.6	16.4	63.0	39.3	19.4	21.3	2.8	4.7	238.6
1995	0.1	19.5	0.0	5.6	34.8	15.6	194.9	34.0	18.0	16.7	0.1	5.7	345.1
1996	1.1	3.6	0.0	23.5	46.9	11.8	112.3	38.3	8.2	24.4	0.0	4.9	274.9
1997	0.0	3.1	0.0	10.9	52.8	14.3	132.4	59.1	16.1	9.0	12.2	5.6	315.5
1998	0.1	2.1	0.0	5.2	14.4	5.4	15.3	30.2	17.3	4.7	0.7	6.9	102.3
1999	0.0	0.0	2.0	7.1	5.2	11.0	4.1	71.9	16.5	9.8	23.0	5.4	155.8
2000	0.0	0.0	0.0	0.0	2.0	8.0	0.1	4.2	8.2	0.1	7.7	6.1	36.4
2001	0.0	0.0	0.0	0.5	1.8	5.1	0.1	6.2	4.0	0.8	21.2	7.9	47.7

Data and assessment

A full assessment for yelloweye rockfish was first conducted in 2001. The 2001 assessment and this update use the length-based version of the Synthesis model to analyze the information. The primary data are size and age composition of the commercial and sport catch from each state, and an index of population abundance from each state's data on catch per sport angler. New information for this update in 2002 are the age data from all three states, and all data from Washington. The level of natural mortality is re-investigated in this 2002 assessment, and a spawner-recruitment relationship is used to stabilize estimates of year-specific recruitment and to provide an overall measure of stock productivity. Major shortcomings in these data are the sparseness of the size and age composition data and the lack of a relevant fishery-independent survey for rockfish species, like yelloweye, that predominately inhabit sites that are not amenable to quantitative bottom trawl surveys.

Unresolved problems and major uncertainties

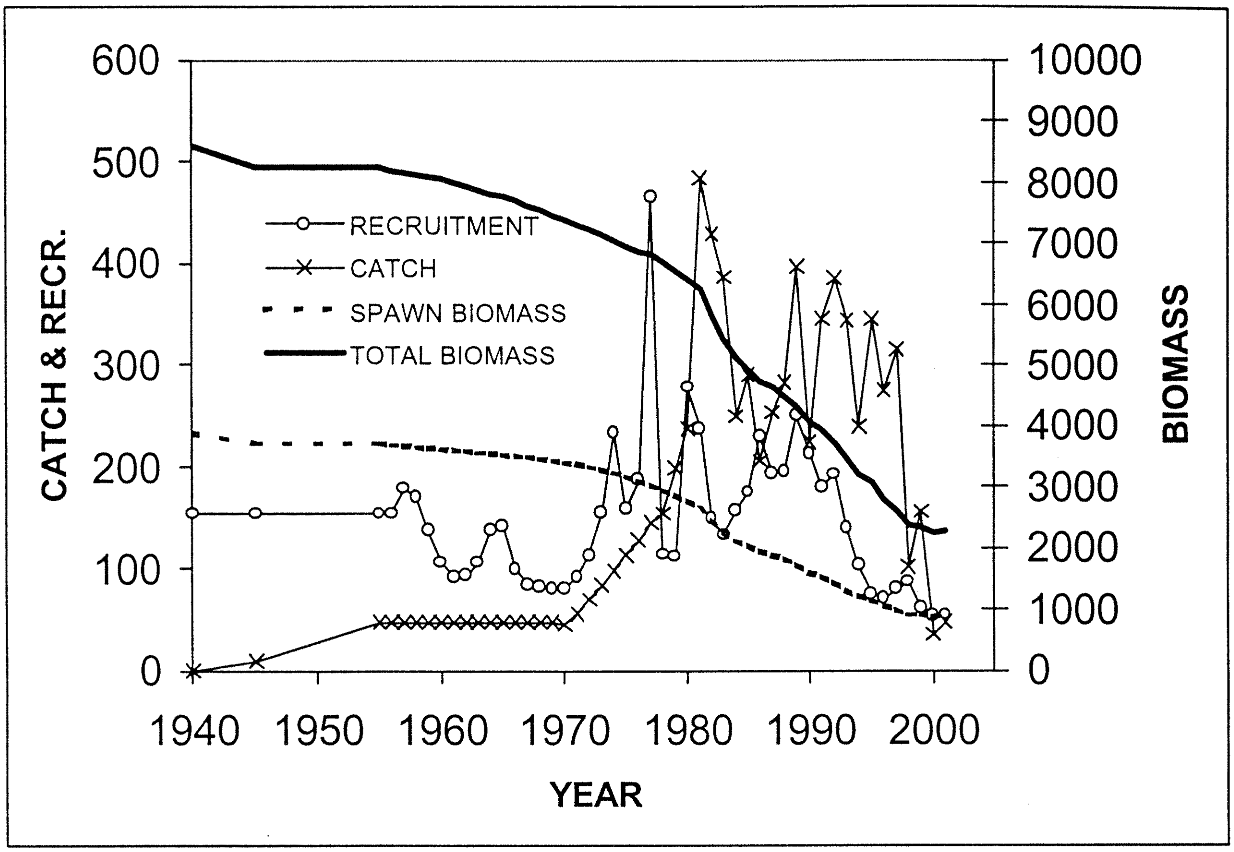
A major uncertainty is due to the inability to independently verify that the sport CPUE index is proportional to stock abundance. It is not uncommon for CPUE to decline more slowly than stock abundance because of targeting by fishers, but this cannot be evaluated for yelloweye because there is no fishery-independent survey to serve as a basis of comparison. If non-proportionality occurs for yelloweye, then this assessment may have an unknown level of inaccuracy.

One result of the assessment is that the level of recruitment has declined during the 1990s as the stock has fallen below its target level of abundance, although the magnitude of this recruitment decline is less than estimated in the 2001 assessment. This decline is quantified in terms of a spawner-recruitment relationship and is used to conduct a rebuilding analysis. However, the magnitude of the recruitment decline cannot be determined with high certainty because of the shortness of the data time series. Also, it is not possible at this time to determine the extent to which the recruitment decline is also influenced by decadal scale shifts in the ocean climate.

Stock biomass and recruitment

The estimated level of unfished female spawning biomass is estimated within the assessment model to be 3,875 mt. The female spawner abundance projected to the beginning of 2002 is 934 mt. This is 24.1% of the unfished level. The target abundance (40% of the unfished level) is 1,550 mt of spawners. The stock fell below this level in 1991.

Year	Total Biomass	Female Spawn Biomass	Recruits at age 3	Catch	Exploitation Rate
unfished	8657	3875	169	0	0.000
1977	6867	3021	122	145	0.021
1978	6769	2941	305	154	0.023
1979	6665	2861	261	198	0.030
1980	6508	2766	165	237	0.037
1981	6315	2661	146	484	0.077
1982	5872	2447	173	429	0.074
1983	5498	2268	193	386	0.071
1984	5191	2117	253	249	0.049
1985	5024	2036	213	290	0.059
1986	4824	1941	214	205	0.043
1987	4727	1887	275	253	0.055
1988	4581	1813	233	282	0.063
1989	4406	1727	199	396	0.092
1990	4125	1592	212	224	0.055
1991	4010	1536	154	345	0.088
1992	3769	1430	114	385	0.104
1993	3482	1309	82	344	0.100
1994	3234	1208	78	239	0.075
1995	3089	1156	88	345	0.113
1996	2837	1060	96	275	0.098
1997	2645	994	68	315	0.121
1998	2407	909	59	102	0.043
1999	2375	911	60	156	0.066
2000	2292	888	92	36	0.016
2001	2325	914	87	48	0.021



Reference points, ABC and OY

Fishing at $F_{50\%}$ SPR, the current default harvest rate, corresponds to an exploitation rate of about 0.023. The $F_{50\%}$ ABC would be 52 mt in 2003 and the 40:10 adjustment would put the OY at 42 mt. With an estimated spawner-recruitment steepness of 0.437, continued fishing at $F_{50\%}$ would result in an equilibrium spawning biomass level that is at 26% of the unfished level (not taking into account the effect of the 40:10 reduction in harvest as the stock would fall below the 40% level). The estimated spawner-recruitment steepness results in the estimated Fmsy to be equivalent to $F_{57\%}$ SPR and an annual exploitation rate of approximately 0.018. Fishing at this rate in the long-term would be expected to produce an average spawning biomass level (Bmsy) that is 36% of the unfished level, and the equilibrium MSY would be 59 mt. This level of Bmsy is highly sensitive to small changes in Fmsy and is not judged to be determined with sufficient certainty to replace the current Btarget, which is set equal to 40% of Bzero.

Forecasts and Decision Table

Forecasts are conducted here by forecasting recruitments simply from the estimated spawner-recruitment curve:

YR	3+ BIOMASS	SPAWN	RECRUIT	EXPLOIT	TOTYIELD	STRATEGY
2003	2399	966	85	0	0	**F=0**
2004	2464	1003	87	0	0	
2005	2529	1038	88	0	0	
2006	2593	1071	90	0	0	
2007	2657	1102	92	0	0	
2008	2720	1133	94	0	0	
2009	2782	1162	96	0	0	
2010	2844	1190	98	0	0	
2011	2905	1217	99	0	0	
2012	2966	1244	101	0	0	
2003	2399	966	85	0.022	52	**ABC with F50%**
2004	2413	980	87	0.023	54	
2005	2424	990	88	0.023	54	
2006	2434	998	90	0.023	55	
2007	2442	1003	91	0.023	56	
2008	2449	1007	92	0.023	56	
2009	2455	1009	92	0.023	56	
2010	2460	1010	92	0.023	57	
2011	2465	1011	93	0.023	57	
2012	2469	1011	93	0.023	57	
2003	2399	966	85	0.018	42	**OY with F50% and 40:10**
2004	2423	984	87	0.018	43	
2005	2445	999	88	0.019	45	
2006	2464	1012	90	0.019	46	
2007	2481	1021	91	0.019	47	
2008	2497	1029	92	0.019	48	
2009	2512	1035	93	0.020	48	
2010	2525	1041	93	0.020	49	
2011	2537	1045	94	0.020	49	
2012	2549	1049	94	0.020	50	

These forecasts illustrate general trends and will be superceded by the rebuilding analysis that uses random deviations around the spawner-recruitment curve to estimate the probability distribution for rebuilding. The rebuilding analysis also incorporates a decision table based upon the confidence range (0.35 to 0.70) on the steepness of the spawner-recruitment relationship.

Recommendations

This yelloweye rockfish assessment incorporates all available data and the best methods available to the STAT team. It's technical merits were endorsed by the review panel. We do, however, caution that the results are based upon relatively sparse data and rely upon some untestable factors, in particular the assertion of a constant proportionality between the sport fishery CPUE indices and population abundance. This constant proportionality for CPUE data has been used in other groundfish assessments, but it is possible that the population could decline faster than indicated by the CPUE indices due to the targeting ability of anglers. This non-proportionality was found in the canary rockfish assessment and may very well occur with yelloweye rockfish, but there is currently no fishery independent survey for yelloweye to serve as a standard for comparison. Although we have attempted to provide as risk-neutral an assessment as possible, we cannot fully evaluate all sources of uncertainty and we recommend that more conservative and precautionary management targets be considered in order to protect against the uncertainty in the assumptions used in the assessment.

Research needs

Abundance – New survey tools are needed because yelloweye rockfish predominately inhabit sites that are difficult to survey with a research trawl. Current fieldwork is making visual measurements of fish abundance from submersibles. Extension of this work to a wider range of areas and habitats should provide a firm basis for future assessments.

Total catch – Additional research could improve the estimates of historical catch, especially from the early time period (pre-1980) and from additional fishery components such as the directed halibut fishery. The observer program started in 2001 will provide information on the level of total catch occurring in the future.

Stock structure – Although the current assessment did not find markedly different results from state-specific versus coastwide model results, there still is a need to better understand the degree of demographic mixing along the coast, including Canada. This will be important to improve future assessments and to understand the potential impact of closed areas on the stock's population dynamics.

Fishery CPUE – The current assessment tracked the degree of stock decline primarily with the trend in sport CPUE. Restrictive management measures beginning in 2000 cripple the ability to use these data into the future. Thus, a fishery-independent survey will be necessary to track the rebuilding of this stock.

Climate effects on recruitment – The potential effect of decadal scale fluctuations in the ocean climate on yelloweye rockfish recruitment off the U.S. west coast needs to be investigated. Successful demonstration of climate-recruitment linkages has the potential to improve the estimate of unfished biomass level, determine the influence of climate effects on the current estimate of spawner-recruitment steepness, and narrow the range of forecast recruitment levels during early years of the rebuilding period.

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INTRODUCTION

This assessment updates the yelloweye rockfish stock assessment conducted in 2001 (Wallace, 2001). The 2001 assessment and this update use the length-based version of the Synthesis model (Methot, 2000) to analyze the information. Substantial changes in the assessment involve inclusion of age data from all three states, inclusion of the Washington catch and data in the model, and an evaluation of several alternatives for combining, or leaving separate, the information from the three states.

Stock definition

Yelloweye rockfish (*Sebastes ruberrimus*) range from northern Baja to the Aleutian Islands inhabiting high-relief rocky areas in depths 15 to 550 meters (Rosenthal et al. 1982, Eschemeyer, et al. 1983, Love, et al., 2000). Genetic appraisal of yelloweye rockfish by Yamanaka, et al. (2001) provided no evidence of differences in stock structure among sampling locations in northern Vancouver, B.C. and SE Alaskan waters. Authors found little variability among samples concluding that yelloweye rockfish, within the sampling area, form panmictic stock. Evaluation of stock boundaries is also dependent upon life history traits associated with a population. Data for assessment of stock boundaries for coastal Washington, Oregon and California (W-O-C) yelloweye stock(s) were limited, but size-at-age comparisons presented later in this report show no differences from California through Alaska. Although the genetic and growth data do not indicate differences, the sedentary nature of adult yelloweye rockfish support the hypothesis for site fidelity; little mixing may occur after settlement. It is possible that discrete sub-populations corresponding to high-relief rocky areas form a much larger meta-population.

This assessment covers yelloweye rockfish throughout their range off California, Oregon and Washington. Unfortunately, the US-Canada border does not present a natural break in the geographic distribution of yelloweye. At this time it is not possible to extend the assessment into Canadian waters, nor to assess the impact of this geo-political assessment boundary on the assessment result.

Key life history features

Yelloweye rockfish can be characterized as relatively low in abundance, long-lived, late maturing, slow growing. They primarily inhabit high-relief rocky areas and there may be little mixing after settlement. Yelloweye are carnivorous feeding primarily on other rockfishes, herring, sand lance, crab and shrimp (Washington et al., 1978, Rosenthal et al.1988, Reilly et al. 1994, Love 1996). They are highly prized by sport fishers due to their size, beauty and quality and by commercial fishers due to high market demand and ex-vessel value.

Fishery history

Management of rockfish has had a long history beginning in 1983 when the Pacific Fisheries Management Council (PFMC) first imposed trip limits on landings from the Sebastes complex. Yelloweye were managed as part of the Sebastes complex until 2000, when the Council abandoned the Sebastes complex in favor of a finer scale portioning of rockfish stocks. Rockfish are now managed independently or part of three species-specific minor rockfish groupings Nearshore, Shelf and Slope. Yelloweye rockfish are currently managed as part of the Minor Shelf Rockfish group. Prior to 2000 trip limit regulations on the Sebastes complex probably had little or no impact in restricting harvest of yelloweye in the trawl fishery. Yelloweye rockfish inhabit areas typically inaccessible to trawl gear, were likely never targeted and individual landings were typically quit small.

Open access and limited entry line gear trip limits for rockfish remained at or above 10,000 lbs in all years prior to 1999. This probably did not constrain yelloweye catch since landings exceeding 10,000 lbs of yelloweye were extremely rare. Sport CPUE indices used in this assessment indicate that catch rates for yelloweye rockfish are low. Sport rockfish limits for W-O-C have remained at or above ten-fish until 2000.

Although no formal bag limit analysis have been done, it is likely that a ten-fish bag limit had little effect on restricting yelloweye harvest. Washington adopted a two-fish bag limit for yelloweye in 2000, and an either/or two fish limit for yelloweye or canary rockfish in 2001. Because of these more restrictive limits beginning in 2000, the sport CPUE indices are used as indicators of stock trends only through 1999.

Management history and performance

There have been no commercial fishery regulations specifically developed to control the catch of yelloweye rockfish. Regulations for general rockfish catch have most likely been ineffective in constraining yelloweye catch until most recent years. It is important to note that recent management decisions have greatly restricted "shelf" rockfish catch and is reflected in recent low level of yelloweye landings. Nevertheless, high market demand and price for yelloweye rockfish relative to other shelf species may cause fishers to concentrate their limited shelf rockfish opportunities on yelloweye.

DATA

Fishery Catch

Yelloweye catch data prior to 1980 do not exist with the exception of Oregon and Washington trawl catch during the 1970s as estimated by Tagart and Kimura, 1982 (Table 1 and Figure 1).

California trawl landings of yelloweye rockfish declined from an average of 42 mt in the 1980s to less than 11 mt in the 1990s. A commercial line fishery developed in the late 1980s peaked at 100 mt in 1991 and declined to less than 10 mt by 1999. Sport catches of yelloweye rockfish averaged 60 mt during the 1980s and precipitously declined to less than 18 mt in the 1990s averaging only 5 mt 1998-2000. The yelloweye assessment in 2001 used only the northern California landings. In this new coastwide assessment, we include landings from throughout California. The high southern California catch in 1981 is much higher than following years. Examination of landings data indicate that this high catch is distributed among many landings and ports, so does not appear to be a reporting anomaly.

Oregon

Trawl landings of yelloweye rockfish averaged over 70 mt since 1980 declining abruptly to less than 16 mt in 1998. A commercial line fishery developed in the early 1990s and has averaged 35 mt until management restrictions in 2000 reduced catches to less than 5 mt. Sport catches of yelloweye rockfish averaged 34 mt during the 1980s and declined to 20 mt in the 1990s.

Washington

With the exception of 1989 when 99 mt were landed, trawl landings of yelloweye rockfish have been variable and less than 45 mt annually. Trawl landings since 1997 have declined to less than 10 mt. Commercial line fishery catch has been less than 15 mt since 1980 with the exception of 1999 when 23 mt was landed. Sport yelloweye rockfish landings peaked in 1991 at 14 mt and have declined to less than 10 mt in the last five years.

Catch data are treated as known without error and due to the high market value for yelloweye rockfish, discarding was assumed to have not occurred. However, discarded bycatch of yelloweye rockfish may occur in the halibut hook-and-line fishery and its magnitude should be estimated for future assessments.

Fishery CPUE

Abundance indices are assumed to be proportional to population abundance. The catchability coefficient is the factor that relates the units of the index to the abundance of the population. Random variability in the coefficient may occur, but if there is a trend over time or if the coefficient varies with population abundance, then the assessment may be biased. Sport fishery catch rates will be influenced by undocumented search time, unreported discard, and change in target species and bag limits. If search time increased in recent years the observed decline in CPUE indices would be underestimated. There is no information to evaluate annual differences in effort for specific individual target species such as yelloweye. It is unlikely that discard or bag limits influenced CPUE because yelloweye are a highly valued species and fishers rarely caught their bag limit of yelloweye. To minimize influence of non-bottomfish effort, data were restricted to rockfish or bottomfish-targeted trips. Below, we describe the statistical models used to explain some of the overall variability in sport CPUE in order to come closer to having indexes that are proportional to the abundance of fish available to the sport fishery.

Northern California CPFV CPUE

The CDFG Central California Marine Sport Fish Project has been collecting catch and effort data onboard recreational Commercial Passenger Fishing Vessels (CPFV) from 1988 to 1998. Data were collected from trips originating out of northern California ports from Port San Luis to Fort Bragg. Observers collected data on catch, number of fishers and time spent fishing at each location fished for the entire day. CPUE was calculated as yelloweye catch per angler minute.

A General Linear Model (delta method) was used on $\log_e$ transformed catch rates to estimate annual catch rates. The GLM included a year, area and depth effect which were significant. Area was described as ports group by area as indicated by the California port numbering system (fort Bragg, 300 ports, 400 ports etc). Depth was divided into 3 discrete groupings 20-40 fm 50-60fm and 70-90fm, where depths less than 20 and greater than 100fm were excluded from the analysis. A hierarchal approach was used to investigate other factors including season (Table 2), but adding season into the GLM did not explain much variability and was not significant, thus was not included in the final analysis. Marginal means (for year effect) were back-transformed to the arithmetic scale and applied in the model as a survey index with selectivity equal to that estimated for the northern California sport fishery. Table 3 gives the estimated deviance explained by factors and significance tests for factors incorporated in the model. Table 4 lists the estimated coefficients of each coefficient for both parts of the delta method. Results indicate catch rates have declined significantly over the entire time period (Table 7 and Figure 2).

Northern California MRFSS CPUE

The 2001 assessment (Wallace, 2001) included a MRFSS recreational CPUE index constructed from sampler observed effort where rockfish were the primary target and at least one rockfish was caught. These data were obtained directly from the RecFIN web page. Creel data were not independently examined in 2001 and time constraints for this assessment did not allow for further evaluation of these data. We considered it prudent to exclude these data until further evaluation can be made. The time series included in the 2001 assessment were kept in the 2002 model configuration, but given negligible emphasis in the model-fitting.

Oregon CPUE

Annual catch rates of yelloweye rockfish were derived from data assembled by ODFW personnel. The 1998-2000 catch and effort estimates were updated since last year's assessment and incorporated in this analysis. Data include aggregate statistics for estimated number of boats, anglers and yelloweye rockfish catch by year, month and port. The data series begins in 1979, but information on trip type was not collected after 1987. For this reason, years with significant salmon effort, 1988-1993, 1997 and records from Brookings and Astoria were excluded from the analysis.

A General Linear Model was used on $\log_e$ transformed catch rates to estimate annual catch rates. October through March estimates were excluded from the analysis since these estimates were only available in 1999 and 2000. Year 2000 data were not included because of implementation of a 3-canary rockfish bag limit, which may have shifted effort from offshore to nearshore areas. The final GLM model included year effect

$\mathbf{Y}_i$ {i= 1979-1987, 1994-1996,1998-1999}, port effect $\mathbf{P}_j$ (Coos Bay, Depot Bay, Garibaldi, Gold Beach, Newport, Pacific City and Winchester) and month effect $\mathbf{M}_k$ (May-September) with normal error term $\in_{ijk}$ and variance σ^2. There is only one observation in each cell since summary statistics are used for each cell.

The final GLM model $LOG_e(catch/anglers)_{ijk} = \mathbf{Y}_i + \mathbf{P}_j + \mathbf{M}_k + \in_{ijk}$ was based on analysis of 418 records. The overall model was highly significant ($P < 0.0001$) with a total $r^2 = 0.45$. Year, port and month effects were also highly significant ($P < 0.0001$). Marginal means (for year effect) were back-transformed to the arithmetic scale and applied in the model. Annual catch rates were applied in the model as a relative survey index and selectivity set equal to that estimated for the Oregon sport fishery. Results indicate catch rates have declined significantly over the entire time period. Catch rates in earlier years declined sharply from an average 0.25 to approximately 0.10 yelloweye per angler trip in most recent years (Table 7 and Figure 2).

ODFW personnel as well provided data and analysis of catch and effort information collected in Garibaldi from nearshore and offshore reefs between 1979 and 1987. Data demonstrated greater CPUE in offshore areas compared to nearshore areas (Figure 3). Effort data were noisy and varied widely between years, but indicate a very modest shift of effort from offshore to nearshore areas. There is no information to indicate a shift in effort in other ports. These data did not provide a compelling reason to believe that the declining CPUE trend, developed from coast-wide data, was driven by a shift in effort. Because of this lack of consistent shift in depth distribution of the effort and because the nearshore-offshore information was incompletely available, it was not used as a factor in the GLM.

Washington CPUE

April-September estimates of catch and effort (by trip type) for coastal Washington ports are available from the WDFW Ocean Sampling Program since1984. Directed halibut trips were pooled with bottomfish trips until 1989. However, the 1989 and 1990 sample data are not currently available and were excluded from the analysis. The directed halibut fishery shows an increasing yelloweye CPUE trend over time (Figure 4). Information from the fishery indicates that this trend was due to increased targeting of yelloweye in a region north of the halibut closure area. For this reason, CPUE trend information from directed halibut trips was biased and could not be used.

A General Linear Model (delta method) was used to estimate the time series of CPUE. The final GLM model included year effect $\mathbf{Y}_i$ {i= 1991-2000}, port effect $\mathbf{P}_j$ (Ilwaco, Westport, LaPush and Neah Bay) and month effect $\mathbf{M}_k$ (May-September).

The final GLM model was based on analysis of 28,786 creel records. The overall model, and the specific factors included in the model were highly significant ($P < 0.001$). The model explained a significant amount of variability in both the estimation of CPUE from positive tows ($r^2=0.08$) and in the estimation of proportion positive ($r^2=0.03$). Marginal means (for year effect) were back-transformed to the arithmetic scale and applied in the model. Annual catch rates were applied in th model as a relative survey index and selectivity set equal to that estimated for the Washington sport fishery. Table 5 gives the estimated deviance explained by factors incorporated in the model. Table 6 lists the estimated coefficients for both parts of the delta method. Results indicate catch rates have declined over the time period (Table 7 and Figure 2).

Fishery size/age composition

Northern California data provide the most complete and longest time series of length information for yelloweye rockfish. Data collection in Oregon began in the early 1980s, though sampling levels were low and sporadic until most recent years. Washington data is essentially limited to the last three years (Tables 3-5). Sample frequency distribution data are used to estimate proportion at each size/age for combined sexes and gear for each assessment area. Because of the scarcity of the data, no weighting is applied in combining samples within state/gear/year strata.

Because of the small sample sizes, some samples are combined across years in order to provide the model with observations that reflect average conditions, although blurring any potential annual signal. The fish within one or a few fishery samples within a year/state/gear cannot represent a good random sample of the entire fishery catch and inspection of the raw data often indicated a cluster of small fish in one year and a cluster of much larger fish in the following year, for example. This occurs because fish within a sample tend to be more similar in size and age than the diversity of size and age that appears when many independent samples are taken. Because the model believes that the fish within a size or age composition observation are a multinomially distributed random sample, it may attempt to infer recruitment events from what is sampling variability. Since inspection of the data do not reveal any obviously strong recruitment events moving through the population, we felt it was better to blend the small sample size years into multi-year observations. The procedure involved: (1) combining sample data across the range of selected years (see boxed data in Table 8) to create a multi-year observation; (2) assign these proportions at age/size back to each of the source years; (3) assign a multinomial sample size for each of these years so that the sum of these sample sizes equals the sum of the original sample sizes for those years.

Size data were condensed into 2 cm bins from 18 cm to 76 cm. Only 0.1% of the observed fish are greater than 76 cm, so 76 cm was considered to be a reasonable accumulator bin.

Age data were condensed into 1 age bins for ages 3 to 29, and into 5 age bins for ages 30-70. All fish above age 70 were accumulated in the 70+ age bin.

In addition to providing the model with size and age composition vectors, we calculated the mean length at each age-bin for each gear/state strata (and the number of fish in each age-bin used for the calculation) and assigned this vector to a year that supplied much of the age data. Synthesis is able to compare the mean size-at-age-bin to the expected value for this quantity in a way that takes into account the effects of ageing error and size-selectivity of the fishery (Methot, 2000).

Survey

The NMFS triennial trawl survey has covered a wide range of depths off California, Oregon and Washington since 1977. Yelloweye rockfish inhabit areas typically inaccessible to trawl gear and as a result yelloweye rockfish were infrequently caught. Most are caught on and near Hecate Bank off central Oregon and off northern Washington (Figure 5). Estimated biomass by statistical area is summarized in Table 11. Given the low frequency of positive tows, NMFS trawl survey probably does not sample yelloweye habitat consistently and may not be a reliable indicator of abundance. NMFS trawl survey data were not incorporated into the assessment.

Rockfish caught incidental to the International Pacific Halibut Commission (IPHC) halibut survey were recorded, but not identified to species until 1999. In1999 rockfish were identified to species and catch recorded for the first 20 hooks per skate at each station (140 of the potential 700 hooks). A longer time series of data, and probably full accounting of yelloweye, will be needed to assess the merit of using the halibut survey as a yelloweye index.

Life history

Weight-at-length:

An allometric length-weight function (weight=0.000021*length$^{2.9659}$) was computed from over 3,000 observations to estimate weight for a fish of known length for combined sexes.

Growth:

Over 1,000 age structures from Oregon and an additional 464 age structures from Washington were recently aged and incorporated into this analysis. The von Bertalanffy growth function (Linf(1-e$^{-k(age-to)}$) was used to estimate the length of a fish of a known age. Estimated parameter values are compared to estimates derived from age data collected from Washington, Oregon, California and other locales (Table 12 and Figure 6). Differences in growth among Washington, Oregon and California fish were not apparent. A single growth function for combined sexes was used for all three areas. Because all samples used for this growth analysis came from size-selective fishery samples, the growth parameters will be re-estimated within the synthesis model in order to adjust for the effects of size-selectivity and ageing error on the expected value of size-at-observed age (Methot, 2000).

Maturity-at-age:
Length and age at 50% maturity for female yelloweye collected from coastal waters off Vancouver Island, B.C., was estimated to be 42.1-42.4 cm and 16.5-17.2 years of age (Yamanaka and Kronlund, 1997). This compares to 41 cm (Barss, 1989) and 45 cm (McClure, 1982) for fishes collected off Oregon and 40 cm (Reilly et al., 1994) for fish collected off California. Misspecification of length at 50% maturity at a larger size than actual will tend to lower allowable rates of fishing. Synthesis model runs were made with 50% maturity occurring at 40 cm.

Natural mortality:
Several procedures to derive estimates of natural mortality were explored (Wallace 2001). Robson and Chapman (1961) method was investigated, but Chi-square testing indicated that at least one of the critical assumptions of the data was not met. Catch curve estimates (Ricker, 1975) of total mortality were derived from age data collected from various locales (Table 13). Estimates of mortality from an exploited stock off Neah Bay (0.076), Washington were higher compared to mortality estimates of an unexploited stock (0.025) located at the Bowie Seamount, Queen Charlotte Islands, B.C. (data provided by Yamanaka, DFO). Mortality estimates from Bowie Seamount using five-year age bins (0.086 males and 0.043 females; Yamanaka, 2000) and no age bins were quite different (0.021 males and 0.033 females). Differences in estimates are probably due to bin specification of large year class(s) recruited in the late 1960s. Catch curve estimates of natural mortality assume constant recruitment and large variation in recruitment makes it difficult to interpret results derived from catch curve procedures. A estimated natural mortality rate near 0.04 is a compromise between low (0.02, O'Connell et al., 2000) and high estimates (0.043 for females and 0.086 for males, Yamanaka et al., 2001) and is equivalent to that estimated using Hoenig's (1983) method (Table 13).

Ageing accuracy
Break-and-burn aging techniques for yelloweye rockfish were recently validated. Employing radiometric aging techniques Andrews et al. (2001) verified growth zone age estimates between 30 and 100 years, substantiating that longevity likely exceeds 100 years. Aging error was assessed using data collected from an exchange of 100 otoliths between the Department of Fisheries and Oceans, Canada (DFO) and WDFW. Aging error increased with age and was assumed unbiased, by imprecise and equivalent differences between DFO and WDFW age readings. Comparison of DFO and WDFW age readings indicate that 75% of fish 9-13 years old and 89% of fish older than 70 years of age are mis-aged by at least one year (Wallace, 2001).

ASSESSMENT

History of modeling approaches
Yelloweye were first addressed as part of the "remaining rockfish" assessment completed in 1996. This assessment included a number of previously un-assessed rockfish species managed as the "*Sebastes* complex". Rogers et al. (1996) estimated a yelloweye rockfish ABC of 39 mt for the Northern area (Columbia and Vancouver) based on biomass estimates from the triennial trawl survey and assumptions about natural

mortality (M) and catchability (Q). No separate yelloweye ABC was estimated for the Southern area (Monterey and Conception) but incorporated with the "other rockfish" assemblage ABC.

Wallace (2001) used the length-based version of Stock Synthesis to model the northern California and Oregon regions separately. Growth was estimated externally to the model. Sport CPUE and sport and commercial size composition data were included in the model. The modeled time period extended from 1970 through 2000 and year-specific recruitments were estimated without constraint by a spawner-recruitment curve. The assessment examined both increasing natural mortality with age and dome-shaped selectivity with size as alternative factors to improve the fit to the data. Alternative model configurations found that increasing natural mortality with age provided a somewhat better fit to the data, but there were no age data included in the 2001 model, and much of an increase in M would be inconsistent with direct examination of age data through the catch curve analysis documented above.

Model description for 2002

Analyses in this assessment were developed using the length-based version of Stock Synthesis (Methot, 2000). Important differences in model configuration from Wallace (2001) include:

1. inclusion of Washington data:
2. inclusion of age composition data from all three states as available and update of size composition data
3. inclusion of mean length-at-age data from each data source to aid in the simultaneous estimation of growth parameters and size-selectivity
4. allowing all fishery sectors to have dome-shaped selectivity
5. including emphasis on the spawner-recruitment curve and estimating the curvature (steepness) of this curve.
6. Starting in 1955 rather than 1970 to better allow for potential long-term patterns in recruitment
7. estimates of the Washington sport CPUE was done by the delta method and sport CPUE based on RecFIN estimates was excluded
8. Washington, Oregon and California was considered to be one stock
9. Re-examining evidence for age-specific natural mortality and concluding that baseline model should have constant natural mortality.

Composition Data and Sample Sizes

Determination of the actual sample variance of composition data is problematic (Crone, 1995). In synthesis, age and length composition data are treated as multinomial, but assignment of the appropriate sample size (which scales the variance) is difficult. In the pre-STAR model runs, the sample size values were set equal to the actual sample sizes, except a maximum sample size of 200 fish was assigned to those samples that actually had more than 200 fish measured. These model runs indicated that the model's ability to fit the age and size composition data implied an effective sample size that was approximately 60% of the observed sample size values. Because sample size and emphasis factor are algebraically equivalent, this reduction in each observation's sample size was subsequently implemented by reducing all the size and age composition emphasis factors from 1.0 to 0.6. This change was instituted during the STAR panel and included in the final model results (see parameter file in Appendix A).

Fishery selectivity

Dome-shaped selectivity (Figure 7) was necessary to account for the low occurrence of older (larger) fish in the age and length composition data. There may be several plausible explanations for dome-shaped selectivity: 1) The trawl fishery can only catch fish at the "fringe" of rough non-trawlable habitat. 2) Hook size(s) in both the sport and commercial line fisheries do not "select" largest individuals. 3) Yelloweye rockfish inhabit high relief (canyons) and rocky bottom habitats and at least some of this habitat may form natural refugia from fishing. 4) Older fishes could be bathymetrically isolated in a portion of their range. There has been lingering debate in some recent rockfish assessment discussions over whether natural mortality increases with age or deficit of older age fish in the catch is related to fishery selectivity. Because natural mortality is confounded with selectivity in age-structured models, the trade-off between natural mortality and selectivity is explored below.

Model selection and evaluation

Some of the model investigations reported below were conducted with the pre-STAR model configuration. These sections are kept in the final document to provide background for the decisions made in configuring the final model. Some of these preliminary investigations are re-run with the final model configuration.

Time-varying Fishery Selectivity:
Changes in apparent fishery selectivity are expected due to changes in fishery regulations or other factors that shift the primary fishing grounds or otherwise change the fishing patterns. Here we have addressed this issue by inspecting the time series of size and age composition data for noticeable changes in the occurrence of small/young or large/old yelloweye. In the preliminary model runs, changes in the following parameters were allowed (the range of years shows where the break occurred):

CA sport, ascending inflection size, 1983-1984;
OR comm., ascending inflection size, 1999-2000;
WA sport, ascending inflection size, 1997-1998.

In the final model runs, the following changes were allowed (also see Appendix A):

CA sport, ascending inflection size, 1982-1983;
CA sport, selectivity at max-size; 1986-1987;
OR comm., ascending inflection size, 1999-2000;
WA sport, ascending inflection size, 1997-1998;
WA sport, ascending slope, 1997-1998;
WA sport, selectivity at max-size, 1997-1998.

By allowing for some time-varying selectivity, we give the model flexibility to track major changes in selectivity, thus we reduce the possibility that the model will inappropriately adjust the estimated stock abundance simply to improve the fit to patterns in the fishery size and age composition data. This issue of the degree of parameterization of the time-varying fishery selectivity is in need of further theoretical treatment. We have tried to strike a parsimonious balance here.

Natural Mortality (pre-STAR investigation):
Natural mortality (M) was configured to be constant for ages 3-12, then to ramp linearly with age up to a higher value at age 70+ (or to stay the same as the young M). The model in 2001 had young M set at 0.04 and old M estimated to be about 0.11. Here, we profile on various levels of young and old M in order to understand the effects on model fit and results. The pre-STAR model was fit at levels of young natural mortality ranging from 0.035 to 0.055 and old natural mortality ranging from 0.035 to 0.055 (plus to 0.65 at young natural mortality of 0.040). Tables 14 and 15 show that the greatest impact was on the fit to the spawner-recruitment function, followed by OR sport ages, WA sport ages, WA line ages, and OR sport sizes. Although the overall best fit was with young M at 0.035 and old M at 0.050, there is little confidence in this result because of the lack of consistency among the various likelihood elements and the fact that two of the most affected components (WA sport and line ages) have short time series of data. Therefore we conclude that selecting an intermediate level of 0.045 for both young and old natural mortality is the most parsimonious action.

The level of natural mortality has an interesting and important interaction with the trend in recruitment over time (as demonstrated by the estimated spawner-recruitment steepness) (Table 15). When natural mortality is low, estimated recruitment shows little downtrend over time and steepness is high. We believe this occurs because, at low M, the model preserves relatively more old fish so it must also preserve a higher recruitment level in order to maintain a comparable overall slope to the age composition (see last panel in Table 15). The converse is true at high M where the model must reduce recruitment at the end of the time series in order to not dilute the diminished number of old fish. The simulation studies by Williams (2002) also found an interaction between natural mortality rate estimates and the degree of spawner-recruitment steepness. This explanation is supported by the fact that the most affected data are the WA sport and WA line ages that occur only at the end of the time series. In the 2001 assessment, fits to available size composition data led to the selection of increasing natural mortality as the preferred scenario. That 2001 scenario produces a declining trend in recruitment over time; consistent with a low S/R steepness. This interaction between M and recruitment trend appears to be a general phenomenon in need of further examination. Meanwhile, this is reason to be cautious when attempting to estimate the best level of M from model goodness-of-fit except in the most data-rich situations.

A comparison of the impact of changes in the model configuration from 2001 (ramp in natural mortality from 0.04 to 0.10 and asymptotic selectivity) to 2002 (flat natural mortality at 0.045 and dome selectivity) is shown in Table 16 using a pre-STAR model configuration. The overall improvement in fit within the OR-CA model is substantial: 17 log likelihood units by introducing domed selectivity and an additional 70 units by keeping natural mortality constant at 0.045. Most of the improvement in fit with the new coastwide model is for the Oregon sport age comps and the Washington sport size comps, neither of which was included in the 2001 model. The level of stock depletion is not greatly affected by the model configuration, but the trend in recruitment (as measured by the S/R steepness) is much lower in the 2001 model configuration with the ramp in natural mortality.

Spawner-recruitment emphasis (pre-STAR investigation):
The degree of importance to including the spawner-recruitment function was investigated using pre-STAR model configurations with equilibrium recruitment and with individual year recruitments penalized by varying degrees of emphasis on deviations from the spawner-recruitment function (Table 17 and Figure 8). In the first run, recruitments are strictly taken from the estimated spawner-recruitment curve and the model has zero emphasis on any of the size or age composition data (selectivity and growth parameters were fixed at the baseline model estimates). In this configuration, only the three state sport CPUE indices influence the model. The result is a steepness level of 0.9, a depletion level of 0.23, and a fit to the total of all the data that is –324.6 units worse than the baseline model (Table 17, 1st column). When the emphasis is returned to the size and age composition data, but recruitments still are taken simply from the estimated S/R curve, the fit improves by approximately 80 units and the steepness parameter declines to 0.59. In the remaining runs, each year's recruitment is estimated as a separate parameter, but penalized by its deviation from the estimated spawner-recruitment curve (with the level of variability in log(recruitment) set at 0.4). With an emphasis of 10.0 on the S/R deviations, the model is still able to estimate enough pattern in the recruitment time series to improve the overall fit by 183 units. Progressively decreasing the emphasis on the S/R deviations allows the individual year recruitment estimates to vary more widely, but with diminishing improvement in the fit to the data. Most of the improvement is with the fit to the OR sport age comps. Based upon the diminishing model improvements for emphasis levels below 0.1, the baseline model was set to have an emphasis level of 0.5 on deviations from the S/R curve. Coincidentally, the 0.5 emphasis level resulted in the RMSE of recruitment deviations to be approximately 0.4.

<u>Base-run results</u>
The final model developed through the STAR review has the following changes from the pre-STAR model used for the investigations reported above:

1. revised GLM for the CA sport CPUE to take into account the effect of depth and other factors that affect the pattern in CPUE;
2. revised GLM for the WA sport CPUE to use a delta-lognormal approach as in CA;
3. increased degree of time-varying selectivity, as reported above;

4. decrease emphasis on the size, age, and size-at-age data to 0.6;
5. allow the size at transition for the selectivity function to be fishery specific. Preliminary model runs had this parameter set at 50 cm for all fisheries. The final values were fixed at the levels found in Appendix A after results of a interim model run with the transition sizes allowed to be estimated. The only substantial change is for the WA sport fishery where a large value (60 cm) provides a better fit to the high occurrence of larger fish at the end of the time series.

The following results are based upon this updated model configuration.

Sensitivity Analyses

Profile on initial recruitment –

This profile on the initial (virgin) recruitment level provides information regarding which data components fit better at higher versus lower biomass levels. The initial recruitment parameter sets both the initial population abundance level and the scale of the spawner-recruitment curve that acts as a pseudo-prior for the subsequent recruitments. Table 18 presents the results, with only the components having a strong gradient appearing in Figure 9. Only the OR sport age comp has a dome-shaped likelihood profile like that of the Total likelihood profile. Other likelihood components are monotonic over this range of initial recruitment, thus the position of the best fit for the Total likelihood depends on the relative weighting of the individual components. The OR sport fishery CPUE fits better at low initial recruitment, whereas the CA and WA sport CPUE have rather flat profiles.

In the virgin recruitment profile for only OR-CA region, the sport CPUE data fit best over a wide range of lower virgin recruitment levels (Table 19). In the WA region profile the overall change in likelihood was only 1.1 log likelihood units over a range of virgin recruitment levels that produced changes in depletion from 0.28 to 0.41 (Table 20), thus indicating that the data are consistent with a range of results.

Profiles were also conducted on the spawner-recruitment steepness parameter. These are shown in Table 21. The 80% confidence interval on steepness extends from approximately 0.3 to 0.8, so the best estimate of 0.43 is rather imprecise. Figure 10 is especially informative. As virgin recruitment is set at a low level, the first estimated recruitment is high and conversely when virgin recruitment is high. At the end of the time series, the mean recruitment (see tabulated values in Table 21) is low if the virgin recruitment is low or if the steepness is low; and conversely the mean ending recruitment is high when virgin recruitment or steepness is high. Recruitment during most of the time series is not sensitive to the level of either virgin recruitment or steepness. This is probably the reason that the likelihood for the trend in sport CPUE is not highly sensitive to changing virgin recruitment levels. We conclude that the magnitude of recruitments during the intermediate portion of the time series is strongly determined by the data, and that recruitments at the end of the time series are not strongly determined by the data, so they are more influenced by the level of virgin recruitment and steepness. Further, this result indicates that the best estimates of virgin recruitment and steepness are influenced by the level and trend in recruitment during the intermediate portion of the time series. Finally, we expect that as the time series of data lengthens over the next 5 to 10 years, the data will have more influence on the estimated level of recent recruitments and the estimated level of S/R steepness will become more precise.

Density-dependent sport catchability -

An additional profile on virgin recruitment was conducted, but with the catchability coefficient for each sport CPUE index allowed to be density-dependent. Not unexpectedly, these profiles were even flatter than those reported above. This indicates the importance of the trend in sport CPUE data in helping to determine the stock trend. Since there is not any feasible way to independently validate that sport CPUE catchability has remained constant, it is now especially important to develop a fishery-independent survey to measure and track the abundance of yelloweye.

Historical catch -
Sensitivity to the level of historical catch was quickly evaluated by running the model with all catch levels during 1955 to 1975 doubled or tripled. Higher levels of early catch produce a slightly better fit, higher initial biomass, and a greater degree of decline in biomass. Although some degree of underestimation of early catch seems plausible, we have no reason to believe that the early catch might be as much as 2-3 times the current estimate. Since even that high level of underestimation does not greatly affect the assessment result, we are confident that no major assessment bias is occurring due to inaccurate information on historical catch. Nevertheless, improvement in historical total catch estimates would improve the accuracy of the assessment model.

Catch 55-75	Like	SPBzero	SPB2001	deplete	steepness
1x	-1057.1	3866	911	0.236	0.437
2x	-1056.5	4406	917	0.208	0.421
3x	-1056.6	4980	944	0.190	0.406

Area specific models –
The difference in trend between the WA sport CPUE and the CA or OR sport CPUE indicates a need to consider area-specific model configurations. The cumulative yelloweye catch from WA is less than either CA or OR, and the yelloweye occurrence in the trawl survey is higher off WA than to the south, so it would not be surprising if the stock had different trends off WA than off CA or OR. All of the models presented in the sections above have treated yelloweye as a coastwide stock. The implicit assumption is that there either: (1) similar recruitment and mortality off each state so that a coastwide model will capture the common recruitment and mortality trends, or (2) there is sufficient mixing between areas within the coast so that any differences in recruitment or mortality are soon smeared across the areas so a coastwide model represents the sum of all the processes operating in each area. The truth is likely to have some degree of difference between areas and only a slow rate of mixing so that area-specific patterns persist for some time. We could build such a complex model to attempt to better model the true sub-stock dynamics, but we are quite far from being able to acquire sufficient data to calibrate such a model. Instead, we will start by simply constructing models that include data from subsets of the coast, and compare these results to the baseline coastwide model.

The results of models with only CA, OR, WA, CA-OR, or CA-OR-WA data are presented in Table 22 and Figure 11. The CA, OR and CA-OR results are quite consistent with regard to the degree of stock depletion (20-23%). Summing the biomass estimates along the coast from the various runs produces a consistent result:

	CAOR+WA	CA+OR+WA	ALL
SPBzero	3987	4113	3859
SPB2001	934	975	898
Depletion	0.234	0.237	0.233

The WA-only model has a lesser degree of stock decline. This is consistent with the lower level of cumulative catch from that area. Although the three areas have different estimated recruitment patterns during 1975-1990, these differences do not produce greatly improved fits in the area-specific models relative to the combined area model (Table 22). Because the three areas (states) have the majority of their size and age composition data distributed differently over the time series, there must be a strong caveat on any direct comparison of the recruitment time series, and the sum of the area-specific recruitments remains very consistent no matter what area configuration is used to estimate the recruitments.

We conclude that the estimated differences between the areas (states) are neither sufficiently different nor sufficiently precisely estimated to recommend that management be based on area-specific population models at this time. We still believe that yelloweye mixing along the coast is low, especially for adults, so localized depletion remains a possibility. Area-specific modeling should remain in consideration as new data become available.

Growth –
Growth parameters were re-estimated within synthesis. Because interprets the size-at-age data after taking into account the expected effect of ageing error and size-selectivity, the re-estimated growth parameters should better correspond to the population's growth curve than to the simple tracking of mean-size-at-observed age from a set of fishery samples. The lower L at age 6 and the higher L at age 60 are due to the effects of the dome-shaped selectivity pattern. The external estimates of the growth parameters produce a good fit to the observed mean-size-at-observed age when the comparison is made outside of the assessment model but because of size-selectivity in the fisheries, these size-at-age values are biased representations of the population size-at-age. When these external growth parameters are moved into the assessment model, the fit to the size-at-age data is poor because the assessment model is accounting for size-selectivity and ageing error when calculating the expected values for mean size-at-age. The internally estimated growth parameters restore the good fit to the observed size-at-age data.

Source	L at age 6	L at age 60	K	Std.dev. at age 3	Stddev at age 60
External	30.8	63.9	.0529	5.54	6.26
From model	26.9	65.7	.0491	3.45	6.21

Convergence test
The fidelity of the model convergence was evaluated by randomly tweaking all free parameters away from the final model's estimate then re-running the model parameter estimation routine to determine the degree to which the estimates returned to the final model values. Model convergence is judged to occur when the improvement in fit is less than 0.001 log likelihood units. Twenty runs were conducted with parameter tweaks of up to 5%, and twenty runs were conducted with tweaks of up to 20%. Three of the 40 runs returned to within 0.001 units of the best run, 15 were within 0.01, and all but 1 were within 0.05. The range of ending spawning biomass for these 39 runs was 908 mt to 969 mt. For the one run with premature convergence, the likelihood was off by only 0.28 units and the ending biomass was 1029 mt, thus still not far from the converged result. We conclude that the model convergence is sufficient to provide confidence in the baseline model parameter estimates.

Results
Figure 12 shows the final model's fit to each sport CPUE time series. Figure 13 shows summary statistics that portray the fit to the size and age composition data. Figure 14 shows bubble plots with observed proportions at age/size, estimated proportions at age/size, and the difference between the two. The time series of estimated recruitment and abundance is shown in Table 23 and Figure 15. Finally, Figure 16 shows the spawner-recruitment relationship with the estimated steepness of 0.437.

FORECASTS

Target population levels and fishing mortality rates
The estimate of unfished (virgin) biomass is calculated within the assessment model. It is equal to the virgin recruitment parameter (155,700 age 3 fish) which sets the scale of the spawner-recruitment curve that is fit in log space; multiplied by the log-bias adjustment ($\exp(0.5*s^2)$; where s is 0.4, the recruitment variability level) to be 168,700 age 3 fish; then multiplied by the spawning biomass per recruit with F=0 (22.97 kg of spawners per age 3 recruit). The resulting level is 3,875 mt of spawners in an unfished state.

The female spawner abundance projected to the beginning of 2002 is 934 mt (Table 23). This is 24.1% of the unfished level. The target abundance (40% of the unfished level) is 1,550 mt of spawners.

From the spawner-recruitment parameters fitted within the assessment model, the steepness of the S-R relationship is 0.437. This is lower than the 0.7 level found as typical for several rockfish species (Dorn, 2002; Myers et al. 1999), but above the level near 0.3 found for canary rockfish (Methot and Piner, 2002). Table 21 shows that there is a 16% probability that the yelloweye data could have occurred even if steepness was less than 0.35 and a 16% probability that they could have occurred from a steepness greater than 0.70. An additional source of uncertainty in the steepness estimate is the unknown role of long-term trends in the ocean climate. Various studies have identified shifts in recruitment for other species (McFarlane et al, 2000) that correspond in timing to changes in the ocean climate, particularly near 1977 and 1989 (Mantua and Hare, 2002). From the yelloweye rockfish recruitment-spawner information (Figure 16) it is not possible at this time to determine the degree to which the lower average recruitments during the 1990's are strictly due to long-term average spawner-recruitment steepness versus a period of climate-induced reduction in recruitment. Therefore, the steepness of 0.437 has a broad confidence range and it seems reasonable to use the range of 0.35 to 0.70 to bracket the uncertainty when conducting projections.

We have used the steepness of the spawner-recruitment curve fitted within the assessment model as a measure of the stock productivity and find that this parameter has a broad confidence range. This range should not be construed as uncertainty only in the steepness estimate. Figure 10 shows that steepness tracks the mean level of the recent recruitments, so uncertainty in one implies uncertainty in the other. Although the broad confidence range on the steepness parameter may seem to be a reason to not use a spawner-recruitment curve in the rebuilding analysis, other methods, such as resampling from observed recruits per spawner, will be similarly sensitive to uncertainty in the recent recruitment estimates. The use of the spawner-recruitment curve and its steepness parameter provides a convenient method to quantify the best estimate of the recruitment trend and its uncertainty.

With a steepness of 0.437, the Fmsy corresponds to $F_{57\%}$ SPR and is an annual exploitation rate of approximately 0.018. This rate is in the middle of the $F_{55\%}$ to $F_{60\%}$ range recommended by Dorn (2002) on the basis of his meta-analysis of rockfish stock-recruit relationships. Fishing at this rate in the long-term would be expected to produce an average spawning biomass level that is 36% of the unfished level, and the equilibrium MSY would be 59 mt. Fishing at $F_{50\%}$ SPR, the current default harvest rate, corresponds to an exploitation rate of about 0.023 and would result in an equilibrium spawning biomass level that is at 26% of the unfished level (not taking into account the effect of the 40:10 reduction in harvest as the stock would fall below the 40% level). Projections using steepness of 0.35 and 0.70 are included in the rebuilding analysis.

Rebuilding parameters

The mean generation time is 44 years. The selectivity, weight, fecundity,, natural mortality, and numbers-at-age used in the rebuilding analysis are reported in Table 24. Although we do not believe the point estimate of Bmsy (36% of unfished) is sufficiently precise to warrant replacing the current Bmsy proxy and rebuilding target (40% of unfished), we do believe that the estimate of steepness provides a useful basis for the range of future recruitments in a forecast. Forecasts that use deviations around a reasonable spawner-recruitment curve will be intermediate between forecasts based upon re-sampling of recruitments and forecasts based upon re-sampling of recruits per spawner. A range of steepness values should be considered to present the best case (steepness = 0.437) and high and low confidence intervals.

Harvest projections and decision tables

Table 25 shows projections assuming recruitments from the S/R curve and various harvest policies. With no fishing (F=0) beginning in 2003, the stock would rebuild to the 40% level by the year 2024 (NOTE: this calculation will be superceded by the stochastic forecasts conducted in the rebuilding analysis). With F =

F50%, the ABC would be 52 mt in 2003 and the 40:10 adjustment would put the OY at 42 mt. However, the degree of S/R steepness indicates that this harvest rate would not rebuild the stock to the 40% level. A long-term harvest level of F57% is close to Fmsy and, with the 40:10 adjustment, would result in an initial OY of 33 mt. Under this strategy, harvest would be expected to increase to 41 mt within 10 years if recruitments and harvests were as used in this projection. The long-term MSY would be 59 mt. However, as noted above, the steepness level used for these forecasts has a broad confidence range. There are no data with which to reduce this uncertainty at this time. Future assessments will provide more precise estimates of the current stock abundance if these assessments can include new survey data. However, these new assessments cannot immediately improve the precision of the steepness estimate. This improvement will probably not occur until we have a longer time series of recruitment estimates from a range of environmental conditions.

MANAGEMENT RECOMMENDATIONS

This yelloweye assessment incorporates all available data and the best methods available to the STAT team. It was endorsed as technically sound and risk neutral by the review panel. We do, however, caution that the results are based upon relatively sparse data and rely upon some untestable factors, in particular the assertion of a constant proportionality between the sport fishery CPUE indices and population abundance. This constant proportionality for CPUE data has been used in other groundfish assessments, but it is possible that the population could decline faster than indicated by the CPUE indices due to the targeting ability of anglers. This non-proportionality was found in the canary rockfish assessment (Methot and Piner, 2002) and may very well occur with yelloweye rockfish, but there is currently no fishery independent survey for yelloweye to serve as a standard for comparison. Although we have attempted to provide as risk-neutral an assessment as possible, we cannot fully evaluate all sources of uncertainty and we recommend that more conservative and precautionary management targets be considered in order to protect against the uncertainty in the assumptions used in the assessment.

RESEARCH NEEDS

Abundance – New survey tools are needed because yelloweye rockfish predominately inhabit sites that are difficult to survey with a research trawl. Current fieldwork is making visual measurements of fish abundance from submersibles. Extension of this work to a wider range of areas and habitats should provide a firm basis for future assessments.

Total catch – Additional research could improve the estimates of historical catch, especially from the early time period (pre-1980) and from additional fishery components such as the directed halibut fishery. The observer program started in 2001 will provide information on the level of total catch occurring in the future.

Stock structure – Although the current assessment did not find markedly different results from state-specific versus coastwide model results, there still is a need to better understand the degree of demographic mixing along the coast, including Canada. This will be important to improve future assessments and to understand the potential impact of closed areas on the stock's population dynamics.

Fishery CPUE – The current assessment tracked the degree of stock decline primarily with the trend in sport CPUE. Restrictive management measures beginning in 2000 cripple the ability to use these data into the future. Thus, a fishery-independent survey will be necessary to track the rebuilding of this stock.

Climate effects on recruitment – The potential effect of decadal scale fluctuations in the ocean climate on yelloweye rockfish recruitment off the U.S. west coast needs to be investigated. Successful demonstration of climate-recruitment linkages has the potential to improve the estimate of unfished biomass level, determine the influence of climate effects on the current estimate of spawner-recruitment steepness, and narrow the range of forecast recruitment levels during early years of the rebuilding period.

ACKNOWLEDGEMENTS

We would like to thank members of the stock assessment review (STAR) panel and Council advisory members (GAP) and (GMT) for their constructive comments that have improved this assessment. We would also like to thank Lynne Yamanaka (DFO) and Tory O'Connell (ADFG) for providing essential information concerning yelloweye life history and Deborah Wilson-Vandenberg for providing sport observer data from the California CPFV fleet. We are also grateful to Mark Wilkins and Mark Zimmermann (NMFS) for providing survey data, Don Bodenmiller and Mark Freeman (ODFW) for providing Oregon catch and effort data, and Don Pearson (NMFS) for providing catch, age and length data for California. There are also a great number of NMFS, WDFW, ODFW and CDFG personnel who collected, documented and provided necessary information used in this stock assessment, which we would like to express thanks.

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Appendix A. Parameter file for baseline coastwide model.

```
ye-dat09.txt
RUNFILE.R01
yeyebase.p10
baseline model
     100.000000        .001000     BEGIN AND END DELTA F PER LOOP1
   3   .95               FIRST LOOP1 FOR LAMBDA & VALUE
    .990                 MAX VALUE FOR CROSS DERIVATIVE
   1 READ HESSIAN
YE.H01
   1 WRITE HESSIAN
YE.H01
    .000                 MIN SAMPLE FRAC. PER AGE
  3  70   5  70          MINAGE, MAXAGE,  SUMMARY AGE RANGE
  55 101                 BEGIN YEAR, END YEAR
  1      12  0  0  0     NPER, MON/PER
  1.00                   SPAWNMONTH
  7  5 NFISHERY, NSURVEY
  1 N SEXES
     100.  REF RECR LEVEL
  1 MORTOPT
     .045000     .010000     .250000 'F-NMORT_YNG     '   0   1  0     .000000   .0000 !   1 NO PICK
     .045000     .010000     .250000 'F-NMORT_OLD     '   0   1  0     .000000   .0000 !   2 NO PICK
   12.000000    4.000000   25.000000 'F-NMORT_INFL    '   0   1  0     .000000   .0000 !   3 NO PICK
 CA-recr    TYPE:  1
  7 SELECTIVITY PATTERN
   0   2   0   3   4   0   0  AGE TYPES USED
     1.00000       .02 'CA recr CATCH        '  ! # =  1 VALUE:         .00000
      .60000     -1.00 'CA recr AGE          '  ! # =  2 VALUE:      -27.62749
      .60000     -1.00 'CA recr SIZE         '  ! # =  3 VALUE:     -404.68993
      .60000     -1.00 'CA recr SIZE@AGE     '  ! # =  4 VALUE:      -45.04872
  1  1  0  0  0  0  SEL. COMPONENTS
   46.000000   40.000000   60.000000 '1 size@trans    '  -2   1  0     .000000   .0000 !   4 NO PICK
     .014163     .001000     .990000 '1 sel @ minsize '   2   1  0     .000000   .0000 !   5 OK
     .000000     .000000     .000000 '1 asc infl      '   0   1  1     .000000   .0000 !   6 ENV FXN
     .174831     .010000    4.000000 '1 asc slope     '   2   1  0     .500000   .9000 !   7 OK
     .000000     .010000    1.000000 '1 sel @ maxsize '   0   1  8     .000000   .0000 !   8 ENV FXN
     .515219     .050000     .950000 '1 desc infl     '   2   1  0     .500000   .5000 !   9 OK
     .417537     .050000    5.000000 '1 desc slope    '   2   1  0     .500000   .5000 !  10 OK
 CA-comm    TYPE:  2
  7 SELECTIVITY PATTERN
   0   6   0   7   8   0   0  AGE TYPES USED
     1.00000       .02 'CA comm CATCH        '  ! # =  5 VALUE:         .00000
      .60000     -1.00 'CA comm AGE          '  ! # =  6 VALUE:      -39.62014
      .60000     -1.00 'CA comm SIZE         '  ! # =  7 VALUE:     -208.86740
      .60000     -1.00 'CA comm SIZE@AGE     '  ! # =  8 VALUE:      -65.81952
  1  1  0  0  0  0  SEL. COMPONENTS
   52.000000   40.000000   60.000000 '2 size@trans    '  -2   1  0     .000000   .0000 !  11 NO PICK
     .001000     .001000     .990000 '2 sel @ minsize '  -2   1  0     .000000   .0000 !  12 NO PICK
     .000000     .000000     .000000 '2 asc infl      '   0   1  2     .000000   .0000 !  13 ENV FXN
     .218568     .010000    4.000000 '2 asc slope     '   2   1  0     .500000   .9000 !  14 OK
     .072970     .010000    1.000000 '2 sel @ maxsize '   2   1  0     .000000   .0000 !  15 OK
     .434112     .050000     .950000 '2 desc infl     '   2   1  0     .500000   .9000 !  16 OK
     .351753     .050000    5.000000 '2 desc slope    '   2   1  0     .500000   .9000 !  17 OK
 OR-recr    TYPE:  3
  7 SELECTIVITY PATTERN
   0  10   0  11  12   0   0  AGE TYPES USED
     1.00000       .02 'OR recr CATCH        '  ! # =  9 VALUE:         .00000
      .60000     -1.00 'OR recr AGE          '  ! # = 10 VALUE:     -240.74114
      .60000     -1.00 'OR recr SIZE         '  ! # = 11 VALUE:     -290.79977
      .60000     -1.00 'OR recr SIZE@AGE     '  ! # = 12 VALUE:      -33.06801
  1  1  0  0  0  0  SEL. COMPONENTS
   50.000000   40.000000   60.000000 '3 size@trans    '  -2   1  0     .000000   .0000 !  18 NO PICK
     .037422     .001000     .990000 '3 sel @ minsize '   2   1  0     .000000   .0000 !  19 OK
     .000000     .000000     .000000 '3 asc infl      '   0   1  3     .000000   .0000 !  20 ENV FXN
     .435083     .010000    4.000000 '3 asc slope     '   2   1  0     .500000   .9000 !  21 OK
     .349519     .010000    1.000000 '3 sel @ maxsize '   2   1  0     .000000   .0000 !  22 OK
     .536240     .050000     .950000 '3 desc infl     '   2   1  0     .500000   .9000 !  23 OK
     .617016     .050000    5.000000 '3 desc slope    '   2   1  0     .500000   .9000 !  24 OK
```

```
OR-comm    TYPE:  4
 7 SELECTIVITY PATTERN
  0  14   0  15   0   0   0  AGE TYPES USED
    1.00000       .02 'OR comm CATCH       '  ! # = 13 VALUE:         .00000
     .60000     -1.00 'OR comm AGE         '  ! # = 14 VALUE:         .00000
     .60000     -1.00 'OR comm SIZE        '  ! # = 15 VALUE:     -127.52090
 1  1  0  0   0  0  SEL. COMPONENTS
  50.000000  40.000000   60.000000 '4 size@trans    '  -2   1  0     .000000    .0000 !   25 NO PICK
    .009605    .001000     .990000 '4 sel @ minsize '   2   1  0     .000000    .0000 !   26 OK
    .000000    .000000     .000000 '4 asc infl      '   0   1  4     .000000    .0000 !   27 ENV FXN
    .541737    .010000    4.000000 '4 asc slope     '   2   1  0     .500000    .9000 !   28 OK
    .487015    .010000    1.000000 '4 sel @ maxsize '   2   1  0     .000000    .0000 !   29 OK
    .481740    .050000     .950000 '4 desc infl     '   2   1  0     .500000    .9000 !   30 OK
    .568190    .050000    5.000000 '4 desc slope    '   2   1  0     .500000    .9000 !   31 OK
WA-recr    TYPE:  5
 7 SELECTIVITY PATTERN
  0  17   0  18  19   0   0  AGE TYPES USED
    1.00000       .02 'WA recr CATCH       '  ! # = 16 VALUE:         .00000
     .60000     -1.00 'WA recr AGE         '  ! # = 17 VALUE:      -75.32913
     .60000     -1.00 'WA recr SIZE        '  ! # = 18 VALUE:      -70.03020
     .60000     -1.00 'WA recr SIZE@AGE    '  ! # = 19 VALUE:      -30.80182
 1  1  0  0   0  0  SEL. COMPONENTS
  60.000000  40.000000   60.000000 '5 size@trans    '  -2   1  0     .000000    .0000 !   32 NO PICK
    .001000    .001000     .990000 '5 sel @ minsize '  -2   1  0     .000000    .0000 !   33 NO PICK
    .000000    .000000     .000000 '5 asc infl      '   0   1  5     .000000    .0000 !   34 ENV FXN
    .000000    .010000    4.000000 '5 asc slope     '   0   1 11     .000000    .0000 !   35 ENV FXN
    .000000    .010000    1.000000 '5 sel @ maxsize '   0   1 12     .000000    .0000 !   36 ENV FXN
    .446396    .050000     .950000 '5 desc infl     '   2   1  0     .500000    .9000 !   37 OK
    .747981    .050000    5.000000 '5 desc slope    '   2   1  0     .500000    .9000 !   38 OK
WA-comm    TYPE:  6
 7 SELECTIVITY PATTERN
  0  21   0  22   0   0   0  AGE TYPES USED
    1.00000       .02 'WA comm CATCH       '  ! # = 20 VALUE:         .00000
     .60000     -1.00 'WA comm AGE         '  ! # = 21 VALUE:         .00000
     .60000     -1.00 'WA comm SIZE        '  ! # = 22 VALUE:      -58.31532
 1  1  0  0   0  0  SEL. COMPONENTS
  55.000000  40.000000   60.000000 '6 size@trans    '  -2   1  0     .000000    .0000 !   39 NO PICK
    .001000    .001000     .990000 '6 sel @ minsize '  -2   1  0     .000000    .0000 !   40 NO PICK
    .000000    .000000     .000000 '6 asc infl      '   0   1  6     .000000    .0000 !   41 ENV FXN
    .289199    .010000    4.000000 '6 asc slope     '   2   1  0     .500000    .9000 !   42 OK
    .226195    .010000    1.000000 '6 sel @ maxsize '   2   1  0     .000000    .0000 !   43 OK
    .591312    .050000     .950000 '6 desc infl     '   2   1  0     .500000    .9000 !   44 OK
    .767525    .050000    5.000000 '6 desc slope    '   2   1  0     .500000    .9000 !   45 OK
WA-line    TYPE:  7
 7 SELECTIVITY PATTERN
  0  24   0  25  26   0   0  AGE TYPES USED
    1.00000       .02 'WA line CATCH       '  ! # = 23 VALUE:         .00000
     .60000     -1.00 'WA line AGE         '  ! # = 24 VALUE:      -36.35694
     .60000     -1.00 'WA line SIZE        '  ! # = 25 VALUE:      -25.79778
     .60000     -1.00 'WA line SIZE@AGE    '  ! # = 26 VALUE:      -37.03133
 1  1  0  0   0  0  SEL. COMPONENTS
  50.000000  40.000000   60.000000 '7 size@trans    '  -2   1  0     .000000    .0000 !   46 NO PICK
    .001000    .001000     .990000 '7 sel @ minsize '  -2   1  0     .000000    .0000 !   47 NO PICK
    .000000    .000000     .000000 '7 asc infl      '   0   1  7     .000000    .0000 !   48 ENV FXN
    .415082    .010000    4.000000 '7 asc slope     '   2   1  0     .500000    .9000 !   49 OK
    .071675    .010000    1.000000 '7 sel @ maxsize '   2   1  0     .000000    .0000 !   50 OK
    .485872    .050000     .950000 '7 desc infl     '   2   1  0     .500000    .9000 !   51 OK
    .471866    .050000    5.000000 '7 desc slope    '   2   1  0     .500000    .9000 !   52 OK
CA-cpue    TYPE:  8
 2 SELECTIVITY PATTERN
  0   0   0   0   0   0   0  AGE TYPES USED
    .015751 -1   1   1 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
    .015751    .000100  100.000000 'CA-cpue Q       '   2   1  0     .000000    .0000 !   53 OK
    .000000  -1.000000     .000000 'CA-cpue bioQ    '  -1   1  0     .000000    .0000 !   54 NO PICK
     .00100       .20 'CA-CPUE             '  ! # = 27 VALUE:       12.07698
   1.000000    .001000   40.000000 'Use selex from 1'   0   1  0     .000000    .0000 !   55 NO PICK
  18.000000    .050000   99.000000 'min size to use '   0   1  0     .000000    .0000 !   56 NO PICK
  90.000000    .010000   99.000000 'max size to use '   0   1  0     .000000    .0000 !   57 NO PICK
CA-mrfss   TYPE:  9
 2 SELECTIVITY PATTERN
  0   0   0   0   0   0   0  AGE TYPES USED
```

```
    .003643 -1  1  1 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
    .003643     .000100  100.000000 'CA-mrfss Q       '  2   1  0     .000000    .0000 !  58 OK
    .000000   -1.000000     .000000 'CA-mrfss bioQ    ' -1   1  0     .000000    .0000 !  59 NO PICK
     .00100        .20 'recfin CPUE        '  ! # = 28 VALUE:      -39.42036
   1.000000     .001000   40.000000 'Use selex from 1'  0   1  0     .000000    .0000 !  60 NO PICK
  18.000000     .050000   99.000000 'min size to use '  0   1  0     .000000    .0000 !  61 NO PICK
  90.000000     .010000   99.000000 'max size to use '  0   1  0     .000000    .0000 !  62 NO PICK
OR-cpue    TYPE: 10
 2 SELECTIVITY PATTERN
  0   0   0   0   0   0   0  AGE TYPES USED
    .004925 -1  1  1 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
    .004925     .000100  100.000000 'OR cpue Q        '  2   1  0     .000000    .0000 !  63 OK
    .000000   -1.000000     .000000 'OR cpue bioQ     ' -1   1  0     .000000    .0000 !  64 NO PICK
    1.00000        .20 'OR CPUE            '  ! # = 29 VALUE:       10.81309
   3.000000     .001000   40.000000 'Use selex from 3'  0   1  0     .000000    .0000 !  65 NO PICK
  18.000000     .050000   99.000000 'min size to use '  0   1  0     .000000    .0000 !  66 NO PICK
  90.000000     .010000   99.000000 'max size to use '  0   1  0     .000000    .0000 !  67 NO PICK
WA-CPUE    TYPE: 11
 7 SELECTIVITY PATTERN
  0   0   0   0   0   0   0  AGE TYPES USED
    .002852 -1  1  1 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
    .002852     .000100  100.000000 'WA cpue Q        '  2   1  0     .000000    .0000 !  68 OK
    .000000   -1.000000     .000000 'WA cpue bioQ     ' -1   1  0     .000000    .0000 !  69 NO PICK
    1.00000        .20 'WA CPUE            '  ! # = 30 VALUE:        7.19377
 1  1  0  0  0  0  SEL. COMPONENTS
  50.000000   40.000000   60.000000 '5 size@trans     '  0   1  0     .000000    .0000 !  70 NO PICK
    .001000     .001000     .990000 '5 sel @ minsize '  0   1  0     .000000    .0000 !  71 NO PICK
    .345990     .000000     .000000 '5 asc infl       ' -2   1  0     .000000    .0000 !  72 NO PICK
    .303990     .010000    4.000000 '5 asc slope      ' -2   1  0     .500000    .9000 !  73 NO PICK
   1.000000     .010000    1.000000 '5 sel @ maxsize '  0   1  0     .000000    .0000 !  74 NO PICK
    .500000     .050000     .950000 '5 desc infl      '  0   1  0     .500000    .9000 !  75 NO PICK
    .500000     .050000    5.000000 '5 desc slope     '  0   1  0     .500000    .9000 !  76 NO PICK
CA-CP2     TYPE: 12
 2 SELECTIVITY PATTERN
  0   0   0   0   0   0   0  AGE TYPES USED
    .019918 -1  1  1 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
    .019918     .000100  100.000000 'CA-2 Q           '  2   1  0     .000000    .0000 !  77 OK
    .000000   -1.000000     .000000 'CA-2 bioQ        ' -1   1  0     .000000    .0000 !  78 NO PICK
    1.00000        .20 'CA-CPUE new        '  ! # = 31 VALUE:       12.99618
   1.000000     .001000   40.000000 'Use selex from 1'  0   1  0     .000000    .0000 !  79 NO PICK
  18.000000     .050000   99.000000 'min size to use '  0   1  0     .000000    .0000 !  80 NO PICK
  90.000000     .010000   99.000000 'max size to use '  0   1  0     .000000    .0000 !  81 NO PICK
 1 AGEERR: 1: MULTINOMIAL,  0: S(LOG(P))=CONSTANT,  -1: S=P*Q/N
900.000 : MAX N FOR MULTINOMIAL
 3 1=%CORRECT, 2=C.V., 3=%AGREE, 4=READ %AGREE @AGE
    .310000     .100000     .950000 '%AGREE @ 1 (MIN)'  0  70  0     .000000    .0000 !  82 NO PICK
    .110000     .100000     .900000 '%AGREE @70 (MAX)'  0  70  0     .000000    .0000 !  83 NO PICK
   1.000000     .001000    4.000000 'POWER            '  0  70  0     .000000    .0000 !  84 NO PICK
    .040000     .010000     .300000 'OLD DISCOUNT     '  0  70  0     .000000    .0000 !  85 NO PICK
    .000000     .001000     .100000 '%MIS-SEXED       '  0  70  0     .000000    .0000 !  86 NO PICK
 0 END OF EFFORT
 0 FIX n FMORTs
 0  CANNIBALISM
 1  GROWTH: 1=CONSTANT, 2=MORT. INFLUENCE
 6.0000 60.0000  AGE AT WHICH L1 AND L2 OCCUR
 1 1=NORMAL, 2=LOGNORMAL
  26.906839   10.000000   40.000000 'L@6              '  2   1  0   30.800000    .0000 !  87 OK
  65.665450   40.000000  100.000000 'L@60             '  2   1  0   63.900000    .0000 !  88 OK
    .049148     .030000     .100000 'von Bert K       '  2   1  0     .052900    .0000 !  89 OK
   3.446488    2.000000    6.000000 'L@A rmse         '  2   1  0     .180000    .0000 !  90 OK
   6.205923    4.000000    8.000000 'L@A rmse         '  2   1  0     .098000    .0000 !  91 OK
          0  DEFINE MARKET CATEGORIES
 12 ENVIRONMENTAL FXN:     [-INDEX]  [FXN TYPE(1-4)]  [ENVVAR USED]
ye.env
 -1  2  1
 -2  2  2
 -3  2  3
 -4  2  4
 -5  2  5
 -6  2  6
 -7  2  7
```

```
 -8  2  8
 -9  2  9
-10  2 10
-11  2 11
-12  2 12
 16 ESTIMATE N ENVIRON VALUES
   -55    82      1
     .814471     .010000      .990000 '1 asc infl 55-82'   2   1  0     .000000    .0000 !   92 OK
   -83   101      1
     .524319     .010000      .990000 '1 ascinfl 83-101'   2   1  0     .000000    .0000 !   93 OK
   -55   101      2
     .516752     .010000      .990000 '2 ascinfl 55-101'   2   1  0     .000000    .0000 !   94 OK
   -55   101      3
     .421154     .010000      .990000 '3 ascinfl 55-101'   2   1  0     .000000    .0000 !   95 OK
   -55    99      4
     .549233     .010000      .990000 '4 ascinfl 55-99 '   2   1  0     .000000    .0000 !   96 OK
  -100   101      4
     .375528     .010000      .990000 '4 ascinfl 100-01'   2   1  0     .000000    .0000 !   97 OK
   -55    97      5
     .282532     .010000      .990000 '5 ascinfl 55-97 '   2   1  0     .000000    .0000 !   98 OK
   -98   101      5
     .645144     .010000      .990000 '5 ascinfl 98-101'   2   1  0     .000000    .0000 !   99 OK
   -55   101      6
     .512718     .010000      .990000 '6 ascinfl 55-101'   2   1  0     .000000    .0000 !  100 OK
   -55   101      7
     .906776     .010000      .990000 '7 ascinfl 55-101'   2   1  0     .000000    .0000 !  101 OK
   -55    86      8
     .375230     .010000     1.000000 '1 sel @ maxsize '   2   1  0     .000000    .0000 !  102 OK
   -87   101      8
     .108647     .010000     1.000000 '1 sel @ maxsize '   2   1  0     .000000    .0000 !  103 OK
   -55    97     11
     .774276     .010000     4.000000 '5 asc slope     '   2   1  0     .500000    .9000 !  104 OK
   -98   101     11
     .175789     .010000     4.000000 '5 asc slope 98- '   2   1  0     .500000    .9000 !  105 OK
   -55    97     12
    1.000000     .010000     1.000000 '5 sel@max       '  -2   1  0     .000000    .0000 !  106 NO PICK
   -98   101     12
     .194897     .010000     1.000000 '5 sel@max 98-   '   2   1  0     .000000    .0000 !  107 OK
 32 PENALTIES
     1.00000       1.00 ' parm penalty       '  ! # = 32 VALUE:       -5.42022
 -1  1.0  1.0
  0 ENVIRONMENT EFFECT ON EXP(RECR)
 33  STOCK-RECR
  3 1=B-H, 2=RICKER, 3=new B-H
  0 0=USE S-R CURVE, 1=SCALE CURVE
      .50000      -.40 ' SPAWN-RECRUIT indiv'  ! # = 33 VALUE:       15.57869
      .00001      -.30 ' SPAWN-RECRUIT mean '  ! # = 34 VALUE:      -34.16321
    1.551884     .001000     9.000000 'VIRGIN RECR MULT'   2   1  0     .000000    .0000 !  108 OK
     .437000     .200000      .900000 'B/H  S/R PARAM  '   2   1  0     .000000    .0000 !  109 OK
     .000000    -.200000      .200000 'BACKG. RECRUIT  '   0   1  0     .000000    .0000 !  110 NO PICK
     .400000     .100000     1.500000 'S/R STD.DEV.    '   0   1  0     .000000    .0000 !  111 NO PICK
     .000000    -.200000      .200000 'RECR TREND      '   0   1  0     .000000    .0000 !  112 NO PICK
    1.000000     .500000     3.000000 'RECR. MULT.     '   0   1  0     .000000    .0000 !  113 NO PICK
 -1 INIT AGE COMP
    1.950407     .001000    10.000000 'RECR 55  YC  52 '   2  55  0     .000000    .0000 !  114 OK
    1.861923     .001000    10.000000 'RECR 56  YC  53 '   2  56  0     .000000    .0000 !  115 OK
    1.500920     .001000    10.000000 'RECR 57  YC  54 '   2  57  0     .000000    .0000 !  116 OK
    1.153830     .001000    10.000000 'RECR 58  YC  55 '   2  58  0     .000000    .0000 !  117 OK
    1.008782     .001000    10.000000 'RECR 59  YC  56 '   2  59  0     .000000    .0000 !  118 OK
    1.026614     .001000    10.000000 'RECR 60  YC  57 '   2  60  0     .000000    .0000 !  119 OK
    1.161454     .001000    10.000000 'RECR 61  YC  58 '   2  61  0     .000000    .0000 !  120 OK
    1.494958     .001000    10.000000 'RECR 62  YC  59 '   2  62  0     .000000    .0000 !  121 OK
    1.535991     .001000    10.000000 'RECR 63  YC  60 '   2  63  0     .000000    .0000 !  122 OK
    1.098382     .001000    10.000000 'RECR 64  YC  61 '   2  64  0     .000000    .0000 !  123 OK
     .926908     .001000    10.000000 'RECR 65  YC  62 '   2  65  0     .000000    .0000 !  124 OK
     .904340     .001000    10.000000 'RECR 66  YC  63 '   2  66  0     .000000    .0000 !  125 OK
     .871277     .001000    10.000000 'RECR 67  YC  64 '   2  67  0     .000000    .0000 !  126 OK
     .873610     .001000    10.000000 'RECR 68  YC  65 '   2  68  0     .000000    .0000 !  127 OK
    1.011115     .001000    10.000000 'RECR 69  YC  66 '   2  69  0     .000000    .0000 !  128 OK
    1.238590     .001000    10.000000 'RECR 70  YC  67 '   2  70  0     .000000    .0000 !  129 OK
    1.687234     .001000    10.000000 'RECR 71  YC  68 '   2  71  0     .000000    .0000 !  130 OK
```

2.556097	.001000	10.000000	'RECR 72	YC	69 '	2	72	0	.000000	.0000	!	131	OK	
1.729344	.001000	10.000000	'RECR 73	YC	70 '	2	73	0	.000000	.0000	!	132	OK	
2.046670	.001000	10.000000	'RECR 74	YC	71 '	2	74	0	.000000	.0000	!	133	OK	
5.079183	.001000	10.000000	'RECR 75	YC	72 '	2	75	0	.000000	.0000	!	134	OK	
1.247131	.001000	10.000000	'RECR 76	YC	73 '	2	76	0	.000000	.0000	!	135	OK	
1.221367	.001000	10.000000	'RECR 77	YC	74 '	2	77	0	.000000	.0000	!	136	OK	
3.029557	.001000	10.000000	'RECR 78	YC	75 '	2	78	0	.000000	.0000	!	137	OK	
2.631122	.001000	10.000000	'RECR 79	YC	76 '	2	79	0	.000000	.0000	!	138	OK	
1.628555	.001000	10.000000	'RECR 80	YC	77 '	2	80	0	.000000	.0000	!	139	OK	
1.440485	.001000	10.000000	'RECR 81	YC	78 '	2	81	0	.000000	.0000	!	140	OK	
1.695047	.001000	10.000000	'RECR 82	YC	79 '	2	82	0	.000000	.0000	!	141	OK	
1.937490	.001000	10.000000	'RECR 83	YC	80 '	2	83	0	.000000	.0000	!	142	OK	
2.543668	.001000	10.000000	'RECR 84	YC	81 '	2	84	0	.000000	.0000	!	143	OK	
2.092596	.001000	10.000000	'RECR 85	YC	82 '	2	85	0	.000000	.0000	!	144	OK	
2.137850	.001000	10.000000	'RECR 86	YC	83 '	2	86	0	.000000	.0000	!	145	OK	
2.738428	.001000	10.000000	'RECR 87	YC	84 '	2	87	0	.000000	.0000	!	146	OK	
2.296072	.001000	10.000000	'RECR 88	YC	85 '	2	88	0	.000000	.0000	!	147	OK	
2.023792	.001000	10.000000	'RECR 89	YC	86 '	2	89	0	.000000	.0000	!	148	OK	
2.060325	.001000	10.000000	'RECR 90	YC	87 '	2	90	0	.000000	.0000	!	149	OK	
1.505119	.001000	10.000000	'RECR 91	YC	88 '	2	91	0	.000000	.0000	!	150	OK	
1.126137	.001000	10.000000	'RECR 92	YC	89 '	2	92	0	.000000	.0000	!	151	OK	
.809528	.001000	10.000000	'RECR 93	YC	90 '	2	93	0	.000000	.0000	!	152	OK	
.771907	.001000	10.000000	'RECR 94	YC	91 '	2	94	0	.000000	.0000	!	153	OK	
.870799	.001000	10.000000	'RECR 95	YC	92 '	2	95	0	.000000	.0000	!	154	OK	
.949611	.001000	10.000000	'RECR 96	YC	93 '	2	96	0	.000000	.0000	!	155	OK	
.674692	.001000	10.000000	'RECR 97	YC	94 '	2	97	0	.000000	.0000	!	156	OK	
.582617	.001000	10.000000	'RECR 98	YC	95 '	2	98	0	.000000	.0000	!	157	OK	
.568613	.001000	10.000000	'RECR 99	YC	96 '	2	99	0	.000000	.0000	!	158	OK	
-.895898	.001000	10.000000	'RECR 100	YC	97 '	0	100	0	.000000	.0000	!	159	NO	PICK
-.844291	.001000	10.000000	'RECR 101	YC	98 '	0	101	0	.000000	.0000	!	160	NO	PICK

NUMBER OF ESTIMATED PARAMETERS = 100
N CATCHES WITH F ESTIMATED = 284
N SURV OBS WITH EMPH > 0.001 = 62
N EFFORT OBS WITH EMPH > 0.001 = 0
N COMPOSITION OBS WITH NAGES>1 = 129
N COMPOSITION BINS WITH DATA = 3342

List of Tables

mortality ramp from 0.04 to 0.10 versus constant at 0.045; and asymptotic selectivity versus domed selectivity.

Table 17. Effect on model fit of spawner-recruitment curve and emphasis on recruitment deviations, using the pre-STAR model configuration.

Table 18. Profile of likelihood and other model outcomes over a range of fixed values for the initial recruitment level (virgin recruitment). Likelihood values are relative to the baseline model. Coastwide model.

Table 19. Profile of likelihood and other model outcomes over a range of fixed values for the initial recruitment level (virgin recruitment). Likelihood values are relative to the best fitting level of virgin recruitment. California-Oregon model.

Table 20. Profile of likelihood and other model outcomes over a range of fixed values for the initial recruitment level (virgin recruitment). Likelihood values are relative to the best fitting level of virgin recruitment. Washington model.

Table 21. Profile on virgin recruitment and on spawner-recruitment steepness.

Table 22. Results from area-specific model runs.

Table 23. Baseline model results: time series of population biomass and recruitment. Virgin conditions are coded as year 1940 and initial equilibrium (with catch of 10 mt) is coded as year 1945.

Table 24. Age-specific quantities used for calculation of rebuilding parameters and forecasts.

Table 25. Ten-year forecasts with various harvest policies. The F=0 policy is extended until the stock is rebuilt to the 40% level. All forecasts are run with recruitments taken from the S/R curve

Table 1. Time series of catch by state and gear.

Year	S. California (1A) Trawl	S. California (1A) Line+ Other	S. California (1A) Sport	N. California Trawl	N. California Line+ Other	N. California Sport	Oregon Trawl	Oregon Line+ Other	Oregon Sport	Washington Trawl	Washington Line+ Other	Washington Sport	Totals Trawl	Totals Line+ Other	Totals Sport	U.S. Total	CANADA Trawl	CANADA Line
1969							0			0			0.0	0.0	0.0	0.0	0	
1972							0			1.7			1.7	0.0	0.0	1.7	0	10
1975							0			2.8		4.7	2.8	0.0	4.7	7.5	0	15
1976							0			3.3		5.1	3.3	0.0	5.1	8.4	0	20
1977							0			0	0.9	10.4	0.0	0.9	10.4	11.3	0	41
1978							21.5			0	1.2	5.4	21.5	1.2	5.4	28.1	3	26
1979							54.7		49.1	2	4.0	0.0	56.7	4.0	49.1	109.8	9	70
1980			15.0	31.4	9.7	55.2	60.2		31.7	29.2	1.5	2.9	120.8	11.2	104.7	236.7	7	59
1981	6.1	196.3	3.0	50.3	46.8	44.0	93.7	0	36.7	2.8	0.8	3.1	152.9	243.9	86.9	483.7	2	39
1982	6.7	6.9	2.0	184.1	0.3	144.9	19.9	0.1	56.0	4.4	0.9	2.6	215.1	8.2	205.5	428.8	0	21
1983	0.0	3.5	12.0	52.7	0.8	37.3	150.6	26.8	63.8	33.2	1.2	4.4	236.5	32.3	117.6	386.4	1	34
1984	0.0	4.4	21.0	39.5	0.3	50.6	38.0	19.0	46.6	19.5	2.0	8.4	97.0	25.7	126.6	249.3	14	67
1985	0.0	3.2	16.0	4.7	0.5	106.4	70.2	21.7	23.3	31.4	6.3	6.3	106.3	31.7	152.0	290.0	3	107
1986	0.0	3.7	12.0	10.4	7.8	52.6	52.5	12.9	29.1	9.4	6.4	8.3	72.3	30.8	102.1	205.2	3	364
1987	0.0	6.5	0.0	10.2	16.3	74.4	48.6	25.5	31.5	22.9	8.1	9.4	81.7	56.4	115.3	253.4	18	349
1988	0.0	3.9	0.0	24.3	22.9	65.1	89.2	20.9	9.5	36.7	4.3	5.0	150.2	52.0	79.5	281.7	4	314
1989	0.0	4.4	1.0	9.3	27.7	55.7	97.3	72.2	17.6	99.0	2.5	9.5	205.6	106.8	83.8	396.1	8	449
1990	0.1	3.2	0.8	11.1	53.8	42.9	48.0	1.7	22.5	32.0	1.7	6.5	91.2	60.4	72.7	224.3	17	505
1991	0.0	7.4	0.5	12.8	105.8	30.2	82.6	31.8	22.8	37.7	1.8	11.8	133.1	146.8	65.3	345.2	18	476
1992	0.0	5.3	0.3	16.9	89.7	17.4	88.6	77.2	31.6	44.2	3.3	10.6	149.7	175.5	59.9	385.1	17	321
1993	0.7	7.7	0.0	8.1	42.6	14.1	90.9	92.4	25.0	44.7	9.0	9.2	144.4	151.7	48.4	344.5	31	455
1994	0.1	25.5	0.0	5.6	40.6	16.4	63.0	39.3	19.4	21.3	2.8	4.7	90.0	108.2	40.4	238.6	42	218
1995	0.1	19.5	0.0	5.6	34.8	15.6	194.9	34.0	18.0	16.7	0.1	5.7	217.3	88.4	39.4	345.1	23	191
1996	1.1	3.6	0.0	23.5	46.9	11.8	112.3	38.3	8.2	24.4	0.0	4.9	161.3	88.8	24.8	274.9	5	136
1997	0.0	3.1	0.0	10.9	52.8	14.3	132.4	59.1	16.1	9.0	12.2	5.6	152.3	127.2	36.0	315.5	3	127
1998	0.1	2.1	0.0	5.2	14.4	5.4	15.3	30.2	17.3	4.7	0.7	6.9	25.3	47.4	29.6	102.3	2	140
1999	0.0	0.0	2.0	7.1	5.2	11.0	4.1	71.9	16.5	9.8	23.0	5.4	21.0	100.1	34.8	155.8	2	92
2000	0.0	0.0	0.0	0.0	2.0	8.0	0.1	4.2	8.2	0.1	7.7	6.1	0.2	13.9	22.2	36.4	2	86
2001	0.0	0.0	0.0	0.5	1.8	5.1	0.1	6.2	4.0	0.8	21.2	7.9	1.4	29.2	17.1	47.7	2	87

Table 2. The r^2 from the sequential additions of factors to models of both the CPUE of positive tows and proportion of zero tows from the two part method (delta method) of estimating the CPUE of the CPFV data from California.

	Factors included in the model							
	Year	Year	Year	Year	**Year**	Year	Year	Year
		Area	Season	Depth	**Area**	Area	Season	Area
					Depth	Season	Depth	Season
								Depth
R^2 CPUE	0.022	0.025	0.022	0.027	**0.034**	0.025	0.027	0.034
R^2 Prop Zero	0.032	0.078	0.032	0.058	**0.119**	0.078	0.058	0.119

Table 3. A table of the factors, estimated deviance, degrees of freedom and probability of significance is given for the delta model that included the factors year, area, and depth from the analysis of the California CPFV data.

model	factor	Deviance	df	chi sq	Pr<
CPUE	Intercept	-1656.55			
CPUE	year	-1619.81	11	36.74	0.0001
CPUE	area_fac	-1614.54	3	5.28	0.1527
CPUE	dep_fac	-1600.27	2	14.26	0.0008
Prop Zero	Intercept	3288.589			
Prop Zero	year	3184.697	11	103.89	<.0001
Prop Zero	area_fac	3031.16	3	153.54	<.0001
Prop Zero	dep_fac	2896.017	2	135.14	<.0001

Table 4. A table is given that includes the factor specific coefficients, degrees of freedom, Standard error, Confidence Interval, Chi-square value and probability of significance for the delta model used to estimate the California CPFV CPUE time-series.

model	Parameter		DF	Estimate	Error	--95% CI limits --		ChiSq	Pr
CPUE	Intercept		1	-6.0234	0.2103	-6.4355	-5.6113	820.54	<.0001
CPUE	year	1987	1	-1.0869	0.2625	-1.6013	-0.5725	17.15	<.0001
CPUE	year	1988	1	-0.5358	0.1919	-0.9119	-0.1596	7.79	0.0052
CPUE	year	1989	1	-0.5702	0.1881	-0.9389	-0.2015	9.19	0.0024
CPUE	year	1990	1	-0.5748	0.2274	-1.0205	-0.1292	6.39	0.0115
CPUE	year	1991	1	-0.5574	0.2126	-0.9742	-0.1407	6.87	0.0088
CPUE	year	1992	1	-0.5765	0.1901	-0.9491	-0.204	9.2	0.0024
CPUE	year	1993	1	-0.4571	0.1953	-0.84	-0.0743	5.48	0.0193
CPUE	year	1994	1	-0.393	0.1931	-0.7716	-0.0145	4.14	0.0418
CPUE	year	1995	1	-0.1066	0.2013	-0.5011	0.2878	0.28	0.5962
CPUE	year	1996	1	-0.1839	0.2006	-0.577	0.2091	0.84	0.359
CPUE	year	1997	1	-0.2646	0.2001	-0.6567	0.1276	1.75	0.1861
CPUE	year	1998	0	0	0	0	0	.	.
CPUE	area_fac	1	1	0.4557	0.1781	0.1066	0.8047	6.55	0.0105
CPUE	area_fac	2	1	0.0556	0.0882	-0.1173	0.2286	0.4	0.5283
CPUE	area_fac	3	1	-0.1081	0.0951	-0.2945	0.0784	1.29	0.256
CPUE	area_fac	4	0	0	0	0	0	.	.
CPUE	dep_fac	1	1	-0.3727	0.1111	-0.5903	-0.155	11.26	0.0008
CPUE	dep_fac	2	1	-0.1518	0.1046	-0.3567	0.0531	2.11	0.1465
CPUE	dep_fac	3	0	0	0	0	0	.	.
%Zero	Intercept		1	2.6538	0.2952	2.0753	3.2323	80.84	<.0001
%Zero	year	1987	1	-0.9366	0.3594	-1.641	-0.2322	6.79	0.0092
%Zero	year	1988	1	-1.4582	0.2743	-1.9957	-0.9207	28.27	<.0001
%Zero	year	1989	1	-1.6102	0.2664	-2.1323	-1.0881	36.54	<.0001
%Zero	year	1990	1	-1.5052	0.3269	-2.146	-0.8644	21.2	<.0001

%Zero	year	1991	1	-2.0392	0.3271	-2.6803	-1.3981	38.86	<.0001
%Zero	year	1992	1	-1.3486	0.2679	-1.8736	-0.8235	25.35	<.0001
%Zero	year	1993	1	-0.9962	0.2707	-1.5266	-0.4657	13.55	0.0002
%Zero	year	1994	1	-1.15	0.2695	-1.6783	-0.6218	18.21	<.0001
%Zero	year	1995	1	-0.7864	0.2766	-1.3286	-0.2442	8.08	0.0045
%Zero	year	1996	1	-0.9805	0.2766	-1.5227	-0.4383	12.56	0.0004
%Zero	year	1997	1	-0.2952	0.2738	-0.8319	0.2415	1.16	0.281
%Zero	year	1998	0	0	0	0	0	.	.
%Zero	area_fac	1	1	-1.7665	0.3204	-2.3945	-1.1384	30.39	<.0001
%Zero	area_fac	2	1	-1.1823	0.1298	-1.4368	-0.9278	82.92	<.0001
%Zero	area_fac	3	1	0.2775	0.1335	0.0158	0.5391	4.32	0.0377
%Zero	area_fac	4	0	0	0	0	0	.	.
%Zero	dep_fac	1	1	0.6547	0.1615	0.3382	0.9712	16.44	<.0001
%Zero	dep_fac	2	1	-0.5365	0.1588	-0.8478	-0.2253	11.41	0.0007
%Zero	dep_fac	3	0	0	0	0	0	.	.

Table 5. A table of the factors, estimated deviance, degrees of freedom and probability of significance is given for the delta model that included the factors year, area, and depth from the analysis of the Washington CPUE data.

model	Source	Deviance	DF	Chi-Square	PR>ChiSq
CPUE	Intercept	-15542.9			
CPUE	Year	-15414.8	11	128.1	<.0001
CPUE	season	-15366.6	5	48.29	<.0001
CPUE	Area	-14240.5	3	1126.01	<.0001
Prop Zero	Intercept	26850.04			
Prop Zero	Year	26535.45	11	314.58	<.0001
Prop Zero	season	26461.78	5	73.67	<.0001
Prop Zero	Area	26092.38	3	369.4	<.0001

Table 6. A table is given that includes the factor, specific coefficients, degrees of freedom, Standard error, Confidence Interval, Chi-square value and probability of significance for the delta model used to estimate the Washington CPUE time-series.

model	Parameter		DF	Estimate	Error	--95% CI limits --		ChiSq	Pr
CPUE	Intercept		1	1.2112	0.0907	1.0334	1.389	178.18	<.0001
CPUE	Year	1990	1	0.3626	0.0881	0.1899	0.5353	16.94	<.0001
CPUE	Year	1991	1	0.6651	0.0836	0.5013	0.8289	63.33	<.0001
CPUE	Year	1992	1	0.4673	0.0811	0.3084	0.6263	33.2	<.0001
CPUE	Year	1993	1	0.4228	0.0833	0.2595	0.5861	25.75	<.0001
CPUE	Year	1994	1	0.3714	0.083	0.2087	0.5341	20.02	<.0001
CPUE	Year	1995	1	0.1773	0.0863	0.0081	0.3464	4.22	0.0399
CPUE	Year	1996	1	0.2338	0.0871	0.0631	0.4045	7.21	0.0073
CPUE	Year	1997	1	0.2436	0.0838	0.0794	0.4079	8.46	0.0036
CPUE	Year	1998	1	0.2507	0.0839	0.0863	0.4152	8.93	0.0028
CPUE	Year	1999	1	0.1728	0.0937	-0.0109	0.3564	3.4	0.0653
CPUE	Year	2000	1	0.1568	0.0901	-0.0198	0.3333	3.03	0.0818
CPUE	Year	2001	0	0	0	0	0.		.
CPUE	Season	4	1	0.0226	0.0707	-0.116	0.1612	0.1	0.7491
CPUE	Season	5	1	0.172	0.0541	0.0658	0.2781	10.09	0.0015
CPUE	Season	6	1	0.2054	0.0531	0.1013	0.3095	14.95	0.0001
CPUE	Season	7	1	0.0657	0.0523	-0.0367	0.1682	1.58	0.2087
CPUE	Season	8	1	0.0102	0.0557	-0.0989	0.1192	0.03	0.8551
CPUE	Season	9	0	0	0	0	0.		.
CPUE	Area	1	1	0.1015	0.0654	-0.0266	0.2296	2.41	0.1203
CPUE	area	2	1	-0.8299	0.0392	-0.9068	-0.753	447.62	<.0001
CPUE	area	3	1	0.5942	0.0563	0.484	0.7045	111.54	<.0001
CPUE	area	4	0	0	0	0	0.		.
CPUE	Scale		1	0.9809	0.0097	0.9621	1.0002		
%Zero	Intercept		1	2.4177	0.0987	2.2244	2.6111	600.64	<.0001
%Zero	year	1990	1	-0.2366	0.0965	-0.4257	-0.0475	6.01	0.0142
%Zero	year	1991	1	-0.6103	0.0925	-0.7916	-0.429	43.52	<.0001
%Zero	year	1992	1	-0.7804	0.0899	-0.9565	-0.6042	75.37	<.0001
%Zero	year	1993	1	-0.6886	0.0921	-0.8691	-0.5081	55.92	<.0001
%Zero	year	1994	1	-0.3228	0.0909	-0.501	-0.1446	12.61	0.0004
%Zero	year	1995	1	-0.1485	0.0945	-0.3336	0.0366	2.47	0.1159
%Zero	year	1996	1	-0.1614	0.0951	-0.3478	0.0249	2.88	0.0896
%Zero	year	1997	1	-0.6696	0.0927	-0.8514	-0.4879	52.16	<.0001
%Zero	year	1998	1	-0.7638	0.0927	-0.9455	-0.5821	67.85	<.0001
%Zero	year	1999	1	-0.2955	0.1032	-0.4978	-0.0932	8.19	0.0042
%Zero	year	2000	1	-0.3507	0.0994	-0.5455	-0.1558	12.44	0.0004
%Zero	year	2001	0	0	0	0	0.		.
%Zero	season	4	1	-0.1323	0.0805	-0.2902	0.0255	2.7	0.1004
%Zero	season	5	1	-0.0947	0.0619	-0.216	0.0265	2.34	0.1257
%Zero	season	6	1	-0.0678	0.0603	-0.186	0.0503	1.27	0.2606
%Zero	season	7	1	0.0276	0.0589	-0.0878	0.1431	0.22	0.639
%Zero	season	8	1	0.219	0.0626	0.0964	0.3417	12.25	0.0005
%Zero	season	9	0	0	0	0	0.		.

%Zero	area	1	1	0.0193	0.0714	-0.1206	0.1593	0.07	0.7864
%Zero	area	2	1	-0.6837	0.0427	-0.7674	-0.5999	255.94	<.0001
%Zero	area	3	1	-0.2818	0.0624	-0.4041	-0.1595	20.39	<.0001
%Zero	area	4	0	0	0	0	0.		.
%Zero	Scale	0	1	0	1	1			

Table 7. Time series of sport fishery CPUE in each state. Values in () were estimated in the GLM, but not included in the assessment model because of potential bias caused by fishery changes (see text).

YEAR	California	Oregon	Washington
1979		23.33	
1980		27.19	
1981		24.46	
1982		22.81	
1983		29.39	
1984		20.82	
1985		13.39	
1986		18.07	
1987		22.24	
1988	48.00		
1989	51.00		
1990	47.00		(6.37)
1991	65.00		11.84
1992	43.00		11.16
1993	37.00		9.91
1994	45.00	12.16	6.92
1995	45.00	8.34	4.89
1996	49.00	5.56	5.24
1997	26.00		8.16
1998	26.00	10.42	8.87
1999		11.80	5.54
2000		(4.53)	(5.72)
2001			(3.59)

Table 8. Fishery age and size composition sample size from the Washington fisheries. Catch is in mtons from Table 1. N/catch ratio shows the density of sampling for size composition. X in the size @ age column indicates the year to which the mean size-at-age observation was assigned for that data source.

			SIZE		AGE				
YEAR	STATE	GEAR	N	N*	N	N*	SIZE @ AGE	Catch	N/ Catch
80	WA	SPORT	29	111				3	10.0
81	WA	SPORT	29	45				3	9.4
82	WA	SPORT	29	15				3	11.2
83	WA	SPORT	29	7				4	6.6
84	WA	SPORT	29	19				8	3.5
85	WA	SPORT	29	15				6	4.6
86	WA	SPORT	29	9				8	3.5
87	WA	SPORT	28	34				9	3.0
88	WA	SPORT	28	4				5	5.6
95	WA	SPORT	11	9				6	1.9
96	WA	SPORT	12	14				5	2.4
98	WA	SPORT	48		60	25		7	7.0
99	WA	SPORT	96		60	95		5	17.8
100	WA	SPORT	189		189		X	6	31.0
101	WA	SPORT	101		101			8	12.8
80	WA	COMM	-4					31	0.1
82	WA	COMM	-14					5	2.6
96	WA	COMM	266					24	10.9
97	WA	COMM	118					21	5.6
98	WA	COMM	34	40				5	6.3
99	WA	COMM	34	45				10	3.5
100	WA	COMM	34	17				0.1	340.0
100	WA	LINE	344				X	8	44.7
101	WA	LINE	583		262			21	27.5

Negative sample sizes = deleted because of small N
(sample size) = deleted because large outlier
Box = blend small N* samples across range of years in box

Table 9. Fishery age and size sample size information from the California fishery.

YEAR	STATE	GEAR	SIZE N	SIZE N*	AGE N	AGE N*	SIZE @ AGE	Catch	N/ Catch
78	CA	SPORT	81					47	1.7
79	CA	SPORT	119					51	2.3
80	CA	SPORT	124		23	17		70	1.8
81	CA	SPORT	83		23	33	X	47	1.8
82	CA	SPORT	106		22	18		147	0.7
83	CA	SPORT	105					49	2.1
84	CA	SPORT	169					72	2.4
85	CA	SPORT	300					122	2.5
86	CA	SPORT	206					65	3.2
87	CA	SPORT	98					74	1.3
88	CA	SPORT	317					65	4.9
89	CA	SPORT	385					57	6.8
90	CA	SPORT	89					44	2.0
91	CA	SPORT	112					31	3.6
92	CA	SPORT	164					18	9.3
93	CA	SPORT	236					14	16.7
94	CA	SPORT	250					16	15.2
95	CA	SPORT	199					16	12.8
96	CA	SPORT	239					12	20.3
97	CA	SPORT	250					14	17.5
98	CA	SPORT	125					5	23.1
99	CA	SPORT	57	88				13	4.4
100	CA	SPORT	57	26				8	7.1
78	CA	COMM	15	50				33	0.5
79	CA	COMM	15	5				37	0.4
80	CA	COMM	15	11	6	12		41	0.4
81	CA	COMM	15	3	6	0		140	0.1
82	CA	COMM	15	8	6	8		198	0.1
83	CA	COMM	15	22	7	5		57	0.3
84	CA	COMM	15	18	20	17		44	0.3
85	CA	COMM	15	11	20	39		8	1.8
86	CA	COMM	15	14	21	5	X	22	0.7
87	CA	COMM	15	22				33	0.5
88	CA	COMM	15	14				51	0.3
89	CA	COMM	15	8				41	0.4
90	CA	COMM	16	10				68	0.2
91	CA	COMM	224					126	1.8
92	CA	COMM	493					112	4.4
93	CA	COMM	709					59	12.0
94	CA	COMM	748					72	10.4
95	CA	COMM	383					60	6.4
96	CA	COMM	534					75	7.1
97	CA	COMM	299					67	4.5
98	CA	COMM	54					22	2.5
99	CA	COMM	507	507				12	41.2
100	CA	COMM	28	28				2	14.0

Table 10. Fishery age and size composition sample sizes from the Oregon fisheries.

			SIZE		AGE				
YEAR	STATE	GEAR	N	N*	N	N*	SIZE @ AGE	Catch	N/ Catch
78	OR	SPORT	120		120			46	2.6
79	OR	SPORT	106		169			49	2.2
80	OR	SPORT	29	25				32	0.9
81	OR	SPORT	29	13				37	0.8
82	OR	SPORT	29	61				56	0.5
83	OR	SPORT	29	17				64	0.5
84	OR	SPORT	373		244			47	8.0
85	OR	SPORT	222		124			23	9.5
86	OR	SPORT	177		140		X	29	6.1
87	OR	SPORT	163		123			32	5.2
88	OR	SPORT	38					10	4.0
89	OR	SPORT	112		32			18	6.4
93	OR	SPORT	163					25	6.5
94	OR	SPORT	151					19	7.8
95	OR	SPORT	110					18	6.1
96	OR	SPORT	73					8	8.9
97	OR	SPORT	99					16	6.1
98	OR	SPORT	147					17	8.5
99	OR	SPORT	246					17	14.9
100	OR	SPORT	62					8	7.6
101	OR	SPORT	137		86			4	34.3
92	OR	COMM	-13					166	0.1
95	OR	COMM	98					229	0.4
96	OR	COMM	161					151	1.1
97	OR	COMM	256					192	1.3
98	OR	COMM	118					46	2.6
99	OR	COMM	166		-24			76	2.2
100	OR	COMM	141					4	32.8
101	OR	COMM	248		(38)			6	39.4

Table11. Yelloweye rockfish biomass as estimated from swept-area densities observed in bottom trawl surveys.

Year	Conception	Monterey	Eureka	Columbia	U.S. Vancouver	U.S. Total	CANADA
1977	0	0	0	210	38	248	----
1980	----	54	0	259	57	370	101
1983	----	5	1	548	140	694	73
1986	----	210	96	191	120	617	----
1989	0	48	35	228	422	733	376
1992	0	6	5	239	82	332	231
1995	0	18	0	59	8	85	86
1998	0	0	4	33	52	89	157
2001	0	0	0	218	66	284	107

Table 12. Yelloweye rockfish von Bertalanffy growth function parameters by area and sex. Sizes are in cm fork length.

von Bertalanffy Growth Parameters 2002 assessment

Area	Linf	K	t 0	t 20	t 40	N
	Males					
California	67.3	0.054	-5.0	49.9	61.4	50
Oregon	67.3	0.054	-5.5	50.5	61.6	424
Washington	68.5	0.050	-5.6	49.6	61.6	355
W-O-C	68.0	0.051	-6.0	50.0	61.5	779
[1] Vancouver Is.	69.1	0.052	-3.7	49.2	62.1	684
[2] Queen Charlotte Islands	68.3	0.053	-6.2	51.2	62.4	749
[3] Bowie Seamount	79.3	0.043	-6.0	53.8	68.6	240
[4] SE Alaska	64.4	0.051	-5.4	46.9	58.1	1112
	Females					
	Linf	**K**	**t 0**	**t 20**	**t 40**	**N**
California	66.3	0.048	-7.8	49.0	59.7	79
Oregon	64.1	0.055	-6.0	48.6	58.9	531
Washington	67.3	0.043	-9.3	48.1	59.1	286
W-O-C	64.9	0.051	-6.6	48.4	59.0	817
[1] Vancouver Is.	66.4	0.052	-4.3	47.8	59.9	642
[2] Queen Charlotte Islands	65.4	0.051	-6.6	48.7	59.4	997
[3] Bowie Seamount	82.4	0.035	-7.8	50.9	66.6	228
[4] SE Alaska	65.9	0.037	-11.6	45.6	56.3	1091
	Combined Sexes					
	Linf	**K**	**t 0**	**t 20**	**t 40**	**N**
California	65.4	0.052	-7.1	49.2	59.6	160
Oregon	65.4	0.055	-5.5	49.2	60.0	1060
Washington	67.5	0.047	-7.4	49.1	60.3	759
W-O-C	65.9	0.053	-5.9	49.2	60.1	1979
[1] Vancouver Is.	67.2	0.055	-3.5	48.6	60.9	1326
[2] Queen Charlotte Islands	65.8	0.056	-5.6	49.9	60.5	1746
[3] Bowie Seamount	81.0	0.038	-7.1	52.3	67.7	468
[4] SE Alaska	64.4	0.046	-7.6	46.2	57.1	2203

[1] Includes data collected at Triangle, Top Knot, Brooks Bay and Espernza

[2] Includes data collected at Tasu, Barber, St. James

[3] Includes data collected at Bowie Seamount

[3] O'Connel et.al., 2000

Table 13. Estimates of natural mortality based upon direct examination of the age data.

Empirical use of longevity data to estimate natural mortality (Hoenig,1983)

			Sexes Combined				Males				Females			
Area	Year	Gear	Mean	Max	Mortality	N	Mean	Max	Mortality	N	Mean	Max	Mortality	N
California	77-85	Sport	25.8	122	0.038	163								
Neah Bay, Washington	98-00	Sport	25.8	87	0.053	296	25.2	79	0.058	152	26.6	87	0.053	144
N. Vancouver Island	97-98	Set Line	23.8	95	0.048	1129	23.8	109	0.042	577	24.9	94	0.049	552
Queen Charelotte	97-98	Set Line	24.3	115	0.040	1407	22.6	95	0.048	716	25.2	89	0.051	684
Bowie Seamount	99	Set Line	28.6	99	0.046	851	26.9	92	0.050	427	30.4	99	0.046	424
SE Alaska														

Note: Natural mortality was estimated using Hoenig's "all groups" a and b parameters.

Ricker Catch Curve Analyses

Area	Year	Age Range	Combined Sexes	Males	Females
Neah Bay, Washington	2000	16-34	0.076	0.060	0.083
		17-34	0.065	0.049	0.074
		18-34	0.048	0.036	0.056
		19-34	0.048	0.049	0.049
Bowie Seamount [1]	1999	19-46	0.025	0.021	0.033
		20-46	0.011	0.008	0.020
		21-46	-0.003	-0.007	0.009
Bowie Seamount-bright [2]	1999	>=20, 5yr Bins	-	0.086	0.043
SE Alaska [3]	1988	36-96,2yr Bins	0.02	-	-

[1] Data provide by Yamanaka, DFO Canada
[2] Yamanaka ,2000
[3] O'Connel et.al., 2000

Table 14. Results of profile on levels of young and old natural mortality. MAX-MIN is the range of log-likelihoods over the profile and illustrates the degree to which each component is sensitive to the level of natural mortality. Based on pre-STAR model configuration.

COMPONENT	MAX-MIN	best young	best old
TOTAL	19.4	0.035	0.050
SPAWN-RECRUIT indiv	17.5	0.055	0.040
OR recr AGE	12.8	0.050	0.040
WA recr AGE	11.0	0.040	0.065
WA line AGE	6.1	0.040	0.065
OR recr SIZE	3.7	0.035	0.035
OR comm SIZE	3.3	0.040	0.065
CA recr SIZE	2.1	0.035	0.035
CA comm AGE	2.0	0.035	0.035
CA comm SIZE	1.6	0.035	0.035
OR CPUE	1.5	0.040	0.065
CA recr AGE	1.3	0.035	0.040
WA recr SIZE	1.3	0.050	0.035
WA line SIZE@AGE	1.0	0.035	0.055
OR recr SIZE@AGE	1.0	0.055	0.045
WA recr SIZE@AGE	0.8	0.035	0.035
WA comm SIZE	0.8	0.045	0.035
CPFV CPUE	0.7	0.040	0.065
WA CPUE	0.4	0.055	0.035
CA recr SIZE@AGE	0.4	flat	flat
WA line SIZE	0.2	0.035	flat

Table 15. Profiles of log-likelihood on natural mortality for the most affected components. Also shown is the sensitivity of the spawner-recruitment steepness parameter. (pre-STAR model)

NM-OLD:	0.035	0.040	0.045	0.050	0.055	0.060	0.065
NM-YOUNG	TOTAL						
0.035	-1647.5	-1636.8	-1630.6	**-1628.1**	**-1628.3**		
0.040	-1644.6	-1635.1	-1630.1	**-1628.5**	-1629.5	-1632.7	-1637.6
0.045	-1642.8	-1634.4	-1630.4	-1629.6	-1631.3		
0.050	-1641.8	-1634.6	-1631.4	-1631.4	-1633.9		
0.055	-1641.8	-1635.5	-1633.2	-1633.9	-1637.0		
	SPAWN-RECRUIT indiv						
0.035	-3.6	3.2	7.5	9.9	11.1		
0.040	2.7	7.9	10.5	11.8	12.0	11.6	10.4
0.045	7.3	10.8	12.4	12.7	12.2		
0.050	10.6	12.8	13.4	12.9	11.6		
0.055	12.7	**13.9**	13.5	12.1	10.0		
	WA line AGE						
0.035	-31.9	-30.8	-29.7	-28.9	-28.0		
0.040	-32.0	-30.9	-29.9	-28.9	-28.1	-27.3	**-26.7**
0.045	-32.2	-31.1	-30.0	-29.0	-28.1		
0.050	-32.4	-31.2	-30.1	-29.1	-28.2		
0.055	-32.8	-31.3	-30.1	-29.1	-28.3		
	WA recr AGE						
0.035	-81.1	-78.2	-75.9	-74.0	-72.4		
0.040	-81.0	-78.2	-75.7	-73.8	-72.2	-71.1	**-70.1**
0.045	-80.7	-77.9	-75.6	-73.7	-72.1		
0.050	-80.5	-77.7	-75.4	-73.5	-72.0		
0.055	-80.3	-77.6	-75.3	-73.4	-71.9		
	OR recr AGE						
0.035	-231.0	-228.8	-228.5	-229.8	-232.2		
0.040	-230.3	-228.4	-228.3	-229.9	-232.6	-236.3	-240.5
0.045	-229.6	-228.0	-228.4	-230.2	-233.1		
0.050	-228.8	**-227.6**	-228.4	-230.5	-233.7		
0.055	-228.0	**-227.7**	-228.7	-231.1	-234.3		
	SPAWNING BIOMASS DEPLETION						
0.035	0.27	0.26	0.26	0.26	0.25		
0.040	0.28	0.28	0.26	0.26	0.25	0.24	0.23
0.045	0.28	0.27	0.26	0.25	0.25		
0.050	0.28	0.27	0.26	0.25	0.24		
0.055	0.27	0.27	0.26	0.25	0.24		
	SPAWNER-RECRUITMENT STEEPNESS						
0.035	0.90	0.82	0.71	0.60	0.53		
0.040	0.90	0.77	0.59	0.51	0.44	0.39	0.35
0.045	0.78	0.60	0.49	0.42	0.38		
0.050	0.62	0.48	0.42	0.36	0.32		
0.055	0.48	0.41	0.35	0.31	0.28		

Table 16. Comparison of 2001 model configuration and the 2002, pre-STAR model configuration. Results are presented for the coastwide versus Oregon-California model; natural mortality ramp from 0.04 to 0.10 versus constant at 0.045; and asymptotic selectivity versus domed selectivity.

Comparison of old and new model configurations.

Region	coast	coast	coast	coast	OR-CA	OR-CA	OR-CA	OR-CA
old M	ramp	ramp	flat	flat	ramp	ramp	flat	flat
Selectivity	asymp	dome	asymp	dome	asymp	dome	asymp	dome
TOTAL Likelihood (weighted):	-1751	-1702	-1686	-1630	-1341	-1324	-1278	-1253
Likelihood components (values relative to coast, flat, dome)								
CA recr AGE	-3	-5	1	0	-3	-3	2	2
CA recr SIZE	-10	1	-17	0	-3	4	-8	3
CA recr SIZE@AGE	0	0	0	0	1	1	1	1
CA comm AGE	-4	-6	1	0	-4	-5	0	0
CA comm SIZE	-4	1	-5	0	3	6	3	6
CA comm SIZE@AGE	-2	0	-2	0	1	2	2	3
OR recr AGE	-54	-54	-3	0	-49	-44	5	8
OR recr SIZE	-2	-4	1	0	8	12	11	15
OR recr SIZE@AGE	-2	-1	-1	0	7	6	4	7
OR comm SIZE	-1	1	-1	0	-2	2	-2	2
WA recr AGE	-6	6	1	0				
WA recr SIZE	-26	-3	-22	0				
WA recr SIZE@AGE	-2	-2	-5	0				
WA comm SIZE	-9	-2	-7	0				
WA line AGE	8	6	3	0				
WA line SIZE	-4	0	-5	0				
WA line SIZE@AGE	3	0	4	0				
CPFV CPUE	1	1	1	0	2	2	2	2
OR CPUE	1	2	1	0	1	1	1	1
WA CPUE	0	-1	0	0				
parm penalty	1	0	0	0	1	1	0	0
SPAWN-RECRUIT indiv	-12	-19	-2	0	-14	-19	-5	-6
ENDING BIOMASS	2498	2457	2148	2535	1501	1449	1340	1308
SPBzero	4660	5305	3358	3935	3546	3786	2765	3135
SPB2001	997	999	848	1020	588	570	520	512
Depletion	0.21	0.19	0.25	0.26	0.17	0.15	0.19	0.16
S/R Steepness	0.25	0.21	0.50	0.49	0.33	0.32	0.58	0.54

Table 17. Effect on model fit of spawner-recruitment curve and emphasis on recruitment deviations. Based on pre-STAR model configuration.

	EQUIL RECRUITMENTS		SPAWNER-RECRUITMENT DEVIATION EMPHASIS					
	NO COMP EMPH.	WITH COMP EMPH.	10	1	0.5	0.1	0.01	0.001
TOTAL w/o SR	-324.6	-246.2	-62.7	-4.7	0.0	4.7	6.6	7.1
CA recr AGE	-9.1	-6.1	-2.0	-0.2	0.0	0.1	0.0	-0.1
CA recr SIZE	-51.8	-36.5	-4.8	0.0	0.0	0.1	0.2	0.3
CA recr SIZE@AGE	-0.6	-1.9	-2.3	-0.3	0.0	0.3	0.5	0.6
CA comm AGE	3.8	2.8	2.9	0.5	0.0	-0.6	-0.9	-0.9
CA comm SIZE	-29.8	-13.0	-1.8	-0.1	0.0	0.1	0.2	0.2
CA comm SIZE@AGE	-0.1	-4.7	-4.0	-0.4	0.0	0.3	0.4	0.3
OR recr AGE	-93.0	-87.7	-34.2	-4.3	0.0	4.8	7.2	7.8
OR recr SIZE	-71.9	-58.4	-12.3	-0.7	0.0	0.7	1.0	1.2
OR recr SIZE@AGE	-2.2	-11.0	-2.2	-0.1	0.0	0.0	-0.5	-0.6
OR comm SIZE	-33.4	-28.0	-6.9	-0.3	0.0	0.1	0.0	0.0
WA recr CATCH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WA recr AGE	-15.0	-6.7	-1.3	-0.1	0.0	0.0	-0.1	-0.1
WA recr SIZE	-6.0	4.1	1.4	0.2	0.0	-0.2	-0.3	-0.2
WA recr SIZE@AGE	0.8	-1.0	0.1	0.1	0.0	-0.1	-0.1	-0.1
WA comm SIZE	-5.5	-1.2	0.6	0.1	0.0	-0.1	-0.1	-0.1
WA line AGE	-8.4	-1.5	0.9	0.4	0.0	-0.4	-0.7	-0.7
WA line SIZE	-5.2	-0.4	-0.1	0.0	0.0	0.0	0.0	0.0
WA line SIZE@AGE	0.0	2.5	1.8	0.2	0.0	-0.1	-0.1	0.0
CPFV CPUE	1.2	1.2	0.3	0.1	0.0	-0.1	-0.1	-0.2
OR CPUE	2.4	2.2	0.9	0.1	0.0	-0.2	-0.1	-0.3
WA CPUE	-0.7	-0.8	-0.1	0.0	0.0	0.1	0.0	0.1
parm penalty	0.0	-0.2	0.2	0.1	0.0	-0.1	-0.1	-0.1
SPAWN-RECRUIT	N/A	N/A	23.0	6.6	0.0	-19.4	-66.5	-134.9
ENDING BIOMASS	2398	2475	2616	2507	2506	2532	2487	2533
SPBzero	3825	4035	4002	3864	3852	3859	3855	3871
SPB2001	879	933	1008	1003	1008	1025	1009	1028
DEPLETE	0.23	0.23	0.25	0.26	0.26	0.27	0.26	0.27
STEEP	0.90	0.59	0.80	0.55	0.49	0.40	0.36	0.38

Table 18 Profile of likelihood and other model outcomes over a range of fixed values for the initial recruitment level (virgin recruitment). Likelihood values are relative to the best fitting level of virgin recruitment. The model is the coastwide model in the final configuration.

VIRGIN RECRUITMENT:	148	152	155	158	161	165	168	171	174	178	181	184	187	191	194
TOTAL	-4.0	-2.7	-1.7	-1.0	-0.5	-0.1	0.0	0.0	-0.1	-0.4	-0.7	-1.0	-1.4	-1.9	-2.4
CA recr AGE	-0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.1
CA recr SIZE	-1.2	-1.0	-0.8	-0.7	-0.4	-0.2	0.0	0.1	0.4	0.5	1.0	1.3	1.6	1.7	2.0
CA recr SIZE@AGE	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
CA comm AGE	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
CA comm SIZE	0.8	0.7	0.6	0.5	0.3	0.1	0.0	-0.2	-0.4	-0.5	-0.8	-1.0	-1.2	-1.3	-1.5
CA comm SIZE@AGE	0.5	0.5	0.4	0.2	0.2	0.1	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4
OR recr AGE	-0.9	-0.7	-0.5	-0.2	-0.2	-0.2	0.0	0.1	0.2	0.2	-0.2	-0.3	-0.6	-0.7	-0.9
OR recr SIZE	0.9	0.8	0.8	0.7	0.4	0.2	0.0	-0.2	-0.6	-0.8	-1.4	-1.9	-2.3	-2.6	-2.9
OR recr SIZE@AGE	1.0	0.8	0.7	0.6	0.4	0.1	0.0	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7
OR comm SIZE	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	0.0	0.1	0.1	0.2	0.2	0.4	0.5	0.5	0.7
WA recr AGE	1.4	1.1	0.9	0.6	0.4	0.2	0.0	-0.2	-0.4	-0.5	-0.6	-0.7	-0.7	-0.7	-0.7
WA recr SIZE	-1.7	-1.4	-1.2	-0.8	-0.5	-0.2	0.0	0.2	0.4	0.5	1.0	1.1	1.3	1.3	1.4
WA recr SIZE@AGE	-1.0	-0.8	-0.6	-0.5	-0.3	-0.1	0.0	0.1	0.2	0.3	0.5	0.5	0.7	0.8	0.8
WA comm SIZE	-1.7	-1.4	-1.1	-0.8	-0.5	-0.2	0.0	0.2	0.5	0.7	1.0	1.1	1.3	1.4	1.6
WA line AGE	-0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.1	0.1	0.1	0.2	0.2	0.4
WA line SIZE	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2
WA line SIZE@AGE	-0.5	-0.4	-0.3	-0.2	-0.1	0.0	0.0	0.1	0.1	0.1	0.3	0.4	0.5	0.6	0.7
OR CPUE	0.6	0.6	0.5	0.5	0.3	0.2	0.0	-0.1	-0.4	-0.6	-0.9	-1.2	-1.6	-1.9	-2.3
WA CPUE	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.2
CA-CPUE new	0.1	0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.3	-0.4	-0.5	-0.5	-0.7
parm penalty	-0.2	-0.2	-0.2	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2
SPAWN-RECRUIT indiv	-1.7	-1.3	-0.8	-0.6	-0.3	-0.1	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.3	0.4
ENDING BIOMASS	1844	1908	1972	2040	2117	2209	2281	2363	2458	2537	2665	2791	2925	3033	3166
SPBzero	3395	3469	3545	3621	3701	3779	3858	3936	4017	4096	4194	4281	4371	4454	4541
SPB2001	728	754	780	809	841	879	911	946	987	1022	1077	1131	1188	1236	1292
deplete	0.214	0.217	0.220	0.223	0.227	0.233	0.236	0.240	0.246	0.250	0.257	0.264	0.272	0.278	0.285
steepness	0.433	0.435	0.438	0.439	0.439	0.445	0.441	0.440	0.441	0.438	0.440	0.447	0.454	0.454	0.462

Table 19. Profile of likelihood and other model outcomes over a range of fixed values for the initial recruitment level (virgin recruitment). Likelihood values are relative to the best fitting level of virgin recruitment. California-Oregon model.

VIRGIN RECRUITMENT:	126	128	131	133	136	139	141	142	145	147	150	153	155	158	160	163	166	168
TOTAL	-5.4	-4.0	-2.8	-1.8	-1.0	-0.5	-0.2	-0.1	0.0	-0.1	-0.3	-0.6	-1.1	-1.6	-2.3	-3.0	-3.8	-4.7
CA recr AGE	-0.4	-0.3	-0.3	-0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
CA recr SIZE	-0.6	-0.5	-0.5	-0.4	-0.3	-0.2	-0.1	-0.1	0.0	0.1	0.2	0.4	0.5	0.7	0.8	0.9	1.1	1.2
CA recr SIZE@AGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CA comm AGE	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3
CA comm SIZE	0.5	0.5	0.4	0.4	0.3	0.2	0.1	0.1	0.0	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0
CA comm SIZE@AGE	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.0	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.6
OR recr AGE	-2.4	-2.0	-1.5	-1.1	-0.8	-0.5	-0.3	-0.2	0.0	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.6	0.6
OR recr SIZE	-0.9	-0.7	-0.4	-0.3	-0.1	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.4	-0.6	-0.7	-0.9	-1.1	-1.3
OR recr SIZE@AGE	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	-0.1	-0.2	-0.3	-0.5	-0.6	-0.7	-0.9	-1.0	-1.2
OR comm SIZE	-1.0	-0.9	-0.8	-0.6	-0.5	-0.3	-0.2	-0.1	0.0	0.1	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.9
WA recr AGE																		
WA recr SIZE																		
WA recr SIZE@AGE																		
WA comm SIZE																		
WA line AGE																		
WA line SIZE																		
WA line SIZE@AGE																		
OR CPUE	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.0	-0.1	-0.3	-0.4	-0.6	-0.8	-1.0	-1.2	-1.5	-1.7
WA CPUE																		
CA-CPUE new	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6
parm penalty	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
SPAWN-RECRUIT indiv	-1.4	-1.0	-0.7	-0.4	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.3	-0.4	-0.6	-0.8	-0.9	-1.1
ENDING BIOMASS	1511	1543	1579	1617	1658	1701	1748	1764	1813	1869	1924	1984	2046	2112	2178	2248	2325	2400
SPBzero	2874	2933	2993	3052	3112	3171	3231	3250	3310	3369	3429	3488	3548	3607	3667	3726	3786	3845
SPB2001	569	583	597	613	630	648	668	674	695	718	741	767	793	820	848	878	910	942
deplete	0.198	0.199	0.199	0.201	0.202	0.204	0.207	0.207	0.210	0.213	0.216	0.220	0.224	0.227	0.231	0.236	0.240	0.245
steepness	0.596	0.591	0.587	0.583	0.579	0.576	0.573	0.572	0.570	0.570	0.568	0.568	0.567	0.568	0.569	0.570	0.573	0.576

Table 20. Profile of likelihood and other model outcomes over a range of fixed values for the initial recruitment level (virgin recruitment). Likelihood values are relative to the best fitting level of virgin recruitment. Washington model.

VIRGIN RECRUITMENT:	26	26.5	27	27.5	28	28.5	29	29.5	30	30.5	31	31.5	32	32.5
TOTAL	-0.8	-0.5	-0.3	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.3	-0.3
CA recr AGE														
CA recr SIZE														
CA recr SIZE@AGE														
CA comm AGE														
CA comm SIZE														
CA comm SIZE@AGE														
OR recr AGE														
OR recr SIZE														
OR recr SIZE@AGE														
OR comm SIZE														
WA recr AGE	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
WA recr SIZE	-0.4	-0.3	-0.2	-0.2	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
WA recr SIZE@AGE	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
WA comm SIZE	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
WA line AGE	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
WA line SIZE	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
WA line SIZE@AGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OR CPUE														
WA CPUE	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	-0.1	-0.2	-0.3	-0.4	-0.4	-0.6
CA-CPUE new														
parm penalty	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPAWN-RECRUIT indiv	-0.5	-0.4	-0.2	-0.1	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1
ENDING BIOMASS	395	410	435	452	478	495	518	540	556	579	605	630	650	687
SPBzero	595	606	617	628	639	650	661	673	684	695	706	717	728	740
SPB2001	169	176	187	195	207	215	225	235	243	253	265	276	285	301
deplete	0.284	0.290	0.303	0.311	0.324	0.331	0.340	0.349	0.355	0.364	0.375	0.385	0.391	0.407
steepness	0.289	0.282	0.283	0.276	0.277	0.269	0.267	0.263	0.252	0.249	0.248	0.247	0.242	0.252

Table 21. Profile on virgin recruitment and on spawner-recruitment steepness.

Vir-Recr	Average Recr 92-99	Steepness	SPBzero	SPB2001	depletion	Total Like	S/R Like * 0.5	non-S/R Like	Prob-ability	Cumul. Pr.
Profile on Virgin Recruitment										
148	69	0.433	3395	728	0.214	-4.0	-1.7	-2.3	0.003	0.003
152	71	0.435	3469	754	0.217	-2.7	-1.3	-1.5	0.010	0.012
155	73	0.438	3545	780	0.220	-1.7	-0.8	-0.9	0.026	0.038
158	75	0.439	3621	809	0.223	-1.0	-0.6	-0.4	0.052	0.090
161	77	0.439	3701	841	0.227	-0.5	-0.3	-0.2	0.086	0.176
165	80	0.445	3779	879	0.233	-0.1	-0.1	0.0	0.128	0.304
168	81	0.441	3858	911	0.236	0.0	0.0	0.0	0.141	0.445
171	83	0.440	3936	946	0.240	0.0	0.0	0.0	0.141	0.586
174	85	0.441	4017	987	0.246	-0.1	0.1	-0.2	0.128	0.714
178	87	0.438	4096	1022	0.250	-0.4	0.1	-0.5	0.095	0.809
181	90	0.440	4194	1077	0.257	-0.7	0.2	-0.9	0.070	0.879
184	93	0.447	4281	1131	0.264	-1.0	0.3	-1.3	0.052	0.931
187	97	0.454	4371	1188	0.272	-1.4	0.4	-1.8	0.035	0.966
191	99	0.454	4454	1236	0.278	-1.9	0.3	-2.2	0.021	0.987
194	103	0.462	4541	1292	0.285	-2.4	0.4	-2.8	0.013	1.000
Profile on Steepness										
170	67	0.200	3912	865	0.221	-4.4	-4.5	0.0	0.002	0.002
170	71	0.250	3915	885	0.226	-2.1	-2.4	0.2	0.015	0.017
170	74	0.300	3905	895	0.229	-0.9	-1.2	0.3	0.051	0.067
169	77	0.350	3894	903	0.232	-0.3	-0.6	0.2	0.092	0.160
169	80	0.400	3882	911	0.235	0.0	-0.2	0.2	0.125	0.284
169	82	0.450	3880	921	0.237	0.0	0.0	0.0	0.125	0.409
169	83	0.500	3879	928	0.239	-0.1	0.0	-0.2	0.113	0.522
169	86	0.550	3883	947	0.244	-0.2	0.2	-0.4	0.102	0.624
169	89	0.600	3896	967	0.248	-0.3	0.3	-0.6	0.092	0.716
169	91	0.650	3896	975	0.250	-0.6	0.2	-0.8	0.068	0.784
170	93	0.700	3900	990	0.254	-0.8	0.2	-1.0	0.056	0.840
170	94	0.750	3902	997	0.256	-1.0	0.1	-1.1	0.046	0.886
171	96	0.800	3929	1023	0.260	-1.2	0.2	-1.4	0.038	0.924
171	98	0.850	3933	1032	0.262	-1.4	0.2	-1.6	0.031	0.954
171	100	0.900	3947	1052	0.267	-1.6	0.2	-1.8	0.025	0.979
172	102	0.950	3960	1066	0.269	-1.8	0.2	-2.0	0.021	1.000
Profile on Both										
158	68	0.300	3622	772	0.213	-1.9	-1.8	-0.1		
184	85	0.300	4287	1089	0.254	-1.9	-0.9	-1.0		
158	86	0.750	3626	874	0.241	-2.2	-0.6	-1.6		
184	108	0.750	4282	1216	0.284	-1.7	0.6	-2.4		

Table 22. Results from area-specific model runs.

	CA	CA-OR	OR	WA	ALL
CA recr AGE	-16.6	-16.6			-16.6
CA recr SIZE	-222.0	-243.1			-242.8
CA recr SIZE@AGE	-27.5	-27.3			-27.0
CA comm AGE	-22.2	-23.3			-23.8
CA comm SIZE	-131.0	-123.2			-125.3
CA comm SIZE@AGE	-39.5	-39.1			-39.5
OR recr AGE		-143.4	-140.5		-144.4
OR recr SIZE		-172.1	-157.1		-174.5
OR recr SIZE@AGE		-18.7	-18.2		-19.8
OR comm SIZE		-76.9	-78.0		-76.5
WA recr AGE				-36.1	-45.2
WA recr SIZE				-46.5	-42.0
WA recr SIZE@AGE				-14.6	-18.5
WA comm SIZE				-35.5	-35.0
WA line AGE				-11.8	-21.8
WA line SIZE				-15.2	-15.5
WA line SIZE@AGE				-18.9	-22.2
OR CPUE		10.9	9.9		10.8
WA CPUE				7.0	7.2
CA-CPUE new	12.0	13.2			13.0
parm penalty	-5.0	-5.9	-5.6	-4.0	-5.4
SPAWN-RECRUIT indiv	14.8	7.7	2.8	13.5	7.8
ENDING BIOMASS	988	1819	921	542	2248
SPBzero	1664	3314	1776	673	3859
SPB2001	386	698	353	236	898
deplete	0.232	0.211	0.199	0.351	0.233
steepness	0.632	0.571	0.467	0.262	0.429

Table 23. Baseline model results: time series of population biomass and recruitment. Virgin conditions are coded as 1940 and initial equilibrium (with catch of 10 mt) is coded as 1945.

YEAR	BEG BIO	MID BIO	SP.BIO	RECRUIT	BEG BIO	MID BIO	SP.BIO	RECRUIT	CATCH
1940	8657	8613	3875	169	8588	8537	3874	154	0
1945	8307	8263	3701	169	8237	8187	3701	154	10
1955	8312	8249	3701	196	8237	8168	3701	154	48
1956	8277	8215	3683	187	8198	8129	3683	154	48
1957	8237	8175	3665	151	8167	8099	3665	179	48
1958	8191	8128	3647	116	8135	8068	3647	170	48
1959	8140	8076	3629	101	8095	8027	3629	137	48
1960	8086	8022	3611	103	8044	7976	3611	106	48
1961	8032	7966	3594	116	7987	7917	3594	92	48
1962	7981	7914	3577	150	7926	7855	3577	94	48
1963	7929	7863	3559	154	7866	7794	3559	106	48
1964	7868	7801	3541	110	7813	7741	3541	137	48
1965	7803	7735	3522	93	7760	7689	3522	141	48
1966	7733	7664	3500	91	7695	7623	3500	100	48
1967	7660	7590	3477	87	7623	7550	3477	85	48
1968	7583	7512	3451	88	7547	7473	3451	83	48
1969	7506	7433	3424	101	7467	7391	3424	80	48
1970	7430	7359	3395	124	7384	7309	3394	80	45
1971	7364	7288	3365	170	7305	7223	3365	92	56
1972	7304	7224	3328	255	7219	7130	3328	113	70
1973	7221	7135	3282	174	7131	7037	3282	155	84
1974	7133	7043	3228	205	7056	6958	3228	233	98
1975	7092	7002	3166	510	6952	6848	3166	158	113
1976	6985	6890	3097	125	6845	6737	3096	187	128
1977	6867	6765	3021	122	6816	6710	3021	465	145
1978	6769	6668	2941	305	6685	6576	2940	114	154
1979	6665	6545	2861	261	6547	6417	2860	112	198
1980	6508	6372	2766	165	6418	6274	2766	278	237
1981	6315	6051	2661	146	6251	5980	2661	237	484
1982	5872	5642	2447	173	5807	5571	2447	149	429
1983	5498	5297	2268	193	5423	5215	2268	133	386
1984	5191	5065	2117	253	5100	4966	2117	157	249
1985	5024	4881	2036	213	4927	4776	2036	175	290
1986	4824	4728	1941	214	4736	4632	1941	229	205
1987	4727	4609	1887	275	4628	4501	1887	193	253
1988	4581	4452	1813	233	4475	4337	1813	195	282
1989	4406	4222	1727	199	4316	4124	1727	250	396
1990	4125	4032	1592	212	4041	3940	1592	212	224
1991	4010	3857	1536	154	3934	3774	1536	180	345
1992	3769	3596	1430	114	3713	3535	1430	192	385
1993	3482	3331	1309	82	3441	3286	1309	139	344
1994	3234	3135	1208	78	3201	3099	1208	103	239
1995	3089	2936	1156	88	3055	2899	1156	75	345
1996	2837	2719	1060	96	2799	2677	1060	71	275
1997	2645	2505	994	68	2611	2467	994	80	315
1998	2407	2372	909	59	2380	2343	909	87	102
1999	2375	2312	911	60	2350	2286	911	62	156
2000	2292	2288	888	92	2262	2255	888	54	36
2001	2325	2315	914	87	2288	2275	914	55	48
2002	2346	2352	934	87	2310	2313	933	84	13

Table 24. Age-specific quantities used for calculation of rebuilding parameters and forecasts.

AGE	BEGWT	MIDWT	SPAWNWT	MATURE	EGGS	SPAWN	M	SELEX	N in 2002	N in 2003
3	0.18	0.20	0.18	0.001	1	0.000	0.045	0.026	86.8	85.4
4	0.24	0.27	0.24	0.003	1	0.001	0.045	0.053	82.8	83.0
5	0.31	0.34	0.31	0.009	1	0.003	0.045	0.092	83.7	79.2
6	0.39	0.43	0.39	0.020	1	0.008	0.045	0.132	52.1	80.0
7	0.48	0.52	0.48	0.044	1	0.021	0.045	0.197	49.1	49.8
8	0.58	0.62	0.58	0.086	1	0.050	0.045	0.263	53.7	46.9
9	0.68	0.73	0.68	0.148	1	0.102	0.045	0.329	71.2	51.2
10	0.80	0.84	0.80	0.231	1	0.184	0.045	0.382	61.4	67.9
11	0.91	0.96	0.91	0.328	1	0.299	0.045	0.447	50.8	58.5
12	1.03	1.08	1.03	0.431	1	0.445	0.045	0.500	49.1	48.4
13	1.16	1.21	1.16	0.531	1	0.615	0.045	0.553	61.8	46.8
14	1.29	1.34	1.29	0.623	1	0.800	0.045	0.605	74.4	58.8
15	1.41	1.47	1.41	0.702	1	0.993	0.045	0.658	90.2	70.8
16	1.55	1.60	1.55	0.768	1	1.188	0.045	0.711	73.5	85.8
17	1.68	1.73	1.68	0.821	1	1.379	0.045	0.763	73.9	69.9
18	1.81	1.87	1.81	0.863	1	1.564	0.045	0.803	74.2	70.3
19	1.94	2.00	1.94	0.896	1	1.741	0.045	0.842	48.9	70.5
20	2.08	2.13	2.08	0.920	1	1.911	0.045	0.882	41.0	46.4
21	2.21	2.26	2.21	0.939	1	2.073	0.045	0.921	41.2	39.0
22	2.34	2.39	2.34	0.953	1	2.228	0.045	0.947	26.7	39.2
23	2.47	2.52	2.47	0.964	1	2.377	0.045	0.961	20.4	25.4
24	2.59	2.65	2.59	0.972	1	2.520	0.045	0.974	14.8	19.3
25	2.72	2.77	2.72	0.978	1	2.658	0.045	0.987	14.3	14.0
26	2.84	2.89	2.84	0.983	1	2.791	0.045	1.000	19.5	13.5
27	2.96	3.01	2.96	0.986	1	2.919	0.045	1.000	19.9	18.5
28	3.08	3.12	3.08	0.989	1	3.043	0.045	1.000	7.0	18.9
29	3.19	3.24	3.19	0.991	1	3.163	0.045	1.000	6.2	6.6
30	3.30	3.35	3.30	0.993	1	3.278	0.045	1.000	22.5	5.9
31	3.41	3.45	3.41	0.994	1	3.390	0.045	0.987	8.1	21.4
32	3.52	3.56	3.52	0.995	1	3.499	0.045	0.987	6.1	7.7
33	3.62	3.66	3.62	0.996	1	3.603	0.045	0.974	8.1	5.8
34	3.72	3.76	3.72	0.997	1	3.705	0.045	0.961	4.9	7.7
35	3.81	3.85	3.81	0.997	1	3.802	0.045	0.947	3.3	4.7
36	3.91	3.94	3.91	0.998	1	3.897	0.045	0.934	2.5	3.1
37	4.00	4.03	4.00	0.998	1	3.987	0.045	0.921	2.0	2.4
38	4.08	4.12	4.08	0.998	1	4.075	0.045	0.908	1.9	1.9
39	4.17	4.20	4.17	0.998	1	4.159	0.045	0.895	1.9	1.8
40	4.25	4.28	4.25	0.999	1	4.241	0.045	0.882	1.8	1.8
41	4.32	4.36	4.32	0.999	1	4.319	0.045	0.855	2.0	1.7
42	4.40	4.43	4.40	0.999	1	4.394	0.045	0.842	2.7	1.9
43	4.47	4.50	4.47	0.999	1	4.465	0.045	0.829	2.6	2.6
44	4.54	4.57	4.54	0.999	1	4.535	0.045	0.816	1.9	2.4
45	4.60	4.63	4.60	0.999	1	4.601	0.045	0.803	1.6	1.8
46	4.67	4.69	4.67	0.999	1	4.664	0.045	0.789	1.6	1.6
47	4.73	4.75	4.73	0.999	1	4.725	0.045	0.776	1.7	1.5
48	4.79	4.81	4.79	0.999	1	4.783	0.045	0.763	2.2	1.7
49	4.84	4.86	4.84	1.000	1	4.839	0.045	0.750	2.7	2.1
50	4.89	4.92	4.89	1.000	1	4.892	0.045	0.750	2.7	2.5
51	4.94	4.97	4.94	1.000	1	4.943	0.045	0.737	2.3	2.6
52	4.99	5.01	4.99	1.000	1	4.991	0.045	0.724	2.2	2.2
53	5.04	5.06	5.04	1.000	1	5.037	0.045	0.711	2.2	2.1
54	5.08	5.10	5.08	1.000	1	5.081	0.045	0.711	2.1	2.1
55	5.13	5.14	5.13	1.000	1	5.124	0.045	0.697	2.1	2.0
56	5.17	5.18	5.17	1.000	1	5.164	0.045	0.684	2.0	2.0
57	5.20	5.22	5.20	1.000	1	5.202	0.045	0.684	2.0	1.9
58	5.24	5.25	5.24	1.000	1	5.238	0.045	0.671	1.9	1.9
59	5.27	5.29	5.27	1.000	1	5.273	0.045	0.658	1.9	1.8
60	5.31	5.32	5.31	1.000	1	5.306	0.045	0.658	1.9	1.8
61	5.34	5.35	5.34	1.000	1	5.338	0.045	0.645	1.8	1.8
62	5.37	5.38	5.37	1.000	1	5.368	0.045	0.645	1.8	1.7
63	5.40	5.41	5.40	1.000	1	5.397	0.045	0.632	1.7	1.7
64	5.42	5.44	5.42	1.000	1	5.424	0.045	0.632	1.7	1.6
65	5.45	5.46	5.45	1.000	1	5.450	0.045	0.632	1.6	1.6
66	5.48	5.49	5.48	1.000	1	5.474	0.045	0.618	1.6	1.6
67	5.50	5.51	5.50	1.000	1	5.498	0.045	0.618	1.6	1.5
68	5.52	5.53	5.52	1.000	1	5.520	0.045	0.605	1.5	1.5
69	5.54	5.55	5.54	1.000	1	5.541	0.045	0.605	1.5	1.4
70	5.77	5.77	5.77	1.000	1	5.769	0.045	0.566	37.9	37.5

Table 25. Ten year forecasts with various harvest policies. The F=0 policy is extended until the stock is rebuilt to the 40% level. All forecasts are run with recruitments taken from the S/R curve

YR	3+ BIOMASS	SPAWN	RECRUIT	EXPLOIT	TOTYIELD	STRATEGY
2003	2399	966	85	0	0	**F=0**
2004	2464	1003	87	0	0	
2005	2529	1038	88	0	0	
2006	2593	1071	90	0	0	
2007	2657	1102	92	0	0	
2008	2720	1133	94	0	0	
2009	2782	1162	96	0	0	
2010	2844	1190	98	0	0	
2011	2905	1217	99	0	0	
2012	2966	1244	101	0	0	
2013	3027	1271	102	0	0	
2014	3088	1298	104	0	0	
2015	3148	1324	105	0	0	
2016	3208	1350	106	0	0	
2017	3268	1376	108	0	0	
2018	3327	1401	109	0	0	
2019	3387	1427	110	0	0	
2020	3447	1453	111	0	0	
2021	3506	1479	112	0	0	
2022	3566	1505	114	0	0	
2023	3625	1531	115	0	0	
2024	3685	1558	116	0	0	
2003	2399	966	85	0.022	52	**ABC with F50%**
2004	2413	980	87	0.023	54	
2005	2424	990	88	0.023	54	
2006	2434	998	90	0.023	55	
2007	2442	1003	91	0.023	56	
2008	2449	1007	92	0.023	56	
2009	2455	1009	92	0.023	56	
2010	2460	1010	92	0.023	57	
2011	2465	1011	93	0.023	57	
2012	2469	1011	93	0.023	57	
2003	2399	966	85	0.018	42	**OY with F50% and 40:10**
2004	2423	984	87	0.018	43	
2005	2445	999	88	0.019	45	
2006	2464	1012	90	0.019	46	
2007	2481	1021	91	0.019	47	
2008	2497	1029	92	0.019	48	
2009	2512	1035	93	0.020	48	
2010	2525	1041	93	0.020	49	
2011	2537	1045	94	0.020	49	
2012	2549	1049	94	0.020	50	
2003	2399	966	85	0.014	33	**OY with F57% with 40:10**
2004	2432	988	87	0.014	34	
2005	2463	1008	88	0.015	36	
2006	2491	1024	90	0.015	37	
2007	2518	1038	91	0.015	38	
2008	2543	1050	93	0.015	39	
2009	2566	1061	94	0.016	39	
2010	2589	1070	94	0.016	40	
2011	2610	1079	95	0.016	41	
2012	2630	1087	96	0.016	41	

List of Figures

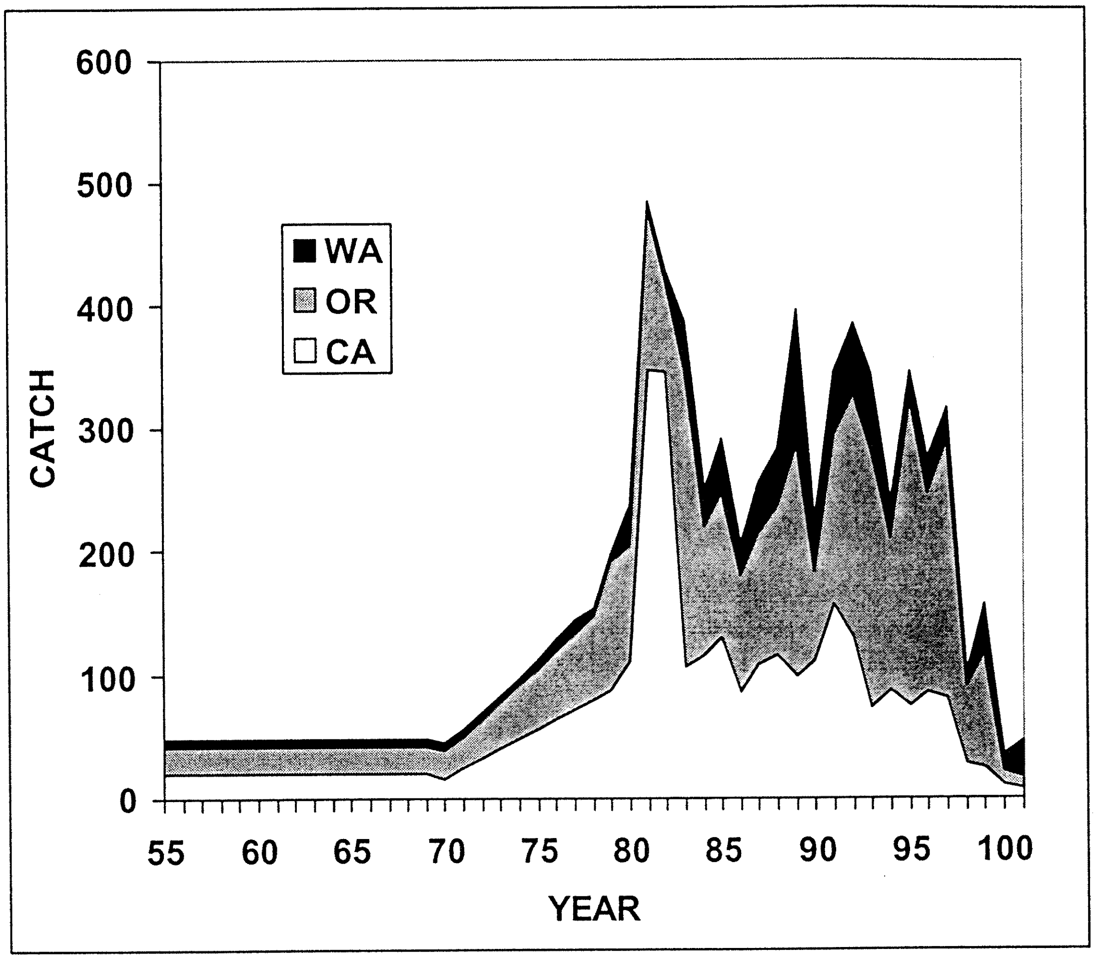


Figure 1. Time series of catch by State.

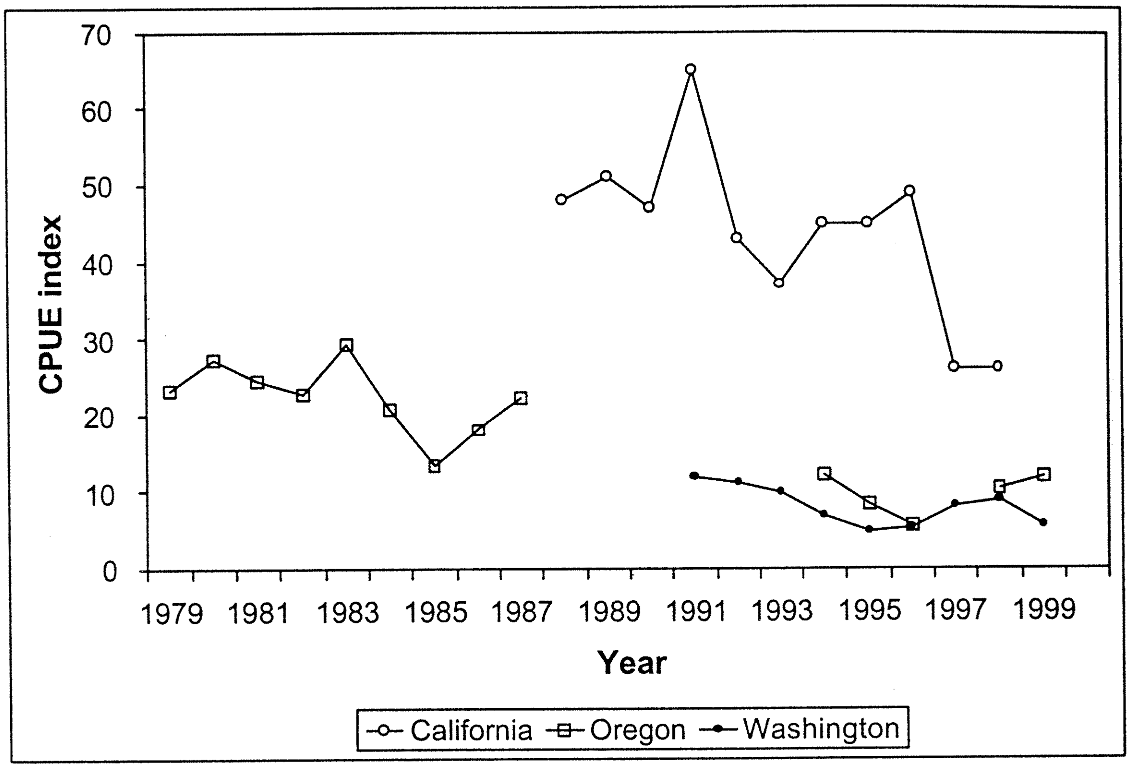


Figure 2. Normalized yelloweye CPUE trends by State.

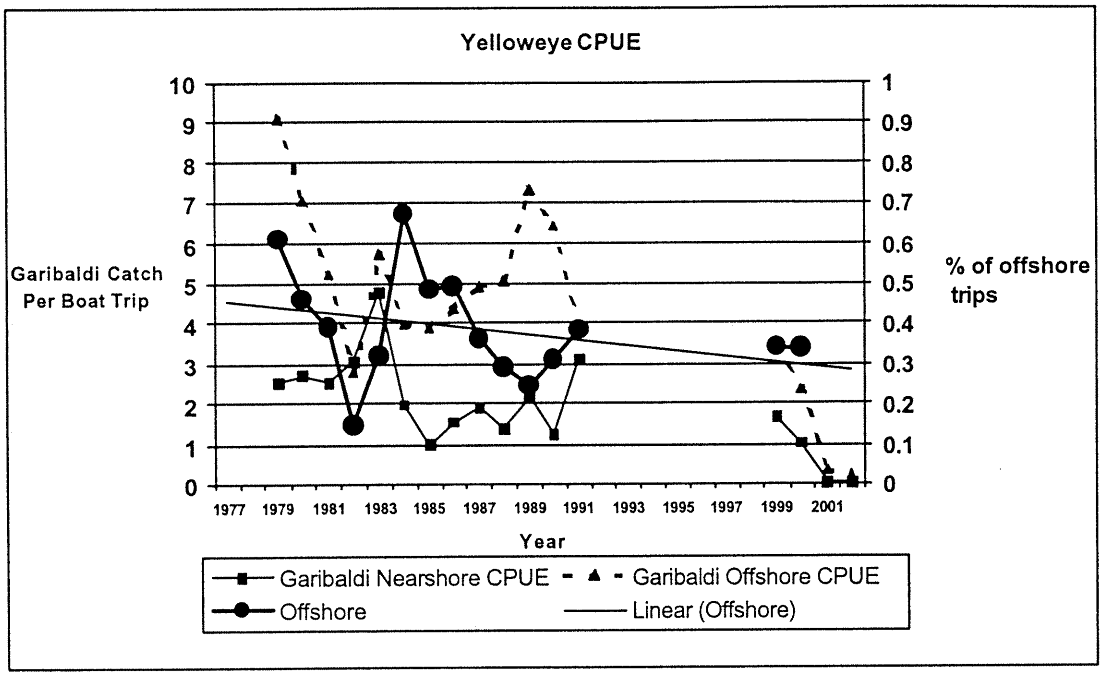


Figure 3. Nearshore-offshore distribution of sport effort at Garibaldi, Oregon.

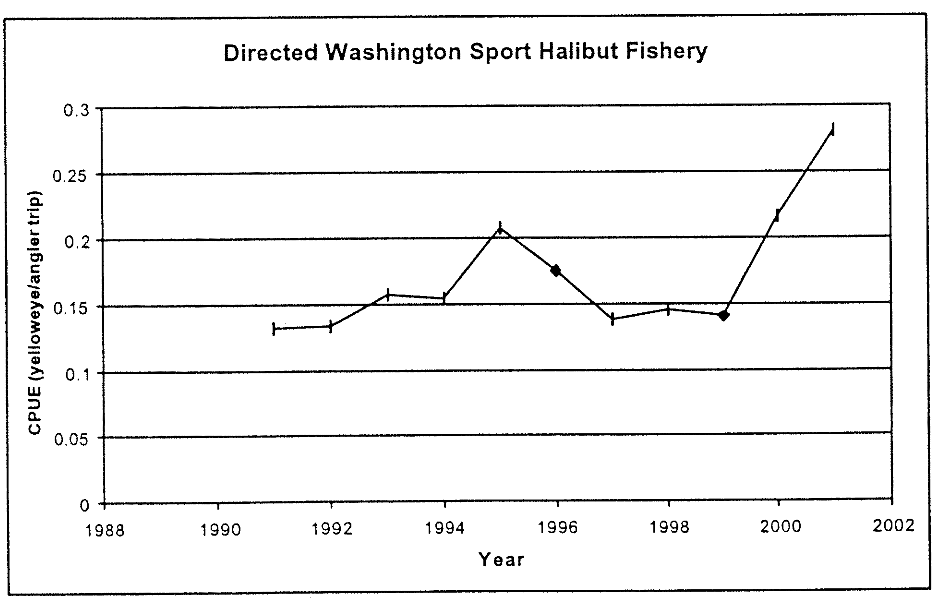


Figure 4. Yelloweye catch per angler for Washington sport halibut directed trips (not included in assessment model).

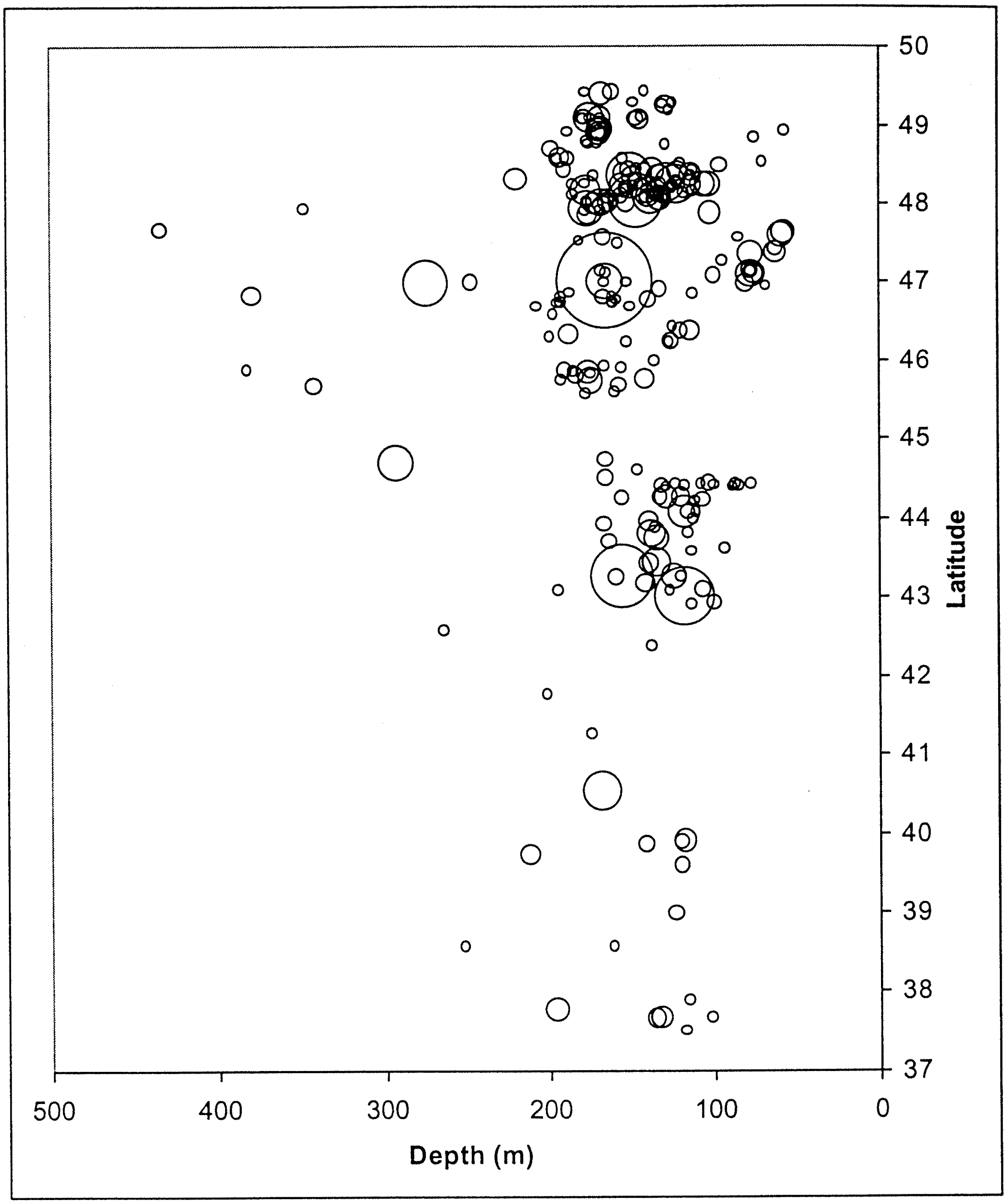
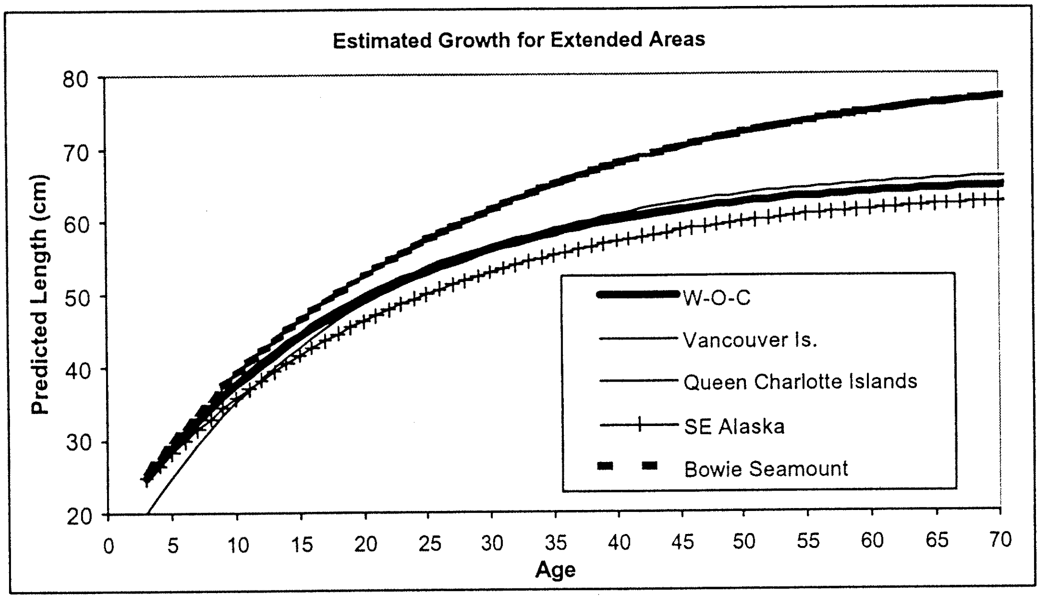


Figure 5. Spatial pattern of yelloweye rockfish occurrence in the NMFS bottom trawl survey; 1977-2001. Size of circle is proportional to yelloweye rockfish density at that location.



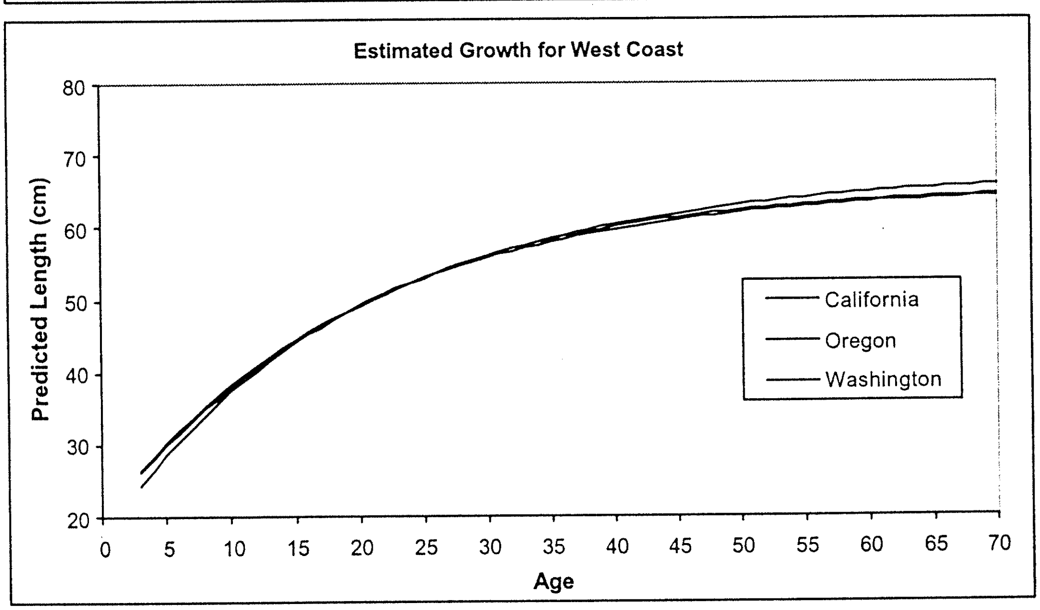


Figure 6. Predicted yelloweye rockfish size-at-age by locale.

Need to update for the final model

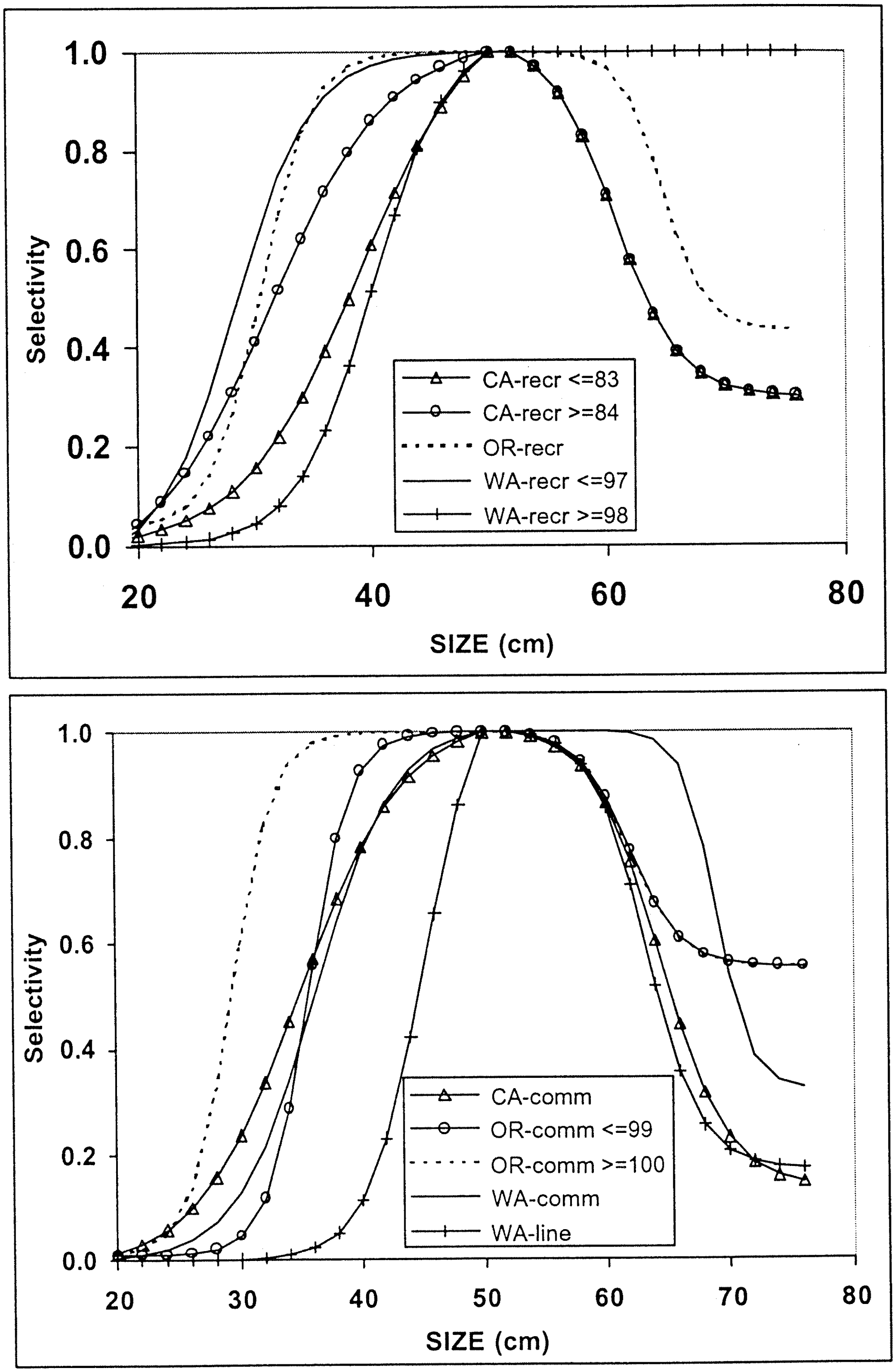


Figure 7. Pattern of size -selectivity as estimated in the baseline model.

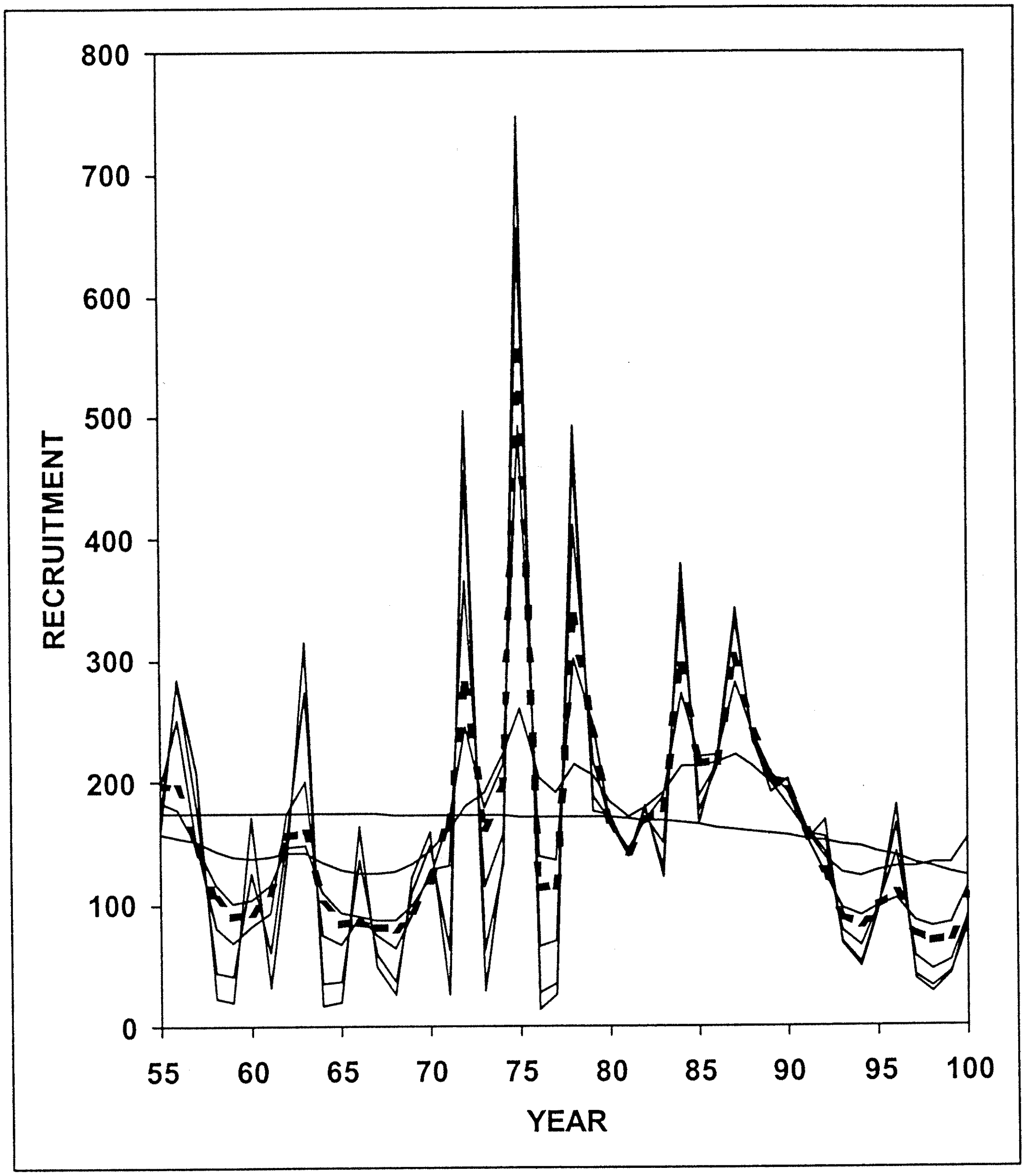


Figure 8. Estimate of time series of recruitment under equilibrium recruitment conditions and with varying degress of emphasis on deviations fromthe estimated spawner-recruitment curve. The selected baseline model is shown with the bold dashed line.

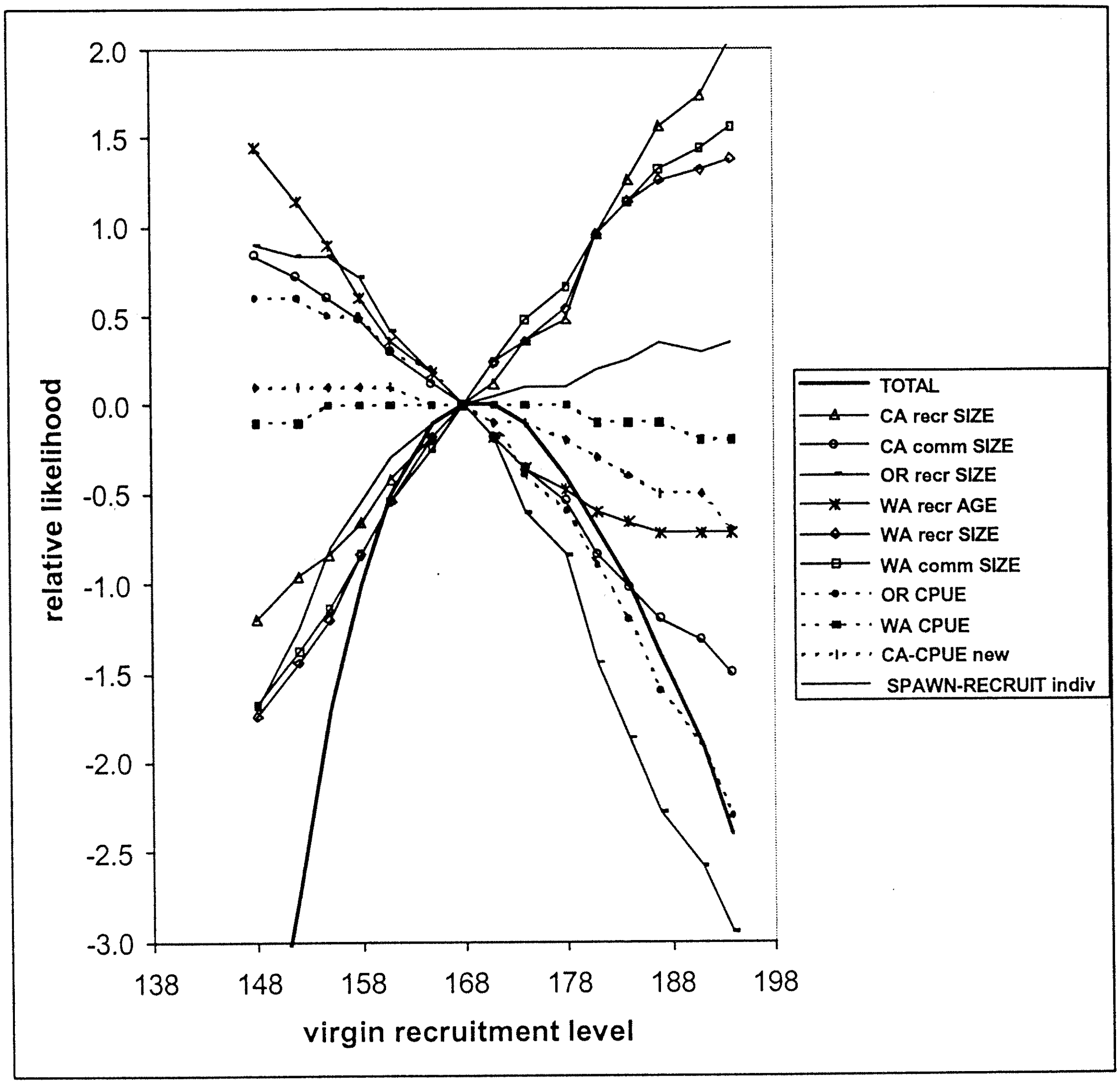


Figure 9. Profile of likelihood versus initial recruitment level for the Total weighted likelihood and for the individual components having the largest gradients in the final coastwide model.

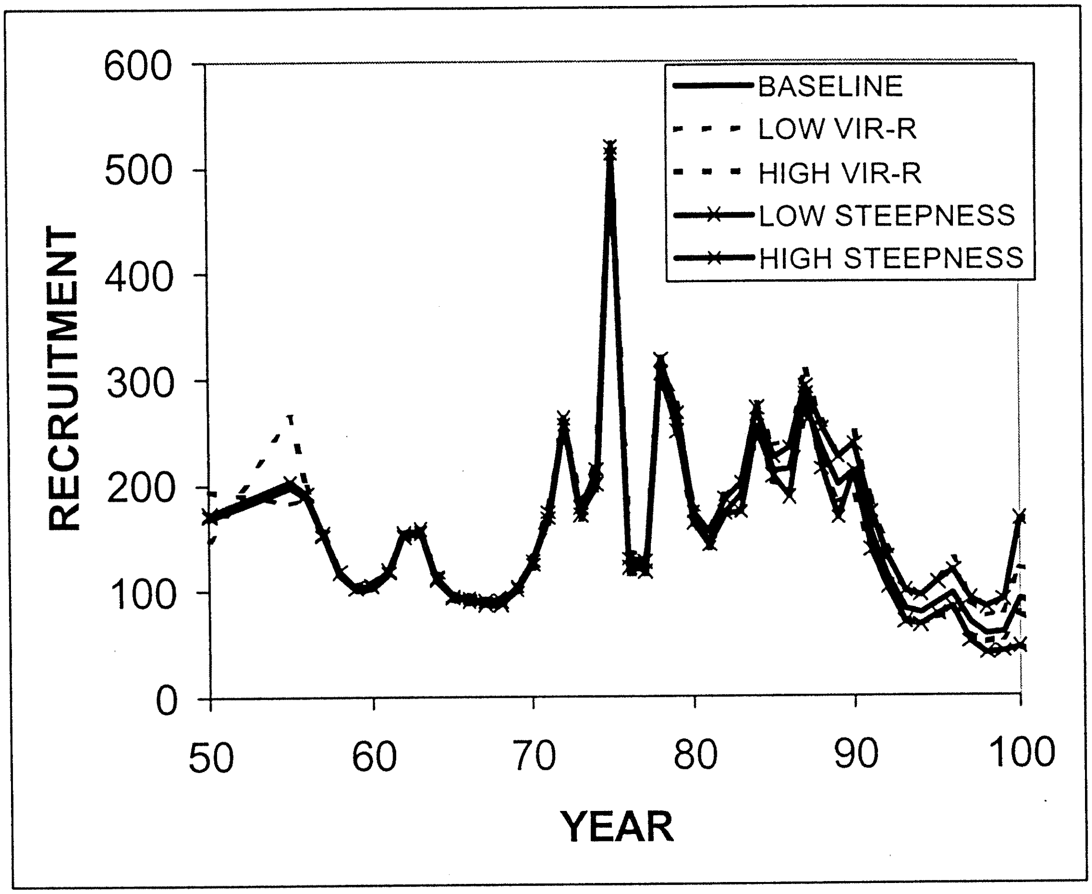
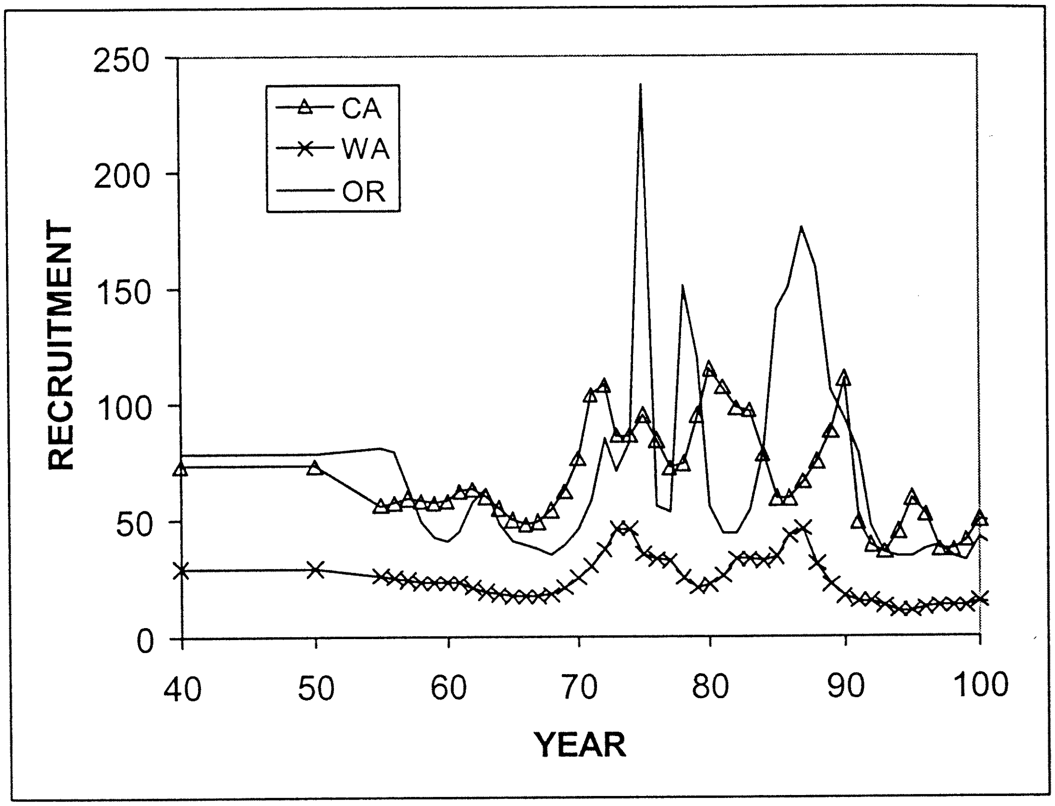


Figure 10. Estimated time series of recruitment for the baseline model and for the extremes of the profile on virgin recruitment and on steepness (see Table 20).



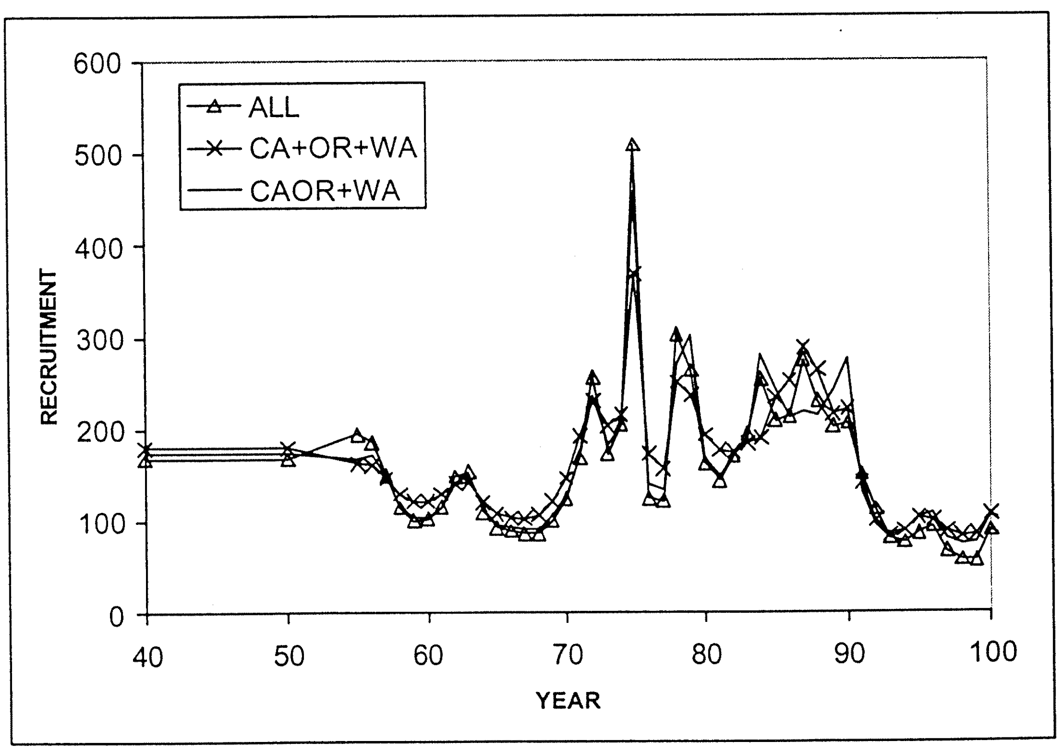


Figure 11. Comparison of recruitment time series from the three area-specific model configurations.

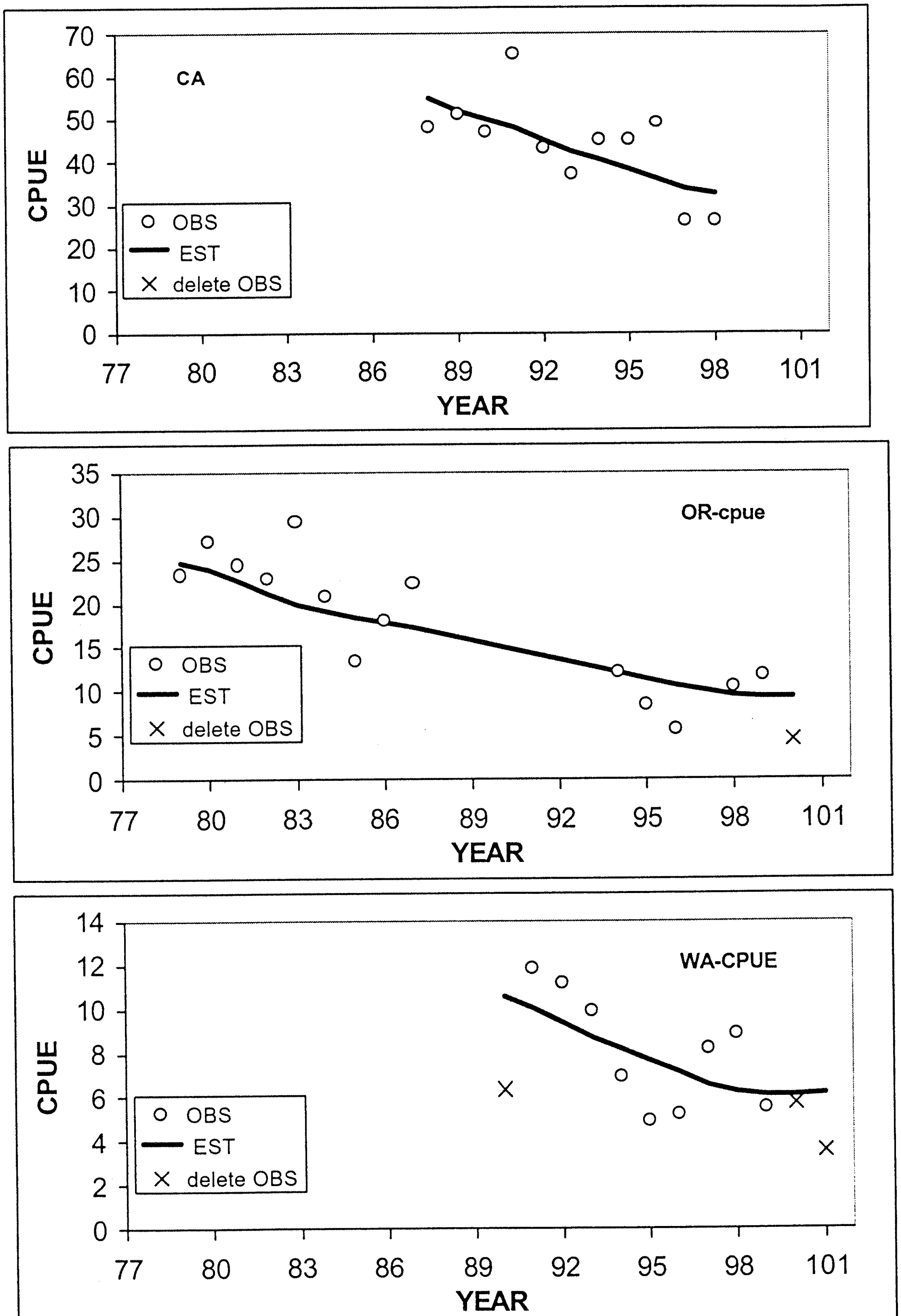


Figure 12. Fit to the three CPUE indices in the final coastwide model.

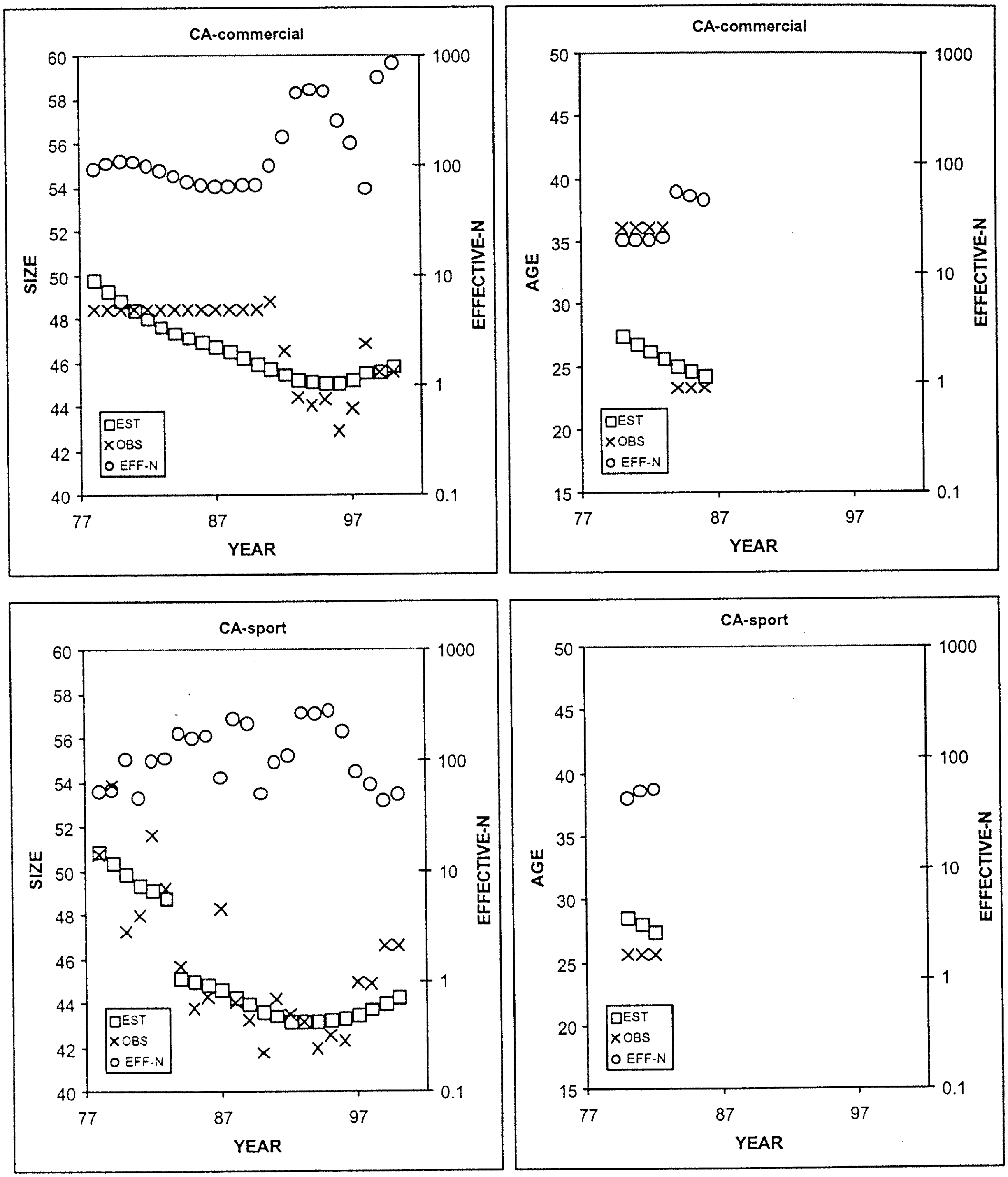


Figure 13. Fit to composition data presented as time series of expected and observed mean size (age).

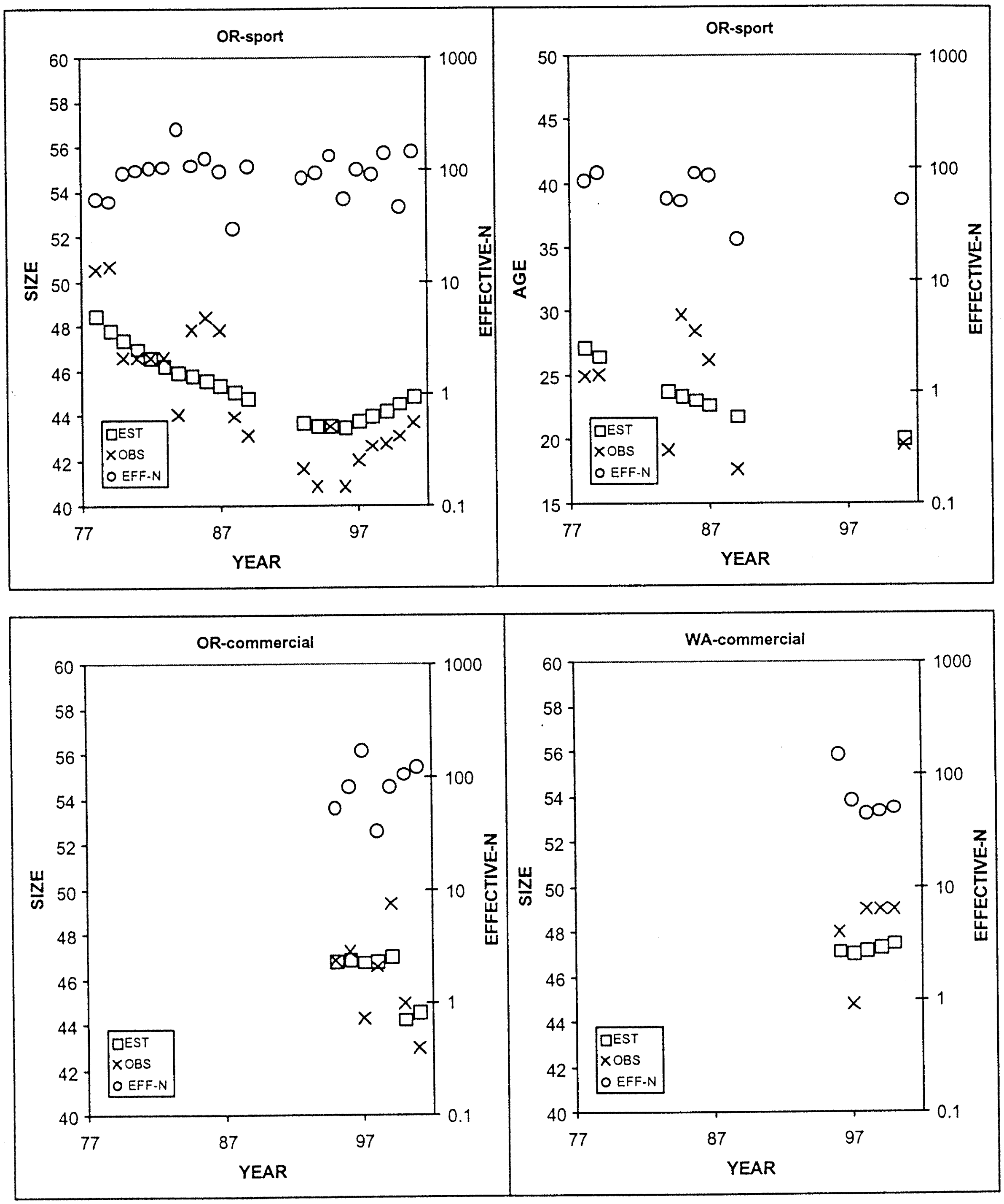


Figure 13. continued

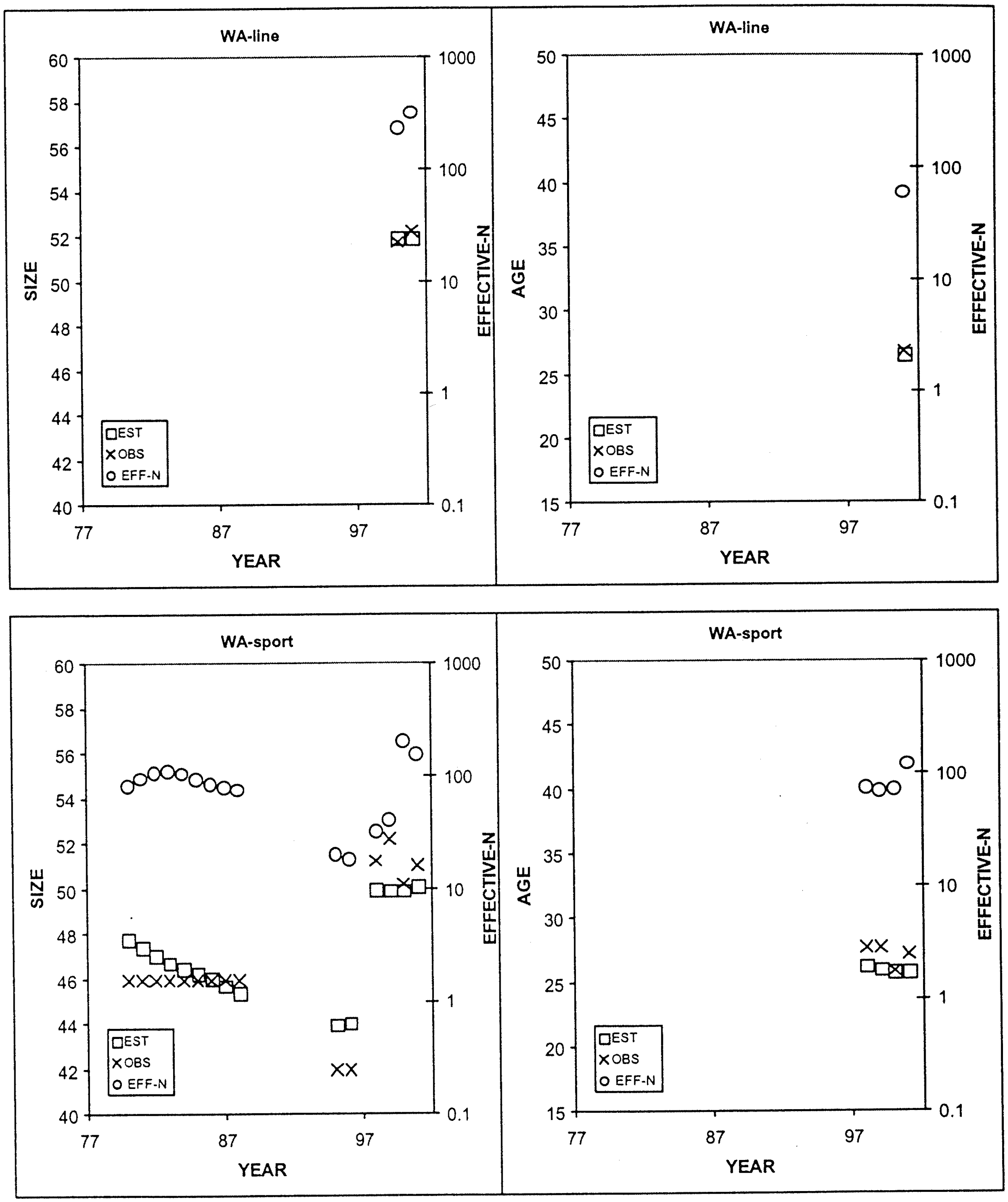


Figure 13. continued

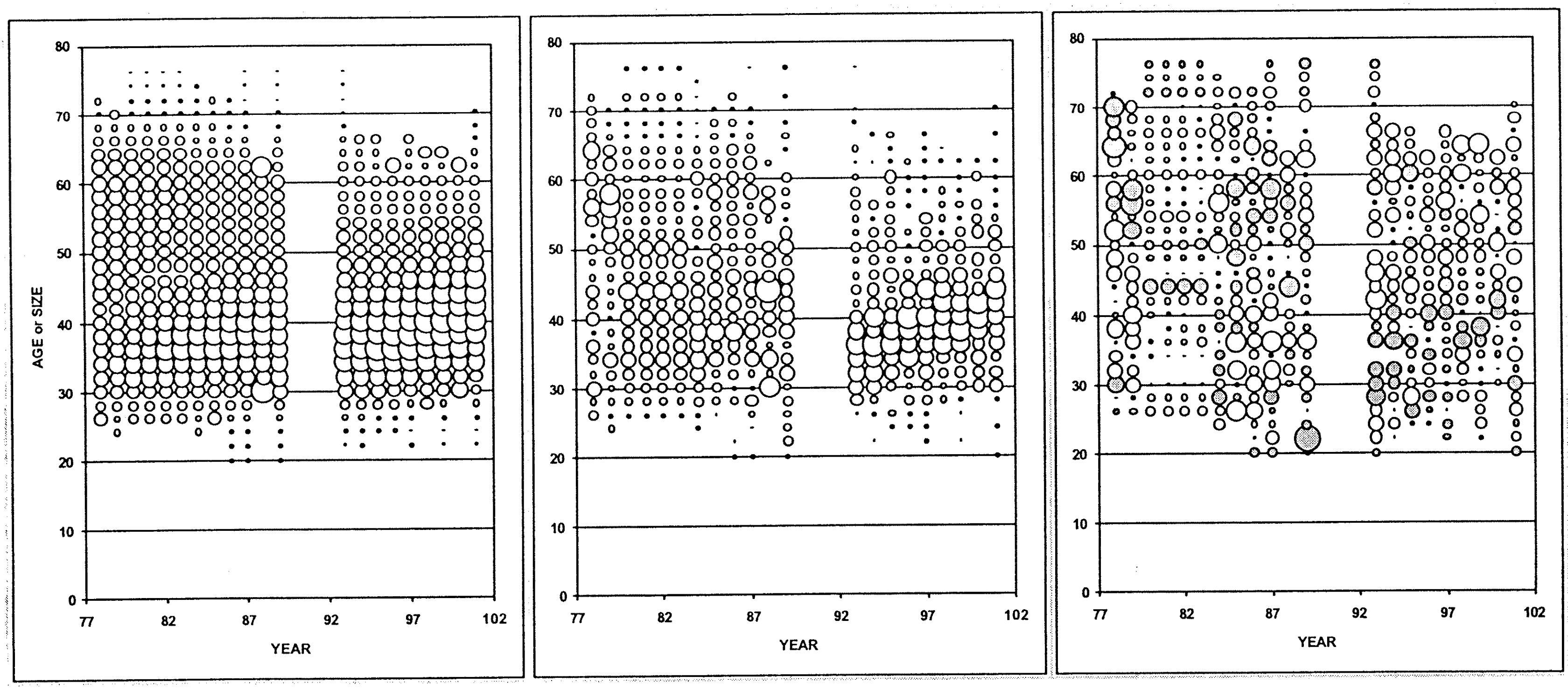


Figure 14. Bubble plot showing Oregon sport size composition. Left plot has estimated proportions at size, middle has observed proportions, right plot has Pearson residuals with solid circles showing observed > expected.

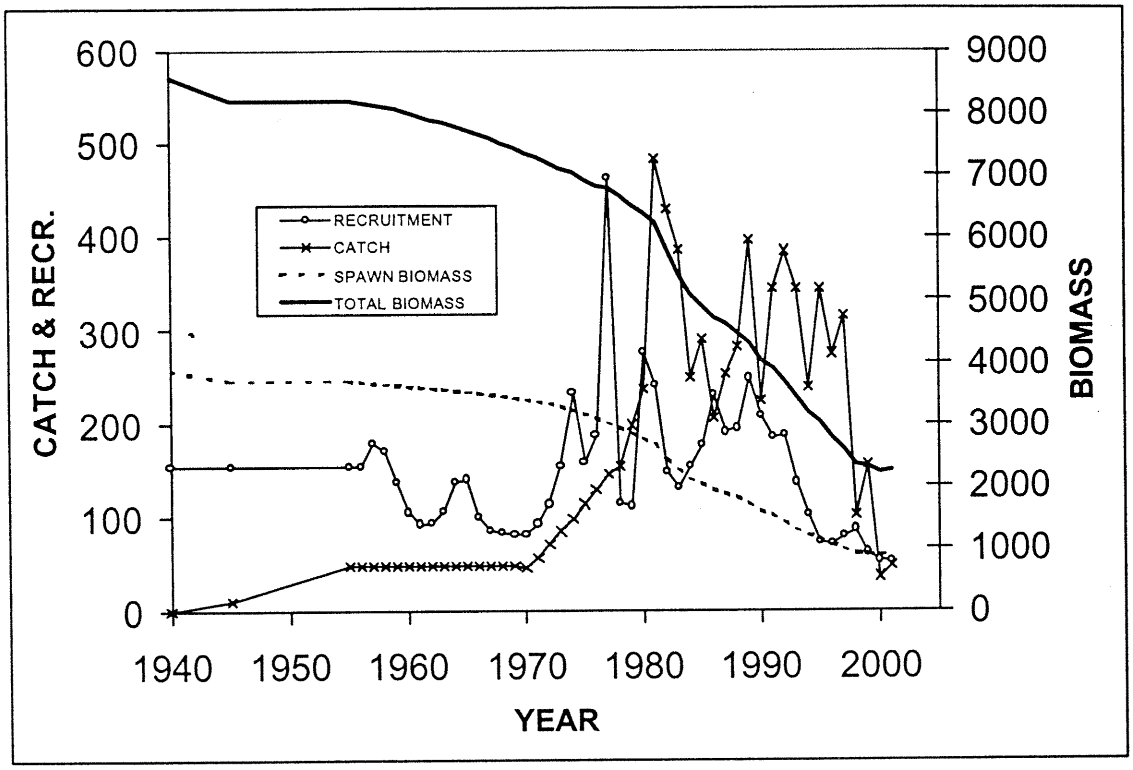
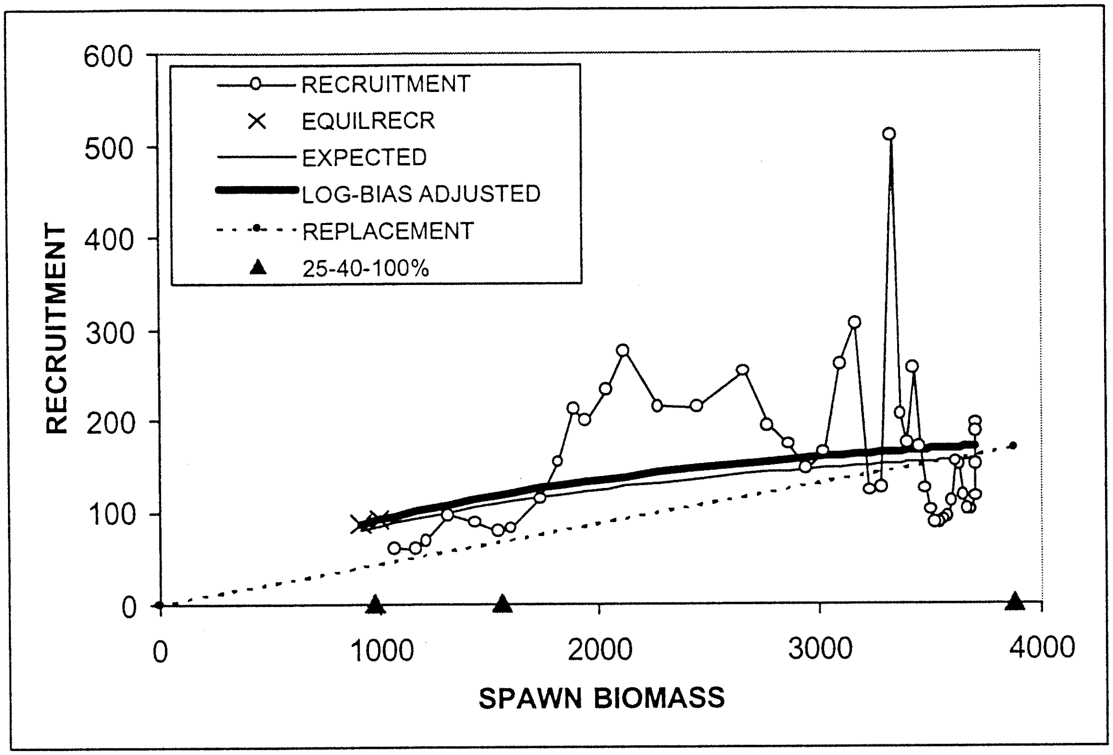


Figure 15. Final coastwide model result: time series of biomass, recruitment, and catch.



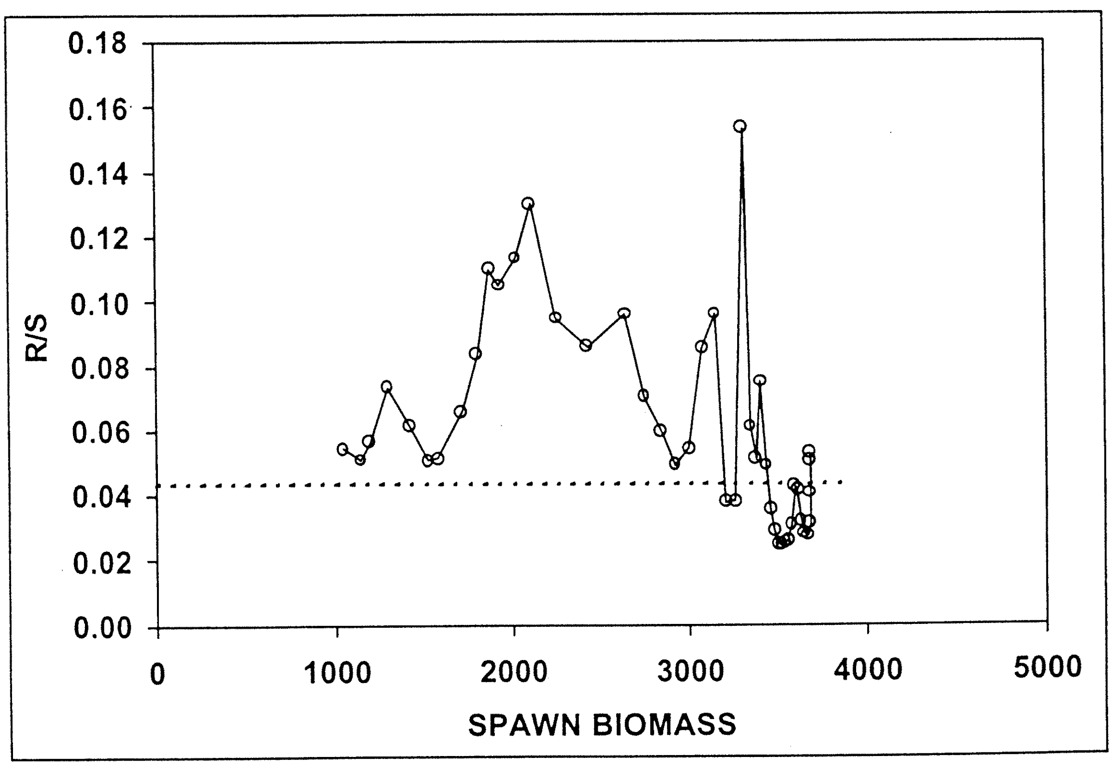


Figure 16. Final coastwide model result: spawner-recruitment relationship.

Rebuilding Analysis for Yelloweye Rockfish: Update to Incorporate Results of Coastwide Assessment in 2002

September 5, 2002

Richard Methot and Kevin Piner
National Marine Fisheries Service

Summary
The rebuilding analysis for yelloweye rockfish was first conducted in 2002 based upon the 2001 assessment (Wallace 2002). This document updates those results based upon the new assessment (Methot et.al. 2002) that incorporates data from Washington State and age data from all 3 states.

The target spawning stock biomass is 40% of the unfished stock biomass (Bzero). Current spawning stock abundance was estimated at 24% of Bzero in 2002.

The mean generation time of yelloweye rockfish is 44 years and the estimated year to be rebuilt in the absence of fishing is 2027. This is shorter than estimated in the previous assessment due to a less depleted stock status in the newest assessment and due to a lesser decline in recruitment as the spawning stock declines.

The rate of rebuilding is based upon the estimated spawner-recruitment relationship with a steepness of 0.437 and sigma R =0.4. The following table lists resulting OY estimates for different rebuilding strategies.

Pr rebuilt by tmax	Median time to rebuild	OY in 2003
50%	67yrs	27mt
60%	64yrs	26mt
70%	59yrs	25mt
80%	55yrs	24mt
50% Pr rebuilt by tmid	48yrs	22mt

Introduction

This rebuilding analysis is based upon the new assessment of the yelloweye rockfish stock conducted in 2002 (Methot et al. 2002). The 2001 assessment and this update use the length-based version of the Synthesis model (Methot, 2000) to analyze the data. Substantial changes in the assessment involve inclusion of age data from all three states, inclusion of the Washington catch and data in the model, and an evaluation of several alternatives for combining, or leaving separate, the information from the three states. Considerable uncertainty remains about the estimates of recruitment and virgin recruitment. The rate of rebuilding will be sensitive to the estimated steepness of the spawner-recruit relationship and the estimate of B40% is sensitive to the estimates of virgin recruitment.

The purpose of this document is to use results from the most recent assessment (Methot et al. 2002) to update estimates of the potential rate of rebuilding of yelloweye rockfish. The basic results of this assessment are summarized in the Assessment Summary below. Rebuilding analyses were carried out using the rebuilding program developed by Punt (2002).

Assesment Summary

Model description

Analyses in this assessment were developed using the length-based version of Stock Synthesis (Methot, 2000). Important differences in model configuration from Wallace (2001) include:

1. inclusion of Washington data:
2. inclusion of age composition data from all three states as available and update of size composition data
3. inclusion of mean length-at-age data from each data source to aid in the simultaneous estimation of growth parameters and size-selectivity
4. allowing all fishery sectors to have dome-shaped selectivity
5. including emphasis on the spawner-recruitment curve and estimating the curvature (steepness) of this curve.
6. Starting in 1955 rather than 1970 to better allow for potential long-term patterns in recruitment
7. estimates of the Washington sport CPUE was done by the delta method and sport CPUE based on RecFIN estimates was excluded
8. Washington, Oregon and California was considered to be one stock
9. Re-examining evidence for age-specific natural mortality and concluding that baseline model should have constant natural mortality.

Results of the assessment indicated that the stock was overfished (24% of Bzero) but was in better condition than previously estimated. This was due in part to the inclusion of Washington state data and age composition data. The coastwide time series of catch is shown in Figure 1. Additional information regarding the assessment result is found in the assessment document.

Rebuilding Calculations

The level of recruitment has declined from 169 thousand fish in an unfished state to around 80 thousand fish after 1990. The mean level of recruitment is estimated to correspond to the size of the spawning population and should therefore rebuild as the parental stock increases.

Of key importance to rebuilding is the estimate of steepness of the S/R relationship. The estimate of S/R steepness was 0.437 and indicates relatively low stock productivity at small sizes. Meta-analysis indicates that rockfish typically have steepness around 0.7 (Myers 1999; Dorn 2000). A source of uncertainty in the steepness estimate is the unknown role of long-term trends in the ocean climate. Various studies have identified shifts in recruitment for other species (McFarlane et al, 2000) that correspond in timing to changes in the ocean climate, particularly near 1977 and 1989 (Mantua and Hare, 2002). From the yelloweye rockfish recruitment-spawner information it is not possible at this time to determine the degree to which the lower average recruitments during the 1990's are strictly due to long-term average spawner-recruitment steepness versus a period of climate-induced reduction in recruitment. Therefore, the steepness of 0.437 has a broad confidence range and it seems reasonable to use the range of 0.35 to 0.70 to bracket the uncertainty when conducting projections.

To impart year to year variability around the estimate of recruits, a lognormal variability (with a value of 0.4) around the S/R curve was used to generate future recruitment. This method is used in lieu of resampling year specific recruits or recruitment deviations. This seems like the most logical choice given that the estimates of year specific recruitment strength are based on very little data and probably not estimated well. The lognormal variability captures the scale of the observed recruitment variability without restricting the future values to the particular values estimated from the past. The sensitivity analysis compares the parametric S/R approach to a resampling of recruitments and to a resampling of recruits per spawner.

ABC, Overfishing and Fmsy

The Council's current policy for the calculation of an ABC is to apply an exploitation rate based on F50%. This would be 52 mt in 2003. For stocks below 40% of Bzero, a correction factor (40-10) is applied to reduce the OY linearly with spawning biomass. This would be in a 2003 limit of 42 mt. For stock below 25% of Bzero the harvest rate applied is that which would have a specified probability of at least 50% to rebuild the stock to 40% Bzero in no more than the time it would take the stock to rebuild in the absence of fishing plus one mean generation time (tmax). Those values along with the 2003 removal corresponding to Tmid are listed in Table 1. The probability distributions for time to rebuilding are shown in Figure 2. There is very little practical difference in 2003 catch over the various rebuilding strategies. The trade-off between short-term OY (corresponding to a constant harvest rate) and time to 50% probability of rebuilding is shown in Figure 3.

Table 1. The OY and median time to rebuild associated with different rebuilding strategies

Pr rebuilt by tmax	Median time to rebuild	OY
50%	67yrs	27mt
60%	64yrs	26mt
70%	59yrs	25mt
80%	55yrs	24mt
50% Pr rebuilt by tmid	48yrs	22mt

Additional rebujilding calculations (Table 2) were made using alternative methods in order to better understand the robustness of the baseline result presented above. The rebuilding runs at steepness levels of 0.35 and 0.70 started from assessment runs with these fixed steepness levels and not from the baseline run with steepness estimated at 0.437. The rebuilding runs based upon resampling of recruits or recruits per spawner used a range of years that corresponded to the time period in which the stock had fallen below the 50% biomass level. This is a small sample of years for such a non-parametric approach, but the results are basically similar to those from the parametric approach. The low steepness run (0.35) produces a result that is similar to the R/S resampling because both reproduce the low recruitments observed during the 1990's. These two pessimistic forecasts indicate that the status quo catch level (13 mt OY in 2002) would allow rebuilding with 80% probability even if the low steepness level prevails in the future.

Table 2. Sensitivity of rebuilding calculations to the level of S/R steepness and to alternative methods of generating future recruitment levels. The rebuilding runs at steepness levels of 0.35 and 0.70 started from assessment runs with these fixed steepness levels and not from the baseline run with steepness estimated at 0.437.

YELLOWEYE ROCKFISH REBUILDING RESULTS

Prob to rebuild by Tmax:	50%	60%	70%	80%	100%
baseline; S/R steepness = 0.437					
Fishing Rate	0.0173	0.0167	0.0161	0.0153	0
2003 OY (mt)	27	26	25	24	0
Median Year to Rebuild	2070	2067	2062	2058	2026
steep=0.35					
Fishing Rate	0.0108	0.0103	0.0097	0.0091	0
2003 OY (mt)	17	16	15	14	0
Median Year to Rebuild	2078	2074	2070	2065	2034
steep=0.70					
Fishing Rate	0.0337	0.0328	0.0321	0.0312	0
2003 OY (mt)	59	57	56	54	0
Median Year to Rebuild	2060	2055	2052	2048	2016
resamp R/S in 89-99					
Fishing Rate	0.0115	0.0112	0.0108	0.0104	0
2003 OY (mt)	18	18	17	16	0
Median Year to Rebuild	2076	2073	2070	2067	2032
resamp R in 89-99					
Fishing Rate	0.0208	0.0200	0.0191	0.0180	0
2003 OY (mt)	33	31	30	28	0
Median Year to Rebuild	2066	2059	2054	2048	2022

Table 3. The age specific vectors of fecundity, mortality, weigh and selectivity used in the rebuilding analysis.

	fecundity at age	mortality at age	weight at age	selectivity at age	Init N at age
3	0.0002	0.045	0.2748	0.0155	84.4
4	0.0008	0.045	0.3578	0.0311	85.6
5	0.0026	0.045	0.4511	0.0559	51.8
6	0.008	0.045	0.5543	0.087	50.6
7	0.0213	0.045	0.6648	0.1273	55.6
8	0.0498	0.045	0.779	0.1677	74
9	0.1017	0.045	0.895	0.2112	63.7
10	0.1839	0.045	1.0123	0.2516	52.6
11	0.2992	0.045	1.1307	0.295	50.9
12	0.445	0.045	1.2504	0.3416	64.3
13	0.6149	0.045	1.371	0.3944	77
14	0.8004	0.045	1.4926	0.4534	92.8
15	0.9935	0.045	1.6149	0.5155	79.2
16	1.1878	0.045	1.7375	0.5776	77.1
17	1.3787	0.045	1.8603	0.6429	78.2
18	1.5633	0.045	1.9827	0.705	51.8
19	1.7408	0.045	2.1046	0.764	42.9
20	1.9104	0.045	2.2256	0.8168	44.1
21	2.0727	0.045	2.3449	0.8602	28.5
22	2.2278	0.045	2.4623	0.9006	21.3
23	2.3767	0.045	2.5772	0.9317	15.5
24	2.5195	0.045	2.6893	0.9565	15.1
25	2.6572	0.045	2.7983	0.9752	21
26	2.7898	0.045	2.9037	0.9876	21.1
27	2.9177	0.045	3.0054	0.9969	7.4
28	3.0415	0.045	3.1031	1	6.7
29	3.1611	0.045	3.1968	1	23.9
30	3.2767	0.045	3.2867	0.9938	8.6
31	3.3886	0.045	3.3723	0.9876	6.5
32	3.4967	0.045	3.4541	0.9814	8.7
33	3.6011	0.045	3.5321	0.9689	5.2
34	3.7022	0.045	3.6066	0.9565	3.5
35	3.7996	0.045	3.6774	0.9441	2.7
36	3.8937	0.045	3.7448	0.9286	2.1
37	3.9843	0.045	3.809	0.913	2
38	4.0717	0.045	3.8704	0.8975	2
39	4.1559	0.045	3.9288	0.882	1.9
40	4.2368	0.045	3.9845	0.8665	2.2
41	4.3146	0.045	4.0376	0.8509	2.9
42	4.3893	0.045	4.0883	0.8354	2.7
43	4.4611	0.045	4.1367	0.8199	2
44	4.53	0.045	4.1831	0.8043	1.7

45	4.596	0.045	4.2273	0.7919	1.6
46	4.6592	0.045	4.2695	0.7764	1.8
47	4.7197	0.045	4.3099	0.764	2.3
48	4.7775	0.045	4.3485	0.7516	2.8
49	4.8329	0.045	4.3855	0.7391	2.9
50	4.8858	0.045	4.4208	0.7267	2.4
51	4.9365	0.045	4.4548	0.7143	2.3
52	4.9848	0.045	4.4871	0.7019	2.3
53	5.0308	0.045	4.5181	0.6925	2.2
54	5.0748	0.045	4.5477	0.6832	2.2
55	5.1167	0.045	4.5761	0.6739	2.1
56	5.1567	0.045	4.6032	0.6646	2.1
57	5.1948	0.045	4.6292	0.6553	2
58	5.2311	0.045	4.654	0.646	2
59	5.2657	0.045	4.6778	0.6398	1.9
60	5.2986	0.045	4.7005	0.6304	1.9
61	5.33	0.045	4.7222	0.6242	1.8
62	5.3599	0.045	4.743	0.618	1.8
63	5.3886	0.045	4.763	0.6118	1.8
64	5.4156	0.045	4.782	0.6056	1.7
65	5.4414	0.045	4.8002	0.5994	1.7
66	5.466	0.045	4.8175	0.5932	1.6
67	5.4893	0.045	4.8341	0.587	1.6
68	5.5115	0.045	4.85	0.5839	1.5
69	5.5327	0.045	4.8651	0.5776	1.5
70	5.758	0.045	4.9912	0.5311	37.8

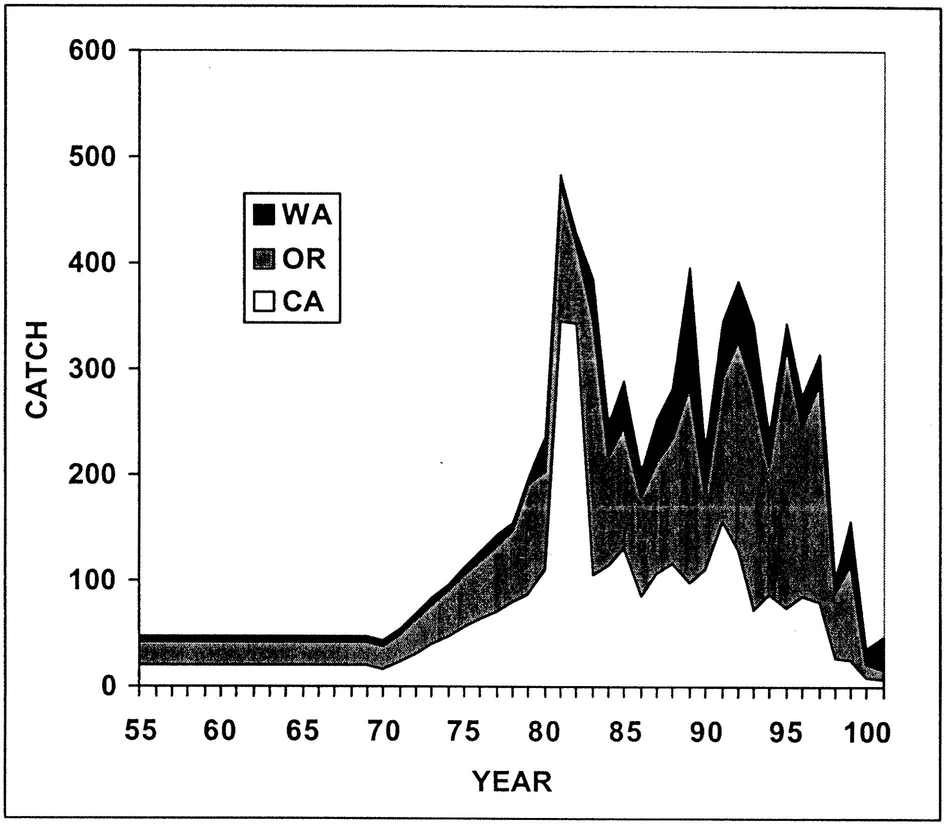


Figure 1. The time series of catch taken from each state from 1955-2001

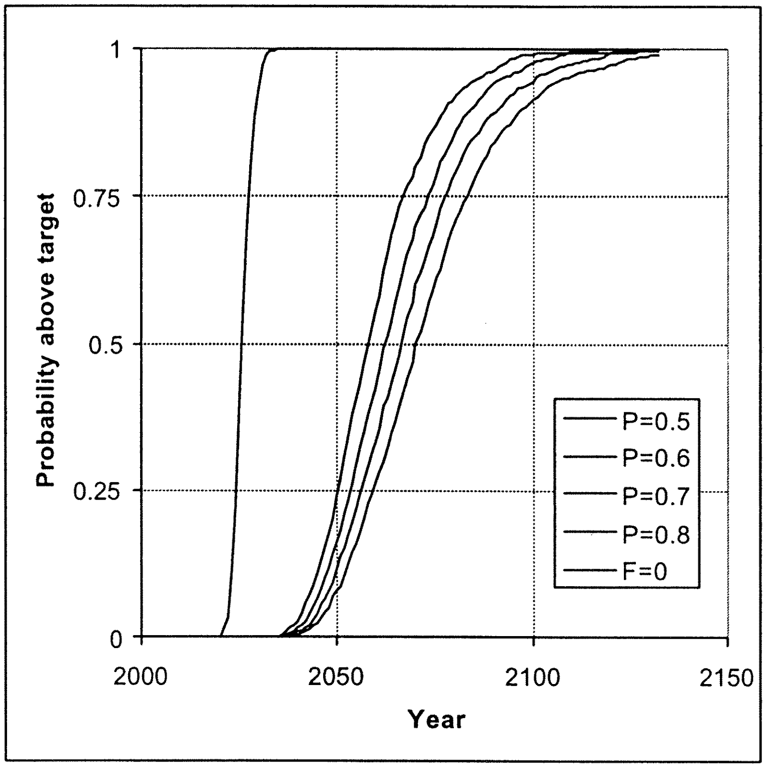


Figure 2. The probability of yelloweye rockfish being above B40% over time under different rebuilding strategies is given.

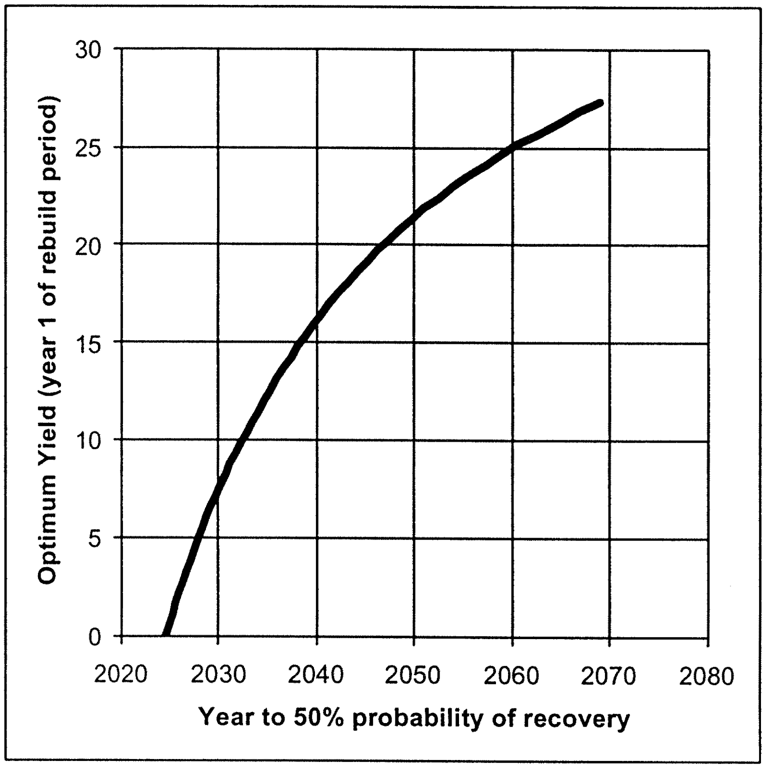


Figure 3. Relationship between short-term harvest level and the year to 50% probability of rebuilding.

YELLOWEYE ROCKFISH

STAR Panel Meeting Report

NOAA/NMFS Northwest Fisheries Science Center
2725 Montlake Blvd., E
Seattle, Washington
August 11-14, 2002

<u>STAR Panel Members</u>
Dave Carlile, Alaska Department of Fish and Game
Chris Francis, National Institute of Water and Atmospheric Research
Han-Lin Lai, NOAA/NMFS Northwest Fisheries Science Center (Chair, SSC)

<u>PFMC Committee Representatives</u>
Brian Culver, Groundfish Management Team (Rapporteur)
Rod Moore, Groundfish Advisory Panel

<u>STAT Team Members</u>
Rick Methot, NOAA/NMFS Northwest Fisheries Science Center
Kevin Piner, NOAA/NMFS Northwest Fisheries Science Center
Farron Wallace, Washington Department of Fish and Wildlife (absent)

Overview

The STAR panel reviewed the stock assessment of yelloweye rockfish at the Northwest Fisheries Science Center, Seattle, Washington on August 11-14, 2002. This is the second assessment of the yelloweye rockfish stock on the US west coast. The first assessment was done in 2001 and reviewed in June 25-29, 2001 at Santa Cruz Laboratory, California. The 2001 assessment was carried out by using Stock Synthesis Model (SSMOD) to assess the northern California and Oregon stocks separately. The Washington state portion of the stock was not assessed in 2001.

In the 2002 stock assessment, the main differences in model configurations from the 2001 assessment are

(1) The Washington data were included;
(2) Combined area models were included;
(3) The California sport CPUE data were re-analyzed to evaluate the influence of port group and depth effects;
(4) The available age compositions were included;
(5) The length compositions from the three states were updated;
(6) The mean length-at-age data from the available ageing data were included to facilitate the estimation of growth parameters and size-selectivity in the model;
(7) The dome-shape selectivity curves were used for all sectors of fisheries;
(8) The extra term was included in the likelihood function to constrain recruitments from deviating too far from the spawner-recruitment curve, and also to allow estimation of its steepness parameter;
(9) The time period covered by the model started at 1955 rather than 1970 to better describe the long-term recruitment pattern.

Although there is substantial uncertainty associated with model estimates, due mainly to data limitations (e.g., short time series), the panel believes that the model provides convincing evidence of a considerable decline in yelloweye rockfish abundance. The panel notes that although some parameters (e.g., the steepness of the stock-recruitment curve) were not well determined, the estimated extent of biomass depletion was little affected by many of the sources of uncertainty.

The model estimates of substantial population decline are consistent with declines of yelloweye rockfish catch prior to recent specific yelloweye rockfish catch restrictions. The increasing proportion of immature fish in the catch over time is also consistent with this decline.

The panel believes that the modeling approach is consistent with international best practice, and that results from this assessment are sufficient to provide management advice to the Council.

The STAR panel commends the STAT team for their excellent work in conducting the stock assessment and for their cooperative spirit and willingness to respond to the panel comments and requests.

Changes Requested and Completed During STAR Panel Meeting

1. Analysis of Washington sport CPUE data

Because of the substantial number of zero catches observed, the panel requested the STAT team use the delta-GLM to re-analyze Washington sport CPUE data with year, month and port effects. The results revealed a more substantial decline of the predicted annual CPUE than the original GLM.

2. Analysis of Northern California sport CPUE data

Following the analysis in the 2001 stock assessment, analysis of Commercial-Passenger Fishing Vessel (CPFV) CPUE data was carried out by delta-GLM with year, month and port effects. Because data are sparsely distributed over the three factor-levels, the panel requested that the months be grouped into quarter, and ports into port groups (based on the likely fishing grounds for boats from a port group). Based on the advice of the GAP advisor and other knowledgeable sources, four port groups were formed along the California coast. During the exploratory data analyses, depth was found to be an important factor. CPUE information from depths less than 19 fathoms and greater than 100 fathoms were removed from the model. Yelloweye rockfish are rarely encountered in these depth strata and changes in sampling efforts within them over time could introduce bias into the CPUE index.

3. Sample sizes for size and age data

The panel requested that the assumed sample sizes for the size and age data be reduced. The model uses these sample sizes as an indication of how precise these data are, and thus how much emphasis to put on them. Initially, the sample sizes were set equal to the actual sample sizes. This is not appropriate because of the structure of these samples. Typically the fish in one sample come from just a few trips, and fish caught in the same trip tend to be more similar to each other - in size and age and age - than they are to fish from different trips. Thus the effective sample size is less than the actual sample size. The suggested procedure for reducing the sample sizes was seen as a temporary *ad hoc* solution. A better approach, using bootstrap resampling, is suggested below.

4. High California line catch in 1981

The high catch of the Southern California line+others fisheries in 1981 was primarily contributed from line fisheries. The STAT team investigated the data and concluded that there was no irregularity in this reported catch, and thus, has no reason to exclude it from the data. However, the stock assessment model assumed that there was no high catch prior to 1981 (because the model started from 1950). The panel requested that sensitivity analyses be conducted to evaluate the influence of possible high catches before 1981 in Southern California.

Suggestions for Future Assessments

1. Sample sizes for size and age data

The panel requested that bootstrap resampling be used to calculate more accurate error distributions for the size and age data. These data are currently assumed to have a multinomial error structure. This assumption is not strictly correct because the samples are not simple random. The aims of the resampling would be to determine: (a) whether the multinomial distribution provides a reasonable approximation for the error distribution for these data; (b) if so, what are the effective sample sizes; and (c) if not, what is the best alternative parametric form for the error distribution, and what are appropriate parameter values. The resampling should use only data from the largest samples. However, it should be possible to use these data to infer appropriate error distributions for all age and size samples, regardless of whether they are large or small.

2. Ageing error

The panel requested that the replicate ageing data (see Table 13 and Figure 10 in the 2001 assessment report) be further analyzed to check the ageing-error assumptions used in the assessment (which were the same as in 2001) and to obtain estimates of possible bias. When these data were briefly examined during the STAR process there was some doubt as to whether the current ageing-error assumptions were correctly derived from them. This should be checked. Also, these data should be used to estimate the likely extent of bias in the age estimates (it is apparent from the plotted data that at least one of the two sets of age estimates must be biased). The effect of this degree of bias could be estimated as a sensitivity analysis in the next yelloweye rockfish assessment.

Areas of Uncertainty

<u>Catch data</u>

Undocumented catch of yelloweye rockfish, for example the bycatch from the commercial halibut fishery, would cause the model to under-estimate the virgin biomass.

<u>CPUE data</u>

1. The Oregon sport CPUE data were received by the STAT team in an aggregated form without sample size information. Without access to the raw data, the STAT team could not investigate sources of variation. It is not known whether the raw data still exist.

2. The panel discussed the apparently contradictory trends in California CPUE: increasing frequency of sport fishing trips with no yelloweye rockfish catches but increasing catch rate on trips where yelloweye rockfish was caught. Although this phenomenon is not inconsistent with the model output, it is unsettling.

3. The sport CPUE data from the three states did not consistently record target species, which is an important factor in CPUE analyses. For example, the Washington CPUE data did not include the sport halibut trips, even though the majority of the state sport yelloweye rockfish catch came from halibut trips.

4. Fishery attributes critical to the understanding of the CPUE time series remain unknown. Potential changes in factors such as fishing locations, fishing targets and vessel sizes contribute to uncertainty in CPUE time series.

Model Components

1. The assumed proportionality between CPUE and stock size is unproven.

2. Combining small length and age samples across years, and presenting the same data in many years, was intended to reflect average conditions. However, the effects of this procedure on the model estimates are not fully understood.

Editorial Comments

1. More extensive documentation of CPUE analyses (i.e., delta-GLM) is essential for the future assessment of yelloweye rockfish. Items such as model structure, sequential percent of variation explained by additional factors, list of estimates of coefficients and standard errors, documentation of other factors in the models that have been examined should be tabulated in the tables or figures. This would reduce unnecessary effort for the STAT team to resolve many unknowns of the past analyses.

2. Better documentation of raw data is required, for example, methods of collection, what is collected, and data sources. Incomplete documentation in the 2001 assessment caused difficulties in this assessment.

3. Evidence of the validity of the very high 1981 Southern California line catch should be provided.

4. Better labels and captions of tables and figures, including units of measurement, are necessary.

Research Needs

1. Fishery-independent surveys using tools such as manned submersibles and remotely operated vehicles (ROV) will improve the stock assessment.

2. Better understanding of stock structure and degrees of mixing would help to model stock dynamics accurately.

3. The states should develop a standardized sport CPUE data collection system, including fishing location data.

4. More age data and more accurate estimation of age would improve the stock assessment.

Appendix: List of Attendees

Name	Affiliation	Email/Phone	Dates Attended
Richard Methot	NMFS/NWFSC	Richard.Methot@ noaa.gov	Aug.11-14
Kevin Piner	NMFS/NWFSC	Kevin.Piner@noaa.gov	Aug.11-14
Dave Carlile	ADFG	dave_carlile@ fishgame. state.ak.us	Aug.11-14
Chris Francis	NIWA	c.francis@niwa.co.nz	Aug.11-14
Han-Lin Lai	NMFS/NWFSC	Han-Lin.Lai@noaa.gov	Aug.11-14
Rod Moore	GAP	seafood@attglobal.net	Aug.11-14
Brain Culver	GMT	culverbnc@dfw.wa.gov	Aug.11-14
Rob Jones	NWIFC/GMT	Rjones@nwifc.org	Aug.11-14
Alan Hicks		a.hicks@earthlink.net	Aug.11-12
Ian Srewart	UW, NWFSC	istewart@u.washinton.edu	Aug.11-14
Steve Joiner	Makah Tribe	360-645-3157	Aug.13-14

Agenda Item C.2.e
GMT Presentation
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Comparison of projected trawl revenues (including at-sea whiting) in a base period, represented by the average of 2000 and 2001, with three sets of 2003 OY options under consideration by the Council, using the bycatch projection model and assuming that depth-based management is possible for the 2003 fishery.

	Avg. trawl rev. from 2000-2001	Projected trawl revenue under 2003 OY options		
		Low OYs	Allocation Committee Preferred-OY Alternative	High OYs
Total	$ 44,434,585	$ 29,815,295	$ 34,422,328	$ 39,144,207
Reduction from 2000-2001				
Revenue		$ 14,619,289	$ 10,012,257	$ 5,290,377
Percentage		33%	23%	12%

Dr. Hastie presentation

GMT STATEMENT ON FINAL HARVEST LEVELS AND OTHER SPECIFICATIONS FOR 2003

The Groundfish Management Team discussed the range of considered groundfish harvest levels for 2003 management and the implications of the varying total catch optimum yields (OYs) for each of the nine stocks with alternative specifications. The *Initial Draft Environmental Impact Statement/Regulatory Impact Review/Initial Regulatory Flexibility Analysis For Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures For The 2003 Pacific Coast Groundfish Fishery* (Annual Specifications EIS; Exhibit C.3, Attachment 1) provides some of the scientific explanation for alternative harvest specifications. However, further GMT discussion of the management implications of alternative harvest levels may be fruitful for Council considerations. Additionally, the GMT discovered an error in the sablefish specifications. The attached Revised Table 2.1-1 is a revision of the table that appeared in the Annual Specifications EIS. The following summary of alternative harvest specifications and their management implications is provided for consideration.

Lingcod

The alternative lingcod OYs are based on probabilities of rebuilding within T_{MAX} that correspond to the 80%, 60%, and 50% trajectories for *Low OY*, *Medium OY*, and *High OY*, respectively. The Allocation Committee met in August and specified a preference for the *Medium OY* value of 651 mt, which is consistent with the interim Council rebuilding strategy for lingcod. The GMT notes that it is unlikely that any of the considered lingcod harvest levels, including *Low OY*, will be attained in 2003 due to the anticipated binding constraints on fisheries operating on the shelf imposed by the need to rebuild bocaccio, canary rockfish, cowcod, and yelloweye rockfish. Preliminary evidence suggests that lingcod rebuilding is on track to rebuild within ten years in accordance with the interim Council lingcod rebuilding measures, which also alleviates any concern for lingcod.

Pacific Whiting

The Pacific whiting OYs are not ranged according to a rebuilding analysis since one has not been adopted by the Council. All three harvest levels the GMT recommended for consideration assume a medium level of recruitment for the 1999 year class. The *Low OY* is the current OY, which is the default $F_{40\%}$ harvest rate with the 40-10 adjustment applied to the estimated 2002 biomass. The *Medium OY* is derived using the more conservative $F_{45\%}$ harvest rate with the 40-10 adjustment, but applied to projected 2003 biomass. The *High OY* is derived using the default $F_{40\%}$ harvest rate with the 40-10 adjustment applied to the projected 2003 biomass.

Sablefish

The alternative sablefish OYs are derived from the 2002 assessment update and reflect alternative explanations for the poor recruitment observed in the 1990s. The *Low OY* harvest level is derived using an $F_{60\%}$ harvest rate under a density-dependence hypothesis and resampling of the 1992-2001 recruits to determine future recruitment. This harvest alternative was requested by the GMT in May in an effort to identify a harvest rate that would provide greater assurance of stock increase over the next 5-10 years, assuming average recruitment after the 1999 and 2000 year classes. The *Medium OY* alternative is based on the default $F_{45\%}$ harvest rate under a density-dependence hypothesis (resampling of 1992-2001 recruits). The *High OY* alternative is based on the default $F_{45\%}$ harvest rate under an environmental regime shift hypothesis (resampling of 1975-2001 recruits). Previous versions of the alternative harvest levels table prepared by the GMT depicted slightly lower harvest levels under these alternatives. The Team discovered the conversion of the OY derived for the assessed area north of Pt. Conception (34°27' N. lat.) to the management area north of 36° N. lat. incorrectly subtracted the entire Conception area OY. This mistake is corrected in the attached Revised Table 2.1-1.

The GMT is not recommending a specific harvest level but does note the STAR-light Panel advice that "given that (1) Q is poorly determined and that (2) at this time there is no compelling scientific basis to select between the two states of nature (density-dependent vs. regime shift), the review panel concluded that a precautionary adjustment that would lower the "risk neutral" sablefish OY is warranted, in order to reduce the possibility of over-harvesting the resource." The GMT is concerned that a harvest level as high as the *Medium OY* risks driving stock spawning biomass down near the overfished threshold if we do not continue to see recruitments that are as large as 1999 or 2000. Precaution is also warranted due to the expected delays in conducting the next assessment if the Council proceeds with multi-year management.

Pacific Ocean Perch

The Pacific ocean perch OY alternatives range probabilities of 80%, 70%, and 50% of rebuilding within T_{MAX} for *Low OY*, *Medium OY*, *High OY*, respectively. The Team notes that it is unlikely that any of the OYs will be attained in 2003 due to expected measures to constrain darkblotched rockfish mortality.

Widow Rockfish

The range of widow rockfish harvest alternatives corresponds to rebuilding probabilities of 80%, 60%, and 50% under the *Low OY*, *Medium OY (= Alloc. Cm. OY)*, and *High OY* alternatives, respectively with the *Medium OY* consistent with the Council's interim rebuilding strategy. The *Medium OY* harvest level of 832 mt conforms to the Council's adopted interim strategy for rebuilding the stock and may provide a winter opportunity for a midwater trawl fishery after anticipated bycatch in the at-sea fishery is taken into account. Therefore, the GMT recommends the 60% probability option of 832 mt, as the expected bycatch of widow in other targeted fisheries is approximately 250 mt which provides a significant buffer against unanticipated mortalities, and provides for a midwater opportunity in a portion of period 6. Using the T_{MID} option (which is equivalent to the 80% probability) produces an OY of 656 mt. This *Low OY* alternative would not provide both a midwater opportunity and an adequate buffer against unanticipated mortalities and possible increased effort. A higher harvest level would provide flexibility for scheduling a midwater trawl opportunity and an adequate buffer between expected catches and the OY. Not providing a midwater trawl opportunity in 2003 would reduce widow/yellowtail exvessel revenue by about $600,000-$750,000.

Canary Rockfish

The range of canary rockfish harvest alternatives correspond to rebuilding probabilities of 80%, 60%, and 50% under the *Low OY*, *Medium OY*, and *High OY* alternatives, respectively. The GMT is primarily concerned with the bycatch implications under the considered catch sharing options. The GMT supports Council consideration of canary rockfish catch sharing for 2003 that is higher on the commercial end than 50%. Catch sharing of canary that is 60% commercial:40% recreational would provide for an overall higher OY at the 60% probability level (44 mt vs. 41 mt). The increase in OY is due to the tendency of recreational fisheries to take smaller fish. This creates a greater "per-ton" impact over the course of rebuilding. Not only would this provide for commercial trawl fisheries which would otherwise be constrained, it would also provide for anticipated canary rockfish mortalities associated with proposed exempted fisheries (EFPs) for 2003. As an example, under a 60:40 split, the recreational portion of the OY would be reduced from 19 mt to 16 mt. The additional 3 mt from the recreational share plus the 3 mt from the increased OY under 60:40 sharing would provide most of what the Team believes would be needed to accommodate valuable experimental fisheries in 2003. However, the GMT notes that the current preferred state recreational management proposals cannot be accommodate under the 50:50 catch sharing option (as they produce mortalities in the 21 mt range); therefore, these proposals must be significantly restructured to meet the appropriate OY targets.

Bocaccio

The GMT could not recommend an OY for bocaccio given the lack of any available harvest under rebuilding in the revised rebuilding analysis.

Darkblotched Rockfish

The darkblotched OYs reviewed with their associated probabilities of rebuilding within T_{MAX} were as follows: *Low OY* (~92%), *2001 OY* (~88%), *Alloc. Cm. OY* (80%), *Medium OY* (70%), and *High OY* (50%). The consequence of managing for the lower OYs are that the trawl fishery would be constrained for a greater portion of the year outside of 250 fm. Smaller vessels would be most affected since they may not be able to effectively fish in deeper water. Opportunities to fish flatfish in shallower water could also be more constrained due to projected bycatch of young darkblotched rockfish inside 100 fm. Some of these vessels could be forced out of the fishery with no viable economic incentives. The GMT believes the T_{MID} value of 172 mt (*Alloc. Cm. OY*) provides a reasonable balance for rebuilding the stock while lessening the potential adverse economic impacts to the limited entry trawl sector.

Yelloweye Rockfish

The *Low OY* is based on the older rebuilding analysis considered in June which was called into question due to the lack of Washington catch and age data. The *Medium OY* alternative is the Status Quo 13.5 mt specified in 2002 and the *High OY* alternative conforms to a 50% probability of rebuilding within T_{MAX} as determined in the new rebuilding analysis. The GMT considered the implications of managing for a coastwide yelloweye rockfish OY. The Team is concerned that targeting of yelloweye would likely occur in areas where the stock is more depressed, leading to local depletion. Given the uncertainty in the assessment and the current ability to manage for these low levels of available harvest, the Team recommends a lower harvest level and would prefer a level closer to *Medium OY.* This would be consistent with recommended management measures such as no retention regulations in all recreational and commercial line fisheries to discourage targeting and alleviate concerns regarding localized depletion.

The Team endorses the upper end of the 14-22 mt updated rebuilding OY range supported by the SSC provided that it not be treated as a target. Due to the data inputs and uncertainty in the current model, the Team feels it would be appropriate to adopt management measures designed to achieve the harvest close to *Medium OY* (13.5 mt). This approach provides a buffer between the management target and the OY to allow for unanticipated (or unmeasurable) yelloweye mortality associated with zero retention management measures. This is similar to the approach we have used in the past for POP in which the OY has not been considered a target and fisheries were modeled to keep mortality to unavoidable incidental levels.

Phil Anderson

REVISED TABLE 2.1-1. Acceptable biological catches (ABCs) and total catch optimum yield (OY) alternatives (mt) for 2003 for the West Coast under the Council-proposed alternatives. (Overfished stocks in CAPS).

Stock	2002 ABCs/OYs		2003 ABCs and OY Alternatives					
	ABC	*No Action OY*	ABC	*Low OY*	*Medium OY*	*High OY*	*Alloc. Cm. OY*	*Council OY*
LINGCOD	745	577	841	555	651	725	651	To be specified at the Sept Council meeting
Pacific Cod as is	3,200	3,200	3,200		3,200			
PACIFIC WHITING	166,000	129,600	188,000	129,600	148,200	173,600	148,200	
Sablefish		6500		6500				
North of Conception	4,644	4,367	8,209	4,477	7,455	8,187	5,000	
Conception INPFC area	333	229	441	233	323	346	249	
PACIFIC OCEAN PERCH	640	350	689	311	377	496	377	
Shortbelly Rockfish as is	13,900	13,900	13,900		13,900			
WIDOW ROCKFISH	3,727	856	3,871	656	832	916	832	
CANARY ROCKFISH								
(50% Comm.-50% Rec.)	228	93	256	30	41	45	41	
(80% Comm.-20% Rec.)			309	38	52	57		
(20% Comm.-80% Rec.)			218	20	34	37		
Chilipepper Rockfish as is	2,700	2,000	2,700		2,000			
BOCACCIO[1]	122	100	198	0	5.8	≤20	≤20	
Splitnose Rockfish	615	461	615		461			
Yellowtail Rockfish	3,146	3,146	3,146		3,146			
Shortspine Thornyhead	1,004	955	1,004		955			
Longspine Thornyhead	2,461	2,461	2,461		2,461			
S. of Pt. Conception	390	195	390		195			
COWCOD (S. Concep)	5	2.4	5		2.4			
N. Concep & Monterey	19	2.4	19		2.4			
DARKBLOTCHED	187	168	205	100	184	205	172	
YELLOWEYE[2]	27	13.5	52	2.1	13.5	27	22	
Minor Rockfish North as is	4,795	3,115	4,795		3,115			
not addressed Minor Rockfish South as is	3,506	2,015	3,506		2,015			
Remaining Rockfish North	2,727		2,727					
Black	1,115		1,115					
Bocaccio	318		318					
Chilipepper - Eureka	32		32					
Redstripe	576		576					
Sharpchin	307		307					
Silvergrey	38		38					
Splitnose	242		242					
Yellowmouth	99		99					
Remaining Rockfish South	854		854					
Bank	350		350					
Blackgill	343		343					
Sharpchin	45		45					
Yellowtail	116		116					
Other Rockfish North	2,068		2,068					
Other Rockfish South	2,652		2,652					
Dover Sole	8,510	7,440	8,510		7,440			
English Sole	3,100		3,100					
Petrale Sole	2,762		2,762					
Arrowtooth Flounder	5,800		5,800					
Other Flatfish	7,700		7,700					
Other Fish	14,700		14,700					

[1]The medium and high OYs are not supported by a revised rebuilding analysis (MacCall and He 2002) that is scheduled for SSC review at the September Council meeting. The *Medium OY* alternative is based on the June 2002 version of the rebuilding analysis. The *High OY* and *Alloc. Cm.-Preferred OY* alternatives are based on a recent decision by NOAA Fisheries that bocaccio do not conform to National Standard Guidelines; the harvest limit specified is estimated to achieve rebuilding beyond T_{MAX} and is supported by Magnuson-Stevens Act objectives.

[2]The *High OY* and *Alloc. Cm.-Preferred OY* alternatives are based on a new rebuilding analysis (Methot et al. 2002) that is scheduled for SSC review at the September Council meeting.

Preliminary ABCs and OYs for 2003, Council Meeting Draft #1, 9-10-02.

All amounts in metric tons		2003	Optimum Yield (OY)									Open-Access			Limited-entry				
			Total				2003			Non-tribal			Total	Landed	Total	At-sea		Limited-entry	
		Total ABC	Catch	Landed	Tribal	Rec.	Comp.	Res.	Non-GF	Comm.		%	catch	catch	catch	Bycatch	Landed	Trawl	FG
Lingcod		841	555	461	5.5	126		3	1.3	419		19%	80	64	340		272		
		841	651	538	5.5	126		3	1.3	515		19%	98	78	417		334		
		841	725	597	5.5	126		3	1.3	589		19%	112	90	477		382		
																at-sea		shore	
Whiting		188,000	129,600		22,680			200	1,800	104,920						60,854		44,066	
		188,000	148,200		25,000			200	1,800	121,200						70,296		50,904	
		188,000	173,600		25,000			200	1,800	146,600						85,028		61,572	
Sablefish NoC		8,209	4,477	3,860	448		11.1	53.0	18.5	3,932		9.4%	370	340	3,562	15	2,988	1,612	1,377
		8,209	5,000	4,309	500		11.1	53.0	18.5	4,402		9.4%	414	381	3,989	15	3,346	1,804	1,541
		8,209	7,455	6,417	745		11.1	53.0	18.5	6,612		9.4%	621	572	5,990	15	5,024	2,710	2,315
		8,209	8,187	7,046	819		11.1	53.0	18.5	7,271		9.4%	683	629	6,587	15	5,526	2,980	2,545
Conception Area		441	233	214						233									
		441	249	229						249									
		441	323	297						323									
		441	346	318						346									
Dover sole		8,510	7,440	7,006			62.4	58.0	2.0	7,318					7,318		7,006		
English sole		3,100																	
Petrale sole		2,762																	
Arrowtooth flounder		5,800																	
Other flatfish		7,700																	
Thornyheads																			
Shortspine N. of Pt.C		1,004	955	755	3.0		1.6	9.0		941		0.27%	3	3	939		751		
Longspine		2,461	2,461	2,029			8.9	18.0		2,434					2,434		2,020		
Conception		390		195						0					0		195		
Widow	Tmid:50%	3,871	656	383	45	3		1.5	0.4	606		3.0%	18	15	588	160	364		
	60%	3,871	832	530	45	3		1.5	0.4	782		3.0%	23	20	759	160	508		
	50%	3,871	916	582	45	3		1.5	0.4	866		3.0%	26	22	840	182	557		
																constant rate, mt depends on whiting OY			
POP	80%	689	311	259	0			3.0		308					308		259		
	60%	689	377	314				3.0		374					374		314		
	50%	689	496	414				3.0		493					493		414		
Yellowtail		3,146	3,146	1,978	400	15		8.0	5.8	2,717		8.3%	226	189	2,492	300	1,773		
Chilipepper		2,700	2,000	1,682		15				1,985		44.3%	879	739	1,106		929		
Splitnose (Rosefish)		615	461	387											461		387		

Preliminary [illegible]s and OYs for 2003, Council Meeting Draft #1, 9-10-02 (cont.).

All amounts in metric tons		2003	Optimum Yield (OY)								Open-Access			Limited-entry			Limited-entry	
			Total				2003			Non-tribal		Total	Landed	Total	At-sea			
		Total ABC	Catch	Landed	Tribal	Rec.	Comp.	Res.	Non-GF	Comm.	%	catch	catch	catch	Bycatch	Landed	Trawl	FG
Canary	Tmid:50%	256	25	17	2.5	11		1	0.07	11	12.3%	1.3	1.1	9	3	5		
50-50%	80%	256	30	22	2.5	13		1	0.07	13	12.3%	1.6	1.4	12	3	7		
	60%	256	41	32	2.5	19		1	0.07	19	12.3%	2.3	1.9	16	3	11		
	50%	256	45	36	2.5	21		1	0.07	21	12.3%	2.5	2.1	18	3	13		
Canary	Tmid:50%	309	32	22	2.5	6		1	0.07	23	12.3%	2.8	2.3	20	3	14		
80% C-20%R	80%	309	38	28	2.5	7		1	0.07	28	12.3%	3.4	2.8	24	3	18		
	60%	309	52	40	2.5	10		1	0.07	39	12.3%	4.8	4.0	34	3	26		
	50%	309	57	44	2.5	11		1	0.07	43	12.3%	5.3	4.4	37	3	29		
Canary	Tmid:50%	218	20	13	2.5	13		1	0.07	3.2	12.3%	0.4	0.3	3	3	0		
20% C-80%R	80%	218	25	18	2.5	17		1	0.07	4.2	12.3%	0.5	0.4	4	3	1		
	60%	218	34	27	2.5	24		1	0.07	6.0	12.3%	0.7	0.6	5	3	2		
	50%	218	37	30	2.5	27		1	0.07	6.6	12.3%	0.8	0.7	6	3	2		
Canary																		
61% C-39%R	60%	272	44	34	2.5	16		1	0.07	25	12.3%	3.0	2.6	22	3	16		
Bocaccio		198	0	0				0.2		0	44.3%	0	0	0		0		
		198	5.8	6		5		0.2		1	44.3%	0	0	0		0		
		198	20	17		5		0.2		15	44.3%	7	6	8		7		
Cowcod (Conception)		5	2.4	0						0			0			0		
Cowcod (Monterey)		19	2.4	0						0			0			0		
Cowcod (total)		24	4.8							0			0			0		
Darkblotched		205	100	75	0			1.6		98		0	0	98	5	75		
Darkblotched		205	130	99				1.6		128		0	0	128	5	99		
Darkblotched	80%; Tmid:5	205	172	132				1.6		170		0	0	170	5	132		
Darkblotched	60%	205	184	142				1.6		182		0	0	182	5	142		
Darkblotched	50%	205	205	159				1.6		203		0	0	203	5	159		
Yelloweye																		
Coastwide	June-low	52	2.1					0.6		2		1.1	0.0	2.8		2.2		
Coastwide	June-high	52	13.5		3.0	6.3		0.6		4		1.1	0.0	2.8		2.2		
Coastwide	Tmid:50%	52	22		3.0	6.3		0.6		12		1.1	0.0	2.8		2.2		
Coastwide	80%	52	24		3.0	6.3		0.6		14		1.1	0.0	2.8		2.2		
Coastwide	60%	52	26		3.0	6.3		0.6		16		1.1	0.0	2.8		2.2		
Coastwide	50%	52	27		3.0	6.3		0.6		17		1.1	0.0	2.8		2.2		

Preliminary ABCs and OYs for 2003, Council Meeting Draft #1, 9-10-02 (cont.).

All amounts in metric tons	2003 Total ABC	Optimum Yield (OY) Total Catch	Total Landed	Tribal	Rec.	Comp.			Non-tribal Comm.		Open-Access %		Landed catch	Limited-entry Total catch	At-sea Bycatch	Landed	Limited-entry Trawl	Fixed-gear
Minor Sebastes																		
North	4,794	3,812	2,325		1,318				2,494		12.9%	322	301	2,172		1,789		
2002 OY		**987**	971															
Near-shore (**OR**:2000 cap)		**530**	523		396				135		75.0%	101	96	34		32		
OR : Black/Blue HG		497			384				113		75.0%	85	80	28		27		
OR : Other NS HG		33			11				22		75.0%	16	15	5		5		
Near-shore (**OR**:2000 cap+15% rec.)		**589**	582		455				134		75.0%	101	95	34		32		
OR : Black/Blue HG		555			442				113		75.0%	85	81	28		27		
OR : Other NS HG		34			13				21		75.0%	16	15	5		5		
Near-shore (**N.CA**:2000 cap)		**108**			54				54		75.0%	40	38	13		13		
N.CA : Black/Blue HG		88.3			44				44		75.0%	33	31	11		10		
N.CA : Other NS HG		19.5			10				10		75.0%	7	7	2		2		
Near-shore (**WA.** combined species)		**290**			290													
Shelf (Remaining+Other)		**968**	815	10	10			0.1	948			30	25	928		780		
Slope (Remaining+Other)		**1,160**	928	4					1,156			10	8	1,150		920		
South 2002	3,506	range 452-541 mt	943						0		#DIV/0!	462	382	691		561		
Near-shore (Rev 8-23) Alt. #1		**452**	**316**		**316**				**136**									
Shallow NS		105	46		46				59									
CA Scorpionfish		85	64		64				21									
Deeper NS		262 - 351	206		206				56									
Near-shore (Rev 8-23) Alt. #1A		**452**	**361**		**361**				**91**									
Shallow NS		105	46		46				59									
CA Scorpionfish		85	64		64				21									
Deeper NS		262	251		251				11									
Near-shore (Rev 8-23) Alt. #1B		**452**	**362**		**362**				**90**									
Shallow NS		105	66		66				39									
CA Scorpionfish		85	64		64				21									
Deeper NS		262	232		232				30									
Near-shore (Rev 8-23) Alt. #1B - 2		**541**	**433**		**433**				**108**									
Shallow NS		105	66		66				39									
CA Scorpionfish		85	64		64				21									
Deeper NS		351	303		303				48									
Near-shore (Rev 8-23) Alt. #2		**452**	**226**		**226**				**226**									
Shallow NS		105	52		52				53									
CA Scorpionfish		85	43		43				42									
Deeper NS		262	131		131				131									
Near-shore (Rev 8-23) Alt. #3		**452**	**316**		**316**				**136**									
Shallow NS		105	73		73				32									
CA Scorpionfish		85	60		60				25									
Deeper NS		262	183		183				79									
Near-shore (Rev 8-23) Alt. #4		**452**	**361**		**361**				**91**									
Shallow NS		105	84		84				21									
CA Scorpionfish		85	68		68				17									
Deeper NS		262	209		209				53									
Shelf (Remaining+Other)		714			60							320	269	194		163		
Slope (Remaining+Other)		639	511						639			142	114	497		398		

Sent of LB motion 4

Exhibit C.2.g
Supplemental CDFG Report
September 2002

LCD presentation by Tom Barnes 9-10-02

SOUTHERN NEARSHORE ROCKFISH (south of 40°10' N. lat.)
OPTIMUM YIELD
AND HARVEST GUIDELINES FOR 2003

2002 Southern Nearshore Rockfish OY

662 metric tons (mt)
- Expected recreational catch of 532 mt.
- Commercial OY of 130 mt
  - OA = 107 mt
  - LE = 23 mt

Proposed 2003 OY/HG

3 separate harvest guideline (HG) components:

1) A shallow HG group composed of kelp, grass, black-and yellow, China, and gopher rockfishes. This sub-set of nearshore species also forms the rockfish basis of the California nearshore live-fish fishery, and the commercial fishery for these rockfish species (along with California scorpionfish, cabezon, greenlings, and California sheephead) is restricted by a nearshore finfish permit required by the state of California.
2) A deeper nearshore rockfish HG group composed of treefish, olive, brown, copper, quillback, calico, black, and blue rockfish.
3) California scorpionfish is recommended as a single-species HG.

Table 1. Southern *Sebastes* Nearshore Rockfish Mean Annual Landings (1994-1999) (Unadjusted for Effects of >20 fm Closure)

	Mean	Mean x 0.5
Shallow Nearshore Rockfishes (w/o CA Scorpionfish)	209.6	104.8
CA Scorpionfish	169.8	84.9
Deeper Nearshore Rockfishes	702.2	351.1
Total	1081.6	540.8

Table 2. Proposed Southern *Sebastes* Nearshore Rockfish OY and HG Based on Mean 1994-1999 Landings – 50% Precautionary Adjustment Applied Adjusted for Effects of >20 fm Closure

	MT
Shallow Nearshore Rockfishes – HG (w/o CA Scorpionfish)	104.8
CA Scorpionfish	84.9
Deeper Nearshore Rockfishes – HG	262.0
Total OY	451.7

GROUNDFISH ADVISORY SUBPANEL REPORT ON FINAL HARVEST LEVELS AND OTHER SPECIFICATIONS FOR 2003

The Groundfish Advisory Subpanel (GAP) conducted a lengthy discussion with Council staff on proposed optimum yield (OY) levels for 2003. Because the Groundfish Management Team (GMT) was simultaneously reviewing the same subject, there was only brief opportunity for interaction between the GMT and the GAP. However, we did have the opportunity to meet with staff of the California Department of Fish and Game to consider a proposal on a new OY for southern nearshore rockfish.

Many members of the GAP had strong concerns with the data that is being used to establish OYs. The GAP notes that observer data is still not being incorporated into the process, although we appreciate the assurances from the GMT that they intend to use that data for inseason management when the data becomes available. Logbook data from 1999 continues to be used even though the fisheries changed considerably starting in 2000. There was general frustration that harvest levels and stock assessments do not reflect the reality of what is happening in the ocean.

Several members of the GAP also raised questions about the role of the Council's Ad Hoc Allocation Committee in setting OY levels. The Ad Hoc Allocation Committee was originally established to examine harvest allocations between commercial and recreational fisheries. GAP members questioned why that committee has consistently taken upon itself the role of recommending OY levels, since these numbers are presumably based on scientific, rather than management considerations.

In considering recommendations for 2003 OY levels, the GAP used as a template Revised Table 2.1-1, which is a revision to the table found in the Addendum to the Annual Specifications EIS (Exhibit C.3). Even though the revised table contains some additional errors, it was the only comprehensive document the GAP had to work from.

The GAP recommendations reflect - as much as possible, given the complexity of the subject - only the scientific issues of ABC/OY levels. The GAP chose to treat management issues separately under agenda item C.3. The GAP concentrated its efforts on those species for which ranges had been specified in the table. For the other species and species groups with no ranges indicated, the GAP supported the single figure shown. The following are our recommendations; please note that bocaccio rockfish is discussed separately at the end of our report:

Lingcod - The majority of the GAP recommends an OY level of ***725 mt***, which represents a 50% probability of rebuilding. The GAP supported this less risk averse probability, because of overwhelming testimony - from GAP members and the public - that lingcod are present along the entire coast in large numbers. The GAP notes that lingcod are voracious predators on rockfish - including overfished species such as bocaccio and yelloweye - and are concerned that heavy predation will offset gains in rebuilding plans for these more sensitive species. Given the large amount of lingcod present, the GAP believes that using a lower OY will have the additional effect of increasing discards, contrary to the goal of minimizing bycatch (including discards) to the extent practicable.

A minority of the GAP supports an OY level of 651 mt, suggesting that if we are seeing such gains as a result of rebuilding, we should not respond too quickly, but rather should maintain our current course of action.

Pacific whiting - The majority of the GAP recommends an OY level of ***173,600 mt***, which corresponds to an $F_{40\%}$ harvest policy applied to projected stock size at the beginning of 2003, the policy which has been adopted by the Council for this species, and which the Scientific and Statistical Committee noted in March, represents a risk-neutral harvest policy for whiting. Again, both GAP and public testimony noted the tremendous size of the whiting resource present this year, along with evidence of another reasonably-sized year class recruiting to the fishery in 2003. As with lingcod, concerns were also expressed about the effect of whiting predation on more sensitive species. Some GAP members noted that increased availability of whiting could maintain the economic viability of some fishing operations during a time of significant cutbacks in other harvest levels.

A minority of the GAP recommended an OY of 148,200 mt, which represents an $F_{45\%}$ harvest policy applied to the biomass at the beginning of 2002. The Scientific and Statistical Committee has identified this policy as being risk-averse.

Sablefish - The GAP recommends an OY level of ***8,187 mt*** and a Conception area OY of ***346 mt***, with the understanding the ABC level shown in Revised Table 2.1-1 was calculated incorrectly and should be higher. The OY level proposed represents a harvest policy of $F_{45\%}$ (the Council's default harvest policy for this species) applied to an assumption of a stock whose recruitment was affected primarily by environmental - rather then density - factors. The GAP notes there is strong evidence of a regime shift occurring which has affected numerous species, including salmon. Using an assessment based on environmental factors rather than density makes more sense. The GAP also rejected suggestions made at the Ad Hoc Allocation Committee meeting that harvest should be reduced due to the large number of small fish. The GAP pointed out the fixed gear fleet has a low encounter rate of small fish, the pot fishery has developed larger escape rings to avoid bycatch of small fish, and the trawl fleet - under the management scenarios being contemplated - will be fishing in areas outside of where small sablefish are present. Finally, some members of the GAP noted the economic importance of sablefish to the fishery at a time when other groundfish options will be limited.

A minority of the GAP recommended a lower OY value be adopted.

Pacific Ocean Perch - The GAP recommends an OY level of ***377 mt***, which represents a 60% probability of rebuilding. This is consistent with previous GAP recommendations for this species. Maintaining the medium level OY will also reduce targeting on Pacific ocean perch and thus associated bycatch of darkblotched rockfish.

Widow Rockfish - The GAP recommends an OY level of ***832 mt***, which represents a 60% probability of rebuilding. Again, this is consistent with previous GAP recommendations for this species.

Canary Rockfish - OY recommendations for this species are confounded by the different OY values that are derived depending on the assumptions made about recreational, commercial, and scientific harvest. Consistent with the GAP's intent to avoid making management recommendations under this agenda item, the GAP recommends an OY ***reflecting a 60% probability of rebuilding***, with whatever distribution of recreational, commercial, and scientific harvest derives from those numbers. The GAP has not had an opportunity to meet with the GMT on various options and is reluctant to recommend a specific number at this time that may have distribution or management consequences.

During the course of the discussion, several GAP members raised concerns about the data that was used to develop the OY ranges. GAP members noted a significant increase in canary rockfish population that may not be adequately reflected in the stock assessment and the rebuilding plan.

Darkblotched Rockfish - The majority of the GAP recommends an OY level of ***198 mt*** which represents a 60% probability of rebuilding. This is consistent with GAP rebuilding recommendations for this species.

A minority of the GAP recommends an OY of 172 mt, which reflects an 80% probability of rebuilding in the T_{MID} time frame.

Yelloweye Rockfish - The majority of the GAP recommends an OY level of ***26 mt***, consistent with other GAP recommendations of a 60% rebuilding probability. The GAP notes that the differences in tonnage between various rebuilding probabilities are so small that they cannot rationally be measured.

A minority of the GAP recommends an OY level of 22 mt.

California Proposal to Establish an OY for Southern Nearshore Rockfish - The GAP recommends this proposal be rejected, and the OY values for Minor, Remaining, and Other Rockfish in the South as reflected in Revised Table 2.1-1 be adopted.

This issue came as a complete surprise to most members of the GAP and the public who were present at the meeting. No figures showing the effect of this proposal on rockfish OYs were made available to the GAP, and inquiries to the GMT indicated that none existed. It would have been helpful to be able to review the data and analysis used by California in support of the OY figure they presented to the GAP. Several of the species that would be added to this category appear to be found both on the shelf and in the nearshore area. Others are found both inside and outside California state waters, leading to questions of who is responsible for science and management. GAP members were particularly concerned about the use of cabezon as a proxy to estimate commercial rockfish catches in the early "base year" period, pointing out there was no significant commercial fishery for cabezon at that time, and cabezon which might have been harvested commercially were generically labeled as rockfish on fishtickets.

There were also significant concerns about the process being followed in bringing this proposal forward. GAP members pointed out that the Council was prevented from recommending depth-based management under normal procedures at the June Council meeting, because such management proposals had not been analyzed under the 2002 Groundfish EIS, even though those measures were specifically designed to meet the legal mandate to minimize bycatch to the extent practicable. In this case, a new management measure and accompanying modification of OY levels is being brought forth without adequate opportunity for public comment on the measures and whatever analysis may have been conducted, simply because it meets a policy goal established under state - not federal - law.

Given all of these concerns and the fact California is delaying its request for a fishery management plan amendment to alter state management authority over nearshore rockfish, the GAP believes this proposal should be rejected for 2003. If California wishes to pursue this proposal, it should follow the regular process in time for the 2004 season.

Bocaccio Rockfish - Of all of the OY levels considered by the GAP, this was the most difficult to deal with. Any of the OY levels within the range specified are effectively the equivalent of zero. Even continuing with the status quo of 100 mt - a number far beyond the range of the rebuilding analysis - is problematic, given the evident over-harvest that has occurred during the last two years.

The GAP found it difficult to believe the modeling effort for the assessment and the rebuilding analysis reflected reality, in spite of the diligent efforts of Dr. Alec MacCall. As GAP members pointed out, if bocaccio existed at such low numbers as suggested by the assessment, there should be little evidence of their existence in the fishery. This is obviously not the case. Further, given the large number of young bocaccio appearing in shallow water and also as prey in salmon and albacore, older spawning fish must exist in greater numbers than are assumed.

The GAP debated for some time on several different proposals for OY levels, ranging from zero to 100 mt. At the end of the debate, there was unanimous agreement among GAP members, supported by a majority of the members of the public present, that the GAP would not make a recommendation that could be no more than an artificial number chosen from a list. The GAP, therefore, declines to make a recommendation on an OY level for bocaccio rockfish for 2003.

PFMC
09/10/02

Exhibit C.2.g
Supplemental Public Comment
September 2002

United States Senate

WASHINGTON, DC 20510

September 9, 2002

The Honorable Donald L. Evans
Secretary, US Department of Commerce
14th Street and Constitution Avenue, N.W.
Washington, DC 20230

Dear Secretary Evans:

We are writing to ask that you intervene immediately in an important decision affecting Oregon's coastal economy.

As you know, Oregon continues to lead the nation in unemployment. The economic recession has had a disproportionate effect on the high-tech and natural resource industries, such as forest products and fishing. Oregon's commercial fishing industry helped build our state and continues to employ thousands of people involved in catching, processing and distributing high quality seafood across the country. But that industry, its workers and their families, are being threatened by drastic reductions to the amount of fish that can be caught off the Oregon coast - reductions that may be made with little regard to the economic consequences.

Management of the multi-species Pacific groundfish fishery has been complicated by indications of population declines in some of the more than 80 groundfish species caught off of Oregon, Washington, and California. Members of the Pacific Fisheries Management Council (the Council) - including fishermen, environmentalists and regulators - agree that these fish stocks must be rebuilt and have made management recommendations consistent with this goal.

The Council has tried to balance the need to rebuild the particular stocks that need additional protections with continued harvest of healthy stocks. The Magnuson-Stevens Act, which established the regional fishery management councils, not only calls for this balance but requires the Council to fully consider the local economic impacts in making its recommendations. Again, we remind you that the fishing communities of Oregon are in their worst financial condition in recent history and are depending upon you to carefully craft a balanced management plan.

We are also aware that the data and analyses underlying this year's decisions contain a large number of uncertainties. We encourage the Council to give that information a searching review, assure that its recommendations are based on the most reasonable interpretations, and take into account the actual observations of coastal fishermen about the increasing abundance of some of these stocks.

Earlier this year, the National Marine Fisheries Service (NMFS) overturned the measured recommendations of the Council regarding the whiting fishery. This action encourages the perception that NMFS' judgement is based on fear of litigation rather than the careful balance crafted by the Council. Congress created the regional Council structure to better inform federal fishery management, not to have them ignored.

This week the Council will meet in Portland, Oregon to recommend catch limits for 2003. It is vital that NMFS respect the difficult decisions that the Council will be making, and work cooperatively and supportively with them. We urge you to direct NMFS to adopt reasonable 2003 groundfish catch guidelines made by the Council that consider sound science and the economic impact to coastal communities.

We thank you for your consideration of our request on this important issue and hope that you will not hesitate to let us know if we can provide you with any additional information or assistance.

Sincerely,

Gordon H. Smith
United States Senator

Ron Wyden
United States Senator

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON FINAL HARVEST LEVELS AND OTHER SPECIFICATIONS FOR 2003

Yelloweye Rockfish

The Scientific and Statistical Committee (SSC) reviewed the new yelloweye rockfish stock assessment (Exhibit C.3, Supplement NMFS Assessment Report, September 2002) and yelloweye rockfish rebuilding analysis (Exhibit C.3, Supplemental NMFS Report, September 2002). The SSC subscribes to the findings of the Stock Assessment Review (STAR) Panel that the new baseline stock assessment model represents the best available scientific information concerning the status of the stock and endorses the use of the assessment and rebuilding analysis by the Council in setting 2003 harvest levels. However, the SSC would like to underscore that great uncertainty remains about stock status and that strict reliance on the baseline model is not without considerable risk. In particular, the estimate of steepness from the spawner-recruit curve (0.437), which underlies stock productivity, is imprecisely estimated in the baseline assessment model. Given this level of uncertainty the SSC advises that the 2003 OY not exceed the Ad Hoc Allocation Committee's recommendation (22 mt), which is based upon rebuilding using the baseline model with a 50% probability of rebuilding by T_{MID} (halfway between T_{MIN} and T_{MAX}).

The new model is very different from the model considered by the Council in June. In particular, the following changes were implemented, (1) the assessment is based on a coastwide stock, (2) selectivity curves are now allowed to be dome-shaped, (3) the natural mortality rate is constant, (4) there are two informative new data sources (Washington sport catch per unit of effort [CPUE] and Oregon age compositions), and (5) California Marine Recreational Fisheries Statistics Survey (MRFSS) CPUE data were excluded from the model. The SSC notes that important model diagnostics (e.g., age and length composition residual plots) were unavailable in the documentation package. In addition, there was concern that incomplete justification was provided with respect to certain changes in the model's formulation (i.e., items 2 and 3 above). The rapid manner in which the assessment was prepared and reviewed between June and September no doubt contributed to these oversights and, as a consequence, the SSC recommends against future use of the accelerated stock assessment process that was used for yelloweye rockfish this year.

Bocaccio

New results from the Bocaccio Rebuilding Analysis for 2002 (Exhibit C.2.b) indicate that under the SSC's Guidelines for Rebuilding Overfished Stocks, which are consistent with the NMFS National Standard Guidelines, bocaccio will fail to rebuild by T_{MAX} with 50% probability, even with no catch. This curious result is due to the fact that the new bocaccio analysis is an update from the original rebuilding analysis and two unfavorable events have occurred since the original work, (1) the 1999 year-class is not considered to be as strong as previously believed, and (2) landings over the last three years have greatly exceeded the OY. Thus, because of the accelerated pace of removals and lower productivity, the stock will likely not rebuild by T_{MAX}, even with no catch.

The SSC discussed the recommendation of the Ad Hoc Allocation Committee (Exhibit C.3.f, Table 1) that the OY for bocaccio be as close to zero as possible, but not to exceed 20 mt. This recommendation is based upon a sustainability analysis that shows that at this level of harvest the stock will rebuild in 170 years with 50% probability, as opposed to 106 years under default policy. Moreover, at this harvest rate there is a low probability of further decline over the next 100 years.

The SSC concluded that the new rebuilding/sustainability analysis represents the best available scientific information concerning the status of the bocaccio stock and endorses its use by the Council in setting 2003 harvest levels. At this time bocaccio appears to be a very unproductive stock, which makes it extremely difficult to develop a rebuilding plan that will tolerate errors in the biological estimates, fishery management, or interactions with other fisheries (i.e., bycatch). These difficulties highlight the importance of developing sensible and robust procedures for updating rebuilding plans for overfished stocks, an issue covered under Council agenda item C.7 (Amendment 16, Process and Standards for Developing Rebuilding Plans). The

SSC concluded that the proposed OY is technically sound, given the minimal surplus production of the bocaccio stock. However, the SSC notes that a new stock assessment will be conducted next year and further investigation of the stock-recruitment relationship and the appropriate natural mortality rate would be very useful.

Sablefish

The SSC notes that an OY of 5,000 mt, as recommended by the Ad Hoc Allocation Committee (Exhibit C.3.f), is consistent with the SSC's recommendation in June that a precautionary adjustment for this stock is warranted. To reiterate from that statement, the likelihood profile of the slope survey catchability coefficient was determined to be very flat, which creates substantial uncertainty with respect to total stock biomass. Therefore, the medium and high OY's (7,359 mt and 8,091 mt) are relatively risk-prone, and caution should be exercised when setting the 2003 harvest level.

Pacific Whiting

In June the SSC supported the recommendation of the 2002 whiting STAR Panel against adopting 2003 projections from the stock assessment model until a new assessment is conducted. This recommendation is consistent with the low OY option presented in Table 1 of the Ad Hoc Allocation Committee Report (Exhibit C.3.f), (i.e., 129,600 mt).

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09/10/02

REVISED TABLE 2.1-1. Acceptable biological catches (ABCs) and total catch optimum yield (OY) alternatives (mt) for 2003 for the West Coast under the Council-proposed alternatives. (Overfished stocks in CAPS).

	2002 ABCs/OYs		2003 ABCs and OY Alternatives					
Stock	**ABC**	***No Action OY***	**ABC**	***Low OY***	***Medium OY***	***High OY***	***Alloc. Cm. OY***	***Council OY***
LINGCOD	745	577	841	555	651	725	651	651
Pacific Cod	3,200	3,200	3,200			3,200		3,200
PACIFIC WHITING	166,000	129,600	188,000	129,60	148,200	173,600	148,200	148,200
Sablefish								
North of Conception	4,644	4,367	8,209	4,477	7,455	8,187	5,000	6,500
Conception INPFC	333	229	441	233	323	346	249	294
PACIFIC OCEAN PERCH	640	350	689	311	377	496	377	377
Shortbelly Rockfish	13,900	13,900	13,900			13,900		13,900
WIDOW ROCKFISH	3,727	856	3,871	656	832	916	832	832
CANARY ROCKFISH								
(50% Comm.-50%	228	93	256	30	41	45	41	41[1]
(80% Comm.-20%			309	38	52	57		
(20% Comm.-80%			218	20	34	37		
Chilipepper Rockfish	2,700	2,000	2,700			2,000		2,000
BOCACCIO[2]	122	100	198	0	5.8	≤20	≤20	≤20
Splitnose Rockfish	615	461	615			461		461
Yellowtail Rockfish	3,146	3,146	3,146			3,146		3,146
Shortspine Thornyhead	1,004	955	1,004			955		955
Longspine Thornyhead	2,461	2,461	2,461			2,461		2,461
S. of Pt. Conception	390	195	390			195		195
COWCOD (S. Concep)	5	2.4	5			2.4		2.4
N. Concep & Monterey	19	2.4	19			2.4		2.4
DARKBLOTCHED	187	168	205	100	184	205	172	172
YELLOWEYE[3]	27	13.5	52	2.1	13.5	27	22	22
Minor Rockfish North	4,795	3,115	4,795			3,115		3,115
Minor Rockfish South								
Alternative 1								
Near-Shore:								452
Shallow Near-Shore								105
CA Scorpionfish								85
Deeper Near-Shore								262
Shelf								714
Slope								639
Total	3,506	2,015	3,506			2,015		1,805
Alternative 2								
Near-Shore:								541
Shallow Near-Shore								105
CA Scorpionfish								85
Deeper Near-Shore								351
Shelf								714
Slope								639
Total	3,506	2,015	3,506			2,015		1,894

[1]The canary rockfish OY is subject to change dependent upon final council adoption of commercial:recreational catch sharing.

[2]The medium and high OYs are not supported by a revised rebuilding analysis (MacCall and He 2002) that is scheduled for SSC review at the September Council meeting. The *Medium OY* alternative is based on the June 2002 version of the rebuilding analysis. The *High OY* and *Alloc. Cm.-Preferred OY* alternatives are based on a recent decision by NOAA Fisheries that bocaccio do not conform to National Standard Guidelines; the harvest limit specified is estimated to achieve rebuilding beyond T_{MAX} and is supported by Magnuson-Stevens Act objectives.

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REVISED TABLE 2.1-1. Acceptable biological catches (ABCs) and total catch optimum yield (OY) alternatives (mt) for 2003 for the West Coast under the Council-proposed alternatives. (Overfished stocks in CAPS).

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Stock	**ABC**	***No Action* OY**	**ABC**	***Low OY***	***Medium OY***	***High OY***	***Alloc. Cm. OY***	***Council OY***
			(CONTINUED)					
Remaining Rockfish	2,727		2,727					
Black	1,115		1,115					
Bocaccio	318		318					
Chilipepper - Eureka	32		32					
Redstripe	576		576					
Sharpchin	307		307					
Silvergrey	38		38					
Splitnose	242		242					
Yellowmouth	99		99					
Remaining Rockfish	854		854					
Bank	350		350					
Blackgill	343		343					
Sharpchin	45		45					
Yellowtail	116		116					
Other Rockfish North	2,068		2,068					
South	2,652		2,652					
Dover Sole	8,510	7,440	8,510			7,440		7,440
English Sole	3,100		3,100					
Petrale Sole	2,762		2,762					
Arrowtooth Flounder	5,800		5,800					
Other Flatfish	7,700		7,700					
Other Fish	14,700		14,700					

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S. of Pt. Conception	390	195	390			195		195
COWCOD (S. Concep)	5	2.4	5			2.4		2.4
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Alternative 2								
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Splitnose	242		242					
Yellowmouth	99		99					
Remaining Rockfish South	854		854					
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Blackgill	343		343					
Sharpchin	45		45					
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Dover Sole	8,510	7,440	8,510			7,440		7,440
English Sole	3,100		3,100					
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09/13/02

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PFMC
09/13/02

ABCs and for 2003, Council Meeting Draft #2, Friday the 13th, 2002.

All amounts in metric tons

	2003	Optimum Yield (OY)								Open-Access			Limited-entry				
		Total				2003			Non-tribal		Total	Landed	Total	At-sea		Limited-entry	
	Total ABC	Catch	Landed	Tribal	Rec.	Comp.	Res.	Non-GF [1]	Comm.	%	catch	catch	catch	Bycatch	Landed	Trawl	FG
Lingcod	841	651	582	5.2	355		3	4.3	284	19%	54	43	230	0.27	184		
Whiting	188,000	148,200		25,000			200	1,800	121,200					at-sea 70,296		shore 50,904	
Sablefish NoC	8,209	6,500	5,595	650		11.1	53.0	18.5	5,767	9.4%	542	499	5,225	15	4,383	2,364	2,019
Conception Area	441	294	271						294								
Dover sole	8,510	7,440	7,006			62.4	58.0	2.0	7,318				7,318		7,006		
English sole	3,100																
Petrale sole	2,762																
Arrowtooth flounder	5,800																
Other flatfish	7,700																
Thornyheads																	
Shortspine N. of Pt.C	1,004	955	755	3.0		1.6	9.0		941	0.27%	3	3	939		751		
Longspine	2,461	2,461	2,029			8.9	18.0		2,434				2,434		2,020		
Conception	390		195						0				0		195		
Widow 60%	3,871	832	513	45	5		1.5	0.0	781	3.0%	23	20	757	182	488		
POP 60%	689	377	314				3.0		374				374		314		
Yellowtail	3,146	3,146	1,978	400	15		8.0	5.8	2,717	8.3%	226	189	2,492	300	1,773		
Chilipepper	2,700	2,000	1,682		15				1,985	44.3%	879	739	1,106		929		
Splitnose (Rosefish)	615	461	387										461		387		
Canary 60% 50-50%	256	41	30	2.5	19		1	2.2	17	12.3%	2.0	1.7	15	3	10		
Canary 60% 61% C-39%R	272	44	34	2.5	16		1	2.2	23	12.3%	2.8	2.3	20	3	14		
Bocaccio	198	20	17		5		0.2	0.8	14	44.3%	6	5	8		7		
Cowcod (Conception)	5	2.4	0						0			0			0		
Cowcod (Monterey)	19	2.4	0						0			0			0		
Cowcod (total)	24	4.8						0.1	0			0			0		
Darkblotched 80%; Tmid	205	172	132				1.6	0	170		0	0	170	5	132		
Yelloweye Tmid:50%	52	22		3.0	7.7		0.6	3.3	7		1.1	0.0	2.8		2.2		

1/ This column reflects estimate revisions made during the Council meeting for groundfish bycatch in non-groundfish fisheries.

ABCs and OYs for 2003, Council Meeting Draft #2, Friday the 13th, 2002.

All amounts in metric tons	2003	Optimum Yield (OY)									Open-Access		Limited-entry			Limited-entry	
		Total				2003			Non-tribal		Total	Landed	Total	At-sea			
	Total ABC	Catch	Landed	Tribal	Rec.	Comp.	Res.	Non-GF [1]	Comm.	%	catch	catch	catch	Bycatch	Landed	Trawl	FG
Minor Sebastes																	
2002 OY		**987**	971														
Near-shore (**OR**:2000 cap)		**530**	396		396				135								
OR : Black/Blue HG		497			384				113								
OR : Other NS HG		33			11				22								
Near-shore (**N.CA**:2000 cap)		**108**			54				54								
N.CA : Black/Blue HG		88.3			44				44								
N.CA : Other NS HG		19.5			10				10								
Near-shore (**OR+N.CA**:2000 cap)		**638**			319				319								
N.CA : Black/Blue HG		585			293				293								
N.CA : Other NS HG		53			26				26								
Near-shore (**WA.** combined species)		**290**			290												
Shelf (Remaining+Other)		**968**	10	10	10			0.1	948								
Slope (Remaining+Other)		**1,160**	0	4					1,156								
South									0								
Near-shore (Rev 8-23) Alt. #1B		**541**	433		433				108								
Shallow NS		105	66		66			0.4	39								
CA Scorpionfish		85	64		64			0.2	21								
Deeper NS		351	303		303			0.4	48								
Shelf (Remaining+Other)		**714**			60												
Slope (Remaining+Other)		**639**	0						639								

1/ This column reflects estimate revisions made during the Council meeting for groundfish bycatch in non-groundfish fisheries.

Action L.L. SJK

REVISED TABLE 2.1-1. Acceptable biological catches (ABCs) and total catch optimum yield (OY) alternatives (mt) for 2003 for the West Coast under the Council-proposed alternatives. (Overfished stocks in CAPS).

Stock	2002 ABCs/OYs		2003 ABCs and OY Alternatives					
	ABC	No Action OY	ABC	Low OY	Medium OY	High OY	Alloc. Cm. OY	Council OY
LINGCOD	745	577	841	555 50%	651 60%	725 80%	651	To be specified at the Sept Council meeting
Pacific Cod	3,200	3,200	3,200		3,200			
PACIFIC WHITING	166,000	129,600	188,000	129,600	148,200	173,600	148,200	
Sablefish				SQ	F45'03	F40'03	6500	
North of Conception	4,644	4,367	8,209	4,477	7,455	8,187	5,000	
Conception INPFC area	333	229	441	233	323	346	323 249	
PACIFIC OCEAN PERCH	640	350	689	311	377	496	377	
Shortbelly Rockfish	13,900	13,900	13,900		13,900			fixed
WIDOW ROCKFISH	3,727	856	3,871	656	832	916	832	
CANARY ROCKFISH								
(50% Comm.-50% Rec.)	228	93	256	30	41	45	41	
(80% Comm.-20% Rec.)			309	38	52	57		
(20% Comm.-80% Rec.)			218	20	34	37		
Chilipepper Rockfish	2,700	2,000	2,700		2,000			
BOCACCIO[1]	122	100	198	0	5.8	≤20	≤20	
Splitnose Rockfish	615	461	615		461			
Yellowtail Rockfish	3,146	3,146	3,146		3,146			
Shortspine Thornyhead	1,004	955	1,004		955			
Longspine Thornyhead	2,461	2,461	2,461		2,461			
S. of Pt. Conception	390	195	390		195			
COWCOD (S. Concep)	5	2.4	5		2.4			
N. Concep & Monterey	19	2.4	19		2.4			
DARKBLOTCHED	187	168	205	100	184	205	172	L.B. motion 452-541 mt
YELLOWEYE[2]	27	13.5	52	2.1	13.5	27	22	
~~Minor Rockfish North~~	~~4,795~~	~~3,115~~	~~4,795~~		~~3,115~~			
Minor Rockfish South	3,506	2,015	3,506		2,015			
Remaining Rockfish North	2,727		2,727					HG shallow 105
Black	1,115		1,115					CA scorp. 85
Bocaccio	318		318					deep ~~262~~-351 291
Chilipepper - Eureka	32		32					
Redstripe	576		576					
Sharpchin	307		307		714 +			
Silvergrey	38		38		639			
Splitnose	242		242					
Yellowmouth	99		99					contingent on season structure
Remaining Rockfish South	854		854					
Bank	350		350					
Blackgill	343		343					
Sharpchin	45		45					
Yellowtail	116		116					
Other Rockfish North	2,068		2,068					
South	2,652		2,652					
Dover Sole	8,510	7,440	8,510		7,440			
English Sole	3,100		3,100					
Petrale Sole	2,762		2,762					
Arrowtooth Flounder	5,800		5,800					
Other Flatfish	7,700		7,700					
Other Fish	14,700		14,700					

[1]The medium and high OYs are not supported by a revised rebuilding analysis (MacCall and He 2002) that is scheduled for SSC review at the September Council meeting. The *Medium OY* alternative is based on the June 2002 version of the rebuilding analysis. The *High OY* and *Alloc. Cm.-Preferred OY* alternatives are based on a recent decision by NOAA Fisheries that bocaccio do not conform to National Standard Guidelines; the harvest limit specified is estimated to achieve rebuilding beyond T_{MAX} and is supported by Magnuson-Stevens Act objectives.

[2]The *High OY* and *Alloc. Cm.-Preferred OY* alternatives are based on a new rebuilding analysis (Methot et al. 2002) that is scheduled for SSC review at the September Council meeting.

Preliminary ABCs and OYs for 2003, Council Meeting Draft #1, 9-10-02.

All amounts in metric tons

		2003	Optimum Yield (OY)								Open-Access			Limited-entry			Limited-entry	
		Total ABC	Total Catch	Total Landed	Tribal	Rec.	2003 Comp.	Res.	Non-GF	Non-tribal Comm.	%	Total catch	Landed catch	Total catch	At-sea Bycatch	Landed	Trawl	FG
Lingcod		841	555	461	5.5	126		3	1.3	419	19%	80	64	340		272		
		841	651	538	5.5	126		3	1.3	515	19%	98	78	417		334		
		841	725	597	5.5	126		3	1.3	589	19%	112	90	477		382		
															at-sea		shore	
Whiting		188,000	129,600		22,680			200	1,800	104,920					60,854		44,066	
		188,000	148,200		25,000			200	1,800	121,200					70,296		50,904	
		188,000	173,600		25,000			200	1,800	146,600					85,028		61,572	
Sablefish NoC		8,209	4,477	3,860	448		11.1	53.0	18.5	3,932	9.4%	370	340	3,562	15	2,988	1,612	1,377
		8,209	5,000	4,309	500		11.1	53.0	18.5	4,402	9.4%	414	381	3,989	15	3,346	1,804	1,541
		8,209	7,455	6,417	745		11.1	53.0	18.5	6,612	9.4%	621	572	5,990	15	5,024	2,710	2,315
		8,209	8,187	7,046	819		11.1	53.0	18.5	7,271	9.4%	683	629	6,587	15	5,526	2,980	2,545
Conception Area		441	233	214						233								
		441	249	229						249								
		441	323	297						323								
		441	346	318						346								
Dover sole		8,510	7,440	7,006			62.4	58.0	2.0	7,318				7,318		7,006		
English sole		3,100																
Petrale sole		2,762																
Arrowtooth flounder		5,800																
Other flatfish		7,700																
Thornyheads Shortspine N. of Pt.C		1,004	955	755	3.0		1.6	9.0		941	0.27%	3	3	939		751		
Longspine		2,461	2,461	2,029			8.9	18.0		2,434				2,434		2,020		
Conception		390		195						0				0		195		
Widow	Tmid:50%	3,871	656	383	45	3		1.5	0.4	606	3.0%	18	15	588	160	364		
	60%	3,871	832	530	45	3		1.5	0.4	782	3.0%	23	20	759	160	508		
	50%	3,871	916	582	45	3		1.5	0.4	866	3.0%	26	22	840	182	557		
															constant rate, mt depends on whiting OY			
POP	80%	689	311	259	0			3.0		308				308		259		
	60%	689	377	314				3.0		374				374		314		
	50%	689	496	414				3.0		493				493		414		
Yellowtail		3,146	3,146	1,978	400	15		8.0	5.8	2,717	8.3%	226	189	2,492	300	1,773		
Chilipepper		2,700	2,000	1,682		15				1,985	44.3%	879	739	1,106		929		
Splitnose (Rosefish)		615	461	387										461		387		

Prelimina ...s and OYs for 2003, Council Meeting Draft #1, 9-10-02 (cont.).

All amounts in metric tons		2003	Optimum Yield (OY) Total				2003			Non-tribal	Open-Access			Limited-entry			Limited-entry	
		Total ABC	Catch	Landed	Tribal	Rec.	Comp.	Res.	Non-GF	Comm.	%	Total catch	Landed catch	Total catch	At-sea Bycatch	Landed	Trawl	FG
Canary	Tmid:50%	256	25	17	2.5	11		1	0.07	11	12.3%	1.3	1.1	9	3	5		
50-50%	80%	256	30	22	2.5	13		1	0.07	13	12.3%	1.6	1.4	12	3	7		
	60%	256	41	32	2.5	19		1	0.07	19	12.3%	2.3	1.9	16	3	11		
	50%	256	45	36	2.5	21		1	0.07	21	12.3%	2.5	2.1	18	3	13		
Canary	Tmid:50%	309	32	22	2.5	6		1	0.07	23	12.3%	2.8	2.3	20	3	14		
80% C-20%R	80%	309	38	28	2.5	7		1	0.07	28	12.3%	3.4	2.8	24	3	18		
	60%	309	52	40	2.5	10		1	0.07	39	12.3%	4.8	4.0	34	3	26		
	50%	309	57	44	2.5	11		1	0.07	43	12.3%	5.3	4.4	37	3	29		
Canary	Tmid:50%	218	20	13	2.5	13		1	0.07	3.2	12.3%	0.4	0.3	3	3	0		
20% C-80%R	80%	218	25	18	2.5	17		1	0.07	4.2	12.3%	0.5	0.4	4	3	1		
	60%	218	34	27	2.5	24		1	0.07	6.0	12.3%	0.7	0.6	5	3	2		
	50%	218	37	30	2.5	27		1	0.07	6.6	12.3%	0.8	0.7	6	3	2		
Canary 61% C-39%R	60%	272	44	34	2.5	16		1	0.07	25	12.3%	3.0	2.6	22	3	16		
Bocaccio		198	0	0				0.2		0	44.3%	0	0	0		0		
		198	5.8	6		5		0.2		1	44.3%	0	0	0		0		
		198	20	17		5		0.2		15	44.3%	7	6	8		7		
Cowcod (Conception)		5	2.4	0						0			0			0		
Cowcod (Monterey)		19	2.4	0						0			0			0		
Cowcod (total)		24	4.8							0			0			0		
Darkblotched		205	100	75	0			1.6		98		0	0	98	5	75		
Darkblotched		205	130	99				1.6		128		0	0	128	5	99		
Darkblotched	80%; Tmid:5	205	172	132				1.6		170		0	0	170	5	132		
Darkblotched	60%	205	184	142				1.6		182		0	0	182	5	142		
Darkblotched	50%	205	205	159				1.6		203		0	0	203	5	159		
Yelloweye																		
Coastwide	June-low	52	2.1					0.6		2		1.1	0.0	2.8		2.2		
Coastwide	June-high	52	13.5		3.0	6.3		0.6		4		1.1	0.0	2.8		2.2		
Coastwide	Tmid:50%	52	22		3.0	6.3		0.6		12		1.1	0.0	2.8		2.2		
Coastwide	80%	52	24		3.0	6.3		0.6		14		1.1	0.0	2.8		2.2		
Coastwide	60%	52	26		3.0	6.3		0.6		16		1.1	0.0	2.8		2.2		
Coastwide	50%	52	27		3.0	6.3		0.6		17		1.1	0.0	2.8		2.2		

Preliminary ABCs and OYs for 2003, Council Meeting Draft #1, 9-10-02 (cont.).

All amounts in metric tons	2003	Optimum Yield (OY)								Open-Access			Limited-entry				
		Total							Non-tribal			Landed	Total	At-sea		Limited-entry	
	Total ABC	Catch	Landed	Tribal	Rec.	Comp.			Comm.	%		catch	catch	Bycatch	Landed	Trawl	Fixed-gear
Minor Sebastes																	
North	4,794	3,812	2,325		1,318				2,494	12.9%	322	301	2,172		1,789		
2002 OY		**987**	971														
Near-shore (**OR**:2000 cap)		**530**	523		396				135	75.0%	101	96	34		32		
1 OR : Black/Blue HG		497			384				113	75.0%	85	80	28		27		
OR : Other NS HG		33			11				22	75.0%	16	15	5		5		
Near-shore (**OR**:2000 cap+15% rec.)		**589**	582		455				134	75.0%	101	95	34		32		
2 OR : Black/Blue HG		555			442				113	75.0%	85	81	28		27		
OR : Other NS HG		34			13				21	75.0%	16	15	5		5		
Near-shore (**N.CA**:2000 cap)		**108**			54				54	75.0%	40	38	13		13		
3 N.CA : Black/Blue HG		88.3			44				44	75.0%	33	31	11		10		
N.CA : Other NS HG		19.5			10				10	75.0%	7	7	2		2		
Near-shore (**WA.** combined species) = rec		**290**			290												
Shelf (Remaining+Other)	no comm inside 3 nm	**968**	815	10	10			0.1	948		30	25	928		780		
Slope (Remaining+Other)		**1,160**	928	4					1,156		10	8	1,150		920		
South 2002	3,506		943						0	#DIV/0!	462	382	691		561		
Near-shore (Rev 8-23) Alt. #1		**452**	**316**		**316**				**136**								
Shallow NS		105	46		46				59								
CA Scorpionfish		85	64		64				21								
Deeper NS		262	206		206				56								
Near-shore (Rev 8-23) Alt. #1A		**452**	**361**		**361**				**91**								
Shallow NS		105	46		46				59								
CA Scorpionfish		85	64		64				21								
Deeper NS		262	251		251				11								
Near-shore (Rev 8-23) Alt. #1B		**452**	**362**		**362**				**90**								
Shallow NS		105	66		66				39								
CA Scorpionfish		85	64		64				21								
Deeper NS		262	232		232				30								
Near-shore (Rev 8-23) Alt. #1B - 2 *		**541**	**433**		**433**				**108**								
Shallow NS		105	66		66				39								
CA Scorpionfish		85	64		64				21								
Deeper NS		351	303		303				48								
Near-shore (Rev 8-23) Alt. #2		**452**	**226**		**226**				**226**								
Shallow NS		105	52		52				53								
CA Scorpionfish		85	43		43				42								
Deeper NS		262	131		131				131								
Near-shore (Rev 8-23) Alt. #3		**452**	**316**		**316**				**136**								
Shallow NS		105	73		73				32								
CA Scorpionfish		85	60		60				25								
Deeper NS		262	183		183				79								
Near-shore (Rev 8-23) Alt. #4		**452**	**361**		**361**				**91**								
Shallow NS		105	84		84				21								
CA Scorpionfish		85	68		68				17								
Deeper NS		262	209		209				53								
Shelf (Remaining+Other)		714			60						320	269	194		163		
Slope (Remaining+Other)		639	511						639		142	114	497		398		

COUNCIL DECISIONS AT THE SEPTEMBER 2002 MEETING

Agenda Item: **C. Groundfish Management**

Subject: **C.2 Final Harvest Levels and Other Specifications for 2003**

Action: The Council adopted final Allowable Biological Catch (ABC) and Optimum Yield (OY) levels for 2003 as shown in Exhibit C.2.e, Supplemental GMT Report, Table 2.1-1 as follows:

(1) The ABC levels shown in the 2003 ABC column on the first page of Table 2.1-1;

(2) The OY levels shown in the 2003 "Medium OY" column, with the following exceptions:

(a) 6,500 mt for sablefish;

(b) ≤ 20 mt for bocaccio rockfish;

(c) 172 mt for darkblotched rockfish;

(d) 22 mt for yelloweye rockfish; and

(e) a more detailed breakdown of the OY for Minor Rockfish South was adopted as follows:

(i) 105 mt for Shallow Nearshore species;

(ii) 85 mt for California scorpionfish;

(iii) a range of 262-351 mt for Deeper Nearshore species;

(iv) 714 mt for Remaining and Other Shelf species; and

(v) 639 mt for Remaining and Other Slope species.

(vi)

Management measures to implement these harvest levels and specifications are taken up as agendum C.3.

Exhibit C.2
Situation Summary
September 2002

FINAL HARVEST LEVELS AND OTHER SPECIFICATIONS FOR 2003

Situation: Each year the Council recommends harvest specifications for the upcoming year. The fishery management plan (FMP) requires the Council to establish reference points for each major species or species complex: an acceptable biological catch (ABC), a total catch optimum yield (OY), and an overfishing threshold. Additionally, OYs for some species are allocated between the open access, limited entry, tribal, and recreational fisheries. The Council adopted a preliminary range of groundfish harvest levels (OYs) for consideration and analysis at the June meeting (Table 2-1 on page T 2-1, Exhibit C.3, Attachment 1). The *Initial Draft Environmental Impact Statement/Regulatory Impact Review/Initial Regulatory Flexibility Analysis For Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures For The 2003 Pacific Coast Groundfish Fishery* (Annual Specifications EIS; Exhibit C.3, Attachment 1) provides analyses of the potential consequences of management measures estimated to conform to this range of harvest levels. These harvest levels will determine the types of management measures available for Council consideration in 2003. The Council is tasked with adopting final recommendations for 2003 groundfish harvest levels at this September meeting.

The Council reviewed and adopted new stock assessments and rebuilding analyses for bocaccio and canary rockfish, as well as a new expedited stock assessment for sablefish at the June 2002 meeting. These analyses provided the scientific basis for the range of harvest levels considered for these species and adopted in June. Since then, a revised bocaccio rebuilding analysis (Exhibit C.2.b, Bocaccio Rebuilding Analysis) was developed according to the Scientific and Statistical Committee's (SSC's) recommendations and to comport with one of the bocaccio harvest alternatives requested by the Council in June. The revised bocaccio rebuilding analysis indicates that no fishing mortality can be considered for the southern bocaccio stock south of Cape Mendocino in 2003 and still comply with a rebuilding target of $B_{40\%}$ (proxy for B_{MSY}) within the maximum allowable time frame (T_{MAX}).

In June 2002 the Council also reviewed a new rebuilding analysis and the 2001 stock assessment for yelloweye rockfish (Wallace 2002). Wallace (2002) only assessed the portion of the stock in northern California and Oregon. The SSC recommended incorporation of Washington catch and age data in any new yelloweye stock assessment and rebuilding analysis given evidence of relatively high densities in waters off Washington. Upon the advice from Washington Department of Fish and Wildlife and NOAA Fisheries scientists, a new yelloweye assessment conforming to the SSC's recommendation could be developed and reviewed by a Stock Assessment Review (STAR) Panel this summer, the Council recommended this action. The new yelloweye stock assessment (Exhibit C.2.c, Supplemental Yelloweye Stock Assessment), STAR Panel report (Exhibit C.2.d, Supplemental Yelloweye STAR Panel Report), and rebuilding analysis (Exhibit C.2.c, Supplemental Yelloweye Rebuilding Analysis) are provided for Council consideration of an appropriate level of harvest for yelloweye in 2003.

Council Action:

1. Adopt final 2003 groundfish harvest specification proposals.

Reference Materials:

1. The Initial Draft Environmental Impact Statement/Regulatory Impact Review/Initial Regulatory Flexibility Analysis For Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures For The 2003 Pacific Coast Groundfish Fishery (Exhibit C.3, Attachment 1).
2. *Bocaccio Rebuilding Analysis for 2002 (final revised version)*, (Exhibit C.2.b, Bocaccio Rebuilding Analysis).
3. Status of yelloweye rockfish off the U.S. West Coast in 2001 (Exhibit C.2.c, Supplemental Yelloweye Stock Assessment).
4. Yelloweye rockfish rebuilding analysis (Exhibit C.2.c, Supplemental Yelloweye Rebuilding Analysis).
5. Yelloweye rockfish STAR Panel meeting report (Exhibit C.2.d, Supplemental Yelloweye STAR Panel Report).

Agenda Order:

a. Agendum Overview	John DeVore
b. Bocaccio Rebuilding Analysis	Alec MacCall
c. Yelloweye Rockfish Stock Assessment	Rick Methot
d. STAR Panel Report for Yelloweye Rockfish	
e. Groundfish Management Team (GMT) Report	Jim Hastie
f. Proposed Treaty Indian Harvest Levels	Jim Harp
g. Reports and Comments of Advisory Bodies	
h. Public Comment	
i. **Council Action:** Adopt Final 2003 Specification Proposals	

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

The GFSP supports establishing an allowable level of catch that prevents overfishing while achieving OY based on best available science (Sec. II.A.2). The GFSP also supports establishing and maintaining a management process that is transparent, participatory, understandable, accessible, consistent, effective, and adaptable (Sec. II.C). The Council process of adopting harvest levels and other specifications is consistent with these GFSP principles.

PFMC
08/20/02

Acceptable biological catches (ABCs) and total catch optimum yield (OY) alternatives (mt) for 2003 West Coast groundfish fisheries as recommended by the Council's Ad Hoc Allocation Committee.

Stock	2002 ABCs/OYs		Ad Hoc Allocation Committee OY Recommendations		Rationale
	ABC	OY	2003 OY	Probability of Rebuilding within T_{MAX}	
LINGCOD	745	577	651	60%	Maintains Council's current rebuilding strategy.
CANARY ROCKFISH (50% Comm.:50% Rec.)	228	93	41	60%	
PACIFIC OCEAN PERCH	640	350	377	70%	
WIDOW ROCKFISH	3,727	856	832	60%	
DARKBLOTCHED	187	168	172	80%	More conservative than the Council interim rebuilding harvest (as specified in 2001) which had a 70% probability of rebuilding in T_{MAX}.
YELLOWEYE	27	13.5	22	>80% (=T_{MID})	Provides the potential to rebuild the stock within a shorter time frame than other alternatives presented in the rebuilding analysis.
PACIFIC WHITING	166,000	129,600	148,200	N/A (≤10 yrs)	This OY alternative uses a more conservative $F_{45\%}$ harvest rate with the 40-10 adjustment applied to to the biomass projected to the start of 2003.
BOCACCIO	122	100	≤20	N/A	Prevents further decline in the stock based on rebuilding and sustainability analyses and the comments from NMFS that this level is consistent with the MSA.
SABLEFISH					Avoids a volatile management future and allows greater survival to a larger size bringing future harvest benefits.
North of Conception	4,644	4,367	5,000	N/A	
Conception INPFC area	333	229	249	N/A	

SUMMARY OF CALIFORNIA DEPARTMENT OF FISH AND GAME
GROUNDFISH MANAGEMENT OPTION HEARING

Date:	July 23, 2002	Hearing Officer:	Mr. James Caito
Location:	Humboldt County Supervisors Chambers Eureka, CA	Council Members:	Mr. LB Boydstun
Attendance:	8	SSC Member:	Dr. Steve Ralston
Testifying:	2	CDFG Groundfish Staff :	Ms. Carrie Wilson
Organizations Represented: None.			

Synopsis of Testimony

Of the 2 people testifying:

- Both spoke primarily about the recreational fishery.

Recreational Comments

Concerned about effort shift stemming from closure south of Cape Mendocino; may need to limit charterboat effort in the local area.

A slot limit for lingcod would protect the larger females.

A higher minimum size limit for cabezon would protect maturing fish.

Concerned about impact of shelf closure on nearshore species.

Written Statements (attached)

None.

PFMC
08/22/02

SUMMARY OF CALIFORNIA DEPARTMENT OF FISH AND GAME
GROUNDFISH MANAGEMENT OPTION HEARING

Date:	July 24, 2002	Hearing Officer:	Mr. Roger Thomas
Location:	Elihu Harris State Building Oakland, CA	Council Members:	Mr. LB Boydstun
Attendance:	40-45	SSC Member:	Dr. Steve Ralston
Testifying:	11	CDFG Groundfish Staff:	Ms. Carrie Wilson
Organizations Represented: Pacific Coast Federation of Fishermen's Associations, Coastside Fishing Club.			

Synopsis of Testimony

Of the 11 people testifying:

- Eight spoke primarily about the recreational fishery.
- Three spoke primarily about the commercial fishery.

Recreational Comments

Do not support the 10 fathom restriction (various reasons offered)–5 commentors

Train people to deflate rockfish gas bladders.

A 16" cabezon is okay in addition to a 5-cabezon bag limit for recreational.

Keep 15" cabezon minimum in the recreational fishery.

Do not implement rockfish minimum size limits.

Allow for 3 or 4 reds (vermillion) in the nearshore bag limit–2 commentors.

Leave lingcod at 2 fish, 24 inches minimum–2 commentors.

Maintain current nearshore commercial/recreational split or give preference to recreational in nearshore–2 commentors.

Better economic data needed on recreational fishery.

January through April closure preferred if needed.

Keep commercial and recreational seasons the same; prefer year-round season–3 commentors.

Don't let partyboats drive the regulations; consider 5-rockfish bag limit–2 commentors.

Keep 10 rockfish bag limit.

Support retention of 1 overfished rockfish in the bag limit to prevent waste.

Close nearshore to all fishing.

Commercial Fishery Comments

The live fish fishery needs to be preserved.

More observers are needed to study flatfish fishery and selective fisheries in general.

Council needs to support federal trawl buyback.

Better stock assessment data are needed.

Dover sole/thornyhead/trawl-caught sablefish complex fishery has a high impact on bocaccio.

Oppose 16" cabezon for commercial; slot limit preferred (not specified).

Ban commercial nearshore fishery–2 commentors.

Ban traps in nearshore.

Rod and reel only for commercial nearshore; ban stick gear.

Retain stick gear for commercial; seek other means to reduce catch.

Eliminate shrimp and prawn trawl due to rockfish bycatch–3 commentors.

Written Statements (attached)

1. Tom Mattusch, Coastside Fishing Club dated July 24, 2002.

PFMC
08/23/02

Coastside Fishing Club

July 24, 2002

California Department of Fish & Game
Comments on Groundfishing Options

Coastside Fishing Club, representing over 2,300 members, would like you to consider the following positions as you set the 2003 groundfishing limits.

On The Recreational Nearshore Fishery Options for 2003 document summary that contains three options, Coastside Fishing Club and its members support Option 3, as it is the most generous to the recreational fishery. We feel that the DFG has shown its wisdom in the past when it eliminated market hunting and fishing for ducks, deer, sturgeon and striper. We feel the nearshore rockfish are an analogous situation. The majority of the resource should be targeted for recreational anglers, as this is a public resource. Commercial fishing should take place only after there is a satisfying recreational fishery.

In 1966, the California legislature discussed recreational anglers having a good experience on the water. The MLMA makes reference in 7055 (c) that there should be a reasonable and satisfying recreational fishery. We ask that you curtail market fishing to satisfy the public's right to fish until there is a harvestable excess.

Allocation has not worked well in the past as shown by the cabezon fishery. Please do not fall into the fallacy of giving recreational fish away to the market sector. Recreational anglers would like the opportunity to fish 12 months a year with a 10 to 15 fish bag limit. Party boat logs, collected by DFG since 1936, have not shown recreational anglers to deplete the resource. We urge only rod and reel fishing in the nearshore for commercial activities for rockfish. This includes no stick gear.

When setting size limits for rockfish for the recreational sector, use the same size limits for the market sector.

Tom Mattusch
Coastside Fishing Club
Secretary & Political Coordinator
P O Box 957
El Granada, CA 94018
(650) 726-2926

SUMMARY OF CALIFORNIA DEPARTMENT OF FISH AND GAME GROUNDFISH MANAGEMENT OPTION HEARING

Date:	July 25, 2002	Hearing Officer:	Ms. Marija Vojkovich
Location:	California Department of Fish and Game Office, Los Alamitos, California	Council Members:	Mr. Don Hansen Mr. Rod McInnis
Attendance:	28 public,17 NMFS and CDFG	GMT Member:	Mr. Tom Barnes
Testifying:	17	CDFG Groundfish Staff:	Ms. Carrie Wilson
Organizations Represented: Newport Dory Fleet, Southern California Trawlers Association, United Anglers of Southern California, Sportfishing Association of California, Port San Luis Commercial Fishermen's Association, Ventura County Commercial Fishermen's Association			

Synopsis of Testimony

Of the 17 people testifying:

- Eight spoke primarily about the commercial fishery.
- Seven spoke about the recreational fishery.
- Two spoke about the regulatory process in general.

Representatives for both the commercial and recreational components of the southern California groundfish fishery expressed concern the management options for 2003 were based on survey data collected north of Point Conception. Survey data collected north of Point Conception does not reflect the status of the groundfish resources in southern California. They also indicated lingcod numbers were very high and there is no survey for them in the south.

Recreational Comments

Support for option 3.

Support for a nearshore recreational/commercial split of 84/16.

Add an option to allow the take of four vermillion rockfish in addition to the 10 rockfish bag limit. This action would take some fishing pressure off the nearshore groundfish stocks. South of Point Conception, red rockfish are not found in the same locations as bocaccio.

Add an option that would reduce the current bag limit to five rockfish and five sculpin, but increase the amount of time on the water (all-year-round fishery).

Support for a bag limit of three lingcod and consider a minimum size range from 22- to-24 inches (option 3).

Support for the United Anglers proposal which calls for a shelf closure between 40 and 70 fathoms for shelf rockfish. A handout was not distributed to provide more information regarding the United Anglers' proposal.

Support for a status quo option regarding the current bag limit, minimum size requirements for nearshore groundfish, and season closures. The proposed 2003 options would put too many people out of business.

Commercial Fishery Comments

Non-Trawl Options for Commercial Fixed Gear:

Several individuals expressed concern that the proposed management options presented tonight did not include trip limit allowances. They did not feel comfortable supporting any of the options presented until they knew how much fish could be landed.

There was support for option four (Cape Mendocino to Mexico Border), but those proponents would also like clarification regarding the trip limit allowance.

Support for an allowance of shelf species (400 pounds/month) harvested within the nearshore management zone.

The allocation for the nearshore fishery should be based on the historical catch record not the most recent trend.

No support for option one. There is not enough data to support a 10- to-150 fathom closure in southern California.

Add an option that would allow commercial fishermen to take an allotment of those species that are currently reserved specifically for recreational anglers: barred sand bass and kelp bass.

Support for the nearshore recreational/commercial split of 50/50.

Create a slot size limit option for cabezon and kelp greenling.

Add an option to increase the recreational and commercial optimum yield for lingcod.

Slope fishermen do not want the shelf closure to extend beyond 150 fathoms. They do not catch bocaccio beyond 150 fathoms in southern California.

Reducing the nearshore management zone to less than 20 fathoms would increase the interaction rate between the recreational and commercial components of the nearshore fishery.

There is a small artisanal hook-and-line fishery for Pacific sanddab at Catalina Island. Their catch is sold to the Island restaurants. The current shelf closure has put them out of business. A representative (Mr. Joel Burt) of the fishery provided a handout that summarized the sanddab fishery at the Island. See attachment.

Nongroundfish Trawl Options:
Will the state's exempted trawl fishery be required to conform to the requirements of the NMFS's limited entry trawl fishery. If so, trawl fishermen targeting California halibut should not be required to use an excluder, because they use a large mesh (8-1/2") net when targeting halibut. Also, the exempted fishery will soon have observers on board to document any bycatch.

General Public Comment

In the future, data collected by nongovernment organizations should be considered when making management decisions.

The department needs to do a better job of announcing these public meetings in advance.

No flag salute at the beginning of the meeting, very un-American.

The federal groundfish plan does not address bycatch adequately.

Written Statements (attached)

Mr. Joel Burt provided a written report regarding an artisanal hook-and-line fishery for Pacific sanddab at Catalina Island.

PMFC
08/22/02

Joel D. Burt – Gregory J. Wenger
(addresses below)

July 23, 2002

TO: Department of Fish and Game
Pacific Fishery Management Council
Council Operations

FROM: Joel D. Burt
123 Upper Terrace Road
Post Office Box 451
Avalon, CA 90704
(310) 510-8583
Commercial License #48785
Vessel #39368

Gregory J. Wenger
301 Whittley Avenue
Post Office Box 2351
Avalon, CA 90704
(310) 510-1742
Commercial License #86433
Vessel # 31171

SUBJECT: Exemption for Commercial Sand Dab Fishing, Santa Catalina Island

As an introduction, we, Joel Burt and Gregory Wenger, are commercial fisherman catching sand dabs off of Santa Catalina Island. We, as sand dab fishermen using rod and reel, hook and line, have no impact on rockfish. Mr. Burt is retired and has been fishing sand dabs for four years to supplement his income; and Mr. Wenger has been fishing for three years to support his family. Preceding Joel Burt, Burl Foster fished sand dabs on Catalina for 18 years in the same manner. All sand dabs we catch are sold to Armstrong's Restaurant in Avalon, on Santa Catalina Island, and we catch and sell only what the restaurant calls for.

We catch 99% sand dabs; less than 1% of our catch is fish other than sand dabs. A few times a year we catch other sellable fish. We fish hook and line on the sand bottom of Santa Catalina Island. We are not fishing around rockfish habitats, and are not hurting the ecosystems.

On July 1, 2002, some major closures occurred that effect rock fishing and depth of fishing in waters past 20 fathoms. We agree with the rockfish closures. However, the proposed closures threaten our sand dab fishing and threaten to put us out of business.

To the extent you go forward with closures that affect our fisheries, we are asking you, the Council, and the Department of Fish and Game, for an exemption or experimental license to allow us to continue fishing sand dabs off of Santa Catalina Island with rod and reel, hook and line, and would welcome observers on our boats.

Gregory Wenger is on the Catalina MLPA panel, a 12-member panel working with the Department of Fish and Game to help protect and place closures around Santa Catalina Island. We have been working with the Department of Fish and Game on this project since March 2002. We are under the impression we will have something to say about any closures around the island, and that is why we formed the panel and the Department of Fish and Game agreed to work with us.

Attached, for your information, is a copy our fishing history.

Thank you very much for your time and for considering our proposal.

Respectfully,

Joel D. Burt

Joel D. Burt

Gregory J. Wenger

Joel Burt
L 48785 – V39368

Fishing History

Year	Days Fished	Income	Sand dabs in Pounds	Rockfish in Pounds	Other in Pounds
1999	63	$9,004	2,705 lbs	65 lbs	0
2000	61	$8,013	2,336 lbs	62 lbs	67 lbs Mako shark
2001	61	$9,140	2,778 lbs	0	34 lbs Mako shark
2002	23	$3,312	1,019 lbs	0	0
Total			**8,838 lbs**	**127 lbs**	**101 lbs**

Gregory Wenger
L86433 – V31171

Year	Days Fished	Income	Sand dabs in Pounds	Rockfish in Pounds	Other in Pounds
2000	(records forthcoming; unavailable at this time)				
2001	192	$29,407.38	12,125 lbs	0	42 lbs Mako shark
2002	122	$7,421.88	5,360 lbs	134 lbs	0
Total			**17,485 lbs**	**134 lbs**	**42 lbs**

MEMORANDUM

OREGON DEPARTMENT OF FISH AND WILDLIFE
Marine Resources Program
2040 SE Marine Science Drive, Newport, OR 97365-5294
PH. 541-867-4741; FAX 541-867-0311

DATE: August 21,2002

TO: Dr. Donald O. McIsaac
Executive Director
Pacific Fisheries Management Council
770 NE Ambassador Place
Suite 200
Portland, OR 97220

FROM: ODFW Marine Resources Program staff.

SUBJECT: Summary of public comment from community meetings

Introduction

The following is a summary of comments, concerns, and recommendations made at four community meetings held in Newport, Astoria, Brookings, and North Bend. The meetings were held to gather information from community leaders and from sport and commercial fishers regarding the proposed management options for the marine sport and commercial regulations for 2003.

Issues Identified

Many fishers and community members stressed the need for finding the best options required by federal law that meet the biological needs and yet have minimal economic impact on the coastal communities in Oregon. The best available data on fish stocks are insufficient to justify the potential biological and economic impacts.

It was suggested that the council needs to implement allocation strategies that prevent one sector from shutting down another.

NMFS and the states need to assure the consumers that west coast groundfish are sustainably harvested, contrary to what other groups would have the public believe (regarding boycotts on specific species served in restaurants and sold in public markets).

The proposed closure zones, particularly the outside zone at 250 fathoms, raises serious concern by fishers, local insurance agents and processors, related to the dangers of having to travel further to get to open fishing waters. Also, the increased distance to travel increases operating costs and time at sea and effectively excludes smaller vessels.

Sport fishers are concerned that restricting commercial fishing on the shelf will push effort on to the near shore areas, increase harvest of nearshore stocks and create a nearshore sustainability issue. Increased commercial effort near shore is also perceived by the sport fishers as having the potential to create gear conflicts such as pot gear in place that interferes with the ability to drift fish over a reef.

Salmon trollers expressed concerns that they do not catch the rockfish species that are driving the proposed options and they want the least restrictive management option for their fishery. Salmon trollers also expressed their desire to have observers aboard their boats to document their claims.

Live fish fishers expressed concern over the proposal to increase the minimum length for cabezon to 16 inches. This would, as they claim, reduce their target size for their market by 50%. Live fish fishers also claimed that if a cap was put on live fish landings, then they would have to resort to targeting black rockfish which would put further strain on an already heavily targeted fishery.

The Dungeness crab fishery will become the most valuable fishery in Oregon and more vessels with unused permits would move into the fishery, but diminished processing capacity as a result of cutbacks in groundfish will adversely affect crab fishermen. Has NMFS or the Council anticipated the potential impacts on the flatfish, shrimp and crab fisheries as a result of effort shift?

IFQ's were suggested to be an effective way to provide incentive for trawlers to voluntarily reduce bycatch.

Flatfish trawlers do not want to see a closure inside of 100 fathoms because it would severely reduce their opportunity to catch Dover, petrale, and English sole, as well as other flatfish.

Several fishers raised the question as to why the council is not pursuing the mixed stock exception option.

Another suggestion was to have a group of trawlers develop proposals for area closures that would keep them off overfished stocks.

Another trawler suggested that if they were allowed to us a large footrope outside 250 fathoms, they might be able to remain viable.

Discussion of the darkblotched rockfish problem included talk about the EFP flatfish trawl research, and one fisher thought it would be wise to also investigate the possibility of lower interception of darkblotched at night when they are off the bottom.

Sport fishers wished to see the most conservative option for the nearshore commercial fishery in lieu of the relatively small amount of biological data available for most nearshore species impacted by a growing fishery.

Many attendees called for implementation of a near shore plan. They also stressed that Oregon nearshore management must be independent and managed by Oregon, not by California desires/PFMC "majority".

Sport fishing interests in Winchester bay said that because the nearshore fathom closure lines are so close to shore that they would effectively close some ports to bottom fishing opportunities. Demand for slip space in Winchester bay is already decreasing.

Sport fishers on the south coast say that mooching for salmon there occurs within 10 fathoms, and has no impact on yelloweye rockfish, thus the potential option to ban mooching would be unnecessary.

One sport fisher asked if it made more sense to have a slot limit for cabezon rather than a minimum size limit.

Sport fishers also stressed consideration of options not yet listed in the proposals, such as:

- Give an allowable yelloweye bycatch limit for the sport halibut fishery. It seems a waste to throw back a dead fish.
- Instead of shutting down sportfishing outside of 20-50 fathoms, adopt gear restrictions for drift fishing such as 8-ounce maximum weight and maximum hook size.
- Consider an observer program on participating sportfishing vessels to validate bycatch of yelloweye and canary rockfish, and the effectiveness of gear restrictions.
- Development of educational programs aimed at ways to reduce bycatch mortality.

A trawler Association representative declared that their position for trawl option was the least conservative options listed in the PFMC option matrix.

A gear supplier suggested consideration of tax credits for obsolete gear that had been pre-ordered prior to regulatory changes.

Enforcement of the proposed fathom line closure would be extremely expensive, possibly more than the fishery is worth.

Concerns about closing the halibut fishery outside of 100 or 150 fathoms to fishing between some yet to be determined depth stratum when yelloweye rockfish bycatch appears to occur primarily in isolated areas (i.e. Stonewall banks). Why not just close halibut fishing, both sport and commercial, at Stonewall banks. Other concerns were voiced by Brookings sport fishers asking why they should be constrained by a fathom closure when they don't catch yelloweye there.

Brookings participants asked if there could be any differential treatment of communities with consideration to existing economic troubles, citing the fire as an example.

Port Orford representatives asked that their port be separately considered due to unique circumstances and economies of scale.

General comments agreed universally at all meetings

- Any regulation changes that supported the full retention program were encouraged.
- The loss of community infrastructure (ice plants, processors, fuel supply, etc.) that would result in the case of the most conservative options would be difficult to re-establish in the future.
- A vessel buyout program is supported.
- There is a need for an economic evaluation for both sport and commercial curtailment related to the trickle down effects to the coastal communities. Also most participants voiced their displeasure with NMFS for not having done this yet.
- Community leaders stated that economic impacts could not be quantified until they occur, and were frustrated at the lack of analysis on ancillary impacts of closures.
- Retraining programs that would help displaced fishers usually provide skills for employment that is not available in small coastal towns, so these people end up moving away, which further exacerbates the stability of the economy.
- Gear suppliers noted that they have ordered supplies that, due to in-season and last minute regulatory changes, become unuseable, causing tens of thousands of dollars in losses. Equipment and nets must be ordered months in advance and

cannot be returned. Suppliers urged for more predictable longer standing regulations or they will not survive.

- Enforcement of the proposed fathom line closure would be extremely expensive, possibly more than the fishery is worth.
- Regulation-induced discards were discussed at all coastal meetings and resulted in strongly held opposition to waste at a time of declining stocks. Options to retain bycatch absent profit were proposed to avoid waste and discard (i.e. donation to charity).
- It was suggested that small amounts of overages be decriminalized to minimize discard.
- Some people in attendance brought up the concern that while we are becoming increasingly more restrictive in our fisheries, Canada may not be, and an international dialogue needs to be established for cooperative management.
- Comments about the fears of having marine reserves, when in fact the fathom curve closure is a defacto reserve.
- Concerns of fishers about the accuracy of stock assessments, trawl survey problems, and scientists not listening to the ideas of fishers to get better data.
- NMFS needs to provide funding for research on unassessed species.
- Federal and state agencies need to address the many aspects of this crisis. Public endorsement is essential for political support for needed programs.
- It is unknown if the regulations will be legally or effectively enforceable. How can the council proceed with regulations without resolving this issue?
- Weekly limits for the fixed gear fleet is more efficient and safer than daily limits.
- Cumulative limits cause problems and waste.
- There was a stated desire to divide the council and not manage the entire West Coast as one unit.

Oregon Sea Grant will provide additional information about community impacts and views presented during the Oregon workshops via written and verbal testimony

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
SUMMARY OF GROUNDFISH PUBLIC MEETINGS

The Washington Department of Fish and Wildlife attended and sponsored a series of public meetings to solicit input from and share information with stakeholders primarily regarding inseason groundfish management measures, proposed management measures and exempted fisheries (EFPs) for 2003, and the status of yelloweye rockfish.

Date	Location	Attendees	Discussion Topics
Aug 6	Port of Ilwaco meeting	~ 30 fishing interests (5 comm/25 rec)	• Pacific Council process • Groundfish fisheries mgmt • Status of yelloweye rockfish
Aug 15	Forks City Council meeting	~ 20 rec fishing interests	• Pacific Council process • Groundfish fisheries mgmt • Status of yelloweye rockfish
Aug 16	WDFW - Olympia	3 comm/4 rec	• Groundfish fisheries mgmt • Proposed mgmt options for 03 • Status of yelloweye rockfish
Aug 21	WDFW - Olympia	~ 20 comm fishing interests	• EFP proposals for 2003 • Status of yelloweye rockfish/STAR Panel mtg results • Proposed mgmt options for 03
Aug 23	WDFW - Montesano	4 comm fishing interests	• Proposed pollock EFP for 2003 • Inseason mgmt measures • Proposed mgmt options for 03
Sept 5	WDFW - Olympia	5 comm/5 rec	• Results of Allocation Committee mtg • Proposed mgmt options for 03 • WDFW EFP proposals for 03 • Proposed changes to Halibut Catch Sharing Plan

Discussion Summary

One of the key issues of concern among recreational fishers was the status of yelloweye rockfish and its potential impact upon the halibut fishery and other recreational groundfish opportunities. WDFW staff provided information on the status of yelloweye rockfish, the results of the new stock assessment, and efforts to collect additional data from the yelloweye taken in the International Pacific Halibut Commission setline survey and through a submersible survey off the Washington coast. Recreational fishing interests provided WDFW staff with information regarding areas where halibut fishing could be allowed with minimal yelloweye catch in the event that such areas would be needed as a management tool. They also proposed extending the current Yelloweye Conservation Area for recreational groundfish and halibut fisheries.

Discussion with commercial fishers focused primarily upon the optimum yields and harvest guidelines for 2003 and the depth-based management measures being proposed to achieve them. We received comments on the latitude and longitude waypoints which would be used to implement the depth closures, and how those closures would affect various fishing opportunities for both trawl and fixed gear fisheries. We also engaged in considerable discussion with both trawl and line gear fishers concerning possible EFPs that could be conducted in 2003.

Our final meeting with commercial and recreational fishers on September 5 focused primarily on identifying preferred management measures for 2003, based on the results of the Allocation Committee meeting and the new stock assessment for yelloweye rockfish.

Macpherson, Gintner, Gordon & Diaz
LAWYERS
423 North Coast Highway
P.O. Box 1270
Newport, Oregon 97365
(541) 265-8881 \ (800) 829-8881
FAX (541) 265-3571
email: eder@mggdlaw.com

Michele Longo Eder
Of Counsel

RECEIVED
AUG 2 0 2002
PFMC

August 19, 2002

Dr. Donald O. McIsaac
Executive Director
Pacific Fisheries Management Council
7700 NE Ambassador Place
Suite 200
Portland, OR 97220

Re: Allocation Committee Meeting
August 28-29, 2002

Dr. Hans Radtke
Chairman
Pacific Fisheries Management Council
P.O. Box 244
Yachats, OR 97498

Dear Dr. McIsaac and Dr. Radtke:

I have not seen an agenda for the allocation committee meeting on August 28-29, but I thought I would ask you to include the following as a discussion and action item on the agenda. Please also include the subject of this letter as an agenda item for the GAP at the September Council meeting, and consider it a public comment for the September briefing book under the appropriate agenda item.

Recognizing that a part of the role of the allocation committee is to examine ways of reducing effort by the groundfish fleet in the groundfish fishery, I would suggest that the regulations and/ or the management plan be amended as follows:

> **To allow the fixed gear fishery to stack more than (3) three permits per vessel, up to (6) six permits per vessel**

First and foremost, from a conservation standpoint, allowing an increase in the number of permits stacked in the fixed gear fishery, from three to six permits, will assist in reducing fishing effort on rockfish and associated bycatch. As I understand it, the stacking of fixed gear sablefish permits does not allow for any stacking of other groundfish limits associated with the permit, thereby lessening this fishery's impact on other groundfish, and in particular , upon species of concern.

Secondly, there are people in the fixed gear fishery who would sell the sablefish endorsed permits, but because of the restriction on the number of permits that can be stacked, have a limited market in which to sell them. Conversely, there are buyers who will purchase permits, but have no market because of the current limits on numbers of permits allowed to be stacked.

We encourage the Council to act proactively, both in regard to the effect on species of concern, and in regard to the economic viability of the businesses in the fishery. Allowing an increase in the number of permits stacked will encourage the survival of those that remain in the fishery , and provide an economic benefit to those who wish to, or because of other business pressures, are forced to exit the fishery.

It may be of use to illustrate to you what the decrease of limits have been in the fixed gear fishery for Sablefish for the last three years:

	2000	**2001**	**2002**
Tier 1	**81,000**	**57,000**	**36,000**
Tier 2	**37,000**	**26,000**	**16,500**
Tier 3	**21,000**	**15,000**	**9,500**

As you will note, the poundage associated with each of the tiers has decreased by more than 50% in the last 3 years. Although we are aware that there may be an increase in the amount of sablefish allowed to be caught in 2003, this increase, if indeed it occurs, may only be temporary, and in any event, the amount of any increase cannot compensate for the significant loss of income during the past two years.

Although the Council is primarily concerned with groundfish, and the effect of restrictions in the groundfish fleet, be aware that the West Coast fishery as a whole is experiencing an overall depression. Depressed prices for salmon, shrimp, crab and tuna are adding to the general poor outlook for fisheries. There will be a smaller fleet regardless of what this Council does, and regardless of what happens in groundfish. This proposal, however, will provide some economic relief both to those who choose to leave, and those who choose to stay.

The limits on the number of permits stacked was initially justified, in part, by a concern that the fixed gear sablefish endorsed fleet not become "too" small, or "too" consolidated. Given the fact that the stated goal of the Council in its long term management plan is to reduce the fleet by 50%, it would appear that allowing an increase in the number of permit to be stacked in this fishery is a specific action that this Council can take now, and by emergency regulation if necessary, in order to meet one of its long term goals.

Because of prior commitments, I will be unable to attend the Committee's meeting on August 28th, but I would be available to join the meeting by conference call and answer any questions by phone on the 29th.

Very truly yours,

Michele Longo Eder

Michele Longo Eder

MLE:ae

GMT REPORT ON BYCATCH MODELING AND TRIP-LIMIT RECOMMENDATIONS, #1

Figure 1.--Overview of approach for evaluating discards of over-fished species in the 2003 groundfish trawl fishery

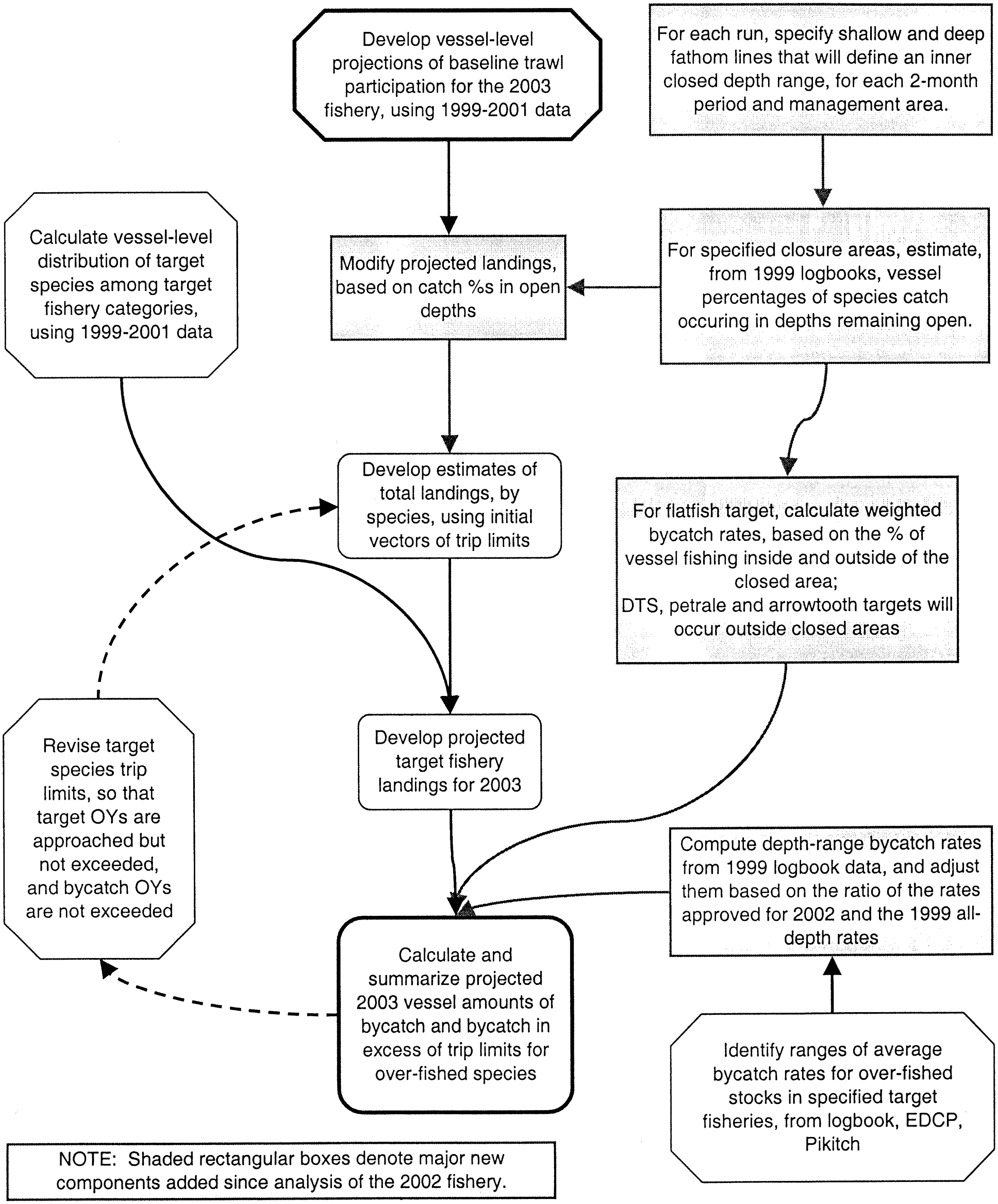

Illustration of method used to estimate effort shifts from closed areas

	Shallow line (50-125 fm N.; 50-80 fm S.)		**Deep line** (150 - 250 fm)	
Depths open to bottom trawling	**Closed area**		**Depths open to bottom trawling**	
% of 1999 species catch from this area/period example: **20%**	% of 1999 species catch from this area/period example: **30%**		% of 1999 species catch from this area/period example: **50%**	

Total % of catch from depths remaining open example: **70%**	Redistributed catch from closed area = **30% * 60% = 18%**	Adding these yields the % of proj.catch used for 2003 **70% + 18% = <u>88%</u>**
Alternative example: **25%**	**75% * 44% = 33%**	**25% + 33% = <u>58%</u>**

Where 1999 logbook data were unavailable for a permit in the projected fleet, average percentage distributions inside and outside of closed areas were substituted, using all vessels from the same:

1) Period : Vessel length group : State
2) Period : Vessel length group
3) Period

To calculate bycatch percentages for the flatfish target fishery, percentages of flatfish species inside and outside of closed area were used to weight bycatch rates for each bycatch species. These weighted rates were then summed and multiplied by projected target tonnage.

	Inside		Outside		Total
% of total catch in open area	20%	+	50%	=	70%
Converted to % of open area	29%	+	71%	=	100%
Bycatch rate	1.5%		0.3%		
Weighted bycatch rate	0.43%	+	0.21%	=	0.643%
Flatfish target mts (example)					6
Estimated bycatch mts (weighted bycatch rate times target mts)					0.039

Formula used to calculate the effect of closed areas on tonnage of species harvested

A % of species lbs caught in depths remaining open		**C** Adjustment used to reflect fishing effort relocated to open areas (A#*100)^0.3/6		**E** % that is added to the orginal open area % (C#*(1-A#))		Resulting percentage applied to existing effort estimate for vessel E#+A#
95%		**65%**		**3%**		**98%**
90%		**64%**		**6%**		**96%**
85%		**63%**		**9%**		**94%**
80%		**62%**		**12%**		**92%**
75%		**61%**		**15%**		**90%**
70%		**60%**		**18%**		**88%**
65%		**58%**		**20%**		**85%**
60%		**57%**		**23%**		**83%**
55%		**55%**		**25%**		**80%**
50%		**54%**		**27%**		**77%**
45%		**52%**		**29%**		**74%**
40%		**50%**		**30%**		**70%**
35%		**48%**		**31%**		**66%**
30%		**46%**		**32%**		**62%**
25%		**44%**		**33%**		**58%**
20%		**41%**		**33%**		**53%**
15%		**38%**		**32%**		**47%**
10%		**33%**		**30%**		**40%**
5%		**27%**		**26%**		**31%**
0%						
		Percentages in this column area multiplied by the percentage of catch from closed areas		These %s are added to the original %s from areas remaining open		These percentages are then multiplied by the projected all-depth tonnages for each species for 2003 BEFORE trip limits are applied

Illustration of the process used for specifying depth-range bycatch rates for use in modeling 2003 fishery alternatives.

This case represents lingcod bycatch in the flatfish target fishery.

In the fall of 2001, the PFMC selected one of three sets of bycatch rates, for each bycatch species being modeled.
The three options were constructed from analysis of three data sources north of 40°10' and logbook data alone south of 40°10'.
Two of the data sources had few enough observations that they were of limited use in informing depth-range bycatch rates, across the number of target fisheries and bi-monthly periods.
The following approach was used to create depth-based bycatch rates, from logbook data only, that remain consistent with the "all-depth" bycatch rates adopted for use by the PFMC in 2001.

1) A ratio was calculated by dividing the PFMC-selected rate by the logbook rate included in the 2001 analysis.

2) Bycatch rates for depth ranges were calculated from 1999 logbooks

	Analysis for 2002 fishery			**New logbook rates for modeling 2003 options, by depth ranges (fm)**							
	"All-depth" bycatch rates		Ratio of								
2-month period	Selected by PFMC	Logbook rate (1999)	selected-to-LB rate	0-1000	0-50	0-75	0-100	0-125	0-150	150-1000	180-1000
1	0.35%	0.10%	**3.59**	0.06%		0.36%	0.33%	0.45%	0.49%	0.04%	0.04%
2	1.75%	0.49%	**3.59**	0.42%	0.68%	0.77%	1.34%	1.73%	1.64%	0.18%	0.11%
3	1.75%	1.52%	**1.15**	1.35%	0.30%	0.83%	1.38%	1.81%	1.82%	0.55%	0.33%
4	2.00%	1.16%	**1.73**	1.23%	0.44%	0.80%	1.16%	1.47%	1.46%	0.44%	0.27%
5	2.40%	0.88%	**2.72**	0.87%	0.23%	0.70%	0.87%	1.09%	1.13%	0.37%	0.22%
6	1.20%	0.44%	**2.74**	0.39%	1.02%	1.33%	1.01%	1.03%	1.28%	0.26%	0.18%

3) New logbook rates are multiplied by the ratios, for each target/area/period

	Adjusted bycatch rates for use in the model							
1	0.21%	1.39%	1.30%	1.18%	1.61%	1.75%	0.16%	0.00%
2	1.49%	2.44%	2.75%	4.83%	6.22%	5.89%	0.65%	0.00%
3	1.56%	0.35%	0.95%	1.59%	2.10%	2.10%	0.64%	0.00%
4	2.12%	0.77%	1.38%	2.02%	2.55%	2.53%	0.77%	0.00%
5	2.37%	0.62%	1.90%	2.37%	2.97%	3.07%	1.01%	0.00%
6	1.08%	2.80%	3.65%	2.78%	2.82%	3.50%	0.72%	0.00%

4) Trawl survey depth distributions for bycatch species are used to set rates for some ranges to 0

Summary of depth and trip-limit management alternatives for the 2003 groundfish trawl fishery.
Council Meeting Draft #1, 9-10-02

Region/ Option/ Species Group	Target species trip limits under this option (lbs/2-mo)						Proj. target species mts	
	Jan/Feb	Mar/Apr	May/Jun	Jul/Aug	Sep/Oct	Nov/Dec	In this area	Coastwide
North of 40°10'								
No depth mgmt. / Allocation Comm. Preferred OY								
Shallow line (fm)	150	150	150	150	150	150		
Deep line (fm)	150	150	150	150	150	150		
Sablefish	10,000	6,000	2,000	2,000	1,500	6,000	1,158	1,473
Longspines	10,000	7,000	2,000	2,000	1,500	7,000	974	1,370
Shortspines	4,000	2,600	1,500	1,500	1,000	2,600	523	686
Dover sole	30,000	20,000	8,000	5,000	4,000	20,000	3,736	4,729
Arrowtooth	60,000	20,000	8,000	3,000	3,000	60,000	1,017	1,024
Petrale sole	60,000	20,000	4,000	2,000	3,000	60,000	1,393	1,630
Other Flatfish	50,000	50,000	8,000	4,000	6,000	50,000	1,162	1,569
Proj. coastwide ex-vessel revenue from all species								**$ 29,594,510**
Proj. coastwide	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
bycatch (mt)	64	12	156	143	21	14		
Allocation Committee Preferred-OY Alternative								
Shallow line (fm)	100	100	100	75	100	100		
Deep line (fm)	150	150	250	250	150	150		
Sablefish	5,000	5,000	5,000	5,000	5,000	4,000	1,536	1,885
Longspines	8,000	9,000	9,000	9,000	9,000	7,000	1,466	1,999
Shortspines	2,300	2,300	2,400	2,400	2,300	2,100	572	741
Dover sole	22,000	24,000	24,000	24,000	24,000	22,000	5,382	6,957
Arrowtooth	No limit		60,000	60,000	60,000	No limit	1,554	1,558
Petrale sole	No limit		30,000	30,000	30,000	No limit	1,626	1,786
Other Flatfish	100,000	100,000	100,000	100,000	100,000	100,000	1,624	2,235
Proj. coastwide ex-vessel revenue from all species								**$ 34,422,328**
Proj. coastwide	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
bycatch (mt)	80	12	136	138	17	3		
Low OYs								
Shallow line (fm)	75	75	75	50	75	75		
Deep line (fm)	150	150	250	250	250	150		
Sablefish	3,500	3,500	4,600	4,600	4,600	4,000	1,297	1,602
Longspines	8,000	8,000	8,000	8,000	8,000	6,000	1,496	2,032
Shortspines	2,300	2,300	2,400	2,400	2,400	1,800	572	744
Dover sole	24,000	24,000	28,000	28,000	28,000	15,000	5,370	7,003
Arrowtooth	No limit	80,000	40,000	40,000	40,000	No limit	929	929
Petrale sole	No limit	40,000	30,000	30,000	30,000	No limit	1,384	1,384
Other Flatfish	90,000	90,000	90,000	90,000	90,000	90,000	1,336	1,336
Proj. coastwide ex-vessel revenue from all species								**$ 29,815,295**
Proj. coastwide	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
bycatch (mt)	33	6	90	90	9	0		
High OYs								
Shallow line (fm)	100	100	100	75	100	100		
Deep line (fm)	150	150	250	250	150	150		
Sablefish	9,000	10,000	11,000	11,000	10,000	8,000	2,449	2,936
Longspines	8,500	8,500	8,700	8,700	8,500	7,600	1,467	2,003
Shortspines	2,200	2,300	2,400	2,400	2,300	2,100	569	738
Dover sole	23,000	23,000	24,000	24,000	23,000	23,000	5,377	6,952
Arrowtooth	No limit	No limit	60,000	60,000	60,000	No limit	1,554	1,554
Petrale sole	No limit	No limit	25,000	25,000	25,000	No limit	1,614	1,775
Other Flatfish	90,000	90,000	90,000	90,000	90,000	90,000	1,624	2,235
Proj. coastwide ex-vessel revenue from all species								**$ 39,144,207**
Proj. coastwide	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
bycatch (mt)	81	11	141	146	17	3		

Summary of depth and trip-limit management alternatives for the 2003 groundfish trawl fishery (cont.).
Council Meeting Draft #1, 9-10-02

Region/ Option/ Species Group	Target species trip limits under this option (lbs/2-mo)						Proj. target species mts	
	Jan/Feb	Mar/Apr	May/Jun	Jul/Aug	Sep/Oct	Nov/Dec	In this area	Coastwide
South of 40°10'								
No depth mgmt. / upper-mid darkblotched OY								
Shallow line (fm)	150	150	150	150	150	150		
Deep line (fm)	150	150	150	150	150	150		
Sablefish	10,000	6,000	2,000	2,000	3,000	6,000	315	1,473
Longspines	10,000	7,000	2,000	2,000	3,000	7,000	396	1,370
Shortspines	4,000	2,600	1,500	1,500	2,000	2,600	163	686
Dover sole	15,000	15,000	8,000	8,000	8,000	15,000	993	4,729
Arrowtooth	6,000	8,000	8,000	8,000	8,000	6,000	7	1,024
Petrale sole	15,000	4,000	4,000	4,000	4,000	15,000	237	1,630
Other Flatfish	6,000	6,000	8,000	8,000	8,000	6,000	407	1,569
Proj. coastwide ex-vessel revenue from all species								**$ 29,594,510**
Proj. coastwide bycatch (mt)	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
	64	12	156	143	21	14		
Allocation Committee Preferred-OY Alternative								
Shallow line (fm)	50	50	50	50	50	50		
Deep line (fm)	150	150	250	250	150	150		
Sablefish	5,000	5,000	5,000	5,000	5,000	4,000	349	1,885
Longspines	8,000	9,000	9,000	9,000	9,000	7,000	533	1,999
Shortspines	2,300	2,300	2,400	2,400	2,300	2,100	170	741
Dover sole	22,000	24,000	24,000	24,000	24,000	22,000	1,575	6,957
Arrowtooth	No limit	No limit	1,000	1,000	1,000	No limit	4	1,558
Petrale sole	No limit	No limit	10,000	10,000	10,000	No limit	161	1,786
Other Flatfish	50,000	50,000	50,000	50,000	50,000	50,000	611	2,235
Proj. coastwide ex-vessel revenue from all species								**$ 34,422,328**
Proj. coastwide bycatch (mt)	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
	80	12	136	138	17	3		
Low OYs								
Shallow line (fm)	0	0	0	0	0	0		
Deep line (fm)	250	250	250	250	250	250		
Sablefish	3,500	3,500	4,600	4,600	4,600	4,000	53	1,602
Longspines	8,000	8,000	8,000	8,000	8,000	6,000	82	2,032
Shortspines	2,300	2,300	2,400	2,400	2,400	1,800	28	744
Dover sole	24,000	24,000	28,000	28,000	28,000	15,000	194	7,003
Arrowtooth	0	0	0	0	0	0	0	929
Petrale sole	0	0	0	0	0	0	0	1,384
Other Flatfish	0	0	0	0	0	0	0	1,336
Proj. coastwide ex-vessel revenue from all species								**$ 29,815,295**
Proj. coastwide bycatch (mt)	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
	33	6	90	90	9	0		
High OYs								
Shallow line (fm)	50	50	50	50	50	50		
Deep line (fm)	150	150	250	250	150	150		
Sablefish	9,000	10,000	11,000	11,000	10,000	8,000	487	2,936
Longspines	8,500	8,500	8,700	8,700	8,500	7,600	536	2,003
Shortspines	2,200	2,300	2,400	2,400	2,300	2,100	169	738
Dover sole	23,000	23,000	24,000	24,000	23,000	23,000	1,576	6,952
Arrowtooth	No limit	No limit	1,000	1,000	1,000	No limit	0	1,554
Petrale sole	No limit	No limit	10,000	10,000	10,000	No limit	161	1,775
Other Flatfish	50,000	50,000	50,000	50,000	50,000	50,000	611	2,235
Proj. coastwide ex-vessel revenue from all species								**$ 39,144,207**
Proj. coastwide bycatch (mt)	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
	81	11	141	146	17	3		

Summary of depth and trip-limit management alternatives for the 2003 groundfish trawl fishery (cont.).
Council Meeting Draft #1, 9-10-02

Options/ Region/ Species Group	**Target species trip limits under this option (lbs/2-mo)**						Proj. target species mts	
	Jan/Feb	Mar/Apr	May/Jun	Jul/Aug	Sep/Oct	Nov/Dec	In this area	Coastwide
Difference between **Allocation Committee Preferred Alternatives** and **No depth management.**								
North								
Sablefish	-5,000	-1,000	3,000	3,000	3,500	-2,000	378	412
Longspines	-2,000	2,000	7,000	7,000	7,500	0	492	629
Shortspines	-1,700	-300	900	900	1,300	-500	48	55
Dover sole	-8,000	4,000	16,000	19,000	20,000	2,000	1,646	2,228
Arrowtooth	No limit under		52,000	57,000	57,000	No limit w/	537	534
Petrale sole	Alloc. Comm. Alt.		26,000	28,000	27,000	Al. Comm.	232	156
Other Flatfish	50,000	50,000	92,000	96,000	94,000	50,000	462	666
South								
Sablefish	-5,000	-1,000	3,000	3,000	2,000	-2,000	34	412
Longspines	-2,000	2,000	7,000	7,000	6,000	0	137	629
Shortspines	-1,700	-300	900	900	300	-500	7	55
Dover sole	7,000	9,000	16,000	16,000	16,000	7,000	582	2,228
Arrowtooth	No limit under		-7,000	-7,000	-7,000	No limit w/	-3	534
Petrale sole	Alloc. Comm. Alt.		6,000	6,000	6,000	Al. Comm.	-77	156
Other Flatfish	44,000	44,000	42,000	42,000	42,000	44,000	204	666
Proj. coastwide ex-vessel revenue from all species								**$ 4,827,818**
Difference between **Allocation Committee Preferred Alternatives** and **Low OYs.**								
North								
Sablefish	1,500	1,500	400	400	400	0	239	282
Longspines	0	1,000	1,000	1,000	1,000	1,000	-31	-33
Shortspines	0	0	0	0	-100	300	-0	-3
Dover sole	-2,000	0	-4,000	-4,000	-4,000	7,000	12	-46
Arrowtooth	0	No limit w/	20,000	20,000	20,000	0	625	628
Petrale sole	0	Al. Comm.	0	0	0	0	242	403
Other Flatfish	10,000	10,000	10,000	10,000	10,000	10,000	288	899
South								
Sablefish	1,500	1,500	400	400	400	0	295	282
Longspines	0	1,000	1,000	1,000	1,000	1,000	451	-33
Shortspines	0	0	0	0	-100	300	142	-3
Dover sole	-2,000	0	-4,000	-4,000	-4,000	7,000	1,381	-46
Arrowtooth	0	0	1,000	1,000	1,000	0	4	628
Petrale sole	0	0	10,000	10,000	10,000	0	161	403
Other Flatfish	50,000	50,000	50,000	50,000	50,000	50,000	611	899
Proj. coastwide ex-vessel revenue from all species								**$ 4,607,032**
Difference between **Allocation Committee Preferred Alternatives** and **High OYs.**								
North								
Sablefish	-4,000	-5,000	-6,000	-6,000	-5,000	-4,000	-913	-1,052
Longspines	-500	500	300	300	500	-600	-2	-5
Shortspines	100	0	0	0	0	0	2	3
Dover sole	-1,000	1,000	0	0	1,000	-1,000	5	4
Arrowtooth	0	0	0	0	0	0	0	4
Petrale sole	0	0	5,000	5,000	5,000	0	11	11
Other Flatfish	10,000	10,000	10,000	10,000	10,000	10,000	0	0
South								
Sablefish	-4,000	-5,000	-6,000	-6,000	-5,000	-4,000	-139	-1,052
Longspines	-500	500	300	300	500	-600	-3	-5
Shortspines	100	0	0	0	0	0	1	3
Dover sole	-1,000	1,000	0	0	1,000	-1,000	-1	4
Arrowtooth	0	0	0	0	0	0	4	4
Petrale sole	0	0	0	0	0	0	0	11
Other Flatfish	0	0	0	0	0	0	0	0
Proj. coastwide ex-vessel revenue from all species								**-$ 4,721,880**

Table 3. Preliminary Trip Limits[1/] and Gear Requirements[2/] for Limited Entry Trawl Gear

9/10/02

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North: lines TBA	1,800 lb/ 2 months					
3	South						
4	40°10' - 38° N. lat.: lines TBA	1,800 lb/ 2 months					
5	South of 38° N. lat. z/	30,000 lb/ 2 months					
6	**Splitnose - South**						
7	40°10' - 38° N. lat.: lines TBA	1,800 lb/ 2 months					
8	South of 38° N. lat. z/	30,000 lb/ 2 months					
9	**Pacific ocean perch - North[6/]**: lines TBA	3,000 lb/ 2 months					
10	**Chilipepper - South[6/]**						
12	small footrope trawl	To be specified					
13	large footrope trawl						
14	**DTS complex - North**	To be specified					
15	Sablefish						
16	Longspine thornyhead						
17	Shortspine thornyhead						
18	Dover sole						
19	**DTS complex - South**						
20	Sablefish[9/]						
21	Longspine thornyhead						
22	Shortspine thornyhead						
23	Dover sole						
24	**Flatfish - North**						
25	All other flatfish[3/]	To be specified					
26	Petrale sole						
27	Rex sole						
28	Arrowtooth flounder						
29	**Flatfish - South**						
30	All other flatfish[3/]	To be specified					
31	Petrale sole						
32	Rex sole						
33	Arrowtooth flounder						
35	**Whiting**[4/]	20,000 lb/ trip		Primary Season		10,000 lb/ trip	

CONTINUED

Table 3. Preliminary Trip Limits[1/] and Gear Requirements[2/] for Limited Entry Trawl Gear

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
37	**Minor shelf rockfish**						
38	North	To be specified					
39	South						
40	**Canary rockfish**						
	North	200 lb/ 2 months		600 lb/ 2months		200 lb/ 2 months	
	South						
	Widow rockfish						
41	North						
42	mid-water trawl	To be specified		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative widow limit of 1,500 lb/ month		To be specified	
43	small footrope trawl	1,000 lb/ month					
	South						
	mid-water trawl	To be specified		During primary whiting season, in trips of at least 10,000 lb of whiting: combined	To be specified		
	small footrope trawl	1,000 lb/ month					
44	**Yellowtail - North[6/]**						
45	mid-water trawl	To be specified		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative yellowtail limit of 2,000 lb/ month		To be specified	
46	small footrope trawl	In landings without flatfish, 1,000 lb/ month. As flatfish bycatch, per trip limit is the sum of 33% (by weight) of all flatfish except arrowtooth flounder, plus 10% (by weight) of arrowtooth flounder. Combined with and without flatfish, not to exceed 30,000 lb/ 2 months.					
47	**Bocaccio - South[6/]**	CLOSED[7/]					
48	**Cowcod**	CLOSED[7/]					
49	**Minor nearshore rockfish**						
50	North	To be specified					
51	South						
	Lingcod[8/]						
	North	800 lb/ 2 months		1,000 lb/ 2 months		800 lb/ 2 months	
	South			1,000 lb/ 2 months			
52	**Other Fish[10/]**	To be specified					

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ Gear requirements and prohibitions are explained above. See IV.A.(14).

3/ "Other" flatfish means all flatfish at 50 CFR 660.302 except those in this Table 3 with species specific management measures, including trip limits.

4/ The whiting "per trip" limit in the Eureka area inside 100 fm is 10,000 lb/trip from January 1 - August 31, 2002. From September 1 - December 31, 2002, the whiting fishery is closed.

5/ Small footrope trawl means a bottom trawl net with a footrope no larger than 8 inches (20 cm) in diameter. In areas where trawl gear is restricted, only one type of trawl gear is allowed on board at ony one time. See above.

6/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

7/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

8/ The minimum size limit for lingcod is 24 inches (61 cm) total length.

9/ The minimum size requirement for sablefish is 22 inches (56 cm) total lengthand. No more than 500 lb of undersized sablefish may be landed per trip.

10/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

x/ restricted to outside of 100 ftm, or inside 27 ftm south of 46°16'

z/ restricted to outside of 150 ftm or inside 20 ftm

Table 4. <u>Preliminary</u> Trip Limits[1/] for Limited Entry Fixed Gear

9/10/02

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North of 40°10' N. lat. x/	1,800 lb/ 2 months	5,000 lb/ 2 months maybe as a percentage				1,800 lb/ 2 months
3	40°10' - 38° N. lat. z/	1,800 lb/ 2 months	5,000 lb/ 2 months maybe as a percentage				1,800 lb/ 2 months
3	South of 38° N. lat. z/	30,000 lb/ 2 months					
6	**Splitnose - South**						
7	North of 40°10' N. lat. x/	1,800 lb/ 2 months					
7	40°10' - 38° N. lat. z/	1,800 lb/ 2 months					
8	South of 38° N. lat. z/	20,000 lb/ 2 months					
9	**Pacific ocean perch - North**[5/]	1,800 lb/ 2 months					
10	**Sablefish**						
11	North of 40°10' N. lat. x/	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months					
11	40°10' - 38° N. lat. z/	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months					
12	South of 36° N. lat. z/	350 lb/ day, or 1 landing per week of up to 1,050 lb					
	Longspine thornyhead						
13	North of 40°10' N. lat. x/	9,000 lb/ 2 months					
13	Soutth of 40°10' N. lat. z/	9,000 lb/ 2 months					
	Shortspine thornyhead						
14	North of 40°10' N. lat. x/	2,000 lb/ 2 months					
14	Soutth of 40°10' N. lat. z/	2,000 lb/ 2 months					
15	**Dover sole**	5,000 lb/month, North of 40°10' x/; South of 40o10' z/					
16	**Arrowtooth flounder**						
17	**Petrale sole**						
18	**Rex sole**						
19	**All other flatfish**[2/]						
20	**Whiting**[3/]	10,000 lb/ trip, North of 40o10' x/; South of 40o10' z/					
21	**Shelf rockfish, including minor shelf rockfish, chilipepper, widow and yellowtail rockfish**[5/]						
22	North x/	200 lb/ month					
23	South z/						
24	40°10' - 34°27' N. lat.	4:1 ratio with nearshore poundage, when nearshore open					
25	South of 34°27' N. lat.	4:1 ratio with nearshore poundage, when nearshore open					
26	**Canary rockfish**	CLOSED[4/]					
27	**Yelloweye rockfish**	CLOSED[4/]					
28	**Cowcod**	CLOSED[4/]					
29	**Bocaccio - South**[5/]						
30	40°10' - 34°27' N. lat.	CLOSED[4/]					
31	South of 34°27' N. lat.	CLOSED[4/]					
35	**Minor nearshore rockfish**						
36	North x/	3,000 lb/ 2 months, no more than 900 lb of which may be species other than black or blue rockfish[6/]					
37	South						
38	40°10' - 34°27' N. lat. z/	To be specified					
39	South of 34°27' N. lat. z/						
40	**Lingcod**[7/]						
41	North x/	CLOSED[4/]		400 lb/ month			CLOSED[4/]
42	South z/						
43	40°10' - 34°27' N. lat.	CLOSED[4/]		400 lb/ month, when nearshore open			CLOSED[4/]
44	South of 34°27' N. lat.	CLOSED[4/]		400 lb/ month, when nearshore open			CLOSED[4/]

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.
2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 4 with species specific management measures, including trip limits.
3/ The whiting "per trip" limit in the Eureka area inside 100 fm is 10,000 lb/ trip throughout the year. Outside Eureka area, the 20,000 lb/ trip limit applies.
4/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).
5/ Yellowtail rockfish and widow rockfish coastwide and bocaccio and chilipepper rockfishes in the north are included in the trip limits for shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.
6/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.
7/ The minimum size limit for lingcod is 24 inches (61 cm) total length.
8/ The minimum size requirement for sablefish is 22 inches (56 cm) total length between 40°10' N. lat. and 36° N. lat.
To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

x/ restricted to outside of 100 ftm, or inside 27 ftm south of 46°16'
z/ restricted to outside of 150 ftm or inside 20 ftm

Table 5. Preliminary Trip Limits[1/] for Open Access Gears

9/10/02

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North /x	Per trip, no more than 25% of weight of the sablefish landed					
4	40°10' - 38° N. lat. z/	Per trip, no more than 25% of weight of the sablefish landed					
5	South of 38° N. lat. z/	10,000 lb/ 2 months					
6	**Splitnose - South z/**	200 lb/ month					
7	**Pacific ocean perch - North**[4/ x/]	100 lb/ month					
8	**Sablefish**						
9	North of 40°10' N. lat. x/	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months					
	40°10' - 38° N. lat. z/	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months					
10	South of 36° N. lat. z/	350 lb/ day, or 1 landing per week of up to 1,050 lb					
11	**Thornyheads**						
12	North of 34° 27' N. lat.	CLOSED[3/]					
13	South of 34° 27' N. lat. z/	50 lb/ day, no more than 2,000 lb/ 2 months					
14	**Dover sole**	3,000 lb/month, no more than 300 lb of which may be species other than Pacific sanddabs, North of 40°10' x/; South of 40o10' z/					
15	**Arrowtooth flounder**						
16	**Petrale sole**						
17	**Rex sole**						
18	**All other flatfish**[2/]						
19	**Whiting**	300 lb/ month, North of 40o10' x/; South of 40o10' z/					
20	**Shelf rockfish, including minor shelf rockfish, chilipepper, widow and yellowtail rockfish**[5/]						
21	North x/	200 lb/ month					
22	South						
23	40°10' - 34°27' N. lat. z/	4:1 ratio with nearshore poundage, when nearshore open					
24	South of 34°27' N. lat. z/	4:1 ratio with nearshore poundage, when nearshore open					
25	**Canary rockfish**	CLOSED[3/]					
26	**Yelloweye rockfish**	CLOSED[3/]					
27	**Cowcod**	CLOSED[3/]					
28	**Bocaccio - South**[4/]						
29	40°10' - 34°27' N. lat.	CLOSED[3/]					
30	South of 34°27' N. lat.	CLOSED[3/]					
34	**Minor nearshore rockfish**						
35	North x/	3,000 lb/ 2 months, no more than 900 lb of which may be species other than black or blue rockfish[6/]					
36	South						
37	40°10' - 34°27' N. lat. z/	To be specified					
38	South of 34°27' N. lat. z/						
39	**Lingcod**[6/]						
40	North x/	CLOSED[3/]		300 lb/ month			CLOSED[3/]
41	South z/						
42	40°10' - 34°27' N. lat.	CLOSED[4/]		300 lb/ month, when nearshore open			CLOSED[4/]
43	South of 34°27' N. lat.	CLOSED[4/]		300 lb/ month, when nearshore open			CLOSED[4/]

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. To the U.S.-Canada border. "South" means 40°10' N. lat. To the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 5 with species specific management measures, including trip limits.

3/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

4/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. Pop in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

5/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

6/ The size limit for lingcod is 24 inches (61 cm) total length.

7/ The minimum size requirement for sablefish is 22 inches (56 cm) total length between 40°10' N. lat. and 36° N. lat.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

x/ restricted to outside of 100 ftm, or inside 27 ftm south of 46°16'

z/ restricted to outside of 150 ftm or inside 20 ftm

VMS UPDATE FOR SEPTEMBER COUNCIL MEETING

At the June 17 - 21, 2002 Council meeting the Enforcement Consultants (EC) presented Council Members with a list of VMS requirement questions. Upon review, the Council asked the EC to review and respond to the VMS requirement questions for presentation at the September Council meeting in Portland. The EC met on July 16, 2002 and produced the document Exhibit C.3.e, titled "Supplemental Enforcement Consultants Report, Vessel Monitoring Systems - Issues, Questions, and Requirements"which was an initial analysis of VMS options.

The EC presented information from Exhibit C.3.e to the Ad Hoc Allocation Sub Committee in Portland on August 29, 2002. After considering the information provided, the EC representatives were asked by the Council Chairman to refine their VMS proposal and provide the Council with a basic, no frills VMS / regulatory package for consideration at the September meeting.

In response to that request, the EC proposes a VMS / regulatory package for 2003 to include:

1. VMS required on all Limited Entry vessels
2. VMS Unit Requirements (minimum)
    a. one way GPS-generated position data compatible with the National VMS Program
    b. hourly reporting
    c. tamper proof
    d. type approved by NOAA Fisheries, Office for Law Enforcement (OLE) – see attached document titled "Mobile Transceiver Unit Specification of Requirements"
    e. costs:
        i. estimated at $2000.00 per unit or less
        ii. transmittal costs, $0.04 per position report x 24 hours = $0.96 a day.
3. Regulatory requirements
    a. faxed declaration of intent to fish in the restricted zone prior to leaving port
    b. only one gear type/net type allowed on board per trip
    c. restricted to fishing either inside or outside of restricted zone on a trip. Prohibited from fishing both areas on an individual trip.

Note: NOAA Fisheries OLE has funded the infrastructure for the National VMS Program which includes the hardware and software to enable the Northwest Division of OLE to monitor up to 10,000 vessels. However, funding is not available at this time to purchase, install and maintain VMS shipboard units, nor is the funding available to pay for the costs of transmitting position reports. Therefore, the EC assumes that proceeding with VMS at this time will require these costs be borne by the industry.

Electrical Power Requirements:
Variable. For example, specifications for an INMARSAT C transmitter are 10.5 - 32 VDC floating, Receive 1.8W, Transmit 23W, Sleep mode function (while in port and not moving) 30mW. Experience indicates that these units operate reliably using a well-maintained, fully charged 12 volt system, operate reliably using a 32 volt system and have demonstrated optimum performance using a 24 volt system.

This proposal represents the minimum VMS / regulatory package monitor compliance with depth-based restrictions , and does not preclude nor eliminate the need for at-sea surveillance by surface and air assets or a shore-based enforcement capability.

Vessels Monitoring Systems (VMS) - Issues, Questions and Requirements

A work group from the Enforcement Consultants (EC) met on July 16, 2002 in Portland, OR. Representatives from USCG, NMFS, WDFW, OSP and PFMC staff discussed a vessel monitoring system (VMS) program.

Steve Springer from NMFS enforcement advised that Office of Law Enforcement (OLE) -Northwest Region has identified VMS as their number one priority for the next fiscal year. They are working with the intent of having a system in place by the second quarter of the federal fiscal year (Jan.-Mar. 2003). NMFS OLE has ordered the equipment for a monitoring system that is capable of monitoring up to 10,000 vessels. They have been authorized to hire a VMS program manager to set up and run the system.

Information provided by OLE shows that there are three (3) systems available. The prices range from $1800.00 to $5800.00 depending on the needs. The mid-range unit may need the addition of some type of computer, which raises the cost if a vessel is not already equipped with a PC. The EC is considering, as a starting point, recommending requiring VMS on all limited entry permit vessels, which is approximately 400 –500 boats. As the EC working group carefully considered each requirement in the NMFS OLE issue paper, it became clear that the INMARSAT-C is the system that best meets our requirements based upon its flexibility to add a message terminal or a PC. With this capability, vessels can provide notice or declarations when transiting the restricted area, changing from one fishery to another, and transmitting catch data in real, or near-real time. It also enables OLE to send messages to the vessel, which may prove very useful for special notifications of openings, closings, warnings of encroachments near or into restricted areas, etc. The cost of the unit is $2500, and a computer required for two-way communication, would raise the costs to approximately $5000 ($2500 for the transmitter, $500 for installation and $2000 for a PC). 500 vessels at a cost of $5000.00 dollars each places start up costs at approximately $2.5 million dollars. To require a similar system on all limited entry and open access vessels would cost approximately $7.5 million dollars assuming there are approximately 1000 open access vessels requiring VMS.

Questions and Responses from the Supplemental EC report June 2002.

1. Which fisheries and gear types will need VMS?

Initially we recommend VMS implementation focus on the limited entry trawl and fixed gear fleet. Once up and running, the Council may wish to include all vessels capable of taking groundfish, either directly or incidentally.

2. How many vessels are in each fishery?

Information from Permit office:
Coastwise

LE Trawl total	231
LE Fixed	172
Open Access	1413

There was some discussion about if this really represented all the commercial vessels. The EC was unsure if all Salmon vessels or exempted fisheries vessels would be included in these numbers.

3. What are the sizes?

Trawl 45' to 90' in length
Fixed 25' to 90"
Open 19' to 50'

This question was asked to determine configuration and project whether adequate electrical systems would be present on the vessels. It appears that a vast majority of the fleet will be able to accommodate the power and superstructure needs of the VMS hardware.

4. Electrical power capabilities of the vessels?

Varied, most will have some kind of generator capacities or batteries.

5. How will restricted areas be defined?

Current regulations and proposed regulations do not define these areas as “traditional” restricted areas; instead they rely on a zone management system based on gear type. However the zones proposed for VMS will be described using latitude and longitude.

VMS is most often used in other parts of the nation to exclude fishers from entering specific areas. Under the proposal being considered here, VMS will be used for zone management. Two-way communication and messaging capability will be necessary for vessels to declare their intention when entering a restricted zone, leaving a restricted zone or returning to port, etc.

6. If the closure is continuous along the entire west coast, how can we use VMS to monitor transiting through restricted areas?

Can VMS be used or is it exact enough for minimum speeds while transiting? Do we need transit lanes? Can we use a declaration from the boat they are transiting?

This discussion evolved around creating a declaration process transmitted through VMS. Operators would notify OLE through the VMS that they were leaving on a trip and what gear they intended to use. Areas/Zones would be identified where the fishing was to occur. The operator could also advise OLE when he was transiting through a prohibited area. Upon reaching the fishing area he would notify that he was now fishing. After fishing, the operator could then send a message that he would again be transiting through a restricted area.

Through this declaration process vessels would be free to switch gear types and fisheries from one trip to the next. We discussed having gear codes and zone codes to limit the amount of time required in making declarations.

7. Will there be season openings and closings?

See above discussion. It was also mentioned that restricted periods to all fishing has the potential for reducing enforcement costs.

8. How much consideration should be given to VMS requirements in other Pacific Ocean fisheries?

Will these other systems work for us, what are their capabilities? Are the Alaska and the pelagic longline systems the same?

First we have to design a system to meet our needs. Then we could look at these other systems to see if they might work for us. However, if we were limited by a certain system's capabilities we may be forced to look at different management measures [ex. Restricted areas/no transit zones]

9. What will the requirements be regarding leaving the power and VMS unit on while vessels are in port?

There are many things to be considered in answering this question. If we have a system that with messaging capability and requires a declaration, then the system could be turned off when at port or perhaps when participating in a fishery which does not require VMS or in other non- fishing activities. This issue and related questions require further analysis. We would request a rule making it a violation for any vessel to fish in a VMS-required fishery without an operating VMS. Fishing without an operating system would be a separate offense and a major penalty would be applied. By allowing systems to be turned off the operating costs of the system would be less.

10. What is the reporting intervals i.e. 30 min., 1 hour, 2 hours, 4 hours, 12, 24, etc?

The EC working group agreed that 1-hour reporting intervals appear adequate. If more frequent polling is required, that request can quickly be accommodated through a computer command made at the base terminal if using the INMARSAT C transceiver. This polling feature is not available with the Argos system.

11. How much lag time is acceptable?

All systems are acceptable. However, the INMARSAT C system, with only a 5 to 10 minute lag time, is clearly the best. If enforcement resources were available to respond to an apparent infraction in near real time, this system may be the best choice.

12. Is random polling a requirement?

The EC working group considered polling to be an important requirement. The Argos system does not allow for polling. The other systems provide random polling through a computer command initiated at the Monitoring Workstation. This feature allows the VMS manager or technician at the Monitoring Workstation to remotely increase the position reporting intervals on individual vessels or groups of vessels as they near restricted areas or for other reasons.

13. **Do we want to establish buffer zones around the restricted areas and initiate more frequent polling (like every 15 minutes) as vessels approach a restricted area (2 miles, 1 mile, several hundred yards)?**

Buffers are not necessary, see polling answers above.

14. Costs of transmitting position reports varies from one system to another, ranging from $1.00 per day to $5.00 per day. Over time, this can be a considerable financial burden.

Requiring special message reporting will increase the costs to slightly over $1.00 per day for the INMARSAT system and would not affect the cost of $5.00 a day charged by Argos. The lower INMARSAT cost of $1 per day will off set the initial cost of the Argos system in approximately 2-4 years, depending on the cost of a messaging terminal or PC and the increased cost of special messages.

15. How much consideration should we give, up front, to those costs?

The costs of a VMS program may be small or insignificant if the alternative is a complete closure of the fishery.

16. **The position data generally comes from the GPS and is accurate to within about 50 meters. If GPS malfunctions on an ARGOS system, the standard Doppler positioning capabilities will initiate and is accurate only to about 300 meters. Boatracs is also only accurate to about 300 meters. Is the backup capability ARGOS provides important?**

The systems being proposed have a very reliable track record. The initial experiences EC members have had working with Council committees, state representatives and industry members to convert fathom curves to straight lines indicate there are many areas off the west coast where unlawful fishing incursions into the restricted areas could occur over very short distances, with potentially devastating impacts to the resource. Therefore, the EC recommends a system that uses and relies on the accuracy of GPS.

17. Do we want course and speed calculated through the transceivers GPS or the base station? The base station is simpler but less accurate.

The base station is acceptable.

18. Will the Council or NMFS require electronic logbooks now or in the future?

The Science Center is interested in exploring combining electronic logbook reporting with VMS in the future. If large-scale reporting of catch data over the VMS is anticipated, it becomes a requirement to consider when selecting a VMS. This issue is currently being researched and evaluated.

19. If a vessel required to have a VMS is allowed to change fisheries, either to another fishery where VMS is required or one where it is not, what is the notification procedure? Can this notification be made by VMS?

Messaging capabilities, two-way communication and declaration would allow this activity to occur over the VMS.

20. Do we foresee a need for sensor data i.e. water temperature, depth, air temperature, engine temp, engine rpm, etc.? Some of these capabilities are "off the shelf" and some if truly important enough could be developed given the time, money and resources.

We did not identify any at this time. INMARSAT is the only system that allows for addition of sensors.

21. Different systems have different coverage capabilities.

INMARSAT and Argos are essentially global systems. Boatracs uses satellites positioned over the U.S. with a “footprint” of the continental U.S. out to about the 200-mile EEZ. For seamounts beyond the EEZ, vessels fishing in the Bering Sea, Gulf of Alaska and high seas of the North Pacific beyond 200 miles, there is no coverage with Boatracs. More discussion may be needed on this question. Coverage is needed from the US/Canada border to Mexico, but coverage may need to extend beyond 200 miles. Issues involving the highly migratory fishery, the Seattle-based Alaska fleet and the need to monitor the far offshore fishery that transits the EEZ and lands in U.S. ports needs to be evaluated.

The rest of the questions we did go over at this meeting, most are not critical to the system but were designed to encourage further thought about what we wanted in the future, or some advantages that may be gained by having VMS.

Value Added Services

22. Email?
23. Internet access?
24. News services?
25. Communications with owner, family, parts and supplies, shipyards, etc?

COSTS

26. Who pays?
27. The transceivers?
28. Communications?
29. Installation?
30. Maintenance?
31. Replacement?
32. Sensors?
33. Hardware and software for electronic log books?

DRAFT MINUTES
Ad Hoc Allocation Committee Meeting

Shilo Inn
11707 NE Airport Way
Portland, OR 97220
(503) 252-7500

August 28-29, 2002

WEDNESDAY, AUGUST 28, 2002 1:00 P.M.

Members Present:
Dr. Hans Radtke, chairman, Pacific Fishery Management Council
Mr. Phil Anderson, Washington Department of Fish and Wildlife
Mr. Burnie Bohn, Oregon Department of Fish and Wildlife
Mr. LB Boydstun, California Department of Fish and Game
Mr. Bill Robinson, National Marine Fisheries Service Northwest Region

Others Present:
Ms. Eileen Cooney, General Counsel, National Oceanic and Atmospheric Administration
Dr. Jim Hastie, National Marine Fisheries Service Northwest Fisheries Science Center, GMT
Mr. Rod Moore, West Coast Seafood Processors Association, GAP
Mr. Tom Ghio, California limited entry fixed gear representative, GAP
Mr. Brian Culver, Washington Department of Fish and Wildlife, GMT
Ms. Michele Robinson, Washington Department of Fish and Wildlife, GMT
Mr. Mark Saelens, Oregon Department of Fish and Wildlife, GMT
Mr. Don Bodenmiller, Oregon Department of Fish and Wildlife
Mr. Steve Kupillas, Oregon Department of Fish and Wildlife
Mr. Tom Barnes, California Department of Fish and Game, GMT
Mr. Dave Thomas, California Department of Fish and Game, GMT
Mr. Rob Jones, Northwest Indian Fisheries Commission, GMT
Mr. Jim Glock, National Marine Fisheries Service
Mr. Dave Cleary, Oregon State Police, EC
Mr. Dayna Matthews, National Oceanic and Atmospheric Administration Fisheries Enforcement, EC
Ms. Vicki Nomura, National Oceanic and Atmospheric Administration Fisheries Enforcement
Mr, Steve Springer, National Oceanic and Atmospheric Administration Fisheries Enforcement
Mr. Steve Bodnar, Coos Bay Trawlers Association
Mr. Steve Joner, Makah Tribe
Ms. Laura Deach, Washington limited entry fixed gear
Mr. Joe Easley, Oregon Trawl Commission
Mr. Joe Bersch, Alaska Supreme Seafoods
Mr. Peter Huhtala, Pacific Marine Conservation Council
Ms. Ky Russell, Institute for Fisheries Resources, Pacific Coast Federation of Fishermen's Associations
Dr. Mark Powell, The Ocean Conservancy
Ms. Kerry Aden, Pacific Fishery Management Council staff
Mr. Dan Waldeck, Pacific Fishery Management Council staff
Dr. Kit Dahl, Pacific Fishery Management Council staff
Mr. Jim Seger, Pacific Fishery Management Council staff
Mr. John DeVore, Pacific Fishery Management Council staff

A. Call to Order

Dr. Radtke called the Ad Hoc Allocation Committee (Committee) meeting to order at 1305.

B. Review and Approve Agenda

The Committee urged the background agenda items be covered succinctly to insure that the main agendum (I.) receives plenty of time for thorough deliberation.

C. Stock Assessment/Rebuilding Analysis Update and Recommended Optimum Yields for 2003

Dr. Hastie reviewed an updated ABC/OY table and explained the harvest levels in the range for each species. The updates correspond to GMT and SSC Groundfish Subcommittee recommendations for bocaccio and yelloweye. Most of the overfished species' OYs originate from rebuilding analyses and range from a 50% probability of rebuilding by Tmax to an 80% probability of rebuilding by Tmax. The canary OY scenarios show alternate sport:commercial catch sharing (50:50, 80:20, and 20:80) effects and do not imply allocation recommendations. The bocaccio OYs correspond to a 0 harvest which is implied by the revised rebuilding analysis and a high end of ≤20 mt which is a maximum harvest suggested by NOAA Fisheries (this will be addressed later in the meeting by Mr. Robinson and Ms. Cooney). The darkblotched OYs correspond to those specified by the Council. The T_{MID} harvest level is the same as the P=0.8 trajectory (172 mt). The yelloweye harvest range corresponds to the new assessment and rebuilding analysis. The low end conforms to the low range from the old rebuilding analysis and the high OY of 27 mt conforms to the P=0.5 (to rebuild by T_{MAX}) rebuilding trajectory in the new analysis. The Council-specified high OY of 13.5 mt is about the harvest level the GMT recommends for 2003. The minor *Sebastes* range is stratified by nearshore, shelf, and slope. Dr. Hastie was not sure the nearshore OYs were accurately captured in the table. This will be discussed by the Committee later in the meeting. The southern nearshore limits range by the Council-specified sport:commercial allocations and will be discussed later in the meeting in more detail.

The basis for some of the species' OYs was requested. The lingcod OYs are based on rebuilding probabilities of 80%, 60%, and 50% respectively. The whiting OYs are based on status quo (2002), $F_{45\%}$ with a 40-10 adjustment, and $F_{40\%}$ with a 40-10 adjustment, respectively. The sablefish OYs were based on an $F_{60\%}$ harvest with a 40-10 adjustment, $F_{45\%}$ under a density dependence hypothesis, and $F_{45\%}$ under a regime shift hypothesis, respectively.

Mr. Robinson was asked to comment on the legal ramifications of the bocaccio rebuilding and sustainability analyses. This has been the subject of intense discussion in NOAA Fisheries. One underlying uncertainty is whether future recruitment of bocaccio is more driven by environmental factors or spawning stock size. That aside, the National Standard Guidelines (NSGs) never contemplated a situation where rebuilding would pre-empt all sources of potential fishing mortality. The fact that the stock cannot be rebuilt within T_{MAX} was also not contemplated. Therefore, the judgement is that the NSGs are inadequate in this case. NOAA Fisheries therefore went to the MSA for guidance. The biology of the stock and the needs of fishing communities argues against a zero fishing mortality scenario. What criteria should be used to determine a level of incidental fishing mortality? NOAA Fisheries feels the appropriate criteria are consistency with the MSA, a high probability of not driving the stock to extinction or into further decline, not jeopardize future rebuilding, and not drive the stock to be listed under the ESA. The bocaccio sustainability analysis will be the guide for this decision. The guidance is to adopt a 2003 OY as close to 0 as possible and no greater than 20 mt. The uncertainty in accounting for bocaccio bycatch needs to be taken into account. Whatever management regime is recommended by the Council, the Council, NOAA Fisheries, and the states need to have adequate observer coverage. Incidental catch needs to account for all sources of mortality including research catch. NOAA Fisheries is not invoking a Mixed Stock Exception.

Mr. Robinson was asked if this was an exception to rebuilding guidelines? This is not a Mixed Stock Exception. It is a departure from the NSGs because they did not contemplate such an extreme case as bocaccio. Ms. Cooney explained that this is a special consideration based on these specific circumstances and doesn't apply to any other overfished species.

Dr. Hastie was asked what was revised in the bocaccio rebuilding analysis. The biomass estimate implies that this year's 2 month harvest of 60 mt by the recreational fishery represents a 7% harvest rate. This was hard for some of the Committee members to believe.

Dr. Hastie explained that the ABC/OY table also has the expected research catches for 2003.

Further questions arose on the bocaccio and yelloweye harvest range reviewed by Dr. Hastie. The analytical results were reiterated. Can the Council consider harvest levels outside the range specified by the Council in June? As long as there are appropriate analyses before the Council in September, they can consider these alternatives.

Could NOAA Fisheries provide further guidance on the other species' rebuilding OYs such as darkblotched? Mr. Robinson explained that T_{MID} is a reasonable objective with greater comfort in more conservative options.

Mr . Brian Peterson had a public comment regarding EFPs (he explained he wouldn't be here tomorrow). Excluder grates being tested in shrimp trawls may be useful in flatfish trawls since they are effective in excluding rockfish. These should be tested in these trawls. Mr. Robinson asked whether he was addressing the experimental flatfish trawls currently being tested or whether he was advocating grates in flatfish trawls. He explained it was the latter.

D. Overview of Overfished Groundfish Species' Bycatch Rates in West Coast Fisheries

Dr. Hastie reviewed the revised trawl bycatch model. Dr. Hastie was asked whether this model was a calibration of logbooks? Dr. Hastie explained it was more than that in that individual vessel participation and expected effort shifts were also modeled. Dr. Hastie explained how the model was stratified by area. Beyond the depth strata, there were latitudinal strata north and south of Cape Mendocino and a slope management line at 38° N. lat.

Dr. Hastie then reviewed modeled trawl fishing scenarios for next year (a handout was provided). Each scenario varies the open depth zones and displays the resulting trip limits for target species and the associated bycatch of overfished species. Depth-based restrictions generally provide more access and a greater harvest of target species than scenarios with no depth restrictions. Open depth zones are somewhat different north and south of Cape Mendocino. The seasonal variation in trip limits are stark for the DTS species. There was an attempt in the model to access DTS at times and in depths where bycatch was minimized. Without depth-based restrictions, it would be hard, if not impossible, to achieve the low sablefish OY.

Dr. Hastie then reviewed midwater trawl scenarios and the tradeoffs in bycatch. Midwater opportunities in the summer are unlikely given the high bycatch of canary; therefore, winter opportunities are the only realistic options. Given the widow bycatch in other fisheries, only one 2-month period of opportunity could be considered.

An economic analysis comporting to the trawl scenarios presented earlier was reviewed. The range of whiting OYs was particularly sensitive to the economic impacts in the trawl sector.

Mr. Jim Seger reviewed the bycatch accountability tables from non-trawl sectors.

E. Public Scoping of the Initial Draft Environmental Impact Statement/Regulatory Impact Review/Initial Regulatory Flexibility Analysis For Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures For The 2003 Pacific Coast Groundfish Fishery (Annual Specs EIS)

Joe Easley, Oregon Trawl Commission: The EIS needs to consider the economic impacts of trawl opportunities. If trawlers cannot cover their trip costs (i.e., fuel, food, crew, etc.), they won't fish. There are three classes of trawl vessels: 200 gal. fuel/day, 400 gal. fuel/day, and ≥600 gal. fuel/day. If the trip costs more than probable return, they won't fish. Dr. Radtke asked about labor costs. Since they get crew shares, this is not an out of pocket expense. Mr. Easley explained it is part of the gross and probable crew share and affects whether a crew can be recruited or not.

There is a potential misidentification of darkblotched and blackgill. An assessment of the foreign catch composition needs to scrutinize the darkblotched and blackgill catch composition implications.

The Oregon coast is much more dependent on fisheries than most realize. Timber and tourism are not or no longer economic mainstays. Most of the demographic growth on the coast is from retirees that don't contribute much to the coastal economies.

Mark Powell, The Ocean Conservancy: With so many soft bycatch numbers, it is critical to provide estimates of uncertainty and a confidence interval about these estimates. Need to understand the accuracy and reliability of these estimates. Credibility of fishery monitoring needs to be high. With such small OYs, need to get to a 100% observer coverage with bycatch caps. That is the most risk-averse strategy.

Brian Petersen, Shrimp Fishermen's Marketing Association: Small trawlers are pressed with the new management regime. EFPs will be critical to develop gear types that will allow shelf fishing opportunities. He is concerned that groundfish trawlers may switch to shrimp fishery without an EFP opportunity. These EFPs should incorporate the use of hard grate excluders to allow trawlers to continue to target Dover sole and other flatfish on the shelf without impacting rockfish.

Peter Huhtula, Pacific Management Conservation Council: Need to analyze the potential impacts of considerable effort shifts to nearshore areas. Need to find opportunities to fish on the shelf using EFPs. Streamlining and focusing the EFP process is critical. A comprehensive area-specific economic analysis needs to be done. Families and communities will need this analysis to get financial disaster-relief aid.

F. Anticipated Socioeconomic Effects

Mr. Seger reviewed some of the economic impact analysis tables. Some further refinement of these data will be done. Some of the rockfish assemblages will be further broken down to the species level. Dr. Radtke pointed out some of the misleading information imparted by representing ex-vessel values. Need to see the revenues from possible fishing opportunities. Dr. Hastie said these projections can be easily generated from the resulting scenarios outputted from the bycatch model. Mr. Seger stated a challenge exists on trying to estimate recreational effort shifts and the economic consequences of anticipated recreational management measures. Dr. MacCall and Mr. Barnes have been working on these analyses.

Mr. Anderson asked if the local income impacts included tribal fisheries? Mr. Seger believed so, but he needed to check. Are Alaska landings included? No. Are dogfish included in other groundfish? Yes. Are Bellingham and Anacortes included in the Puget Sound bin? Yes- all Puget Sound ports out to Port Townsend. The NW Olympic Peninsula ports include Neah Bay and La Push. Central WA includes Westport and Willapa Bay ports. South WA Coast represents Ilwaco.

H. Exempted Fishing Permit (EFP) Considerations

Initial discussion on this agendum occurred although many of the critical participants will be here tomorrow (as it turned out, the NMFS staff did not make it to the meeting). The GMT has stated consideration of EFP allocations is important when allocating harvest. This needs thorough discussion.

Mr. Anderson reviewed the Washington arrowtooth and midwater yellowtail EFP results from 2001 and 2002. WDFW used disaster relief monies to fund these EFPs and coordinated with the NWR and NWFSC to insure no conflicts with the Observer Program. Much coordination also occurred with industry to set up and finance future EFPs. It takes much more effort than one might anticipate to do an EFP. Funding future EFPs is problematic. WDFW is exploring funding possibilities but has no firm plan. WDFW also developed EFP standards for their own use. These are still in draft form and will be finalized soon. One alternative to a formal EFP would be to set up criteria such as mandatory observers and bycatch caps as part of the regulation package. A number of EFP participants in the WDFW program now realize it might be economically beneficial fund or subsidize observer coverage to gain fishing opportunities. This may be the way to go.

Mr. Bohn explained that in their state hearings this summer, EFPs was a big subject. The experimental flatfish trawl efforts this summer provided valuable information. Mr. Saelens provided details of the experimental flatfish trawl discussions in their state hearings. Fishermen generally favored trying selective flatfish trawls. Another EFP application to test excluder grates in flatfish trawls may be forthcoming. This was suggested by some fishermen. Coordinating EFPs is somewhat confusing. The respective roles by the NWR and the NWFSC in the EFP process needs to be clarified. This would be appreciated tomorrow.

Mr. Robinson explained some of the NWR's concerns. How are EFPs prioritized? Only a limited number of EFPs can be accommodated. The NWR is responsible for authorizing EFPs. The NWFSC advises the NWR on the scientific credibility of proposed EFPs. EFPs are not the answer to everything.

Dr. Radtke opened up public comment on today's agenda items. Mr. Easley had a comment on irreversible economic effects of past and anticipated management measures.

Mr. Bohn handed out Oregon state hearing summaries.

Mr. Anderson said WDFW would be providing their comments and proposed standards for EFPs in September. Specific EFP applications would be forthcoming at the October Council meeting. WDFW is seriously considering advancing EFPs that are impact-neutral on overfished species. One possible EFP may need a small set-aside. These will be proposed and deliberated at the September Council meeting.

Mr. Boydstun wanted to advance a concept where NMFS and state observers would be pooled to more efficiently gain observer coverage of West Coast fisheries. This discussion needs to occur with Dr. Elizabeth Clarke of the NWFSC. We need to have more detailed guidelines for future EFPs. The Committee agreed this needs to be done.

Dr. Radtke reviewed tomorrow's agenda. The hope is to allocate as much time as possible to agendum I. tomorrow. Mr. Anderson wanted to focus in on individual OYs selected by the Committee and then model management options and approaches. The Committee agreed this would be helpful to narrow down considered options.

THURSDAY, AUGUST 29, 2002 8:00 A.M.

Members Present:
Dr. Hans Radtke, chairman, Pacific Fishery Management Council
Mr. Phil Anderson, Washington Department of Fish and Wildlife
Mr. Burnie Bohn, Oregon Department of Fish and Wildlife
Mr. LB Boydstun, California Department of Fish and Game
Mr. Bill Robinson, National Marine Fisheries Service Northwest Region

Others Present:
Ms. Eileen Cooney, General Counsel, National Oceanic and Atmospheric Administration
Dr. Jim Hastie, National Marine Fisheries Service Northwest Fisheries Science Center, GMT
Mr. Mark Cedergreen, Washington Charterboat Association, PFMC
Mr. Tom Ghio, California limited entry fixed gear representative, GAP
Ms. Janice Green, Recreational Fishing Alliance, GAP
Mr. Brian Culver, Washington Department of Fish and Wildlife, GMT
Ms. Michele Robinson, Washington Department of Fish and Wildlife, GMT
Dr. Patty Burke, Oregon Department of Fish and Wildlife
Mr. Mark Saelens, Oregon Department of Fish and Wildlife, GMT
Mr. Don Bodenmiller, Oregon Department of Fish and Wildlife
Mr. Steve Kupillas, Oregon Department of Fish and Wildlife
Mr. Tom Barnes, California Department of Fish and Game, GMT
Mr. Rob Jones, Northwest Indian Fisheries Commission, GMT
Mr. Dave Cleary, Oregon State Police, EC
Mr. Dayna Matthews, National Oceanic and Atmospheric Administration Fisheries Enforcement, EC
Ms. Vicki Nomura, National Oceanic and Atmospheric Administration Fisheries Enforcement
Mr, Steve Springer, National Oceanic and Atmospheric Administration Fisheries Enforcement
Mr. Jim Glock, National Marine Fisheries Service
Mr. Steve Bodnar, Coos Bay Trawlers Association
Mr. Brian Petersen, Shrimp Producer's Marketing Cooperative
Mr. Steve Joner, Makah Tribe
Ms. Laura Deach, Washington limited entry fixed gear
Mr. Joe Easley, Oregon Trawl Commission
Mr. Joe Bersch, Alaska Supreme Seafoods
Mr. Peter Huhtala, Pacific Marine Conservation Council
Ms. Ky Russell, Institute for Fisheries Resources, Pacific Coast Federation of Fishermen's Associations
Dr. Mark Powell, The Ocean Conservancy
Ms. Kerry Aden, Pacific Fishery Management Council staff
Mr. Dan Waldeck, Pacific Fishery Management Council staff
Dr. Kit Dahl, Pacific Fishery Management Council staff
Mr. Jim Seger, Pacific Fishery Management Council staff
Mr. John DeVore, Pacific Fishery Management Council staff

G. *VMS and Enforcement Issues*

Mr. Dave Cleary and Mr. Steve Springer presented the latest developments in planning a Vessel Monitoring System (VMS) for the West Coast groundfish fishery. Current enforcement capabilities are waning due to budget cuts and therefore heavily dependent on the Coast Guard. One of the VMS systems of those available appears to meet the needs of the fishery. Inmarsat C is this system and costs about $5K per unit. Who pays is a significant hurdle. NMFS believes this system could be implemented as early as June 2003. A rulemaking needs to be done, along with completion of NEPA and PRA requirements.

The document handed out to the Committee "Vessel Monitoring Systems (VMS)- Issues, Questions, and Requirements" is a work in progress. Enforcement resources for this fall and the start of 2003 are scant. For instance, one 210' cutter may be available this fall (Sept.-Dec.) may be the only deep water vessel for use in enforcing depth-based restrictions. Some CG aerial support is also available.

Initial plans for VMS included all the limited entry groundfish vessels. Some additional thought has gone into placing VMS on other vessels that may operate on the West Coast (i.e., shrimpers). Much additional planning needs to be done.

Why is it important to link VMS to PCs? Most VMS in use are to enforce closed areas. In this case, there may be some opportunities in restricted zones. Therefore, two-way communication is important for the fisherman to communicate the fishing activity that is occurring to differentiate legal from suspicious activities. Communications to the skipper could also warn of potential violations. Deeper water fishing activities increases safety risks. This communication capability enables distress signals to improve rescue response. If an appropriation were available now, VMS could be in place in January. Mr. Robinson said it would be important to have a detailed plan advanced through the Council process this September. NMFS has the money to support a VMS infrastructure but cannot buy the units. It may be necessary to require fishermen to buy the units in order to fish. Has the equipment been ordered already? Yes. What are the chances of having a system in place by June 2003? Mr. Robinson said it is hard to say how long it would take to get the paperwork in place. The NWR has the task to do the rulemaking which is a significant workload. If the Council asks for VMS in September and the user pays for the units, the rulemaking could be done by June or July. How long would it take for the manufacturer to get the equipment built? About three months. Could the open access fleet of about 1,400 vessels be enforced without VMS? The open access fleet is probably the second priority for VMS after the limited entry fleets. Probably would not want to institute open access and limited entry all at once. How would VMS be used for enforcement? It certainly helps in monitoring but isn't an at-sea presence important? VMS allows hourly positioning of the entire fleet. Otherwise, vessels would need to be searched for by aerial or vessel surveillance. Therefore, VMS facilitates the at-sea enforcement but an at-sea presence is still critical. In Washington and Oregon this at-sea presence will necessitate help by the Coast Guard. Wouldn't shoreside enforcement be important as well? Yes, vessel tracks can be looked at and the gear and catch can be surveyed at the dock. VMS therefore focuses enforcement assets efficiently.

Who will be required to have VMS? Could have a rule that VMS is required on limited entry vessels by a certain date. The other option is to require a vessel to have VMS if it is transiting a restricted area with gear or fish. Vessels fishing shallow zones might not be required to have VMS in this case. Of course, that is more risky since they could more easily violate the restricted area.

There may be a simpler method where vessels make declarations of their fishing intentions prior to leaving port or initiating fishing activities. This is somewhat problematic in that communication glitches are more likely.

Economically, some fishermen are balking at the increasing costs of fishing. Requiring them to pay for VMS adds to this cost and may keep some fishermen from fishing altogether. We could therefore set up a system that no one would use because the costs are prohibitive.

Mr. Ghio explained his Alaska boat has VMS. It requires a 24 volt system and a 24 hour generator. It costs him about $75/month to operate the system. In California, there are problems. Most boats have a 12 volt system and no generators. An inverter and generator would be needed to operate the system. This adds over $3K in costs. It may not be cost-effective for fishermen. What about nearshore fisheries? To transit closed areas becomes more burdensome if one has to stay within 20 fm to transit up or down the coast.

The Committee decided they needed more information before they could develop a recommendation. The Enforcement Consultants need to do more planning work and the Committee/Council could benefit from their insights. However, delaying decisions has a cost in making the process more protracted. This is really a workload issue and needs to be weighed against all the other priorities. Mr. Robinson stated that NMFS has a role here but the Council does as well. Options and alternatives need to be narrowed by the Council. He is concerned with the existing management structure and lack of enforcement capabilities. The only way we are going to know that management measures are effective is adequate monitoring. We are in trouble without improved monitoring from a better Observer Program and an effective enforcement capability. The alternative is a simpler management structure where yields may not be realized. Ms. Cooney recommended that the technical options need to be laid out for decision-making. Mr. Bohn wants to see a clearer picture of the costs to fishermen. It goes beyond the cost of the unit itself. Fishermen need to know this to decide whether fishing in a VMS management regime is cost-effective. We need to line out the major objective and minimize the costs.

Mr. Anderson approached this issue from a different angle. How do we design a system that insures overfishing doesn't occur? Tweaking the management system has not really informed us of how well the system works. Drawing depth contours has been a problem when crafting depth lines across a steep slope gradient. These lines are close together making it harder to enforce. VMS may locate vessels but it doesn't inform us of the total catch. We still need to verify that the depth-based model is working. He is not convinced that the costs of VMS are justified. Perhaps an observer requirement might be a better insurance policy. One could then monitor vessel location and catch composition. The Council needs to weigh the costs of these alternatives. The bottom line is we can't afford 24/7 fishing by all vessels in the fleet. Therefore, we don't need as many observers as vessels in the fleet to provide adequate observer coverage. The WDFW experience with the yellowtail EFP indicated a smaller number of observers can effectively observe a greater portion of the active fleet. Mr. Robinson asked if he was recommending 100% observer coverage with a limited number of observers? Mr. Anderson said he was advocating 100% observer coverage with costs shared by the states, federal government, and industry. Observers would be required for a vessel to transit closed areas with fishing gear or to fish. Mr. Boydstun agreed that observers might be the most effective means of ensuring regulation compliance in areas wherein the scope of the closure is relatively narrow, but may not be the case for very large closure areas, such as the one contemplated for California south of Cape Mendocino.

Mr. Cleary said enforcement is struggling with the dynamic management system in place. They can't plan without policy guidance on how to proceed.

Dr. Hastie mentioned that the gross value difference in the limited entry trawl fishery between depth-based management and status quo is about $7M. This could help subsidize monitoring and enforcement costs.

How we monitor and enforce depth-based management is an important dilemma to resolve. Mr. Boydstun said observers and VMS are tools that need to be evaluated. Mr. Bohn cautioned that we don't want to place observers in a position of enforcing regulations. Mr. Boydstun wants a work group to convene and work through these issues. Mr. Robinson urged this be done expeditiously. Would the work group take up this issue immediately after the September Council meeting? How does the work group recommendation get incorporated in 2003 management? The Council will be making 2003 management decisions in September. Therefore, we need to resolve these issues prior to the Council meeting. Mr. Bohn asked if it was possible to focus the Observer Program on the deeper water vessels working outside the restricted area? Mr. Robinson stated that this discussion hasn't occurred yet. Dr. Hastie said any boats fishing this fall will be subject to depth line constraints. The current Observer Program protocol is to place observers on these fishing vessels. Therefore, we will get an indication of their total catch.

I. Management Options and Recommendations

The Committee elected to go through the alternative ABCs/OYs under consideration (Table 1) and specify recommendations by species and/or complex. This was considered important as a precursor to recommending 2003 management measures. The considerations and rationale for these harvest level recommendations follows.

Lingcod: The Committee was advised that it would be difficult to attain any of the OYs considered since protective measures for shelf rockfish are expected to considerably reduce lingcod harvest opportunities. The alternative of **651 mt** is consistent with the interim rebuilding program previously adopted and conforms to a trajectory that is estimated to have a 60% probability of rebuilding by maximum allowable rebuilding period (T_{MAX}).

Whiting: The Committee was told there was no new whiting data. The question arose why wouldn't the high OY be used? The STAR/PSARC Panel recommendation was to not increase the OY until a new assessment was done. The concern is uncertainty of the strength of the 1999 year class. The GMT was also concerned that it was important to preserve this incoming year class and allow higher survival to the spawning biomass. With about 66% of the exploitable biomass comprised of the 1999 year class, there is a limited stock structure. The SSC rejected the rebuilding analysis in June which estimated a rapid recovery of the stock. Although a new stock assessment is expected this winter, a revised rebuilding analysis will not be available before September. There was concern over the volatility of the whiting fishery and the effect of constantly adjusting harvest policy. It was asked whether the alternative OYs in the annual specifications EIS table represented coastwide U.S. OYs which was confirmed. Committee members were uncomfortable selecting a whiting harvest level given this year's NMFS disapproval. Stock status and rebuilding expectations were discussed. Projections suggest the stock will be above $B_{40\%}$ in about three or four years, already above $B_{25\%}$, and certain to rebuild within 10 years. It was recommended that the medium OY value of **148,200 mt** be used at this point in the discussion so the Committee could finish its work. This value is based on an $F_{45\%}$ harvest rate with the precautionary 40-10 adjustment.

Sablefish: The Committee first discussed the basis for the alternate sablefish OYs. The low OY value of 4,381 mt is based on an $F_{60\%}$ harvest rate. The GMT asked for a modeled result that would predict no decline in abundance after ten years when recent recruits no longer contribute to the spawning biomass. The medium (7,359 mt) and high (8,091 mt) OYs are based on the proxy $F_{45\%}$ harvest rate, with the 40-10 adjustment, under a density-dependence and environmental regime shift state of nature, respectively. Dr. Hastie pointed out that the medium OY could not be harvested without depth-based restrictions. The Committee thought something below 7,359 mt would avoid a volatile management future. The industry is also concerned when the fishery harvests smaller fish; a conservative harvest level would allow greater survival to a larger size bringing future harvest benefits. The Committee supported a **5,000 mt** harvest level north of Pt. Conception. The analogous harvest level for the Conception Area is **251 mt**.

POP: The medium OY value of **377 mt** recommended by the Committee is consistent with the 70%. probability trajectory previously adopted by the Council as an interim rebuilding strategy.

Widow: This year's total catch OY is 856 mt. There were concerns expressed for increased bycatch of canary when fishing midwater trawl strategies for widow. Dr. Hastie said winter midwater opportunities do not tend to catch canary. The Committee recommended the medium OY of **832 mt** which is consistent with a trajectory with a 60% probability of rebuilding by T_{MAX}.

Canary: The Committee discussed the catch sharing alternatives on the EIS harvest table and implications of canary being the binding constraint in many shelf fisheries next year. The catch sharing alternatives are not allocations or recommendations thereof, but simply the rebuilding model result of the effect of the sport fishery taking a greater proportion of younger fish and having a greater "per-ton" impact on rebuilding. The Committee recommended using the 50:50 catch sharing alternative for planning as this has been the allocation in recent years. The medium OY (60% rebuilding probability) of **41 mt** was recommended as a starting point. The Committee discussed how this harvest level impacts recreational fishing opportunity. The mandatory use of finfish excluders on shrimp boats is an example of ways to create commercial opportunity.

Cowcod: No decision to be made since there is no new information to base an alternative harvest level. The Committee did consider the anticipated effect of bocaccio protective measures reducing cowcod impacts. The level of **4.8 mt** is therefore the default harvest for 2003.

Bocaccio: The Committee considered the comments of Mr. Robinson yesterday and how to shape rebuilding measures for bocaccio, a stock that doesn't conform to National Standard Guidelines. The Committee realized the task was to minimize bocaccio impacts. The Committee chose **≤20 mt** for planning purposes.

Darkblotched: The Committee recommended the medium OY of **172 mt** for 2003. This harvest level has an 80% probability of rebuilding by T_{MAX}. It was also noted this is the estimated T_{MID} for the stock. This is more conservative than the Council interim rebuilding harvest (as specified in 2001) which had a 70% probability of rebuilding in T_{MAX}.

Yelloweye: The Committee considered the new yelloweye rebuilding analysis and discussed stock recruitment relationships. It was decided it would be a good idea to limit harvests to the T_{MID} level. Therefore, a harvest level of **22 mt** was recommended.

Minor Nearshore Rockfish North of Cape Mendocino: Mr. Bohn presented a handout that depicted Oregon nearshore groundfish harvest estimates (Table 2). The consideration was to **cap 2003 harvests at 2000 levels.** The Committee was supportive of moving in this direction given the anticipated increase in nearshore fishing pressure Mr. Anderson explained there was a different strategy for WA nearshore fisheries (no commercial nearshore fisheries in state waters), but it would be compatible with Mr. Bohn's suggestion to cap at 2000 levels. Dr. Hastie asked if the Council is considering setting OYs for cabezon and greenling? Mr. Bohn stated that would be helpful, but not needed for management. Dr. Hastie added these species could be tracked in QSM without setting an OY by setting landing limits.

Minor Nearshore Rockfish South of Cape Mendocino: Mr. Barnes gave an overview of his analysis for determining a precautionary southern nearshore rockfish OY (Table 3). The primary goal in 2003 southern Nearshore management is to prevent overfishing. Mr. Barnes divided the overall nearshore southern rockfish OY into 3 components: shallow nearshore (species that are completely distributed inside 20 fm), scorpionfish (distributed shallower and deeper than 20 fm), and deeper nearshore rockfish (distributed shallower and deeper than 20 fm). Instead of managing for the current OY, the precautionary principle was applied by cutting the OY in half. A slightly different base period was used than in the past when the nearshore rockfish OY was originally determined. Calculating the proportion of catch occurring within 20 fm more accurately reflects the distribution of nearshore species. The result is an aggregate 1,082 mt average landing. The precautionary half OY is **541 mt.** Table 4 shows the proportion of the recreational catch of overfished shelf rockfish species that occurred in depths shallower and deeper than 20 fm. Applying this catch proportion within 20 fm to the aggregate catch reduces the OY to **451.7 mt**. Commercial and recreational catch shares, as per those adopted by the Council for analysis in June, were applied to this OY to generate the scenarios depicted in Table 3. Mr. Boydstun indicated that CDFG was recommending **Scenario #1B** to their Commission and the Council.

Mr. Boydstun introduced the concept of establishing a California Rockfish Conservation Area (see attached) to protect overfished shelf and slope rockfish. The Conservation Area is defined as ocean waters 20-250 fm between Cape Mendocino and Point Reyes and 20-150 fm between Point Reyes and the U.S.-Mexico Border, and The Cowcod Conservation Areas. During rulemaking this year, CDFG proposed a state regulation regarding fishing off the continental shelf south of Cape Mendocino. They proposed an inseason closure of nontrawl groundfish fisheries to reduce bocaccio bycatch. They learned federal regulations don't preclude take in California fisheries, only retention. Therefore, the conservation area concept was considered. Certain gear types would be prohibited in depth zones where bocaccio bycatch occurs (see details in attached description). Ms. Cooney remarked that this approach makes sense. Mr. Boydstun proposed this concept receive advisory body and public review at the September Council meeting and be considered for Council adoption. There is not much separation between many of the considered depth management lines. Enforcement would have to rely on a depth restriction, especially with the nearshore line. In less than 50 fm they can't be that finite in their enforcement. Mr. Robinson thought this could apply coastwide in management measures. The Committee agreed to endorse the concept.

Mr. DeVore reviewed items left to be discussed: 1) proposed Oregon measures for pink shrimp, spot prawn, recreational halibut, recreational salmon, 2) proposed Oregon measures for recreational groundfish, 3) proposed Washington measures for pink shrimp, spot prawn, recreational halibut, recreational salmon, 4) proposed Washington measures for recreational groundfish 5) commercial halibut line fishery measures north of Cape Mendocino, 6) commercial dogfish line fishery measures north of Cape Mendocino, and 7) limited entry fixed gear measures north of Cape Mendocino.

Proposed Oregon management measures: Mr. Bohn presented the management options at the June Council meeting and stated they are still looking at the same range of options. Regarding the 10-fish bag limit, they are still considering either a 10 groundfish limit or the current 10 rockfish limit. They plan to maintain the rockfish sublimits currently in place under either of these options (1 canary, 1 yelloweye, 2 lingcod). They may revisit the need to maintain the option of not allowing retention of yelloweye if halibut are on board. They plan to adopt 27 fathom inseason closures if necessary. Dr. Hastie warned that RecFIN/MRFSS estimates have not been timely for accurate inseason management. Mr. Bohn stated Oregon inseason data/catch estimates were available in a timely fashion. They are still considering a cabezon minimum size limit of either 15" or 16".

Proposed Washington management measures: Mr. Anderson stated Washington is intending to mandate finfish excluders in pink shrimp trawls at the onset of the 2003 season. They will prohibit spot prawn trawls and will only allow pot gear. Washington is not proposing any recreational salmon fishery changes from 2002 given the more optimistic yelloweye results. They are leaning to the least conservative commercial salmon troll option proposed in June of increasing the distance between the cannonball and the first spread. Regarding commercial halibut south of Pt. Chehalis, they intend to recommend a closure inside of 100 fm. The Committee was shown some IPHC survey data indicating 99.1% of yelloweye bycatch occurred inside 100 fm. Regarding the halibut fishery north of Pt. Chehalis, they will assume the same 100 fm depth restriction for sablefish bycatch. They intend to look at the estimated yelloweye bycatch and then bring forth a final recommendation. The 100 fm restriction would also be imposed on the fixed gear fleet which would include targeted dogfish fishing opportunities. This fishery would be the subject of one of four possible EFPs to ascertain the incidental bycatch of overfished species inside 100 fm. They are considering allowing a recreational 15 groundfish bag limit, with a sublimit of 2 lingcod with a 24" minimum size limit, a mid-March to mid-October season, a sublimit of 10 rockfish, sublimits of 2 canary (2003 estimated catch is 2 mt) and 0 yelloweye (3.5 mt yelloweye mortalities associated with halibut trips in 2002). For recreational halibut, they are considering modifying the yelloweye closed area west of Umatilla Reef including enlargement of the current yelloweye conservation area. They intend to open some of the current halibut hotspot areas in Areas 3 and 4, while closing known yelloweye areas to minimize yelloweye bycatch. They know of 3 areas within the current halibut hotspot area that are good halibut spots without a high abundance of yelloweye or other rockfish. There are increased quantities of yelloweye south and north of this area. Hotspot areas will be the only areas open to recreational halibut fishing. WDFW will continue ride-along observers on halibut charters to monitor rockfish Bycatch. As per this year's management strategy, they will close the fishery outside of 25 fm if they project they are getting close to any rockfish harvest guidelines.

Proposed California management measures: Mr. Boydstun addressed bocaccio bycatch in the California spot prawn trawl fishery which was estimated to be about 5 mt. CDFG will recommended to its Commission (CFGC) to move that fishery outside of 150 fm. CFGC opted to go to notice on a list of management measures. They received a request for emergency action from environmental groups to address bocaccio bycatch inseason this year in the spot prawn fishery. The CFGC will consider action at its meeting on August 30. The two recommendations are to move the spot prawn trawl fishery to outside 150 fm or close it down. The current bycatch estimate is a range of from .9 to 1.4 tons of bocaccio during the rest of the season. [Note: On August 30, 2002 the CFGC took emergency action to close the spot prawn trawl fishery off California. The action will be effective in early September 2002 and will extend through the balance of the season which ends October 31, 2002.] A letter from Mr. Mike McCorkle of the Southern California Trawlers Association regarding exempt trawling opportunities and impacts was distributed to the Committee. Mr. Boydstun also went over the major elements of a proposed list of management measures and management options that will be presented to the Council at its September decision meeting (attached "California Rockfish Conservation Area"). [Note: On August 29, 2002 the CFGC gave its approval to the list of CDFG proposed management measures including the option to allocate 63% of shallow nearshore rockfish to the recreational fishery.]

Proposed limited entry fixed gear management measures north of Cape Mendocino: The Committee reviewed a written request from Ms. Michele Longo-Eder to consider increasing the maximum number of stacked sablefish tier endorsements from 3 to 6. Ms. Deach commented that this proposal would help reduce fleet capacity and associated bycatch. The Committee discussed what regulatory action would take place to affect such a change. It was thought it would require a regulatory, not FMP, amendment. This is something that wouldn't have to be in place by January 1 to work.

Other limited entry fixed gear options, beyond depth restrictions, include specified trip and landing limits. It was recognized there are no models, such as the Hastie trawl bycatch model, to inform us of fixed gear bycatch implications. The focus with the GMT has been with the depth lines. Mr. Boydstun said they were missing a provision for fixed gear opportunities in the nearshore fishery. Inside 20-27 fm there is no provision for rockfish bycatch; outside of the nearshore line, darkblotched is less of a concern in the fixed gear fishery. The 150 fm management line provides appropriate protection for shelf rockfish. Sablefish opportunities can still be provided outside of 150 fm. Mr. Anderson said it was difficult specifying a 150 fm line since this occurs on the steep continental slope. Bocaccio and yelloweye bycatch predominantly occurs inside 100-150 fm. The Committee discussed the concept of a shelf closure for canary and yelloweye. An inside line 20-27 fm and outside line of 100 fm or greater would be most risk-averse. Mr. Boydstun reiterated the need for fixed gear nearshore access inside 20-27 fm. Mr. Bohn thought this needs more discussion; it wasn't brought up at their state hearings. Mr. Anderson agreed. The Committee agreed to 100-150 fm line north of Cape Mendocino for fixed gear fisheries. This management line would apply to all groundfish fixed gear fisheries, including limited entry and directed open access.

Proposed limited entry trawl management measures: Dr. Hastie modeled the Committee-specified OYs to estimate trawl options and associated bycatch of overfished species. He calculated 2-month landing limits using the *Medium OY* darkblotched and 5,000 mt sablefish alternatives. He stated further adjustment would be needed to decrease the estimated canary bycatch, most likely decreased flatfish limits in the summer. This may involve shutting down flatfish opportunities for 2 months. Mr. Anderson wanted to pinpoint arrowtooth numbers more accurately.

Allocation and Annual Specs EIS Considerations: Mr. DeVore stated, with so many gaps in our current understanding of bycatch implications of considered management measures, it is hard to have a fruitful allocation discussion. Council staff will identify the gaps in the annual specs EIS and proceed working with the states, NMFS, and the GMT. The Committee discussed the required NEPA analyses for the annual specs EIS. At least the implications of the lowest and highest harvest levels of the considered range need to be analyzed. Mr. Robinson stated it may be beneficial to have a low, medium, and high range analysis for the EIS.

Coordination of state/federal management: Ms. Cooney said she would like to examine what we need to do to implement management measures in various fisheries. Resolution is needed at the upcoming Council meeting.

H. Exempted Fishing Permit (EFP) Considerations (continued)

Washington EFP considerations: WDFW wants to place observers on vessels to collect biological data from discarded prohibited species. Ms. Cooney thought a regulation could allow observers to retain fish that a vessel operator could not legally retain. Mr. Anderson stated they learned a lot by conducting the arrowtooth EFP for 2 months last year and 4 months this year. He would like to do an EFP for 2003 with a similar time frame and approach. This EFP would be impact-neutral with no set aside needed for any particular overfished species. They also learned a lot from this year's midwater yellowtail EFP. They propose some significant changes before repeating this one. Both are dependent on funding (total by participants) or shared funding between state and participant. WDFW has exhausted their disaster funding. A dogfish longline EFP is being considered. This is not impact neutral. About 1.5 mt of yelloweye would have to be set aside to do this. A walleye pollock EFP is the fourth EFP being considered in Washington. The fishery developed off the U.S.-Canada border this year. Apparently, there is a cyclical showing of pollock off Washington every 5-7 years. This fishery operates in similar fashion to the whiting fishery using midwater gear and occurs close to the U.S.-Canada border. Shoreside sampling of this fishery revealed very limited bycatch of yellowtail (< 25 fish) and salmon (3-10 fish) and a higher bycatch of whiting (5-7 thousand pounds). Over 3 million pounds of pollock have been landed providing a unique economic opportunity. Pollock are not in groundfish FMP. The Committee expressed interest in future consideration for adding pollock to the groundfish FMP. Ms. Cooney commented it could go in as a plan amendment.

Oregon EFP considerations: ODFW is contemplating a selective flatfish trawl EFP for next year. They expect there may be a set aside need to accommodate some rockfish bycatch. They will finalize a proposal for consideration at the November Council meeting.

General EFP considerations: Mr. Anderson voiced a general concern for standardizing state observer programs to the federal observer program. WDFW doesn't have the same educational requirements; their observers go through in-depth training and are paid less. The states would like to sit down with Dr. Elizabeth Clarke to talk about these standards. Mr. Bohn stated there should be 4 standardized criteria; what you test with an EFP should: 1) significantly reduce bycatch, 2) increase fishing opportunity, 3) be applicable fleet wide, and 4) translate into something that can be implemented. The Committee agreed it would be important to have this discussion with Dr. Clarke at the September Council meeting.

J. Other

Mr. Anderson asked how we should deal with closure of yelloweye/halibut areas? Should this occur in the halibut catch sharing plan or the regulations/groundfish plan? Ms. Cooney thought there was latitude to do it either way. It may depend on the package. She will determine what the best mechanism might be.

Dr. Radtke allowed public comment before adjourning the meeting.

ADJOURN at 1433

PFMC
08/29/02

TABLE 1. Acceptable biological catches (ABCs) and total catch optimum yield (OY) alternatives (mt) for 2003 for the Washington, Oregon, and California region under the Council-proposed alternatives. (Overfished stocks in CAPS).

Stock	2002 ABCs/OYs		2003 ABCs and OY Alternatives					
	ABC	*No Action OY*	ABC	*Low OY*	*Medium OY*	*High OY*	*Alloc. Cm. OY*	*Council OY*
LINGCOD	745	577	841	555	651	725	651	To be specified at the Sept Council meeting
Pacific Cod	3,200	3,200	3,200		3,200			
PACIFIC WHITING	166,000	129,600	188,000	129,600	148,200	173,600	148,200	
Sablefish								
North of Conception	4,644	4,367	8,113	4,381	7,359	8,091	5,000	
Conception INPFC area	333	229	441	233	323	346	251	
PACIFIC OCEAN PERCH	640	350	689	311	377	496	377	
Shortbelly Rockfish	13,900	13,900	13,900		13,900			
WIDOW ROCKFISH	3,727	856	3,871	656	832	916	832	
CANARY ROCKFISH								
(50% Comm.-50% Rec.)	228	93	256	30	41	45	41	
(80% Comm.-20% Rec.)			309	38	52	57		
(20% Comm.-80% Rec.)			218	20	34	37		
Chilipepper Rockfish	2,700	2,000	2,700		2,000			
BOCACCIO[1/]	122	100	198	0	5.8	≤20	≤20	
Splitnose Rockfish	615	461	615		461			
Yellowtail Rockfish	3,146	3,146	3,146		3,146			
Shortspine Thornyhead	1,004	955	1,004		955			
Longspine Thornyhead	2,461	2,461	2,461		2,461			
S. of Pt. Conception	390	195	390		195			
COWCOD (S. Concep)	5	2.4	5		2.4			
N. Concep & Monterey	19	2.4	19		2.4			
DARKBLOTCHED	187	168	205	100	184	205	172	
YELLOWEYE[2/]	27	13.5	52	2.1	13.5	27	22	
Minor Rockfish North	4,795	3,115	4,795		3,115			
Minor Rockfish South	3,506	2,015	3,506		2,015			
Remaining Rockfish North	2,727		2,727					
Black	1,115		1,115					
Bocaccio	318		318					
Chilipepper - Eureka	32		32					
Redstripe	576		576					
Sharpchin	307		307					
Silvergrey	38		38					
Splitnose	242		242					
Yellowmouth	99		99					
Remaining Rockfish South	854		854					
Bank	350		350					
Blackgill	343		343					
Sharpchin	45		45					
Yellowtail	116		116					
Other Rockfish North	2,068		2,068					
South	2,652		2,652					
Dover Sole	8,510	7,440	8,510		7,440			
English Sole	3,100		3,100					
Petrale Sole	2,762		2,762					
Arrowtooth Flounder	5,800		5,800					
Other Flatfish	7,700		7,700					
Other Fish	14,700		14,700					

1/ The medium and high OYs are not supported by a revised rebuilding analysis (MacCall and He 2002) that is scheduled for SSC review at the September Council meeting. The *Medium OY* alternative is based on the June 2002 version of the rebuilding analysis. The *High OY* and *Alloc. Cm.-Preferred* alternatives are based on a recent decision by NOAA Fisheries that bocaccio do not conform to National Standard Guidelines; the harvest limit specified is estimated to achieve rebuilding beyond T_{MAX} and is supported by Magnuson-Stevens Act objectives.

2/ The *High OY* and *Alloc. Cm.-Preferred* alternatives are based on a new rebuilding analysis (Methot et al. 2002) that is scheduled for SSC review at the September Council meeting.

TABLE 2. Landings (mt) of nearshore groundfish species off Oregon by select marine species groups and year.

	Black and Blue Rockfish			Other Nearshore Rockfish			Cabezon			Greenling		
Year	Comm.	Rec.	Total	Comm.	Rec.	Total	Comm.	Rec.	Total	Comm.	Rec.	Total
1995	110.2	410.1	520.3	10.4	6.4	16.8	5.9	14.1	20.0	0.0	4.1	4.1
1996	147.0	430.9	577.9	9.1	7.7	16.8	5.9	14.1	20.0	0.5	3.6	4.1
1997	181.4	445.9	627.3	24.5	13.6	38.1	20.9	24.5	45.4	10.4	5.4	15.9
1998	197.8	403.2	601.0	52.6	13.6	66.2	26.8	15.0	41.7	10.0	3.6	13.6
1999	129.3	356.1	485.3	35.4	18.6	54.0	26.3	17.2	43.5	24.5	5.9	30.4
2000 [1/]	112.9	384.2	497.1	21.3	11.3	32.7	31.3	15.9	47.2	19.5	5.0	24.5
2001	152.0	376.0	528.0	26.3	9.1	35.4	46.3	12.2	58.5	29.0	4.1	33.1

[1/] Proposal for 2003 Oregon nearshore management is to cap commercial and recreational harvest at the 2000 level as indicated by the levels outlined. The commercial nearshore rockfish OY would be 134.3 mt and the recreational OY would be 395.5 mt for a total of 529.8 mt.

TABLE 3. Effects of some different approaches for distributing nearshore rockfish between the recreational sector and commercial fleets.

Scenario #1: 540.8 mt OY reduced by amount of non-permit landings in 120+ ft and preferred depth range for each species; OY= 451.7; Commercial and Recreational % based upon 1994-2000 landings

		MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes		104.8	56.3	59.0	43.7	45.8
CA Scorpionfish		84.9	24.8	21.0	75.2	63.8
Deeper NS Rockfishes		262.0	21.3	55.8	78.7	206.2
	Total	451.7	30.1	135.9	69.9	315.8

Scenario #1A: Comm. : Rec. Ratio for shallow Sps. based upon 1994-2000 landings; Deeper NS RF % adjusted for overall allotment = 20/80

		MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes		104.8	56.3	59.0	43.7	45.8
CA Scorpionfish		84.9	24.8	21.0	75.2	63.8
Deeper NS Rockfishes		262.0	4.0	10.5	96.0	251.5
	Total	451.7	20.0	90.6	80.0	361.2

Scenario #1B: Comm.: Rec. Ratio for shallow Sps. based upon 1983-89 & 93-99 landings; Deeper NS RF % adjusted for overall allotment = 20/80

		MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes		104.8	37.0	38.8	63.0	66.1
CA Scorpionfish		84.9	24.8	21.0	75.2	63.8
Deeper NS Rockfishes		262.0	11.6	30.4	88.4	231.6
	Total	451.7	20.0	90.2	80.0	361.5

Scenario #2: Recreational:Commercial Ratio of 1:1 Applied to Each Sector

		MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes		104.8	50.0	52.4	50.0	52.4
CA Scorpionfish		84.9	50.0	42.4	50.0	42.4
Deeper NS Rockfishes		262.0	50.0	131.0	50.0	131.0
	Total	451.7	50.0	225.9	50.0	225.9

Scenario #3: Recreational:Commercial Ratio of 7:3 Applied to Each Sector

		MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes		104.8	30.0	31.5	70.0	73.4
CA Scorpionfish		84.9	30.0	25.5	70.0	59.4
Deeper NS Rockfishes		262.0	30.0	78.6	70.0	183.4
	Total	451.7	30.0	135.5	70.0	316.2

Scenario #4

Recreational:Commercial Ratio of 5:1 Applied to Each Sector

		MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes		104.8	16.7	17.5	83.3	87.3
CA Scorpionfish		84.9	16.7	14.2	83.3	70.7
Deeper NS Rockfishes		262.0	16.7	43.8	83.3	218.2
	Total	451.7	16.7	75.4	83.3	376.3

TABLE 4. Estimated 2003 recreational fishing mortality for overfished shelf rockfish species taken incidentally in the nearshore fishery south of Cape Mendocino.

HIGH IMPACT SCENARIO

Distribution of estimated 2001 landings (mt) by depth.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.5	8.8	87.8	109.0
canary	4.8	6.1	22.5	33.4
yelloweye	0.3	0.9	3.4	4.6

Distribution of estimated 2003 catch (mt) by depth. Effort shift = 1.36.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	17.0	11.9	0.0	28.9
canary	6.5	8.3	0.0	14.8
yelloweye	0.4	1.3	0.0	1.7

Distribution of estimated 2003 fishing mortality (mt) by depth. Hooking Mortality (0-59 ft) = 0.159; Hooking Mortality (60-119 ft) = 0.500.

Species	All Modes <60ft	60-119 ft	120+ ft	*Total*
bocaccio	2.7	6.0	0.0	*8.7*
canary	1.0	4.1	0.0	*5.2*
yelloweye	0.1	0.6	0.0	*0.7*

LOW IMPACT SCENARIO

Distribution of estimated 2001 landings (mt) by depth

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.5	8.8	87.8	109.0
canary	4.8	6.1	22.5	33.4
yelloweye	0.3	0.9	3.4	4.6

Distribution of estimated 2003 catch (mt) by depth. Effort shift = 1.03.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.9	9.0	0.0	21.9
canary	4.9	6.3	0.0	11.2
yelloweye	0.3	1.0	0.0	1.3

Distribution of estimated 2003 fishing mortality (mt) by depth. Hooking Mortality (0-59 ft) = 0.051; Hooking Mortality (60-119 ft) = 0.339.

Species	**All Modes <60ft**	**60-119 ft**	**120+ ft**	***Total***
bocaccio	0.7	3.1	0.0	*3.7*
canary	0.2	2.1	0.0	*2.4*
yelloweye	0.0	0.3	0.0	*0.3*

California Rockfish Conservation Area

Defined: 1) Ocean waters 20-250 fm between Cape Mendocino and Point Reyes and 20-150 fm between Point Reyes and the U.S.-Mexico Border, and 2) The Cowcod Conservation Areas. Waypoints may eventually be substituted for fm.

Purpose: Regulate all gear types that have a potentially substantial affect on rebuilding of overfished rockfish species south of Cape Mendocino.

Prohibited Gear Types (except as provided in regulation):

1) Trawl nets
2) Set or anchored gill or trammel nets
3) Fishing lines with more than 1 lure/hook or 1 oz or more of weight attached
4) Fish pots and traps

Exceptions

1) Small footrope trawl and Scottish Seine may be used inside 50 fm or 100 fm north and south of Pt. Conception, respectively
2) Trawl nets may be used for shrimp if hard grate excluders are used
3) Commercial salmon vessels may use up to 6 mainlines with multiple hooks when trolling
4) Sport salmon vessels may use an additional single, sliding hook with up to 3 lbs of weight on each line when trolling
5) Traps may be used for crabs provided they each have a 5-inch destruct opening and a 3-inch (?) round escape port
6) Deeper water line may be moved in seasonally north of Point Reyes
7) Fixed gears limited only inside 150 fm south of Cape Mendocino
8) Others?

Note: Round-haul and harpoon gears are permitted gear types

Read by
John DeVore

Exhibit C.3.g
Supplemental CPSAS Report
September 2002

COASTAL PELAGIC SPECIES ADVISORY SUBPANEL REPORT ON
2003 GROUNDFISH MANAGEMENT MEASURES

The Coastal Pelagic Species Advisory Subpanel (CPSAS) reviewed proposed management measures for the 2003 groundfish fisheries. The CPSAS is generally satisfied that the proposed groundfish management measures presented to the CPSAS on September 6th will not affect CPS fisheries. The CPSAS would like to reiterate the information we provided to the Council in June 2002 (see attached, Exhibit C.8.d, Supplemental CPSAS Report, June 2002).

PFMC
09/10/02

COASTAL PELAGIC SPECIES ADVISORY SUBPANEL COMMENTS ON PROPOSED MANAGEMENT MEASURES FOR 2003

The Coastal Pelagic Species Advisory Subpanel reviewed the proposed management recommendations for market squid in 2003, including a prohibition on day-time fishing and no purse seining for squid within 10 fathoms anywhere in the state of California. The HMSAS also reviewed the background paper submitted by Ms. Heather Munro on behalf of the West Coast Seafood Processors's Association that investigates the alleged incidents of bocaccio interaction within the market squid fishery.

The CPSAS does not believe eliminating day-time fishing is a rational recommendation. Currently, 100% of the squid fishing in the Monterey/Moss Landing area occurs during daylight hours - the only time squid are available to the fishery. Eliminating daytime fishing would result in an immediate halt of landings into Monterey causing negative economic and social impacts. Furthermore, there is no economic incentive to land bocaccio, only a disincentive as it renders the squid catch worthless. The percentage of daytime squid fishing in southern California is less, but still a significant amount. There have been no allegations of bocaccio interaction with squid catches in southern California.

The reality of the fishing practice is that fishermen can and want to avoid bocaccio during their fishing trips. Experienced fisherman can identify bocaccio on their echo sounder and avoid them. If a fishermen has not identified the fish and makes a set, he still has the opportunity to let the fish escape once he realizes that the fish are not squid.

The CPSAS is concerned there is no evidence to suggest the recent allegation of interaction with bocaccio is more then a rare occurrence, and the proposed management measures are not based on the best available science.

The information provided by California Department of Fish and Game (CDFG) port sampling data demonstrates there has been only one incidence of bocaccio observed in the market squid catch prior to 2002. It occurred on July 9, 2001 in Moss Landing. There were a total of 1,481 landings between October 1998 and September 2001. After that time, CDFG has observed and recorded another 559 landings, of which one incident of bocaccio (a handful) was recorded in Moss Landing as incidental catch. The total number of landings that have been observed is 2,040.

This works out to less then 0.1% occurrence. The CPSAS finds that further restricting the market squid fishery based on the existing data is unjustified. There are already management measures in place that prohibit weekend fishing.

The CPSAS recommends the Council consider the most recent quantitative data that demonstrates the lack of interaction between bocaccio and market squid prior to implementing any further restrictions. The CPSAS believes the data demonstrates that no further restrictions on market squid fishing at this time are warranted. Ongoing monitoring of potential bocaccio interactions should continue through the current port sampling program.

PFMC
06/20/02

DRAFT MINUTES

Groundfish Management Team and Groundfish Subcommittee of the Scientific and Statistical Committee Meeting

Shilo Inn
11707 NE Airport Way
Portland, OR 97220
(503) 252-7500

August 27-28, 2002

Tuesday, August 27, 2002 10:00 A.M.

Members Present:
Dr. Steve Ralston, National Marine Fisheries Service Southwest Fisheries Science Center, SSC
Dr. Martin Dorn, National Marine Fisheries Service Alaska Fisheries Science Center, SSC
Dr. Han-Lin Lai, National Marine Fisheries Service Northwest Fisheries Science Center, SSC
Dr. Michael Dalton, California State University, Monterey Bay, SSC
Dr. Jim Hastie, National Marine Fisheries Service Northwest Fisheries Science Center, GMT
Mr. Brian Culver, Washington Department of Fish and Wildlife, GMT
Ms. Michele Robinson, Washington Department of Fish and Wildlife, GMT
Mr. Mark Saelens, Oregon Department of Fish and Wildlife, GMT
Mr. Tom Barnes, California Department of Fish and Game, GMT
Mr. Dave Thomas, California Department of Fish and Game, GMT
Mr. Rob Jones, Northwest Indian Fisheries Commission, GMT
Ms. Becky Renko, National Marine Fisheries Service Northwest Region, GMT
Dr. Alec MacCall, National Marine Fisheries Service Southwest Fisheries Science Center, GMT
Dr. Kevin Piner, National Marine Fisheries Service Northwest Fisheries Science Center, GMT

Others present:
Dr. Rick Methot, National Marine Fisheries Service Northwest Fisheries Science Center
Mr. Rod Moore, West Coast Seafood Processors Association, GAP
Ms. Yvonne deReynier, National Marine Fisheries Service Northwest Region
Mr. Jim Glock, National Marine Fisheries Service
Mr. Don Bodenmiller, Oregon Department of Fish and Wildlife
Ms. Laura Deach, Washington limited entry fixed gear
Mr. Steve Bodnar, Coos Bay Trawlers Association
Mr. Brian Petersen, Shrimp Producer's Marketing Cooperative
Mr. Dan Waldeck, Pacific Fishery Management Council staff
Mr. John DeVore, Pacific Fishery Management Council staff

A. Call to Order

Dr. Ralston explained the new accelerated science process for groundfish assessments this year. He briefed the group on what was done this summer and how it will drive the Council process this September. The SSC will formally endorse the science used for 2003 groundfish management at the September meeting. Mr. Culver agreed that this meeting will be useful to guide the Council process in September.

B. Review and Approve Agenda

The agenda was approved without change.

C. Overview of the New Yelloweye Stock Assessment and Rebuilding Analysis

1. Overview of the new yelloweye stock assessment

Dr. Methot gave an overview of the new yelloweye stock assessment. The time series of yelloweye catch from 1955-2001 is fraught with uncertainty. California catches only include northern California although the assessment is coastwide. The catch decline is even sharper than management constraints alone can account for in the trend. What about uncertainty of historical foreign catch composition? A sensitivity analysis where the assumed foreign yelloweye catch was 2x or 3x larger made little difference in the trend. Washington also had a lesser catch and presumably catch rate than the other areas, although there is a sense that densities are higher in Washington waters. High catch years in the series are also non-coincident among areas (i.e., high line catch in S. CA line fisheries in 1981, N. CA trawl catch in 1982, and OR trawl catch in 1983). Some math errors were found in the catch series table.

A GLM delta method of estimating CPUE in the CPFV data in CA from the proportion of zero tows and the CPUE of positive tows were key indices in determining abundance in CA. Depth was the most informative variable correlated to CA CPUE. The MRFSS data series was not used in the 2002 assessment. How did the exclusion of MRFSS data affect the 2002 outcome relative to the 2001 assessment result? This sensitivity analysis was not done but could be done prior to the September Council meeting. These data were not particularly noisy since there are a lot of data points; however, there are few samples of yelloweye in the dataset.

What was the CA sample data? The data recorded is the amount of time anglers fish on CPFV trips and landings made during these trips. The result showed an increasing number of zero yelloweye trips with an increasing CPUE for positive yelloweye trips. This is due to a trend of anglers spending less time on the water. The mean CPUE is therefore affected by the change in how this fishery operates. The CPFV logbook data did not record discards. The assertion has been that yelloweye are so highly valued that discarding is minimal.

Oregon CPUE was not analyzed with the GLM delta method since the digitized dataset was aggregated. This is the same problem identified for the 2001 black rockfish assessment. It may not be possible to get this information from Oregon port sampling in the future. How did OR data get incorporated in the assessment? A CV of 0.2 was assumed and the aggregated data was input.

The NMFS bottom trawl survey wasn't used since yelloweye tend to reside in non-trawlable habitat. There are no occurrences of yelloweye in the survey south of 37°30' N. lat., although some yelloweye appear in catches further south. The trawl survey shows the highest densities off Cape Flattery and on Heceta Bank. Canada survey catches of yelloweye are higher than in U.S. waters. Genetic information suggests there is no stock difference of yelloweye within their distribution. The U.S. West Coast is clearly on the southern end of the range. The new submersible survey is looking for yelloweye in areas previously designated as untrawlable. It will take some time to fold in submersible observations with trawl survey information. There is also a desire to look at a habitat-based trawl survey model. This will be further refined in the near future.

Scrutiny of Washington fishery samples showed some very low incidences of yelloweye in the samples (i.e., only 7 yelloweye sampled in 1983). This dataset was therefore extremely noisy. Overall size selectivity and trend information was derived by blending sampling data from multiple years. Recruitment variability is not shown in these data due to blending of samples across years. Otherwise, the data would have to be thrown out due to small sample sizes. Age composition data was used in this assessment while last year's assessment used only size composition data. On Table 8 of the assessment there is a series of WA commercial data that combines trawl and line catches and a separate series for line gears in 2000 and 2001. The line catches changed in 2000. The limit decreased in 2000 and more fishers targeted the more valuable yelloweye. The assessment therefore stratified this fishery starting in 2000.

Similar growth rates were observed in all areas (except Bowie Seamount, where larger yelloweye are found) and by gender. There were differences in size selectivities of gears fished in different West Coast fisheries. Gear selectivities were parameterized in the model by varying the time series of gear-area strata. Shifts occurred in WA recreational and OR commercial fisheries. The fit for increasing mortality is poorer than for varying gear selectivities. How were the time series in the selectivities decided? This was done by visual examination. A continuous function would be more difficult for the model to resolve.

Natural mortalities, based on longevities, range between 0.038 and 0.053. Catch curve analysis range more due to low sample sizes. A natural mortality estimate of 0.045 was modeled which is in the range of estimates from both analyses.

How to model ageing errors was an issue raised by the STAR Panel. This will be an issue to resolve in future assessments. Percent agreement among readers is a methodology that needs to be improved. Another difference from the 2001 assessment is an assumption of dome-shaped recruitment and time-varying fishery selectivity. Age varying natural mortality was not evident by looking at the profiles of log-likelihood on natural mortality for the most affected area-gear strata. The full range of steepness can be gotten just by tweaking natural mortality. A recruitment trend is indistinguishable from varying natural mortality. The steepness parameter tracks the recruitment trend. Spawning biomass depletion is not sensitive to the natural mortality of younger fish.

The recruitment trend in the new assessment did not change appreciably from last year's assessment. The size data signaled recruitment variation as well as age data. A penalty imposed on recruitments that varied much from the spawner-recruit line smoothed the data and decreased emphasis on the nominal variation. A sensitivity analysis was done to show compensation emphasis and de-emphasis. Scenarios with high vs. low virgin recruitment and low vs. high steepness did not affect recruitment estimates in the middle of the time series but did have an effect at the end of the time series. Recruitment trends were different looking at specific areas in the 1980s (similar in 1970s and 1990s).

When these data were combined they showed a remarkably similar trend. Ideally, the assessment would be stratified by these area differences, but the data is too sparse to stratify. A coastwide management structure could lead to localized depletion in some areas where there are fewer fish yet higher fishing effort. Distributing the catch should occur along the lines of the distribution of exploitable biomass. Could the individual area biomass estimates be used to draw management lines? This is problematic in that some area strata have extremely sparse data available to have much confidence in these area-specific biomass estimates. Could the NMFS trawl survey data be used to draw management lines? The distribution of trawlable habitats is different among areas. For instance, there is much more untrawlable habitat in Washington where yelloweye densities are highest. Therefore, using trawl survey data in a quantifiable analysis is problematic.

There was some discussion of the differences in this year's vs, last year's assessment. The inclusion of the Washington data, which was relatively flat, made some difference, but the changes in the treatment of CA CPFV catch data made a significant difference. An assumption of dome-shaped selectivity made a difference as well. It was suggested that a table be produced showing a step-by-step treatment of the input data for these assessments and how they affect the bottom line estimate of relative biomass.

2. Yelloweye STAR Panel report

Dr. Han-Lin Lai presented the yelloweye STAR Panel report. The STAR Panel spent much time analyzing the CPUE data. They investigated the model sensitivity to empirical observations. The Washington sport CPUE data was modeled using the delta-GLM method with year, port, and months effects selected. The Northern California CPFV data was treated with delta-GLM with year, port, and depth effects selected. Nothing could be done with the aggregated Oregon CPUE data. Apparently this can't be done because the port sampling did not differentiate individual rockfish species. Since 2000, the species compositions were noted in samples. Another aspect of the Oregon fishery is the general trend for fishers to move inshore which artificially lowered CPUE. Trip by trip rockfish catch data is available which could be analyzed, but not at the species level.

Further STAR Panel deliberations included the question of profiling on initial recruitment, sport catchability, sample sizes for size and age data, the possibility of high line catches before 1981, and using an area-specific vs. a coastwide model. The STAR Panel strongly recommended a single sport catch sampling methodology coastwide. The proportional relationship between CPUE and spawning stock size has yet to be proven. The STAR Panel recommended a coastwide assessment.

The assessment was approved by the STAR Panel for use in 2003 management.

3. Overview of the new yelloweye rebuilding analysis

The new yelloweye rebuilding analysis was presented by Dr. Methot. Current spawning biomass is 24% of virgin. Mean generation time equals 44 years and T_{MIN} is 2027. The probabilities of rebuilding by

TMAX between 50% and 80% predicts a 2003 OY of 27 mt to 24 mt, respectively. The median time to rebuild at P=0.5 is 67 years and, at P=0.8, 55 years. A steepness of 0.437 was used which comports with the sensitivity analyses done. A lower steepness factor would be predicted with an underestimate of historical catch.

There was much discussion of the implications of resampling recruits/spawner (as was done in the current analysis), resampling recruits, and the time series of these recruitments used to predict future recruitment. These additional profiles could characterize the uncertainty in yelloweye rebuilding. The $B_{40\%}$ point on the spawner-recruit curve seemed like an objective break in the distribution for resampling recruits (or R/S). The group decided to project recruitment assuming a range of steepness between 0.350 and 0.700. These runs will be done tonight and shared tomorrow.

D. Overview of the Revised Bocaccio Rebuilding Analysis

1. Overview of the revised bocaccio rebuilding analysis

Dr. Alec MacCall explained the revised bocaccio rebuilding analysis. The change in 2003 rebuilding OYs resulted from changes in the Punt rebuilding program that reflect the effects of 2000-2002 catches on rebuilding, given the initial conditions in 1999 when an overfished status was declared.

There is no available 2003 harvest of bocaccio in the new rebuilding analysis. The group was in general agreement that the revisions were reasonable.

2. Overview of the bocaccio sustainability analysis

The sustainability analysis indicates the probabilities of no further decline in biomass with a bocaccio harvest in 2003. At zero fishing, there is a 50% probability of rebuilding by 2111 (infers a 10% probability of further decline even at F=0). The other extreme: with a 79 mt harvest in 2003, there is a 50% probability of no further decline by 2102 (and 7% of the cases are rebuilt by T_{MAX} (2109)). This sustainability analysis may be used to determine a 2003 bocaccio harvest that won't drive the stock to further decline. NOAA General Counsel is exploring the legal ramifications of a harvest larger than zero. Some OY is clearly needed for research and many low bycatch impact fishing opportunities.

Scenarios were modeled where the 2002 year class is assumed to be as high as the 1999 year class and where the 1999 and 2002 year classes are twice as high as modeled in the assessment. The first scenario indicated a 400 kg harvest could occur under rebuilding in 2003. The second scenario indicates a harvest of 19 mt under rebuilding could be sustained. It was noted that the second scenario where the 1999 year class strength is twice is high is still not as high as the "weak" year class scenario considered in the 1999 rebuilding analysis.

E. Overview of the Revised Groundfish Bycatch Model

Dr. Jim Hastie presented an overview of the revised trawl bycatch model. A key revision is the addition of depth strata. Logbook data is limited for depth-based modeling since only the start depth of tows is recorded. Tows may cut across many depth contours and cloud our understanding of bycatch rates by depth. Another difficult suite of modeling assumptions is how the effort will shift as areas and depth zones are closed. Some of the deeper water opportunities may not be available for smaller vessels that are not equipped to fish deep. An ad hoc assumption of anticipated effort shifting was made which was discussed by the group. Adjustments to the model will need to be made once depth-based restrictions are in place and effort shifts occur. In the same vein, observer data will be included in future versions of the model. The group discussed th mechanics of assumed effort shifts in the model. It seemed reasonable to assume not all the catch that previously came from closed areas could be recouped.

<u>Wednesday, August 28, 2002 8:00 A.M.</u>

Members Present:
Dr. Steve Ralston, National Marine Fisheries Service Southwest Fisheries Science Center, SSC
Dr. Martin Dorn, National Marine Fisheries Service Alaska Fisheries Science Center, SSC
Dr. Han-Lin Lai, National Marine Fisheries Service Northwest Fisheries Science Center, SSC
Dr. Michael Dalton, California State University, Monterey Bay, SSC

Dr. Jim Hastie, National Marine Fisheries Service Northwest Fisheries Science Center, GMT
Mr. Brian Culver, Washington Department of Fish and Wildlife, GMT
Ms. Michele Robinson, Washington Department of Fish and Wildlife, GMT
Mr. Mark Saelens, Oregon Department of Fish and Wildlife, GMT
Mr. Tom Barnes, California Department of Fish and Game, GMT
Mr. Dave Thomas, California Department of Fish and Game, GMT
Mr. Rob Jones, Northwest Indian Fisheries Commission, GMT
Ms. Becky Renko, National Marine Fisheries Service Northwest Region, GMT
Dr. Alec MacCall, National Marine Fisheries Service Southwest Fisheries Science Center, GMT
Dr. Kevin Piner, National Marine Fisheries Service Northwest Fisheries Science Center, GMT

Others present:
Dr. Rick Methot, National Marine Fisheries Service Northwest Fisheries Science Center
Mr. Bill Robinson, National Marine Fisheries Service Northwest Region
Mr. Rod Moore, West Coast Seafood Processors Association, GAP
Ms. Yvonne deReynier, National Marine Fisheries Service Northwest Region
Mr. Jim Glock, National Marine Fisheries Service
Mr. Don Bodenmiller, Oregon Department of Fish and Wildlife
Mr. Tom Ghio, California limited entry fixed gear representative, GAP
Ms. Laura Deach, Washington limited entry fixed gear
Mr. Joe Easley, Oregon Trawl Commission
Mr. Steve Bodnar, Coos Bay Trawlers Association
Mr. Brian Petersen, Shrimp Producer's Marketing Cooperative
Ms. Ky Russell, Institute for Fisheries Resources, Pacific Coast Federation of Fishermen's Associations
Dr. Kit Dahl, Pacific Fishery Management Council staff
Mr. Dan Waldeck, Pacific Fishery Management Council staff
Mr. John DeVore, Pacific Fishery Management Council staff

E. Overview of the Revised Groundfish Bycatch Model (continued)

Dr. Hastie continued his review of the revised trawl bycatch model. An example output with a scenario of low darkblotched and sablefish OYs (pg. 6 of his handout) reveals the anticipated decrease in sablefish landings in 2003 based on effort shifts to deeper water. One problem encountered with modeling bycatch is underestimating landings of target species early in the year. In this case, the associated bycatch is modeled to be higher, which leads to more severe fishery constraints later in the year.

How many species' trip limits are modeled? The DTS and flatfish species are the primary targets. There are also trip limits for minor slope rockfish and yellowtail. Trip limits are adjusted by seasonal period to attempt to maximize the target species catch within the bycatch constraints imposed for overfished species. The current analytical approach has many different scenarios that mix and match the range of OYs for overfished species that the Council adopted for consideration. The model does not optimize these trip limits; it is more of a computational tool. Once a scenario is run and an overfished species OY is exceeded in the model, Dr. Hastie goes back to the model to adjust trip limits seasonally to force a reasonable result. Does the model try to optimize opportunities - if one opportunity is not available during a period, does the model search for other reasonable opportunities? The model is not that sophisticated, these are ad hoc decisions made by the modeler. Modeled scenarios range from closing the shelf from 50-250 fm coastwide to limited closures, especially in the north, to stay within overfished species' OYs. The key dynamic in the model is the ability to shift effort out of closed areas seasonally. The group thought it reasonable to use the power function (table on pg. 2 of the handout), although some might quibble about the scalar used.

What changes to the model are anticipated next year? There will be an effort to incorporate observer data in the model. Darkblotched and canary are expected to be the main constraining stocks in the north and bocaccio in the south. What about yelloweye? Dr. Hastie has not been able to model yelloweye since it has not been required for sorting and QSM until this year. Yelloweye is also a minor component in the trawl catch of minor shelf rockfish (due to small footrope regulations), it is not believed to be a binding constraint for the trawl fishery. If observer data suggests that darkblotched bycatch rates are lower than originally modeled, is the model adaptable for making that change? Yes, the bycatch rates used are easily adjusted. Seasonal depth restrictions are also easily adjusted.

There was some discussion of the criteria used to determine the target species in any given tow from the logbook record. Dr. Hastie said the criteria can be changed to determine targets. There is still some confounding data since trawl tows may be mixing or combining targets by trip. Is this the best approach to use? Could we alternatively predict trawl effort? Yes, but this is much more complicated than estimating how trip limits are going to affect target opportunities and trawl effort. A more conservative call early on how much effort might be shifted (i.e., 100% effort shift) risks not being able to approach target species' OYs for the year once the landings come in and the conservative assumption led to lower than projected landings. There may not be an opportunity to harvest the OY given the seasonal bycatch implications.

Further questions of how depth and seasonal periods are used to manage bycatch revealed that there are many pathways to attain target species' OYs without exceeding overfished species' OYs. The page 11 example was used to illustrate how this is done to reduce, in this example, lingcod bycatch. Most often the GMT meets with the GAP to propose a solution. In some cases, changing target species trip limits in a period may be better than changing the depth zone where fishing can occur (and vice versa).

Does the model assume the same participation in 2003 as in 2002? Actually, the model assumes the same vessel participation as in 1999. Is it more likely that vessels that didn't attain trip limits in 1999 will drop out than more successful vessels? The danger is that the model might underestimate participation early in the year. Dr. Hastie did make some ad hoc changes in vessel participation based on actual participation in 2002 relative to what the model estimated. How did the model behave in 2002? The model came within 3-4% of DTS landings, but was 10-15% off on sablefish. The model was judged to be useful for 2002 management. It is difficult to predict effort shifts when trip limits are adjusted. Depth-based restrictions will be helpful in 2003. There is more flexibility in recommending risk-averse management measures by avoiding overfished species' depth zones.

C. Overview of the New Yelloweye Stock Assessment and Rebuilding Analysis (continued)

Dr. Methot came back to review suggested yelloweye model runs suggested by the group yesterday (Table 1). Model runs that varied the spawner/recruit curve steepness factor (0.35-0.70; ~a 70% confidence interval). With a steepness of 0.35 the OYs go down to 14 mt (P=0.8) to 17 mt (P=0.5). With a steepness of 0.70, the OYs go up to 54 mt (P=0.8) to 59 mt (P=0.5). If the recruits/spawner resampled are from the 1989-1999 period, the OYs go down (16-18 mt at P= 0.8 and 0.5, respectively). If recruits are resampled from the same period the OYs go up (28-33 mt at P= 0.8 and 0.5, respectively).

An experimental model run used a "hockey stick" spawner recruit curve to model the central tendency of recruitments. This approach has been used in other contexts and is as reasonable as the Beverton-Holt spawner recruit curve used in the draft rebuilding analysis. The rebuilding result is similar to recruit/spawner results noted above. Low steepness provides about the same result as resampling recruits/spawner. These results are reassuring in that there are intermediate results from the extremes originally modeled. Another expectation is that, even with a low steepness of 0.35, the status quo (13.5 mt) is about T_{MID} under this state of nature. The dynamic nature of our understanding of these states of nature obviates the need for the SSC to determine how rebuilding parameters are incorporated into the FMP (or in regulations). The SSC has previously gone on record saying parameters should be incorporated in as flexible a way as possible since new assessments typically bring dramatic changes in our understanding of stock status and productivity.

What information is needed to declare a stock rebuilt? If a new assessment indicates that the stock has achieved B_{MSY}, then the stock is declared rebuilt. Paying attention to the uncertainty of the assessment is important as well. Also determining an appropriate F_{MSY} harvest rate would be needed to declare a stock officially rebuilt and on a sustainable management footing.

TABLE 1. Yelloweye rockfish rebuilding results.

Prob to rebuild by Tmax:	50%	60%	70%	80%	100%
	baseline; S/R steepness = 0.437				
Fishing Rate	0.0173	0.0167	0.0161	0.0153	0
2003 OY (mt)	27	26	25	24	0
Median Year to Rebuild	2070	2067	2062	2058	2026
	steep=0.35				
Fishing Rate	0.0108	0.0103	0.0097	0.0091	0
2003 OY (mt)	17	16	15	14	0
Median Year to Rebuild	2078	2074	2070	2065	2034
	steep=0.70				
Fishing Rate	0.0337	0.0328	0.0321	0.0312	0
2003 OY (mt)	59	57	56	54	0
Median Year to Rebuild	2060	2055	2052	2048	2016
	resamp R/S in 89-99				
Fishing Rate	0.0115	0.0112	0.0108	0.0104	0
2003 OY (mt)	18	18	17	16	0
Median Year to Rebuild	2076	2073	2070	2067	2032
	resamp R in 89-99				
Fishing Rate	0.0208	0.0200	0.0191	0.0180	0
2003 OY (mt)	33	31	30	28	0
Median Year to Rebuild	2066	2059	2054	2048	2022

D. Overview of the Revised Bocaccio Rebuilding Analysis (continued)

Mr. Robinson was asked to comment on the legal ramifications of the bocaccio rebuilding and sustainability analyses. This has been the subject of intense discussion in NOAA Fisheries. One underlying uncertainty is whether future recruitment of bocaccio is more driven by environmental factors or spawning stock size. That aside, the National Standard Guidelines (NSGs) never contemplated a situation where rebuilding would pre-empt all sources of potential fishing mortality. The fact that the stock cannot be rebuilt within T_{MAX} was also not contemplated. Therefore, the judgement is that the NSGs are inadequate in this case. NOAA Fisheries therefore went to the MSA for guidance. The biology of the stock and the needs of fishing communities argues against a zero fishing mortality scenario. What criteria should be used to determine a level of incidental fishing mortality? NOAA Fisheries feels the appropriate criteria are consistency with the MSA, a high probability of not driving the stock to extinction or into further decline, not jeopardize future rebuilding, and not drive the stock to be listed under the ESA. The bocaccio sustainability analysis will be the guide for this decision. The guidance is to adopt a 2003 OY as close to 0 as possible and no greater than 20 mt. The uncertainty in accounting for bocaccio bycatch needs to be taken into account. Whatever management regime is recommended by the Council, the Council, NOAA Fisheries, and the states need to have adequate observer coverage. Incidental catch needs to account for all sources of mortality including research catch. NOAA Fisheries is not invoking a Mixed Stock Exception.

How will the recreational fishery be managed? Mr. Robinson thought that MRFSS needs to be redesigned to meet our management needs. NOAA Fisheries is reviewing this regional recommendation. Another management approach is to make more conservative management decisions for fisheries that are poorly monitored. This could focus attention on the need to redesign programs such as MRFSS.

Another need is to overhaul the FMP to consider options like prohibiting legal gears in closed areas or in how closed areas are defined. These are examples of FMP considerations.

The question of the state of nature driving bocaccio recruitment was raised. There has clearly been an environmental regime shift, but there is no clear evidence that environmental factors drive bocaccio recruitment. We really do not know what environmental factors may be correlated with good bocaccio recruitment.

What is specified as the bocaccio rebuilding period? In this case it is greater than T_{MAX}. The SSC rebuilding guidelines simply are not applicable to bocaccio.

F. Management Options and Recommendations

1. Recommended harvest levels for yelloweye

The rebuilding analysis for yelloweye is similar to the canary model. However, there is less data for yelloweye and more serial autocorrelation which is problematic. However, the SSC views the base model result in the rebuilding analysis as a good risk-neutral harvest level. The modeled results presented today in Table 1 may provide a reasonable range of harvest for 2003. The base model OY at P=0.5 (27 mt) may not be an upper range since a more risk-averse harvest level than one that rebuilds by T_{MAX} at P=0.5 can be accomplished without too much added constraint to fisheries. Perhaps a 14-22 mt range is reasonable. The lower end of this range (14 mt) conforms to a rebuilding P of 0.8 with a more pessimistic steepness (0.35; Table 1) and the upper end (27 mt) conforms to a 50% rebuilding trajectory in the base case in the new rebuilding analysis.

2. Recommended harvest levels for bocaccio

The GMT recommends a range of 0 to less than 20 mt for bocaccio in light of Mr. Robinson's guidance. Managing for this range will require coordination of all affected management regimes. California is recommending to the California Fish and Game Commission that state managed fisheries would automatically be managed in accordance with federal regulations.

G. Other?

Dr. Methot asked if the NWFSC should provide anything more for Pacific whiting. The Council did specify a range of harvest levels based on the assessment decision table. The SSC accepted the assessment but rejected the rebuilding analysis. Is a new rebuilding analysis needed at this time? One is needed to meet the 1 year deadline for adopting a rebuilding plan. The NWFSC needs to consider the timing of the whiting assessment review and international process to allow time for developing a rebuilding plan.

The GMT briefly discussed the ABC/OY table that Dr. Hastie updated for the upcoming Allocation Committee meeting. There was consensus on the range of yelloweye and bocaccio OYs represented in agendum F. above. The 13.5 mt status quo harvest level would be the low end of the yelloweye range recommended by the GMT. The yelloweye ABC calculated using a proxy $F_{50\%}$ rate is 52 mt. Should a calculated F_{MSY} rate ($F_{57\%}$ for yelloweye) be used instead of the proxy rate to calculate the ABC? This should be resolved after the new assessment and rebuilding analysis are formally adopted at the September Council meeting. The previously-used area-specific harvest guidelines for yelloweye do not conform with the structure of the new assessment and rebuilding analysis.

ADJOURN

PFMC
08/28/02

Exhibit C.3.g
Supplemental HMSAS Report
September 2002

Bob Fletcher

HIGHLY MIGRATORY SPECIES ADVISORY SUBPANEL REPORT ON 2003 GROUNDFISH MANAGEMENT MEASURES

The Highly Migratory Species Advisory Subpanel (HMSAS) reviewed proposed management measures for the 2003 groundfish fisheries. The intent of these measures, specifically the proposed rockfish conservation area, appears to be to protect overfished rockfish by reducing fishery impacts on these species. The HMSAS agrees with this intent, but stresses that consideration should be given to how highly migratory species (HMS) fisheries operate. The proposed measures do not appear to affect commercial HMS fisheries. However, HMS recreational fisheries will be affected by the proposed rockfish conservation area. The HMSAS recommends that a provision be added to exempt surface hook-and-line HMS fisheries (both commercial and recreational), rockfish retention would not be allowed. The HMSAS stresses that, given the nature of how surface hook-and-line fisheries operate, it is unlikely these fisheries will catch any of the overfished rockfish species.

The HMSAS also notes that possible coding errors in the database used for groundfish management (i.e., PacFIN) could mis-characterize incidental groundfish catch in commercial HMS fisheries (e.g., drift gillnet and albacore troll). The HMSAS encourages the use of observer data in concert with fishticket data to accurately determine the incidental catch of groundfish in commercial HMS fisheries.

PFMC
09/10/02

Don Stevens

SALMON ADVISORY SUBPANEL REPORT ON 2002 GROUNDFISH MANAGEMENT MEASURES

The Salmon Advisory Subpanel (SAS) has developed recommendations for the Council to consider for salmon fisheries; however, because the impacts on groundfish stocks of concern are negligible, implementing regulations for their protection will do little for their recovery. Efforts to educate the fishing community on maintaining an awareness to avoid situations where contact has a greater probability may be more appropriate. As fishermen and women today we all have a responsibility as stewards of all our ocean resources to minimize any impacts on critical stocks.

The SAS supports the following alternatives for salmon troll fisheries:

Washington: Status quo based on minimal impacts on yelloweye and canary rockfish (0.05 mt and 0.08 mt respectively in 2001; Environmental Impact Statement [EIS] Table 3.3.1.3-11).

Oregon: Status quo. The Oregon salmon troll fishery in 2001 would represent about 2% (0.7 mt; EIS table 3.3.1.3-11) of the most conservative OY alternative for canary rockfish.

California: Status quo. The California commercial salmon fishery caught only 0.01 mt of bocaccio, 0.05 mt of canary rockfish, and an unknown but negligible amount of yelloweye rockfish (EIS table 3.3.1.3-11).

The SAS supports the following alternatives for recreational salmon fisheries:

Washington: Status quo plus no retention of canary rockfish with a salmon on board based on low impacts on canary and yelloweye rockfish (1.48 mt and 3.07 mt respectively in 2001; Washington Department of Fish and Wildlife port sampling data and Marine Recreational Fisheries Statistics Survey (MRFSS) average weights).

Oregon: Status quo. Salmon directed trips in Oregon caught 0.14 mt of yelloweye and 0.30 mt of canary rockfish in 2001 (Oregon Department of Fish and Wildlife [ODFW] port sampling data).

California: No recommendations, because California SAS members were not present.

Based on an analysis of data collected in an encounter rate study conducted by Lawson (1990), alternatives that require moving gear up in the water column may change the relative encounter rates of coho and chinook. These include alternatives that require a minimum distance between the cannon ball and lower spread for troll gear. These types of regulations could result in loss of opportunity for chinook necessary to provide a similar level of protection for depressed natural coho stocks. The SAS does not support any gear changes that would result in increased coho encounter rates or decreased chinook opportunity.

In order to better understand incidental groundfish catch in salmon fisheries the SAS has the following general recommendations:

1. A coastwide troll gear encounter rate study similar to the Lawson (1990) study off central Oregon.
2. A standardized commercial salmon landing tickets, landing requirements, and accounting methods for all three states.
3. Consistent port sampling programs for all three states.
4. Observer coverage should be provided to evaluate troll regulation changes. If not available, full retention of groundfish should be considered as an option for evaluating the effects of the regulations.

per Don Stevens 9-11-02

Attached is a correct version of the SAS salmon fishery alternatives developed in ~~June~~ July. The version presented in the EIS table 2.2.2-1b was in error, listing the most conservative alternative as status quo.

PFMC
09/10/02

Exhibit C.3.g
Supplemental SSC Report
September 2002

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
2003 GROUNDFISH MANAGEMENT MEASURES: TENTATIVE ADOPTION FOR ANALYSIS

The Scientific and Statistical Committee (SSC) discussed the methodology proposed by Dr. Jim Hastie to estimate projected bycatch rates and discards of overfished groundfish species for the upcoming 2003 fishing year. The basic approach is the same as that used for the 2002 fishing year – i.e., for each targeting strategy, bycatch rates of the overfished species are estimated, then discards are calculated, on a vessel basis, as the amount that bycatch exceeds available landings limits for each species. However, for the 2003 fishing year, the approach was extended to allow for depth-based closed areas, (e.g., restricting fishing at depths of 100 fm to 250 fm and other possible depth ranges.

Dr. Hastie reported that the basic approach worked well for the 2002 Dover sole/thornyhead/trawl-caught sablefish complex (DTS) fishery. However, the incorporation of critical depth data from logbook records for the 2003 analysis introduces considerable uncertainty. Bottom trawl tows are often lengthy (5 hours or more) and cover a considerable depth range. However, for each tow, only a single depth is often recorded in logbooks, and consequently, it is difficult to estimate the depth from which any individual animal is taken. Observer data – scheduled to become available in late 2002 – should provide some validation of logbook data, but are unlikely to provide a good understanding of depth-specific distribution. While the first year of observer data will not become available in time for establishing the Council's 2003 management measures, they should be useful for inseason adjustments during the 2003 fishing year.

The discard estimation methodology also assumes that baseline trawl activity in 2003 will be similar to the 1999-2001 level of activity, relies on an ad hoc formula to predict how effort will be redistributed to open areas, and assumes that catch per unit of effort (CPUE) will remain the same after effort redistribution. Recognizing that (1) the GMT analysis is only the first part of a necessary, more comprehensive evaluation and (2) a full SSC review was not possible given the urgency of the work and its immediate application in the 2003 management measures process, the SSC considers the Groundfish Management Team (GMT) analysis to be a reasonable way to proceed for the coming year.

The area closures being considered for 2003 are unprecedented. Effort shifts to the nearshore and slope areas may result in undue pressure in open areas with consequent crowding and safety concerns. A full SSC review of the 2003 environmental impact statement (EIS) was not possible as that document is still a work in progress. It is important the socioeconomics as well as environmental effects of the options be analyzed before the document is distributed for public comment.

The SSC looks forward to working with the GMT on further improvements of the methods and refinements in the data analysis. The Council may wish to sponsor a bycatch workshop to fully review the methodology and address other outstanding issues. The SSC's Economics Subcommittee (with support from the SSC Groundfish Subcommittee) is willing to organize such a workshop.

PFMC
09/10/02

Jim Harp

Tribal Proposal Regarding 2003 Groundfish Harvests

Black Rockfish - The 2003 tribal harvest guidelines will be set at 20,000 pounds for the management area between the US/Canada border and Cape Alava, and 10,000 pounds for the management area located between Destruction Island and Leadbetter Point. No tribal harvest restrictions are proposed for the management area between Cape Alava and Destruction Island.

Sablefish - The 2003 tribal set aside for sablefish will be set at 10 percent of the Monterey through Vancouver area OY minus 3 percent to account for expected discard mortality. This would be equivalent to 631 mt based on the Council's decision under the previous agenda item. Allocations among tribes and among gear types, if any, will be determined by the tribes.

Lingcod - Tribal fisheries will be restricted to 300 lbs. per day and 900 lbs. per week limits for all fisheries.

Rockfish Taken During Competitive Halibut Fisheries – To provide for full retention and utilization during directed, fully competitive treaty longline fisheries for halibut, there will be no trip limit on the retention of incidental harvests of rockfish. However, appropriate management actions will be taken in season, if necessary, to restrict incidental harvests of rockfish, so that tribal fisheries do not exceed the estimated tribal impact levels.

For all other tribal groundfish fisheries the following trip limits will apply:

Thornyhead Rockfish - Tribal fisheries will be restricted to a 300 pound per trip limit. This trip limit will be for short and longspine thornyheads combined.

Canary Rockfish - Tribal fisheries will be restricted to a 300 pound per trip limit.

Other Minor Nearshore, Shelf and Slope Rockfish - Tribal fisheries will be restricted to a 300 lbs. per trip limit for each species group, or the limited entry trip limits if they are less restrictive than the 300 lbs. per trip limit.

Yelloweye Rockfish – The tribes will continue to work on developing depth, area, and time restrictions in their directed halibut fishery to minimize impacts on yelloweye rockfish. Tribal fisheries will be restricted to a 100 lb per trip limit.

Makah Tribal Proposals for 2003 Trawl Fisheries:

Pacific Whiting - For the 2003 Pacific whiting fishery, the tribal set aside will be as provided in the Makah tribe's proposed allocation framework. This would be 25,000 mt based on the Ad Hoc Allocation Committee's recommendation of an OY of 148,200.

Mid-water Trawl Fishery- Treaty mid-water trawl fishermen will be restricted to a cumulative limit for yellowtail rockfish of 30,000 lbs. per vessel per two month period. Their landings of widow rockfish must not exceed 10% of the poundage of yellowtail rockfish landed in any given period. Fishermen will not be permitted to carry-over portions of the cumulative limit that are not used in any previous two-month period. The tribe may adjust the cumulative limit for any two-month period to minimize the incidental catch of canary and widow rockfish, provided the average cumulative limit does not exceed 30,000 lbs. (e.g. – 45,000 lbs. in one period, and 15,000 lbs. in a following period). Trip limits may also be adjusted downward if there is greater participation than expected in the fishery.

Bottom Trawl Fishery - Treaty fishermen using bottom trawl gear will be subject to the trip limits applicable to the limited entry fishery for Pacific cod, petrale sole, English sole, rex sole, arrowtooth flounder, and other flatfish. Because of the relatively small expected harvest, the trip limits for the tribal fishery will be those in place at the beginning of the season in the limited entry fishery and will not be adjusted downward, nor will time restrictions or closures be imposed, unless in-season catch statistics demonstrate that the tribes have taken ½ of the harvest in the tribal area. Fishermen will be restricted to PFMC approved trawl gear.

Observer Program - The Makah tribe will develop and implement an observer program to monitor and enforce the limits proposed above.

These proposed management measures would be expected to result in catches as referenced in Table 4.3.5-1 in exhibit C.3 Attachment 1 (the annual specifications EIS/RIR). It should be noted that the catch levels in this table represent the upper end of the range of expected catches for these fisheries.

The GMT has revised the table currently in the EIS. The revised table is presented below.

REVISED TABLE 4.3.5-1. Expected catch of important groundfish species under the proposed tribal fishery management option.

	Longline		Trawl		Troll		Total- All Gears	
Species	lbs	mt	lbs	mt	lbs	mt	lbs	mt
black [1/]	0	0	<50	<0.02	0	0	<0	<0.02
lingcod	7,500	3.4	2,000	0.9	2,000	0.9	11,500	5.2
canary	1,500	0.7	2,500	1.1	1,000	0.5	5,000	2.3
yelloweye		3	50	0.02	100	0.05		3.1
yellowtail	200	0.09	500,000	395	10,000	4.5	510,200	400.0
widow	0	0	50,000	45	NA	NA	50,000	45.0
POP	0	0	0	0	0	0	0	0.0
darkblotched	0	0	0	0	0	0	0	0.0
shortspine thornyhead	6,000	2.7	0	0	0	0	6,000	2.7

[1/] Not including unspecified rockfish. About 15-25 mt landed on average in 1996-2001.

AUG. 12. 2002 1 9:36AM NMFS\NOAA \NFS F \WR2DIV → 9126653267636 NO. 499 P. 2 of

[W]M M. THOMAS
[21ST] DISTRICT, CALIFORNIA

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Congress of the United States
House of Representatives
Washington, DC

July 25, 2002

Dr. William Hogarth
Assistant Administrator for Fisheries
National Atmospheric and Oceanic Administration
1315 East West Highway SSM C3
Silver Spring, MD 20910

Dear Dr. Hogarth:

I write with regard to a series of proposed rules concerning the Pacific Coast Groundfish Fishery.

As you know, limits on groundfishing were proposed in order to protect the endangered yelloweye rockfish. However, these proposed regulations will also have the unintended consequence of limiting or eliminating fishing for dogfish sharks. Dogfish sharks are one of the most popular specimens used by high school and college biology students for study. Limiting the Pacific catch would have a substantial impact on schools and students who rely on the availability of specimens as a major part of their biology curriculum. In the future, limiting the availability of specimens for study may eventually result in a reduction of American students who choose to pursue careers in the sciences.

I encourage the National Marine Fisheries Service (NMFS) to examine all of the consequences of these proposals, including the reduction in the availability of dogfish for scientific study, when formulating a final rule in the coming weeks. Thank you for your attention to this matter.

Best regards,

Bill Thomas

WILLIAM M. THOMAS
Member of Congress

WMT/tpw

Department Recommendations
2003 Rockfish and Lingcod Regulations[1]

LB Boydstun

General

1) North of Cape Mendocino. Allow DFG to work with Oregon on a uniform set of regulations *#
South of Cape Mendocino. Commission concurrence is sought on the following options *

Recreational

2) Depth Restriction. Prohibit rockfish, sculpin, ocean whitefish and lingcod fishing in waters 20 fm and greater in depth *#
3) Bag Limits and Open Season Dates. Retain flexibility for PFMC meeting. Options currently provide for 5-10 rockfish bag limit, with 0-2 shelf rockfish incidental allowance; 5-10 sculpin bag limit; and 6-12 month open season *#
4) Lingcod. Retain current 2-fish bag limit and 24-inch minimum size limit *#
5) Rockfish Minimum Size Limits and Barbless Circle Hooks. Do not implement size limits, but allow consideration of barbless circle hooks *#
6) DFG Authority to Close Rockfish and Lingcod Seasons. Give DFG authority same authority as it has for other nearshore fish stocks and shelf rockfish and lingcod *
7) Shore Fishing. Same regulations for shore and boat fisheries *

Commercial
(Fixed Gear)

8) Depth Restriction. Prohibit rockfish, sculpin, and lingcod fishing in waters 20-150 fm in depth #
9) Season. Same as recreational, except allow for separate deepwater seasons #
10) Shelf Rockfish. Allow same proportion per vessel as recreational fishery bag limit # incidental consistent w/ the rec. fishery
11) Stick Gear. Defer to Commission *

General

12) Overfished Rockfish. Prohibit retention of bocaccio, canary and yelloweye rockfish *#
13) Nearshore Rockfish and Sculpin OY. Adopt Overall Nearshore OY with separate HGs for Shallow Nearshore Rockfish, Sculpin, and Deeper Nearshore Rockfish. These are being developed #
14) Cabezon. Retain current 15-inch minimum size limit in both fisheries *#
15) Nearshore Rockfish and Sculpin Allocations (recreational/commercial):

Overall Nearshore OY: based on recent years 80/20
Shallow Water HG: Option 1—44/56; Option 2—63/37 based on a longer time series actual catch sharing.
Sculpin HG: 75/25 based on recent years
Deeper Nearshore HG: To Be Determined #

16) Bocaccio. Set aside 57% of OY for recreational and 43% for commercial #
17) Lingcod. No set asides #

* = Commission Action Item
# = PFMC Action Item
*# = Joint Commission/PFMC Action Item

[1] Prepared by Marine Region and Intergovernmental Affairs Office for Commission August 29-30, 2002 Meeting.

SOUTHERN NEARSHORE ROCKFISH (south of 40°10' N. lat.) OPTIMUM YIELD AND HARVEST GUIDELINES FOR 2003

Maria Vojkovich

Scenario #1B
Comm.: Rec. Ratio for shallow Sps. based upon 1983-89 & 93-99 landings
Deeper NS RF % adjusted for overall
allotment = 20/80

	MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes	104.8	37.0	38.8	63.0	66.1
CA Scorpionfish	84.9	24.8	21.0	75.2	63.8
Deeper NS Rockfishes	262.0	11.6	30.4	88.4	231.6
Total	451.7	20.0	90.2	80.0	361.5

Scenario #1B (Revised)
Comm.: Rec. Ratio for shallow Sps. based upon 1983-89 & 93-99
landings
Deeper NS RF % adjusted
for overall allotment = 20/80

	MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes	104.8	37.0	38.8	63.0	66.1
CA Scorpionfish	84.9	24.8	21.0	75.2	63.8
Deeper NS Rockfishes	351.0	13.7	48.0	86.3	303.0
Total	540.7	20.0	107.8	80.0	432.9

NORTHERN CALIFORNIA NEARSHORE ROCKFISH (north of 40°10' N. lat.)

HARVEST GUIDELINES FOR 2003

California Catch of Selected Marine species Groups (metric tons)
From 40°10' N. Lat. To Oregon Border

	Black & Blue Rockfish			Other Nearshore Rockfish		
Year	Com	Rec	Total	Com	Rec	Total
1994	141.5	102.8	244.4	6.5	12.3	18.8
1995	165.6	93.3	258.9	23.6	6.0	29.6
1996	115.9	71.2	187.1	18.5	6.9	25.4
1997	138.5	47.7	186.2	28.3	6.1	34.4
1998	81.3	59.8	141.1	15.0	4.0	19.0
1999	59.7	67.1	126.8	28.7	9.6	38.3
Mean 1994-99	117.1	73.7	190.8	20.1	7.5	27.6
Mean 94-99 x 0.5	58.5	36.8	95.4	10.1	3.7	13.8
2000	38.6	49.7	88.3	12.4	7.1	19.5
2001[1]	104.7	141.4	246.1	22.2	5.6	27.8

Source: PacFIN and RecFIN. Note: Commercial "Other Nearshore Rockfish
in 2000 and 2001 likely contain some black rockfish

1 Note: The 2001 commercial estimates are very preliminary as of this summary date.
It is estimated that these data represent 70 - 80% of the total.

SUMMARY OF RECENT ACTIONS OF THE CALIFORNIA FISH AND GAME COMMISSION REGARDING FEDERAL GROUNDFISH REGULATIONS[1/]

1. At a recent meeting, the California Fish and Game Commission (CFGC) concurred with the California Department of Fish and Game (CDFG) regarding 2003 rockfish and lingcod regulations for presentation to the Pacific Fishery Management Council (Council). Also, we selected Option 2 for shallow nearshore rockfish. The list of recommendations has been handed out and provided to the Groundfish Advisory Subpanel (GAP).

2. Spot Prawn - Accepted CDFG recommendation for emergency action to reduce bocaccio impacts in the trawl fishery and took action to close the fishery for the rest of the season, through October 31, 2002. We expect the closure to be effective by the end of this week. We had previously directed CDFG to file notice of a suite of management options for the fishery to be implemented before the opening of the 2003 season. Permanent fishery closure will likely be seriously considered.

3. Fishery Observers - Accepted CDFG recommendation for emergency action to require cooperation with federal and state fishery observers as a condition of permitting under CFGC regulations. This affects charterboats as well as shrimp, prawn, sea cucumber trawl vessels; it does not affect trawl or line fisheries for California halibut or white seabass. We expect these regulations will be permanently adopted before expiration of the emergency portion.

4. Nearshore Fishery Management Plan - We adopted the plan at out late August meeting and will consider certifying the environmental document and implementing regulations at our October meeting. We have asked CDFG to provide additional implementing regulations at that meeting, along with a plan to defer management of nearshore rockfish to California beginning in 2004. Delegation of authority of nearshore rockfish to California is on your agenda for discussion on Thursday. We urge you to expedite the delegation process if at all possible.

PFMC
09/10/02

1/ Prepared by Mr. Robert Treanor for presentation fo the Council on September 10, 2002.

Regional (WA, OR & CA - North of 40^{o} 10') Catch of Selected Marine species Groups (mt)

	Black & Blue Rockfish			Other Nearshore Rockfish			Cabezon			Greenling		
Year	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total
1995	276.2	716.4	992.6	34.0	13.3	47.4	9.7	22.5	32.2	1.0	6.8	7.8
1996	262.9	737.2	1000.0	27.6	15.6	43.1	11.4	21.8	33.2	1.0	7.9	8.8
1997	320.0	674.6	994.6	52.8	21.7	74.5	34.2	28.4	62.5	16.3	7.8	24.1
1998	279.8	689.1	968.8	67.6	21.6	89.2	38.6	23.8	62.4	12.0	5.9	17.9
1999	189.0	579.2	768.2	64.1	31.2	95.3	39.3	21.8	61.1	30.2	9.5	39.7
2000	151.5	577.9	729.4	34.5	23.5	58.0	39.1	20.8	59.9	19.5	7.0	26.5
2001	256.7	694.4	951.1	48.9	17.7	66.6	50.3	18.3	68.7	31.2	7.2	38.4
7-yr avg	248.0	667.0	915.0	47.1	20.7	67.7	31.8	22.5	54.3	15.9	7.4	23.3
7-yr share	27	73		70	30		59	41		68	32	
2000 share	21	79		60	40		65	35		74	26	

Exhibit C.3.i
Supplemental ODFW Report 2 Revised Table
September 2002

Mark Saelens

Exhibit C.3.i
Supplemental ODFW Report
September 2002

Oregon Department of Fish and Wildlife
Statement on Capping Nearshore Groundfish Catches for 2003

In June the Oregon Dept. of Fish and Wildlife announced the intent to cap 2003 nearshore catches at the level caught during the year 2000 or 2002. At the August PFMC Ad Hoc Allocation Committee meeting we specified that after examining the catch information, sharing the results with constituents at a series of public meetings, and presenting it to the PFMC's Groundfish Management Team, we decided to use year 2000 catches as the basis for the catch limits imposed during 2003. The northern nearshore rockfish OY would stay in place.

The table below summarizes these proposed caps. The commercial caps (firm quotas) are the 2000 catches by species group rounded to the nearest metric ton. The recreational caps (implemented as harvest guidelines with some limited room to adjust as needed) are also the 2000 catches with the assumption that the total recreational catch may exceed the harvest guideline by 10-15% by the time inseason state action is taken, if necessary.

Fishery	Black and Blue Rockfish	Other Nearshore Rockfish	Cabezon	Greenling
Recreational	384	11	16	5
Commercial	113	21	31	20

These catch caps are considered an interim action for 2003 while we wait for the results of the 2003 southern black rockfish stock assessment, and while further policy is discussed at the Department and Oregon Fish and Wildlife Commission level.

Regional (WA, OR & CA) Catch of Selected Marine species Groups (mt)

	Black & Blue Rockfish			Other Nearshore Rockfish			Cabezon			Greenling		
Year	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total
1995	252.2	725.9	978.0	16.9	19.7	36.6	6.1	20.2	26.4	0.0	6.6	6.6
1996	312.6	759.2	1071.8	32.7	14.7	47.4	9.7	23.5	33.2	1.5	7.4	8.8
1997	297.4	698.1	995.6	43.0	22.5	65.5	26.3	32.3	58.6	11.0	9.7	20.6
1998	336.9	677.0	1013.9	80.9	23.7	104.7	40.1	20.8	60.9	15.9	5.9	21.8
1999	210.6	571.9	782.5	50.4	25.5	75.9	38.1	24.1	62.2	26.5	10.2	36.7
2000	172.7	595.3	768.0	50.9	25.9	76.8	44.3	21.4	65.7	25.2	6.6	31.8
2001	190.5	602.7	793.2	39.1	19.2	58.3	54.0	16.2	70.2	29.0	6.1	35.1
7-yr avg	253.3	661.4	914.7	44.8	21.6	66.5	31.2	22.6	53.9	15.6	7.5	23.1
7-yr share	27.7	72.3		67.5	32.5		58.0	42.0		67.5	32.5	
2000 share	22.5	77.5		66.2	33.8		67.4	32.6		79.3	20.7	
Split	22	78		65	35		65	35		65	35	

California Catch of Selected Marine species Groups (metric tons)
From $40^{0}10'$ N. Lat. To Oregon Border

	Black & Blue Rockfish			Other Nearshore Rockfish			Cabezon			Greenling		
Year	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total
1994	141.5	102.8	244.4	6.5	12.3	18.8	0.2	5.2	5.4	0.0	2.5	2.6
1995	165.6	93.3	258.9	23.6	6.0	29.6	3.8	7.4	11.3	1.0	2.7	3.7
1996	115.9	71.2	187.1	18.5	6.9	25.4	5.5	5.8	11.3	0.5	3.2	3.8
1997	138.5	47.7	186.2	28.3	6.1	34.4	13.3	1.9	15.2	5.9	1.3	7.2
1998	81.3	59.8	141.1	15.0	4.0	19.0	11.8	4.9	16.7	2.0	1.3	3.3
1999	59.7	67.1	126.8	28.7	9.6	38.3	13.0	2.6	15.5	5.7	0.6	6.3
2000	38.6	49.7	88.3	12.4	7.1	19.5	7.8	1.9	9.7	0.0	1.0	1.0
2001[1]	104.7	141.4	246.1	22.2	5.6	27.8	4.1	4.1	8.2	2.2	2.1	4.3

Source: PacFIN and RecFIN. Note: Commercial "Other Nearshore Rockfish in 2000 and 2001 likely contain some black rockfish

1 Note: The 2001 commercial estimates are very preliminary as of this summary date. It is estimated that these data represent 70 - 80% of the

Oregon Catch of Selected Marine species Groups (mt)

	Black & Blue Rockfish			Other Nearshore Rockfish			Cabezon			Greenling		
Year	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total
1995	110.2	410.1	520.3	10.4	6.4	16.8	5.9	14.1	20.0	0.0	4.1	4.1
1996	147.0	430.9	577.9	9.1	7.7	16.8	5.9	14.1	20.0	0.5	3.6	4.1
1997	181.4	445.9	627.3	24.5	13.6	38.1	20.9	24.5	45.4	10.4	5.4	15.9
1998	197.8	403.2	601.0	52.6	13.6	66.2	26.8	15.0	41.7	10.0	3.6	13.6
1999	129.3	356.1	485.3	35.4	18.6	54.0	26.3	17.2	43.5	24.5	5.9	30.4
2000	112.9	384.2	497.1	21.3	11.3	32.7	31.3	15.9	47.2	19.5	5.0	24.5
2001	152.0	376.0	528.0	26.3	9.1	35.4	46.3	12.2	58.5	29.0	4.1	33.1
7-yr avg	147.2	400.9	548.1	25.7	11.5	37.1	23.3	16.1	39.5	13.4	4.5	17.9
7-yr share	26.9	73.1		69.1	30.9		59.1	40.9		74.7	25.3	

Proposed: Cap Commercial and Recreational Harvest at 2000 Level

How: Nearshore Rockfish OY

Com:	134.3
Rec:	395.5
	529.8

And: Harvest Guidelines as indicated by amounts in table that are outlined.

Oregon Sharing of Selected Marine species Groups Rec vs Com

	Black & Blue Rockfish			Other Nearshore Rockfish			Cabezon			Greenling		
Year	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total
IF Region												
2000 share	22	78		66	34		67	33		79	21	
mt	109	388		22	11		32	16		19	5	
IF Region												
7-yr share	28	72		68	32		58	42		67	33	
mt	139	358		22	10		27	20		16	8	
Oregon												
2000 Share	23	77		65	35		66	34		80	20	
mt	113	384		21	11		31	16		20	5	
Rec/Com	22	78		65	35		65	35		65	35	
Share #1(mt)	109	388		21	11		31	17		16	9	
Rec/Com	20	80		50	50		50	50		50	50	
Share #2(mt)	99	398		16	16		24	24		12	12	

Washington Catch of Selected Marine species Groups (metric tons)

Year	Black & Blue Rockfish			Other Nearshore Rockfish			Cabezon			Greenling		
	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total
1995	0.4	213	213.4	0	1	1	0	1	1	0	0	0
1996	0	235	235	0	1	1	0	2	2	0	1	1
1997	0.1	181	181.1	0	2	2	0	2	2	0	1	1
1998	0.7	226	226.7	0	4	4	0	4	4	0	1	1
1999	0	156	156	0	3	3	0	2	2	0	3	3
2000	0	144	144	0.8	5	5.8	0	3	3	0	1	1
2001	0	177	177	0.4	3	3.4	0	2	2	0	1	1

Source: PacFIN and RecFIN. Note: Commercial "Other Nearshore Rockfish in 2000 and 2001 likely contain some black rockfish

Oregon Department of Fish and Wildlife
Recommendations for 2003 Oregon Groundfish Fisheries

Recreational Fisheries

Groundfish

Open January through December. Ten marine fish bag limit, which excludes salmon, tuna, surfperch, sanddab, and bait fish (herring, anchovy smelt and sardine). In addition, sublimits of 2 lingcod at a 24-inch minimum length, 1 canary, 1 yelloweye, and the first Pacific halibut 32-inches or longer when open (see catch sharing plan). Minimum length limit of 16-inches for cabezon. Both Oregon recreational and commercial nearshore fisheries will be managed under harvest guidelines equal to 2000 landings. Four nearshore fish categories will be managed: (1) black and blue rockfish, (2) other nearshore rockfish, (3) cabezon, and (4) greenling species.

Consider if necessary:
1. Minimum length limit of 15 inches for cabezon consistent with California size limit.
2. Non-retention of yelloweye rockfish if Pacific halibut is aboard vessel during all-depth halibut fishery.
3. Either closure period outside of 27-fathom line or a period of non-retention of canary rockfish.

Salmon

ODFW is not recommending any changes to the Oregon recreational salmon fishery relative to Groundfish management.

Commercial Fisheries

Groundfish (LE and OA)

1. Implement depth closures for the trawl fishery seasonally to protect canary rockfish.
2. Close fixed gear fishery inside a line approximating 100 fathoms to provide protection for yelloweye rockfish.
3. Allow midwater trawl fishery for yellowtail and widow rockfish subject to time/area restrictions.
4. Allow midwater trawl fishery for whiting subject to time/area restrictions.

Halibut

Close directed halibut fishery in the area inside 100 fathoms.

Salmon Troll

ODFW is not recommending any changes to the Oregon commercial salmon fishery relative to groundfish management.

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE PREFERRED GROUNDFISH OPTIONS FOR 2003

Recreational Fisheries

Bottomfish

A recreational groundfish bag limit of 15 groundfish, including rockfish and lingcod, open year-round (except lingcod). The following sublimits apply: 10 aggregate rockfish which includes a sublimit of 2 canary and no retention of yelloweye rockfish; 2 lingcod with 24-inch minimum size limit, lingcod season open Mar 16-Oct 15.

Halibut

Will propose changes to Halibut Catch Sharing plan to be approved for public review, including:
- Allow recreational halibut fishing inside “hotspot” in North Coast subarea
- Modify closed Yelloweye Conservation Area (“L” shaped area)
- Allow flexibility to open North Coast subarea on a date between May 1-15

Close recreational halibut fishery outside of a line approximating 25 fathoms–latitude/longitude waypoints to be defined–by subarea, if the yelloweye rockfish catch projected for that subarea is approached or exceeded.

Salmon

WDFW is not recommending any changes to the Washington recreational salmon fishery relative to groundfish management.

Commercial Fisheries

Commercial Groundfish (LE & OA)

- Implement depth closures for the trawl fishery seasonally to protect canary rockfish.
- Close fixed gear fishery inside a line approximating 100 fathoms to provide protection for yelloweye.
- Allow midwater trawl fishery for yellowtail and widow rockfish subject to time/area restrictions.
- Allow midwater trawl fishery for whiting subject to time/area restrictions.

Halibut Retention in Sablefish Fishery North of Pt. Chehalis

Allow halibut retention in sablefish fishery North of Pt. Chehalis, subject to a landing ratio. Fixed gear sablefish fishery would be closed inside a line approximating 100 fms to protect yelloweye rockfish.

Halibut South of Pt. Chehalis

Close directed halibut fishery in the area inside 100 fathoms.

Pink Shrimp Fishery

Require excluders in the pink shrimp fishery.

Salmon Troll

Gear modifications (e.g., prohibit placement of any hook within 4 fathoms (24') of the weight used on each mainline deployed).

U.S. Department of Transportation

United States Coast Guard

Commander
Thirteenth District
United States Coast Guard

915 Second Ave
Seattle, WA 98174-1067
Staff Symbol: d
Phone: (206) 220-7034
Fax: (206) 220-7036

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JUL 2 2 2002

PFMC

16214
July 15, 2002

Dr. Donald O. McIsaac
Executive Director
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

Dear Dr. McIsaac:

Thank you for this opportunity to present several safety concerns regarding recent and potential adjustments to the Council's Groundfish Management Plan.

The proposed emergency rule to shift the limited entry trawl fleet targeting Dover sole, thornyhead & sablefish (DTS Complex) to waters beyond 250 fathoms beginning September 1, 2002, may create significant safety issues for some vessels in this fleet. Trawlers off Oregon & Washington will be forced to transit approximately 40 miles offshore to reach open fishing grounds, and these extended transits will result in longer exposure to harsh weather conditions, especially during winter months. This problem is compounded by the slow speed of these boats, which will limit their ability to return to port before sea conditions become hazardous. Also, many of these vessels are relatively small: already handicapped in seakeeping ability by their size, these boats will need to add weight topside (cable) in order to set their trawl gear at greater depths. This potential combination of prolonged exposure to foul weather and additional topside weight on smaller vessels is a significant safety concern.

I must also note that the recently enacted closure of all recreational groundfish fishing south of Cape Mendocino to waters inside 20 fathoms increases the potential for mishap within this fishery. Previously, the charter fishing vessels and the many recreational boats targeting groundfish had expansive areas in which to fish. The changes that took effect on July 1, however, have forced both fleets to operate in much closer proximity. Given the large number of vessels that participate in this fishery, this situation may increase the risk of collisions at sea, especially during periods of reduced visibility. Additionally, the average recreational boater often does not have the requisite local knowledge of bottom contours and wave dynamics to fully avoid such inshore hazards as grounding or exposure to breaking seas. This combination of greater vessel density and a requirement to navigate shallower waters may present increased risks to the boating public in certain areas.

I fully appreciate the extremely difficult scientific, sociological, legal and economic constraints that the Council must balance while also trying to meet the Magnuson Act's requirement to promote the safety of human life at sea. Please ask the Council and your staff to consider the issues I have noted as they work to optimize the Groundfish Management Plan.

If you have any questions about these issues, please contact my Chief of Law Enforcement, Commander Fred Myer, at (206) 220-7304.

Sincerely,

Erroll Brown

ERROLL BROWN
Rear Admiral, U.S. Coast Guard
Commander, Thirteenth Coast Guard District

Copy: Commandant (G-OPL-4)
Commander, Coast Guard Pacific Area (Po)
Commander, Coast Guard District 11 (o)

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JUN 12 2002

PFMC

G. C. Putnam
11843 Mt. Everett Ct.
Alta Loma, CA 91737-7956

Mr. Hans Radtke
Chairman, Pacific Fisheries Management Council
7700 NE Ambassador Place, STE 200
Portland, OR 97220-1384

June 6, 2002

Dear Sir:

There is a joke circulating that says:

2 + 2 = 5 for very large values of 2 and very small values of 5.

I suspect that this is about the level of the "science" involved in the Baccacio issue. Regardless, the fishing community needs to know the exact methods involved and should be able to review the raw data. Who funded the the studies and for what reason? The questions arise because of the huge volume of daily fishing experience that says the species is very abundant.

A total closure of the Pacific Coast is too draconian a measure. All that is required is to restrict all fishing to a single hook on a single line. Just as long lines kill everything on the surface, trawl gear scrapes and rapes the bottom.

I know that PFMC members have interests in trawl boats. Special interests on the council are ok as long as all interests are represented. I request that the council take no action until interests are equally represented.

The issue now is allocation of scarce resources. Commercial fishing uses 95% of the resource for 5% of the economic benefit. It is time to change. A shutdown of the western coast will not only irritate local fisherman, but also the millions who come to fish once or twice every year or two.

Please consider carefully.

Sincerely,

G. C. Putnam

CC: The Honorable Joe Baca
The Honorable Dianne Feinstein
The Honorable Barbara Boxer

SEA JAY SPORTFISHING
4151 South Victoria
Oxnard, CA 93035
(805) 985-6355 or (805) 701-5778

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JUN 14 2002
PFMC

June 10, 2002

Mr. Hans Radtke
Chairman, Pacific Fisheries Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

Dear Chairman Radtke and members of the Council,

This letter is in response to the proposed rockfish closure in Southern California Bight. This proposed closure would supposedly enhance the dwindling boccacio stocks. There is no truth that boccacio stocks are low; in fact there is a huge boccacio population in the Southern California Bight.

Biologists who tell you that boccacio stocks are low are grossly misinformed! We in the industry have invited biologists, fish and game persons, etc. to come out on any number of sport fishing boats to experience and witness the huge boccacio stocks. Our invitation still holds because we have nothing to hide. From 3-4 miles (dropoff) outside Channel Islands Harbor to 60+ miles the stocks are astounding.

I've been exclusively in the sportfishing industry 27 years. We average 175-200 days at sea each year. I've witnessed the ups and downs and the trends of fish stocks. Bocacio and rockfish in general are on the increase. Multiple rockfish areas must be avoided because we reach our two fish boccacio limit too soon.

We in the industry have already absorbed huge regulation changes; e.g. rockfish season went from 12 months to 8 months, rockfish limit went from 15 fish to 10 fish, and boccacio limit went from 10 fish to 2 fish. All of these regulations have had a HUGE IMPACT on fisherman and their families. I find myself planning each trip around staying away from boccacio.

Biologists/environmentalists keep putting the squeeze on fisherman with new limits and regulations. It is obvious to me that they want us off of the water. There is no proof to back their claims on boccacio. There hasn't been a study conducted south of Point Conception on the rockfish population in more than 25 years.

Rockfish consists of 85-90% of our catch annually. A rockfish closure woud definitely require huge compensations or buyouts for us in the industry.

I thank you in advance for your consideration of this matter and if you have any further questions or comments, please feel free to contact me at (805) 985-6355.

Sincerely,
Daniel J. Oronoz

Daniel J. Oronoz
Owner/Operator F.V. SEA JAY

Commissioners
FRANK UNFRED
chairman
PAUL C. POLILLO
secretary
JIM STIEBRITZ

PORT OF ILWACO

P.O. Box 307
Ilwaco, Washington
98624

Mack Funk
manager

Area Code 360
Phone 642-3143
FAX 642-3148
www.portofilwaco.com

August 13, 2002

Dr. Hans Radtke, Chair
Pacific Fisheries Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

RE: Groundfish Regulations

Dear Chairman Radtke, Board Members and staff,

The Magnuson-Stevens Act was revised in 1996 to require fisheries managers to minimize the adverse consequences, to communities, of proposed conservation measures. With regard to the proposed new groundfish regulations, we understand that a preliminary Environmental Impact Study is being drafted for the consideration of the Pacific Fisheries Management Council at the September meetings. How can the PFMC take action on the proposed new conservation rules when the socio-economic factors have not yet been quantified?

Coastal fishing communities are facing disastrous economic consequences in addition to the hardships already suffered as a result of the Endangered Species Act rules protecting the spotted owl and salmon. These problems include:

1. Fishermen have been forced to eliminate safety measures such as annual maintenance haul-outs and insurance;
2. Marine suppliers and fish processors have made capital investments in gear and equipment that have become obsolete due to previous regulation changes;

3. The Port of Ilwaco is not able to maintain its facilities in a safe condition with the cash flow generated from moorage rentals;
4. Town merchants must consider whether to cutoff credit for fishing families that can't pay their bills;
5. Fishing families can't afford recreation such as school sports or band instruments for their children;
6. Incidents resulting from illegal drug use, alcohol abuse, and domestic violence;
7. Families can't afford rent and must move from their homes and apartments;

Our communities are trying hard to replace the traditional sources of income, but due to our isolation and the overall poor state of the economy, new job opportunities are very difficult to find. The regulations that are being considered cannot be adopted without a full package of relief programs that includes long-term benefits for fishermen, processors, suppliers, ports, merchants, and workers.

We, therefore, believe that of the alternatives being considered (per your Range of Harvest Levels document), the least conservative options are preferable to the most conservative. However, we strongly feel that the PFMC should not adopt new restrictions at this time until after community impacts are fully considered.

Please don't let this emergency for the fish become an emergency for coastal fishing communities.

Sincerely,

Mack Funk

Mack Funk
Manager, Port of Ilwaco

Cc: Rep. Brian Baird
Sen. Patty Murray
Sen. Maria Cantwell
Gov. Gary Locke
Sen. Sid Snyder
Rep. Mark Doumit
Rep. Brian Hatfield
Dr. Jeff Koenings, Washington Department of Fish & Wildlife
Martha Choe, Washington Department of Community, Trade & Ec. Dev.

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JUN 27 2002
PFMC

PACIFIC OCEAN HARVESTER, INC.

Anthony W. West, President
Barbara B. West, Secretary
Phone (310) 832-8143

1423 Silvius Ave.
San Pedro, CA 90731
Fax (310) 514-2193

June 22, 2002

Mr Hans Radtke, Chairman
P.F.M.C
7700 N E Ambassador Place Ste 200
Portland, OR. 97220-1384

Dear Mr Radtke

I am one of a very few trawlers in San Pedro, Calif, fishing in the Santa Barbara Channel, for Ridgeback Shrimp, and Calif Halibut.

The shrimp net is a standard 2" mesh with a large double bag of 4" material, while halibut net is a minimus mesh size in Santa Barbara Trawl grounds of 7 1/2".

I can honestly say that I have never caught a Boccacio Rockfish, nor the other two species of concern. The Canary & Golden eye don't even occur in these waters, while the Boccacio is much deeper here; and our shallow water operations don't interact with Boccacio which are generally on hard bottom or rocky areas, and we avoid those types of structures, while fishing in the muddy bottoms.

I support the Southern California Trawler Assoc options and suggestions to the Groundfish Management Plan for the Santa Barbara Channel Artisanal Trawl fisheries

Thank you.

Sincerely,
Tony West
F/V Steel Fin II

cc. Dr D. McIsaac

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AUG 2 2 2002
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August 18, 2002

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

In response to your Pacific Fishery Management Council Meeting Notice dated August 8, 2002, I would like to express my views.

I operate a small trawl boat (42 feet) and have fished for 37 years, of which 25 years was trawl fishing. This has been a family business for two generations. I do not trawl over rocks as my gear is set up to trawl over sand and mud. I also cannot fish outside of 150 fathoms due to the size of my vessel and the gear used.

99.9% of flat fish, sandabs, English, petrale, rock sole and sand sole are not in the same area as rock fish.

If no consideration is given to small trawlers, it would be a serious hardship as many of the fishermen have no other skills and some are at an age that a new beginning would be extremely difficult, if not impossible. There are mortgages to pay, families to feed. This temporary work stoppage has already put me in a serious financial situation.

I believe consideration should be given to small trawlers so that fishermen can survive.

F V HELEN RUTH

Thom Genochio
THOMAS GENOCHIO

8-18-02
DATE

To the PFMC

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AUG 22 2002
PFMC

I hereby request no actions be taken until a team of scientific piers from around the world meet and hold a hearing an all data be brought out under the Magnuson. It calls for best an true Data.

In accordance with the law I seek this hearing on a emergency basis.

I request Congress step in a see that everyone's best intrest is protected.

I demand my Constitutional Right's to Readress. This is not a request but a demand. The peoples voices have been ignored long enough.

Years have passed an ignored.

It is time to act. Data swept away or ignored.

You call for insight. Listen to the voices of the people. No closers. fisical data brought forward.

I will not be silent any longer

NO Closer

Donna Leach
8-15-2002

10:45 AM

Return-Path: <eternalpeace@email.msn.com>
Received: from relay-east.nems.noaa.gov ([205.156.4.216]) by
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Jun 21 2001 23:53:48) with ESMTP id H0LWB800.NYC for
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Fri, 9 Aug 2002 19:29:44 -0700
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From: "eternalpeace" <eternalpeace@email.msn.com>
To: <pfmc.comments@noaa.gov>
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Date: Fri, 9 Aug 2002 19:29:44 -0700
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Content-Transfer-Encoding: quoted-printable

Ladies an Gentlemen.
This is Donna Leach an I want you to know I am not out of the loop. You =
are all guilty of fraud,and covering up the truth along with murder. And =
when I say murder I meanexactly that. Of fishermen and fish and a =
historical industry.=20
 Methot started by using the fisheries to gain a name for his self a =
the cost of all of the   people in America. Did anyone learn a thing on =
9-11. I did. I realized what being a citizen in America is. We have all =
closed our eyes and our minds while governments agencies steam role over =
everyone. I am here to tell you I will not close my eyes any more nor =
will my lips be silenced. I just lost a family member that taught me to =
fish as a child and to be grateful for the chance and the right to be =
free. I am not going to be shut up or swept aside anymore by Senators or =
Congress. Not even The Governor. I will yell it and post it and keep on =
an on till the people know they have been lied to and used. I hereby =
charge each of you with covering up the truth about stocks to the public =
and Congress for personal gain. Allowing stock assessments to be ignored =
and real data covered up or swept aside.You were allowed to manage this =
industry and you have felled. You are each as guilty as
those from water gate and those who sold there stocks and let the little =
guy loose there lively hood. Well I may not be rich and famous but I can =
scream till enough people decide to stop all of you. You have gotten =
away with covering up the truth long enough.=20
Snob Hill Washington is going to have to listen when I am done. I will =
not be shut up or put off anylonger. I wont stop until they listen . All =
of Congress, as well as President Bush. I do not plan on violence at =
ant point but I do plan to do what ever it takes to show Washington the =
little people of America have had enough and are ;prepared to show =
it,Look yourself in the mirror and ask yourself aaaaaaaaif you are free =
and clear of quilt free of costing lives and destroying families and =
homes. As well as takeing away dreams an livelyhoods. Causing people to =
loose everything they built up for old age and there dreams of the =
future for others. To some the Ocean and fishing is in there blood.
 Let me ask you as Jesus did that day at the rock pit. If there be one =
who is free of sin then stand up or else open up and tell America the =
truth. Fishing surveys show that I am right.Even Sen. Wyden and =
Congressmen DE Fazio knows the truth. Even Jo Ann Verger has seen and =
heard enough to know the truth. Now its time to show America your spin =
and tell all the world the truth. Money has been behind the lies and =
cover ups.I want you to know I am prepared to do what ever I can to have =
the voices heard before you destroy any more people. I want to read this =
also at the meeting in September.

Donna Leach
91482 Kellogg Ln
CoosBay Or97420

eternalpeace@msn.com

 I will be watching ODFW,PFMC,NOAA,Nimps
 We want all of you out of business and prepared to go out of our way to =
put each of you out of work. Not one penny of tax money to pay your =
salaries or medical oh yes and your pensions. Let you see the other =
side. Truth shall win.

Southern California Trawlers Association

June 19, 2002

RECEIVED

JUN 24 2002

PFMC

COPY

Mr. Hans Radke, Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384
June 20, 2002

RE: GROUNDFISH MANAGEMENT PLAN AMENDMENTS AND THE SANTA BARBARA CHANNEL ARTISANAL TRAWL FISHERIES

Dear Mr. Radke:

The Southern California Trawler's Association is a group of seventeen small trawlers (80% from 32 feet to 45 feet, largest is 60 feet in length) fishing out of the ports of Morro Bay, Santa Barbara, Ventura, and San Pedro, principally in the Santa Barbara Channel. We fish for ridgeback shrimp, spot prawns, sea cucumbers and (mostly live) halibut. A few of our members also fish for pink shrimp.

I am the President of the SCTA, and write to you on behalf of the membership about the unintended consequences of the groundfish regulations changes that PFMC is currently considering to further protect canary, yelloweye and bocaccio rockfish. I have been fishing commercially as my sole occupation since 1956, and have fished for every species of fish and shellfish available to commercial fishermen in southern California except abalone and sea urchins, using many different types of gear. I have been involved in the innovation of many of the types of gear used in southern California, including continuously trying to modify and test trawl nets to fish cleaner and with less bycatch. I was involved in the startup of the ridgeback shrimp fishery in 1972-73, and found local markets for the shrimp. I have fished California Halibut since the early 1970's when the California Halibut Trawl Grounds were first designated by the State of California. Twenty-two years ago, I started the sea cucumber trawl fishery, working with a local Chinese buyer/processor. This trawl fishery is now a highly regulated, limited entry, sustainable fishery. I am currently a member of the California Department of Fish and Game's Ad-Hoc Spot Prawn Committee, formed in 1999 to develop limited entry, permit moratorium, bycatch provision and other management issues for spot prawn and ridgeback shrimp I am also a member of CDF&G's White Seabass Advisory Committee, which has recently developed a limited entry and allocation plan for the Legislatively-mandated California White Seabass Management Plan. In 1985, I was named as Highliner of the Year by National Fisherman for my contributions to sustainable management of our fisheries in this region. The point of this short biography is to provide my credentials as a knowledgeable participant in southern California Trawl fisheries, and fisheries management, with long experience at sea observing the fish and the ever-changing conditions in which they live.

PRINCIPAL CONCERNS

The principal reason I am writing to you is our concern that with the kind of broad-brush, Pacific-wide regulations currently under consideration by the Council to address new information on the lower recruitment rate of certain rockfish species, the Council is going to be "throwing out the baby with the bathwater." There are small, local, artisánal fisheries that have been fishing sustainably with little bycatch in the Santa Barbara Channel for decades that are going to be eliminated with most of the alternative regulation packages you are considering for resolving the canary, yelloweye, and bocaccio rockfish problems. Going with a simple depth closure across the entire state is what will affect our small boat fisheries by not being specific to the distribution of the species of concern and the species of our commercial interest here in the Santa Barbara Channel and, to the way we fish here. We have suggestions to offer that will allow the Council to protect these species without unduly affecting our small-boat artisanal fisheries here in the Santa Barbara Channel, which we consider to extend from Point Arguello to Point Dume.

One of the first, and most general of our suggestions, is that the Council should seriously consider zonal management to reduce bycatch of the rockfish species of concern, consistent with how it is done in the Salmon Management Plan, and we feel that the area south of Point Conception is, from oceanographic, biological, and commercial fishing perspectives, different enough from the waters north of there to warrant a different management regime than those waters further to the north. If you consult your own scientific advisors, we know that they will support this concept from a scientifically defensible point of view. It makes good biological and management sense to put a management line at Point Conception and make regulations specific to each area, north, and south, of this groundfish management line.

Further, for our region, the Santa Barbara Channel, two of the species causing the big concern are not even present in any numbers whatsoever; the canary rockfish and the yelloweye rockfish (DFG 2002 Status of Resources Report, and personal knowledge). Bocaccio are in the Channel, but have very limited overlap with the areas we fish for California Halibut, sea cucumbers, and Ridgeback Shrimp. There are bocaccio at Point Arguello, sometimes in numbers. However, the Council's own scientific advisory panel members have publicly stated that bocaccio are relatively more abundant and doing better in Southern California than elsewhere, and this is borne out by reports of large schools of all different sizes of bocaccio found in their specific depths and habitats (shown on charts enclosed) throughout the Channel including a large cohort of recruits from a few years ago that will soon be 10-12 inches long, and, this year, large numbers of ½ inch to 1 inch long baby bocaccio showing up in gut contents of salmon throughout central and southern California. Fishermen are now saving samples of these young of the year bocaccio to demonstrate to the Council and its scientific advisors just how prevalent they are in these areas.

There has not been a directed bocaccio trawl fishery in the Santa Barbara Channel for 20 years. When there was one, it was in the area marked on the enclosed chart, because that's where bocaccio are found in the Channel.

We also want to make sure that the Council understands the level of management currently applied to these artisanal-scale fisheries: with the exception of the California Halibut fishery, the fisheries that we describe here are either already limited entry with a full complement of permits, or are currently the subject of limited entry committee discussions with the Department of Fish and Game, with already-established cut-off dates that preclude trawl vessels from other parts of the West Coast to "jump in" to these fisheries. Thus, what we are proposing to resolve protection of bocaccio, yelloweye and canary rockfish stocks with the continuation of our artisanal fisheries in the Santa Barbara Channel will not engender any new "loopholes" through which trawl boats may slip to counter further regulations in other areas.

FIVE SANTA BARBARA CHANNEL ARTISANAL TRAWL FISHERIES

California Halibut

The Groundfish Ad-Hoc Committee proposals under consideration by the Council suggest that fishing out to 45 fathoms would be allowed. We agree with this boundary; most of our fishing during the California Halibut Trawl Grounds season (June 16 – March 14) is in water depths of 45 fathoms or less. We are the only halibut fishery in the State, either commercial or recreational, with a four month closure for spawning season. We use a different kind of cod-end on our halibut nets measuring 7 ½-inch, specifically for small halibut escapement. This is a healthy and clean fishery that has been vetted by the California Department of Fish and Game with respect to stock health and bycatch; it is not an overcapitalized fishery. The probability of catching a bocaccio (the only species of concern in the Channel) in the halibut trawl grounds is zero. We never catch bocaccio in halibut trawl grounds in the Santa Barbara Channel. They simply don't live where we fish for halibut (see attached map).

We request that the Council continue to allow trawling for California Halibut out to 45 fathoms below a management line at Point Conception.

Sea Cucumber

The alternatives presently under consideration also allow for fishing out to 45 fathoms. We support this also. We can fish in the California Halibut Trawl Grounds for sea cucumbers also, and we use that 7 ½ inch mesh cod end to do this. However, the distribution of sea cucumbers we trawl for seasonally extends (they move) beyond 45 fathoms and the designated halibut grounds, and we also fish for cucumbers outside 45 fathoms and outside the designated halibut trawl grounds when they are closed, using the same 7 ½ inch mesh cod-end net that we use for halibut inside the grounds in season. When we go outside the designated halibut grounds for sea cucumber, we're basically fishing in the same habitat/grounds as we do for ridgeback shrimp, in mud bottoms; we don't fish for cucumbers or ridgeback in areas that have any hard bottom at all, and, as a result, we don't get bocaccio in our nets. The distribution of bocaccio doesn't overlap with the cucumber and ridgeback habitat. And even if there were a stray, the 7 ½ inch cod end mesh would allow the bocaccio to escape the net. So, ideally, we would like to fish out to 85 fathoms for sea cucumbers, and we feel that we can do this because the groundfish of concern (bocaccio, not canary or yelloweye, which basically don't live in the Channel) don't overlap in distribution with the cucumbers.

We request that management south of Point Conception for these groundfish of concern allow sea cucumber trawling out to 85 fathoms for the above reasons (lack of bycatch of species of concern due to distribution differences, large-mesh nets used allowing escapement).

Ridgeback Shrimp

Our small-boat association fishes for ridgeback shrimp in 35 to 85 fathoms from October 1 to May 30th in areas of the Santa Barbara Channel principally consisting of muddy bottoms (see attached maps). As with the sea cucumber fishery, there is little to no overlap of the distribution of the one species of concern (bocaccio) in this region with the ridgeback shrimp grounds (again, see distribution maps). One Department of Fish and Game biologist who has observed the shrimp fishery for many years has stated in the Department's Ad-Hoc Spot Prawn Advisory Committee meetings that she has never observed any bocaccio as bycatch on a ridgeback shrimp trawl trip. With all of the publicity about bycatch in the Gulf of Mexico over the last few years, we here in the Santa Barbara Channel have also been working on making our fishery ever-cleaner, and have developed a number of different kinds of fish excluders in our ridgeback shrimp nets that are working well. We have a very low bycatch of any finfish and particularly of any species of concern in the ridgeback shrimp fishery. We have developed a videotape of our fishery that illustrates the nature of the fishery and the minimal bycatch involved. We have enclosed a copy of the video for your information.

Further, since ridgeback do not have a long shelf life due to enzyme problems, many of our members have switched to fishing for ridgeback as a live-shrimp fishery; the value is enhanced, the survivorship is good, and fewer shrimp are taken to maintain the same dollar value to the fleet. Short tows are essential for live shrimp, and presently our ridgeback fleet is a small-boat, low-volume fishery that has been fishing sustainably for over 20 years, and we really count on this fishery as a mainstay in the winter. Our membership is responsible for working with the Department of Fish and Game for seasonal restrictions so that we maintain healthy stocks for a long-term sustainable fishery.

As noted above, the ridgeback shrimp fishery is a mainstay for our Association's small-boat artisanal fishery in the Santa Barbara Channel. It has taken us nearly 30 years to develop consistent and stable markets for this sustainably-fished shrimp, which we now have. If we were to be forced to stop producing ridgebacks for a year or two due to regulations, and then were allowed to produce again later due to changing regulations and/or conditions, the consistent, stable markets we now have will have disappeared. One mechanism that has evolved in the last several decades to make these markets unavailable to us when we are forced to stop producing is the importation of cheap, foreign product to fill the empty niche caused by regulations changes. Should this happen in the case of ridgebacks, it would then take our Association members the better part of two or three decades, again, to re-develop the market connections we lost. The possibility exists that we might not ever get it back, and that would be a shame for local seafood consumers who have come to know and appreciate ridgeback shrimp as a fresh, local seafood that they can buy with clear conscience. This pattern of market loss to cheap imports has happened repeatedly in California, clearly illustrated in the last decade by the loss of fresh local gill-net halibut, angel shark and white seabass from the implementation of Proposition 132, the California gillnet ban. These fish are now being imported from Mexico, precluding a fresh, local market.

We request that the Council adopt regulations below a management line at Point Conception that allows the continuance of ridgeback shrimp trawling from 3 miles offshore out to 85 fathoms. Once again, this is in the attempt the Council should be making to not "throw out the baby with the bathwater," and allow good, small-boat artisanal fisheries to continue while providing sufficient protection for the species of concern. The Magnuson Act specifically endorses the support of such sustainable fisheries.

Spot Prawns

The spot prawn trawl fishery originated in Santa Barbara in the early 1970's as a small-boat fishery. We developed areas where we could catch good landings of spot prawns without catching a lot of fish, particularly along the mainland coast. We attribute this to the makeup of the bottom along the mainland, as opposed to out at the islands. Our association boats fish spot prawns from February 1 to October 31 in depths from about 70 to 150 fathoms. In the Santa Barbara Channel, on the mainland side at these depths, we have very little interactions with bocaccio. While some of the hard bottom spots that harbor spot prawns along the coast also will have the occasional bocaccio, the main population of bocaccio is found along a depth contour outside of a seafloor feature we call "the finger" in the central Channel, and there are no spot prawn trawlers who fish that area because there are no prawns there. All of our boats have fish excluders on their spot prawn nets, and the California onboard observation programs indicate that, for our area, for species of concern, only very limited numbers were taken, and that's for the whole coast. The California Department of Fish and Game Ad-Hoc Spot Prawn Committee met on June 7 and it was decided that they would form a bycatch committee to develop regulations and gear to reduce any bycatch to acceptable levels.

Today, this is almost 100% a live-prawn fishery; the markets demand high-quality live prawns, and having bycatch mixed in does not lend itself to delivering good, high-quality live spot prawns. Therefore, we have focused on fishing in areas and with gear that tends not to catch anything else, so that we can bring in what the market requires today.

We request that for the management area below Point Conception, the Council allow spot prawn trawling out to 150 fathoms along the mainland side of the Santa Barbara Channel.

Pink Shrimp

Due to market conditions in Santa Barbara, there is not much effort put into pink shrimp trawling in this region. However, we do have the largest size pink shrimp in California taken in the Santa Barbara Channel (from about Point Conception down to Goleta Point), so when we do fish for them, we get premium price at market. We sometimes fish for pink shrimp in about 70 to 130 fathoms, overlapping some with both ridgeback shrimp and spot prawn, but in somewhat different areas along the coast. The season is April 1 to October 31.

Again, this fishery in the Santa Barbara Channel takes place infrequently, in areas that have little to no overlap with the distribution of bocaccio for the region, and we also have fish excluders in our pink shrimp nets, so we do not catch bocaccio when targeting pink shrimp either. Our small boat, single-rigged, small nets are fishing for a fresh, daily and local market, so catches are also small. Consequently, the boats are not out fishing for pink shrimp very long during a one-day trip.

We request that the Council establish a management line at Point Conception and allow our small boats to continue to fish seasonally for pink shrimp along the mainland coast at least as far south as Goleta Point from 70 to 130 fathoms.

On behalf of our Association, we have herewith made five specific requests for inclusion in the rulemaking process to further protect canary, yelloweye and bocaccio rockfish.

We also request that one of the Council staff members respond directly to our Association's request. I can be reached at (805) 566-1400, fax (805) 566-0188 and the Association's address is on this letterhead. My email is fish4u1@msn.com. Any of these methods of communication is acceptable, however, no communication is not.

Please give serious consideration to our requests to establish a zonal management line at Point Conception, and to allow our artisanal, small-boat sustainable fisheries to continue for California Halibut, sea cucumbers, ridgeback shrimp, spot prawns and pink shrimp. The nature of our small-boat fleet is such that we have to have multiple fisheries to survive, and these have been sustaining commercial fishing in the regional ports for decades without unduly stressing the rockfish species that are now of present concern to the Council. Our landings and logbooks will verify the facts concerning the scale of these fisheries. The Council, following both the spirit and letter of the Magnuson Act as amended by the Sustainable Fisheries Act of 1996, should allow the continuance of these artisanal fisheries.

Remember, also, that what we propose does not promote any further "loopholes" that other trawl boats could slip through to counter the precautionary regulations you adopt to further conserve canary, yelloweye and/or bocaccio rockfish.

Please call or write at your earliest convenience to discuss these proposals within the next week. Thank you for your consideration of our concerns.

Sincerely,

Mike McCorkle

Mike McCorkle, President
Southern California Trawler's Association

Cc: Dr. Don McIsaac, Executive Director, PFMC
Mr. John DeVore, Groundfish Staff Officer, PFMC
Mr. Jim Seger, Fisheries Economics Staff Officer, PFMC
Mr. Rod Moore, Groundfish Advisory Subpanel
Mr. Alec McCall, Scientific and Statistical Committee
Mr. Steve Ralston, Scientific and Statistical Committee
Ms. Cindy Thompson, Scientific and Statistical Committee
Mr. L.B. Boydston, Ad-Hoc Allocation Committee
Mr. Brian Culver, Groundfish Management Team
Dr. James Hastie, Groundfish Management Team
Mr. Zeke Grader, Pacific Coast Federation of Fishermen's Associations

PACIFIC COAST FEDERATION of FISHERMEN'S ASSOCIATIONS

www.pcffa.org

Please Respond to:
☑ California Office
P.O. Box 29370
San Francisco, CA 94129-0370
Tel: (415) 561-5080
Fax: (415) 561-5464

☐ Office of the President
215 Spruce Street
Half Moon Bay, CA 94019
Tel: (650) 726-1607
Fax: (650) 726-1607

☐ Northwest Office
P.O. Box 11170
Eugene, OR 97440-3370
Tel: (541) 689-2000
Fax: (541) 689-2500

21 August 2002

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PFMC

Dr. Don McIsaac, Executive Director
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

RE: Proposed Management Measures for 2003 Pacific Groundfish Fishery

Dear Dr. McIsaac:

The Pacific Coast Federation of Fishermen's Associations (PCFFA) represents working men and women in the West Coast commercial fishing fleet. Most of the fishermen belonging to our member associations are either engaged in directed fisheries for species in the groundfish complex (e.g., rockfish in nearshore fisheries, sand dabs in trawl and seine fisheries, blackcod in longline fisheries) or are in fisheries that may have an incidental take of species in the groundfish complex (e.g., trawl fishery for California halibut). PCFFA wishes to make the following recommendations for the 2003 groundfish management measures:

Limited Entry Trawl and Fixed Gear

Given the restrictions that have already been imposed and the economic hardships that have befallen these fisheries, PCFFA recommends the least conservative fishery measures possible that are consistent with stock rebuilding plans, preventing overfishing, minimizing discards and protecting critical habitats. To that end, PCFFA recommends the expediting of experimental gear permits, with full observer coverage, for the purpose of:

1) Delineating areas where species of abundance may be targeted (e.g., sand dabs) with minimal or zero bycatch of species of concern (e.g., boccacio); and
2) Evaluating modified or alternative fishing gear (e.g., Scottish seine) for the purpose of developing more selective fishing gear.

In this regard, PCFFA further urges the Pacific Council recommend to the National Marine Fisheries Service that the experimental gear permit program be bifurcated, with the Northwest Region responsible for authorizing experimental fisheries offshore Washington and Oregon, and the Southwest Region given authority over all experimental fisheries offshore California. This would greatly assist in the expediting of the permits and provide for more effective control.

Exempted Trawl

For the area north of Cape Mendocino (40'10°N.Lat), we recommend Option 3, and for the area south we recommend Option 4. The reason for picking the least restrictive option for the area south of Cape Mendocino is that it is already heavily impacted by the cowcod closures and the restrictions on bocaccio.

Open Access

For the Open Access fishery, PCFFA recommends Option 3, except that for California, in waters inside of one mile or 20 fathoms, whichever is farthest from shore, the State be delegated management authority pursuant to a Nearshore Fishery Management Plan, under the following caveats:

1) Viable commercial and recreational fisheries in the nearshore areas be provided for;
2) Regional management of the fishery with not less than four regions (i.e., Oregon border to Cape Mendocino, Cape Mendocino to Ano Nuevo, Ano Nuevo to Point Conception, Point Conception to the Mexican Border);
3) TACs and an OY for all managed species;
4) Limited access commercial fishery; and
5) Such other measures that are consistent with the national standards in the Magnuson-Stevens Act and that do not conflict with the Council's management measures for groundfish in the EEZ.

Recreational Fishery

For California, either Option 2 or Option 3, and a delegation of management authority to the State to manage the nearshore waters pursuant to the recommendations above for the commercial Open Access fishery.

Salmon Troll Fishery

For the salmon troll fishery in ocean waters off the three states, PCFFA recommends a prohibition only on the sale (retention required, but proceeds of sale would go to a conservation fund, not to the fisherman) of canary, yelloweye and bocaccio. The retention and sale of Pacific halibut would continue to be allowed.

Other Measures

PCFFA recommends the Council put in place a program for the full retention of all fish taken in the groundfish fishery, with a requirement that all prohibited species become property of the National Marine Fisheries Service with the proceeds from the receipt of the sales of those prohibited species to be deposited into a groundfish conservation fund to offset enforcement and research costs associated with the fishery (such as proposed above for the salmon troll fishery). A full retention program will allow for a full accounting of all fish taken in the fishery.

Finally, PCFFA urges the Pacific Council, when it submits its recommendations to the Secretary for approval, that it **emphatically** request:

1) Administration support for a government funded, wholly or partially, Pacific groundfish vessel/permit buyback program. This is consistent with the Council's recommended reduction of fishing capacity in this fleet by 50 percent and essential for the Council both to meet its mandates for rebuilding stocks while providing for economically viable fisheries.
2) Funding and administrative support from Commerce for semi-annual stock surveys (not tri-annual) that would include provisions for cooperative research utilizing fishermen and their vessels from the groundfish fishery; and
3) Reallocation of Saltonstall-Kennedy Act fishery development funds from subsidy programs for aquaculture (much of this is currently for non-sustainable forms of aquaculture and/or programs competing with existing U.S. fisheries) to assistance with development of more selective fishing gear for the groundfish fishery.

If you, members of the Council, or staff have any questions regarding these comments on the proposed 2003 groundfish management measures, please do not hesitate to contact our office. It is our understanding these comments will be made available for council members and public review and will become part of the administrative record. Your attention to this matter is appreciated.

Sincerely,

W.F. "Zeke" Grader

W.F. "Zeke" Grader, Jr.
Executive Director

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My concerns about potential ground fish rulings;

Please don't lump the sport fishermen in with the commercial and charter boat operators. Charter boat operators are commercial fishermen, in that they are selling a natural resource, or at least the opportunity to harvest this resource for money. They make two trips a day during the spring, summer and fall in good weather and weather that a sport boat operator can not safely operate in because the charter boats are much larger. And if they take ten people per trip and catch limits, that is one hundred fish per day plus a possible of 20 lingcod per boat. Sport fishermen, at least the ones that I know, make an average of four to five trips a year. There are exceptions but not many.

I have not heard any discussions about the live box commercial fishermen that decimated the inshore fishing in California, that are now operating here in Oregon. They must fish in shallow water to keep from killing their fish. Also what about the folks that fish off the rocks that don't have a boat and can't afford to go on a charter boat, don't forget them.

Seems to me, that lower limits, or seasonal limits, like salmon (harvest cards) or allowing fishing on only certain days should be explored. If economics are going to be considered, sport fishing is a much bigger industry than commercial fishing. It supports more people and enterprises than commercial fishing ever will. Anyway, that's the way I see it.

Thank you
Curt Nichols
61336 Wriston Springs Road, Coos Bay, Oregon

YAQUINA BOAT EQUIPMENT, INC.

August 20, 2002

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PFMC

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

Dear Council Member:

I am a small business owner in Toledo, Oregon located on the Central Oregon Coast. I am writing to express my concerns over the recent proposed groundfish cuts, which will severely affect my business.

We manufacture commercial fishing equipment. I have approximately $1,000,000 in sales each year and estimate that my revenue will drop by 30%.

I ask the Council members to take into consideration, not only the economic impact on my business, but the social and economic impact on our fishing community as well as the entire Oregon Coast when you make your final decision on groundfish quotas for 2002 and 2003.

Thank you for your consideration in this important matter.

Sincerely,

Dale Tindall

Dale Tindall
President

508 BUTLER BRIDGE ROAD • TOLEDO, OR • 97391
PHONE: 541-336-5593 • FAX: 541-336-5156

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JUN 13 2002

PFMC

Gentlemen:

I am recreational angler who has been fishing the Southern California waters for more than 15 years. During this time I have spent the majority of time fishing for Sebastes, commonly called Rockfish. I understand that you are considering blanket closures that would include recreational fishing for these fish. Some of the studies that you have been presented indicate that bocaccio, Sebastes Paucispinis, are on the verge of extinction. It is my experience, at least in the areas that I fish, from Bodego Bay to the tip of Baja and extensively around the Channel Islands, that nothing could be farther from the truth. Around the Channel Islands, sportfishermen and sportboat captains regard bocaccio, Sebastes Paucispinis, as an over-abundant species and we go out of our way to avoid them. They are more abundant down here, in all sizes, than they have been for more than twenty years.

Obviously, something is wrong with your studies, your data and your assumptions about bocaccio, Sebastes Paucispinis. I'm certain that other Sebastes species have been wrongly placed on the "overfished" list because of bad data.

I strongly recommend that you make a thorough study of the anecdotal experiences of long time recreational anglers and sportboat captains on a regional basis. In California, we are talking about a constituency of nearly 1 million voting anglers that pay to use and conserve the resource, not exploit and profit from it.

You will find that our reality, times several hundred million dollars of economic impact, differs widely from those who craft research to gain grants, and those who fish for profit alone.

Sincerely,

Kevin Ostwald

APEX
asia pacific environmental exchange

NRDC
THE EARTH'S BEST DEFENSE

The Ocean Conservancy

22 July 2002

Mr. Robert Treanor
Executive Director
California Fish and Game Commission
1416 Ninth Street
Sacramento, CA 94244-2090

Re: Spot prawn trawl fishery and bycatch

Dear Mr. Treanor:

We are writing on behalf of the Natural Resources Defense Council (NRDC), the Ocean Conservancy and the Asia Pacific Environmental Exchange (APEX). We want to commend the California Fish and Game Commission (the Commission) and the California Department of Fish and Game (the Department) for ensuring that the much needed analysis and summation of the spot prawn observer program data was completed. We look forward to receiving the final report, *Results of California Department of Fish and Game Spot Prawn Trawl and Trap Fisheries Bycatch Observer Program 2000-2001 (the Report),* in advance of the August 2, 2002 Commission meeting.

The *Report's* analysis and findings indicate that urgent action is needed to address the ecological and economic impacts of the spot prawn trawl fishery on overfished groundfish populations— an urgency heightened by the severity of the groundfish crisis. We urge the Commission to close the spot prawn trawl fishery within groundfish habitat to address the bycatch and potential habitat damage of this fishery, and to conform to the Pacific Fishery Management Council's (PFMC's) groundfish closure on California's continental shelf. If the fishery continues in any area, we recommend appropriate steps be taken to ensure that it fully complies with the Marine Life Management Act (MLMA).

Current management of the spot prawn fishery, particularly the trawl component, presents numerous management challenges and concerns. These include the destruction of critical habitat, the lack of ecosystem-based management, and a dearth of essential fishery information. In addition, the Department's *Report* indicates that the trawl component of the California's prawn fishery produces unacceptable bycatch levels despite the mandatory use of fish excluder devices, threatens the long-term viability and recovery of several vulnerable groundfish species, and clearly calls into question the fishery's compliance with several MLMA mandates. The MLMA demands information supporting management measures that conserve the health and diversity of marine ecosystems,[1] are sustainable and do not sacrifice long-term health for short-term benefits,[2] maintain and restore fishery habitat,[3] limit bycatch,[4] and minimize the adverse impact of fishery management on small scale fisheries and local economies.[5]

The PFMC recently took unprecedented management measures that resulted in a closure of the shelf south of Cape Mendocino to all groundfish fishing outside 20 fathoms (and to all trawling except for limited activity on the slope) for the remainder of this year. This is a direct result of the failure to stem the overfishing of West Coast groundfish populations and the need to avoid exceeding the rebuilding targets for boccacio rockfish. More extensive groundfish closures are under consideration for next year due to new evidence of deepening declines of yelloweye and additional rockfish species. The National Marine Fisheries Service has determined that nine of the 16 fully assessed groundfish species are overfished, and a scientific panel of the American Fisheries Society recently identified a number of these species as at risk of extinction. Furthermore, the status of most rockfish managed by the PFMC is "unknown". While regulatory recommendations have only looked at the 2002 and 2003 fishing seasons, extensive reductions in effort could be with us for decades. Scientists predict that it will take yelloweye rockfish over 100 years to recover; boccacio recovery is now estimated at 90 years.

The magnitude of this PFMC decision is such that virtually every fishery and economy along the coast will be affected. The rebuilding requirements of several groundfish species is expected to result in catch levels too low to accommodate their bycatch in other fisheries operating on the continental shelf and beyond. The implications of these restrictions become clear when one considers that the International Pacific Halibut Commission's annual survey is likely to incidentally take the whole allocation of yelloweye rockfish for next year, effectively shutting down every other West Coast fishery that takes yelloweye. The potential impact of the spot prawn fishery becomes even clearer when one considers that the 2003 boccacio limits are likely to be set between zero and 14 tons. By our calculation the Department's *Report* indicates that

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[1] See e.g., Fish and Game Code (FGC)§7050 (b) (1).
[2] See e.g., FGC §7056 (a)
[3] Id. at (b)
[4] Id at (d)
[5] Id.at (j).

approximately 5 metric tons of boccacio were incidentally caught in the 2000-01 season; this tonnage could amount to the entire California quota in 2003.

The severity of the groundfish declines—and their impact on fishing communities and the broader Pacific Ocean ecosystem—is unprecedented, and makes the spot prawn trawl fishery's impact on the ecology and economies of the West Coast untenable. It is imperative that the Commission take immediate action to close California's spot prawn trawl fishery. Under less dramatic circumstances than a groundfish shelf closure, we believe the mandates of the MLMA would also oblige the Commission to phase out this fishery. But given the current circumstances, we see no way to reduce groundfish bycatch to the necessary levels other than through an immediate closure of the trawl fishery in groundfish habitat. For the longer term, we would like to see the Commission initiate a public process that will lead to the development of a fishery management plan for spot prawn fishing that guarantees sustainability and ensures its compatibility with healthy ecosystems, most probably by developing a trap-only fishery.

Thank you again for your efforts to secure analysis and publication of the spot prawn observer data. We look forward to working with you to affect a sustainable course for California's spot prawn fishery. Please feel free to contact us anytime with concerns or questions. We look forward to speaking with you again in the near future.

Sincerely,

Karen Garrison
Senior Policy Analyst
Natural Resources Defense Council
71 Stevenson, Suite 1825
San Francisco, CA 94105
Tel: 415.777.0220
Fax: 415.495.5996
kgarrison@nrdc.org

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Karen Reyna
California Fish Program Manager
The Ocean Conservancy
116 New Montgomery Street, Suite 810
San Francisco, CA 94105
Tel: 415.979.0900
Fax: 415.979.0901
kreyna@oceanconservancyca.org

cc: Dr. Don McIsaac, Executive Director, PFMC

Island Tak Sportfishing

7975 Colton St.
Ventura, Ca. 93004

Phone 805-985-8511

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JUN 14 2002
PFMC

June 2, 2002

Mr. Hans Radtke
Pacific Fisheries Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

Dear chairman Radtke and members of the council,

To allow the closure of a fantastic fishing opportunity without adequate surveys of stocks is criminal. The stock of boccacio in southern California is at a higher level than I have seen since the early 70's.

I have spent an average of 200 days a year fishing in the Southern California bight starting in 1973. Both as a commercial hook and line rockfisherman and Capt of a sportboat. I see Boccacio inundating the banks, huge schools are on some of the traditional highspots we fish, to avoid catching them we have to fish elsewhere sometimes running for miles to avoid boccacio. Last year in 2001 while fishing albacore outside of San Nicholas Island we found albacore pushing huge schools of 2 and 3 inch boccacio up to the surface and feeding on them. It was quite a sight to behold, the boccacio were thick enough to scoop.

Southern Calif. already has a 4,500 square mile closed area encompassing several of the bigger offshore banks and islands. The commercial rockfisherman is regulated out of fishing already so this leaves sportfisherman only accessing these stocks of boccacio. From what I see daily the stocks of boccacio are doing the best I have seen in years.

Before considering a complete closure of rockfishing to save the boccacio do a comprehensive stock survey in Southern Calif. There hasn't been one done in 25 years, the scientists have absolutely no idea of the boccacio stocks south of Pt Conception.
The best available science routine is a copout and the economic impact of the rockfish closure is going to shake Sacramento and Washington to its foundations in this election year.

Sincerely,

Steve Kelly

Steve Kelly
owner fishing vessel
Island Tak

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STAGNARO
STAGNARO II
FISHING TRIPS & BAY CRUISES
Santa Cruz, California
P.O. Box 1340, Santa Cruz, CA 95061 Ph (408) 427-2334

8-06-02

To:PFMC
From:Ken Stagnaro (representing charter boats on the Monterey Bay)
Subject: 2003 Sport Groundfish Management plan

Dear Council members,

The following is a recommendation as an alternative to the proposals now being considered for 2003. This recommendation would in effect still satisfy the proposed season allocations being presented, while still allowing commercial charter boat operators to conduct a somewhat viable business.

OPTION FOR RECREATIONAL FISHING SOUTH OF CAPE MENDOCINO

*Season- March-April closed.
Nov thru Feb open Saturday and Sundays only.
May thru Oct Open daily
*Depth- 120 feet or less.
*Limit -10 Rockfish, 2 Lingcod.
*RESULT-days closed approx. * * 140 DAYS * *

* *It is also somewhat inconsiderate for the Council to completely ignore the inevitable results of winter on our ability to operate. A very conservative average of 30 days per year is lost to adverse weather* *

We would ask the Council to consider this, how many businesses can afford to completely close their doors for a 4 to 6 month period and survive? This is not a rhetorical question please consider the answer. This is a practical solution that could satisfy the interests of all concerned. Under these restriction all elements are satisfied. We ask that the PFMC, NMFS and CDFG give serious consideration to this option. This allows both species BELOW AND ABOVE the sea to survive.

We fisherman still have many questions unanswered ! such as:

* does the extrapolation procedures used even remotely represent current harvest levels?
* Is it truly considered that the size of the fishing fleet is a mere fraction of what it used to be and thus harvest levels a mere fraction?
* Is it considered that existing vessels have switched their target species?
* Are biologists and environmental groups looking at ALL information available to them or just information that supports their position?
* If in fact populations are as low as estimated. Is man wholly responsible or is there a cycle occurring , we see them all the time out there.
* Finally is this even remotely accurate science that supports stock assessments or is this just pages and pages of guesswork. And if so, should the fisherman be cleaned off of the ocean and out of business. Should we accept this based

on the so called "best available data" what if the data is very poor? These are questions we have. Most fisherman I know are protective of the resource.

Sincerely, Ken J. Stagnaro
Stagnaro Fishing Trips

Ph # 831 427-0230

Ventura Fish Company
18212 Rosita St.
Tarzana, CA 91356
318) 343-9927
Fax (818) 881-5003
E-mail: LaPazKD@aol.com

August 12, 2002

Robert R. Treanor
Executive Director
Fish & Game Commission
1416 9th St.
Sacramento, CA 95814

Dear Commissioners,

My name is Pete Dupuy, I'm President and founding member of the Ventura County Commercial Fishermen's Association, Director and founding member of Federation of Independent Seafood Harvesters, a member of Western Fish Boat Owners Association and Southern California Trawler's Association.

My partner and I are active prawn trawlers. I've been fishing prawns for over 20 years, it has been a consistent fishery and represents about 60% of our gross income. It is a high value, low volume fishery. When we first started fishing prawns we weren't concerned about by-catch, but as the fishery revolved into a live fishery by-catch became a big concern. Because by-catch damages and kills the prawns, ($9.00 lb. live versus $3.00 lb. dead), we modified our nets to cut down on by-catch.

I've never used big rollers, and never went into high relief areas because I thought that would be a good area for recruitment.

I don't have a lot of tow areas in the Santa Barbara channel, about 12. The tow areas I have go close to the high relief areas but not in them, thereby leaving those areas for spawning and enough prawns to regenerate. I'll work the tow areas for a short period of time and when the catch rate goes down I move to another tow area. Like mowing the lawn, you mow it and come back in a week or two, and mow it again. I've been using the same tow area for 20 years

The majority of the prawns are sold in California, mainly in San Francisco and Los Angeles. But unlike tuna and other fish that are sold throughout the city these prawns are sold in smaller ethic communities in the city. The economic value is worth more to these communities then to the city as a whole.

I would like to comment on the Spot Prawn Trawl by-catch report and management recommendations delivered to the Commission and on it's agenda August 2, 2002.

First, let me comment on two important factors that will reflect decisions on this matter.
Department by-catch report:

With all due respect to Paul Rilley, given the limited amount of time and money provided to work with, no peer review, lack of observer coverage, with some of the observers being biased, makes this report very weak.

Bocaccio allocations:

Given the fact there has been no Bocaccio survey done below Point Conception in the past 25 years also makes allocations for Bocaccio very weak.

With the facts we have to work with I suggest the following management recommendations:

(1) Put an immediate moratorium on Prawn permits.
   a. At this time we don't want any more effort with any kind of bottom trawling.

(2) Instruct the Department to work with the Ad-Hoc Committee to come up with a limited entry program.
   a. We started this over ten years ago, it's time we finished, like the spot prawn trap fishery did.

(3) Consider marrying Ad-Hoc and By-catch Committees.
   a. The majority of the people on the Ad-Hoc Committee will no doubt be the same people on the By-catch Committee.
   b. Less expense for the state.
   c. Some of the issues relate to both committees.

(4) Consider splitting Ridgeback shrimp from Spot Prawns.

(5) Consider revisiting our original control date.
   a. The control date has been published.

(6) Use National Marine Fisheries Service observer programs.
   a. Nation Marine Fisheries Service has funds for observers.

(7) Conform with the Federal small foot rope regulations.
   a. I've fished for 20 years without large foot ropes.
   b. In general, the environmental and some science communities want us to stay out of high relief areas.
   c. With small foot ropes, it makes it almost impossible and impractical to go into high relief areas.
   d. Makes it easier for enforcement then area closures.

(8) Consider asking the Council for a rock cod quota.
   a. The value of the prawn fishery is worth a lot more then the little fish quota they would give us, and the fish could be marketed and thereby not losing that value either.
   b. By having a quota, you have no rock cod by-catch problem.

(9) Consider asking the Council for an exemption like the northern pink shrimp fishery.
   a. Using fish excluders.

Yours truly,

Pete Dupuy

cc: Mr.Robert C. Hight, Director, Department of Fish & Game
Mr.Rod McInnis, Acting Regional Administrator, National Marine fisheries Service
Dr. Donald McIssac, Executive Director, National Marine Fisheries Service

William M. Williamson
Reelin Sportfishing
CPFV's Monterey
#66 Fishermen's Wharf
Monterey, CA 93940

Dear Pacific Fishery Management Council Members:

Having not been unable to attend any of the scheduled public meetings for comments I would like very much to be on the record for the options most desirable to the Monterey Sportfishing and Charter Fishing Fleet located in the Monterey Bay area to include the ports of Moss Landing and Santa Cruz.

The rivers of regulation over the past few years have decreased our business and our ability to operate our businesses effectively. The charter fleet provides a service for public access to our local waters for recreational purposes. We have, as you know come under reduced angler limits, seasonal closures, and water depth restrictions. We need to see an end to this type of slow death by regulation process that most average citizens cannot understand or even keep up with. This should be of no surprise to any of you because even CDF&G does not even seem to be able to keep up with them.

The California Recreational Options as written leave us no choice but to be on record supporting **Option 3.** Ideally we would like to be able to fish in waters of greater depth. Businesses (Charter Vessels) around Monterey Bay have been fishing deep waters for well over 30 years and our clients have grown accustomed to a deeper water fishing trip. We are quite unique in this respect and would like to be given special consideration concerning depths for fishing.

We are aware that recreational sport fishermen take no more than 6% of fish taken. We contend that our impact on any of the species that are considered over fished is so minimal that there is no need for restriction. Our workplace is constantly being scrutinized by many different groups, none of them familiar with or educated in our industry.

If other options are considered, please know that we ***do not support any further reductions in limits, any additional seasonal closures, or any further depth restrictions.***

Reduction in limits will further destroy our businesses; any reduced water depths for fishing will result in deaths due to placing oneself in a dangerous situation. Closures are the main factors ruining our businesses. Imagine any business that you have to close your doors for currently 4 months per year. Please consider closing rock fishing for 2 days per week (Tuesday and Wednesday) for example instead of total 2-month closure periods. Monthly closures (4 months) represent 33% annual closure and 2 days per week represents 29% closure. At least now we could operate our business year round, stay open, and be able to accommodate our passengers more efficiently. Most anglers could follow and accept 2 days per week with no rock cod fishing.

If I understand correctly is seems as though the 20 fathom line restriction could be changed. Something that would be more manageable for the Operators that I represent could be legal sport fishing out to the 50-fathom line. This would reduce the effort concentrated within the 20-fathom line and promote preservation of this area. I am sure that the members of the council know that the most dramatic fishing efforts over the past 10 years have been concentrated inside of 20 fathoms. This impact was the efforts of the live fish fisheries.

Our other major concern has been the manipulation of the data that has resulted in these regulation changes. We do not support the data currently being used by NMFS. We would like to propose a workable solution for monitoring and enforcing their latest changes. We would like to require NMFS to work with data that we could provide and not have the authority to manipulate or extrapolate this data.

I thank each of you for taking the time to review this letter and would like an acknowledgment of receipt from each member of the Council. You can email me at reelinfish@aol.com, or call (831) 901-2356 for questions and/or comments.

Sincerely,

William M. Williamson
Owner
Reelin Sportfishing

Chris Arcoleo – Owner/Chris's Fishing Trips ____________________

Peter Bruno – Owner/Randy's Fishing Trips ____________________

Angelo Shake – Owner/Monterey Sportfishing ____________________

Fred Mountford – Owner/Sams Fishing Fleet ____________________

Carol Jones – Owner/Tom's Sportfishing ____________________

Kenny Stagnaro – Owner/Staganaro's Fishing Trips____________________

Tim Zolinak – Owner/Santa Cruz Sportfishing ____________________

Bill Rawson – Manager/Scurfield's Landing ____________________

FILE

RECEIVED
MAR 1 2 2002
PFMC

to: Fisheries Managers
re: State control of nearshore species in Oregon and Washington --
a limited entry point of view
March 10, 2002

Dear Managers:

I am a limited entry pot fisherman with landings of nearshore species' in 1998: Oregon (and Washington outside 3 miles); 2000:Washington and I believe I delivered most of the live fish in 2001 for the north and central parts of Oregon. I bought my limited entry pot license in 1997.

I live in Long Beach, Washington but moved my business to Garibaldi, Oregon in April 2001 because in conferring with a WDFW patrol officer, he told me that if I brought live fish into Washington, they were going to "take a real close look at them" meaning most likely not a good outcome for me.

State control means more decisions made from political pressures. I have little clout in either state. The first boat limiting proposal in Oregon maintained a separation between limited entry and open access quotas. I favor this strongly (the status quo) because it keeps the playing field even and doesn't radically change anything for anybody. It is one line of protection for limited entry boats from a boat limiting scheme that has too many boats in it. The latest proposal has 161 boats of which 20 are limited entry.

There are staff members thinking that they might lower limited entry boats to the open access level. From what I know of the limited entry fleet, they are making larger landings per boat than the average open access boat. The open access overcapitalization is not the limited entry sector's fault and they should not suffer for it.

When limited entry was put into effect some years ago, it captured all of the active ground fish boats at the time, including the boats that were targeting rockfish of which there are a number of licenses that are strictly rockfish. Open access mainly grew out of incidental catch allowances. Unfortunately the number of fish allowed were enough to start targeted businesses. It would be a ridiculous chain of events that would now give the open access boats the right to pre-empt the limited entry fleet.

Some in the open access fleet may be viewing this as a chance to step up at the expense of the limited entry nearshore fleet mainly by taking over the limited entry quota. The limited entry nearshore boats need their assigned quota to justify the investment they have made which is much larger than open access boats. Limited entry boats really need a nearshore endorsement that is transferable like their permit.

I paid a large amount of money for my pot license with the intention of targeting some nearshore fish (I primarily catch Cabezon, Sea Trout, Wolf Eel & Octopus). Entering at the limited entry level was insurance to me in case of further limitations on these species.

I also spent a large amount of money on pot design and experimentation over a period of 4 years and I have played by the rules in using my gear to redeem my cululative limit. I have worked hard at making a market grow for the species' I catch and I try very hard to keep a consistent supply coming to my customers.

The amount of harvestable nearshore fish(excluding Blackrock or Lingcod) might be in the vicinity of 225,000 lbs. Dividing that number by 161 boats would spread the resource so thin that no one could make a reasonable living. There were only 90 boats that made landings in 2000.

My fishing area is from Newport to Tillamook Head. There is a proposal that includes not limiting boat participation this area. With the large number of limited entry charter boats, five live fish boats and numerous fresh fish boats not to mention all of the other recreational boats from Warrenton, Ilwaco, Garibaldi, Pacific City, Depoe Bay and Newport, it would be irresponsible not to take this present opportunity to limit nearshore ground fish boats. It might even be criminal, taking into consideration the Sustainable Fisheries Act. At the present time, nearshore fishing might be sustainable at 2001 levels. It would be a unprecedented move to open a window of opportunity for new boats to enter a nearshore fishery when you know the number of boats will have to be cut back in the future. I don't want my quota to to go to boats that haven't fished nearshore fish before the cutoff date that was chosen by the commission. I have witnessed up to ten or more new nearshore groundfish businesses starting up or intending to do so. With all that I have witnessed with the strategic plan and other groundfish problems, this development is an invitation to disaster and contrary to ground fish management trends.

My last concern is that I think the State of Washington needs to have a plan that includes commercial harvests of nearshore fish outside of 3 miles.

Sincerely,

Paul Meyer
F/V Network
document #937590

RECEIVED
JUL 29 2002
PFMC

Pacific Fisheries Council
7700 Ambassador Place, Suite 200
Portland, Or. 97220

California Fish and Game Commission
1416 Ninth St.
Sacramento Ca. 95814

I am writing you to object to the considerations you have made for the 2002 fishing-season. I first believe that the data you used for these recommendations is absolutely flawed. To restrict the sport fishermen and allow the commercial fishermen to continue and even increase there catch is very wrong. It is time to keep the commercial fishermen out of the inshore fishing three-mile area and restrict them to fish outside this area. If the inshore fishing is in such bad shape then you must stop all commercial fishing period in this area.

I have been a sport fisherman for over 50 years and have no objections to the way the California Department of Fish and game has managed the fishery till now, but I believe my concerns need to addressed by you at this time. Thank you for your time and consideration.

Sincerely,

Wendell H Harrell

Wendell H Harrell
31217 Tower Rd.
Visalia, Ca. 93292
N6ciy@mindinfo.com

Rachelle Schaaf - Chair
Lucie La Bonté - Vice Chair
Marlyn Schafer - Commissioner

COUNTY
Commissioner

(541) 247-3296 * P.O. Box 746, Gold Beach, OR. 97444 * (541) 247-2718 (FAX)

RECEIVED
AUG 22 2002
PFMC

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

Dear Sirs:

August 19, 2002

The Curry County Board of Commissioners understands the far-reaching effects of the Groundfish Fishery Crisis. Regarding the PFCM proposals for 2003, Curry County supports the least restrictive options to minimize the impacts to the communities within Curry County.

We believe that there is a lack of data and that the analytical models are flawed. Congress needs to explore amending the Magnuson Act.

We also believe that there needs to be a federal initiative to support the industry. That initiative should include support of:

1. The Groundfish Vessel Permit Buyback Proposal
2. Creation of a Northwest Fisheries Readjustment Initiative. This would give our local ports the opportunity to restructure obligations and provide capital in order to target new opportunities that work to revitalize the waterfront for new uses while supporting the needs of the fishing industry.
3. Small Business Adjustment Strategies. This would provide assistance to fisheries dependent communities that is both flexible and allows for the opportunity to move quickly to new product lines and maintain short-term business viability.
4. Federal Retraining Programs to provide additional job retraining and placement and living expense reimbursement (equivalent to the last 3 years of reportable personal income) for each individual/family displaced by the current fishery crisis.

The Curry County economy traditionally has been a natural resource and tourist based economy. We encourage the PFMC to keep in mind that our county has not had economic replacement for the loss of the timber industry and that the recent Biscuit Fire has impacted our tourist industry. Further impacts to our fishing fleets will further devastate the Curry County economy and impact our local communities. This we cannot afford.

Thank you for allowing us the opportunity to give input.

Sincerely:

Rachelle R. Schaaf — Commissioner Rachelle Schaaf, Chair

Commissioner Lucie La Bonté, Vice-Chair

Commissioner Marlyn Schafer

RECEIVED

JUN 24 2002

PFMC

Subject: **closure of fishing for rockfish to sportfishing**
Date: Thu, 13 Jun 2002 22:38:55 -0700
From: Aran Dokovna <Dokovna@pacbell.net>
Organization: Pacific Bell Internet Services
To: pfmc.comments@noaa.gov

Dear Mr. Hans Radke:

It has been brought to my attention that the next meeting of the Pacific Fisheries Management Council will discuss the potential closure of the rockfishing resources in California. I have been fishing the resource personally since a teenager and now am approaching 57 years. I have seen no change in the number of Boccacio or other Rockfish being taken on sport fishing boats. There is no need to close this resource. The resource at present provides substantial food and recreation to the fishing sportsman.

The number of fish that can be taken by fisherman is significantly less than a net takes on any one sweep of an area. The research being done at the present is unknown to me. Please provide a duplicate copy of the complete study for my perusal.

Thank you,

Aran H. Dokovna

email: dokovna@pacbell.net

smail: 27235 Trenton Place, Valencia, CA 91354

Subject: Fwd: closure of fishing for rockfish to sportfishing
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Fri, 14 Jun 2002 07:40:49 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Fri Jun 14 07: 46:11 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GXPA4100.NRU for <john.devore@noaa.gov>; Fri, 14 Jun 2002 07:40:49 -0700
Message-ID: <3afa293b1272.3b12723afa29@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--6227949428778e0"

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: closure of fishing for rockfish to sportfishing
From: Aran Dokovna <Dokovna@pacbell.net>
Date: Thu, 13 Jun 2002 22:38:55 -0700
To: pfmc.comments@noaa.gov

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X-Mozilla-Status2: 00000000
>From - Fri Jun 14 07: 46:11 2002
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X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GXPA4100.NRU for <john.devore@noaa.gov>; Fri, 14 Jun 2002 07:40:49 -0700
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X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--6227949428778e0"

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The number of fish that can be taken by fisherman is significantly less than a net takes on any one sweep of an area. The research being done at the present is unknown to me. Please provide a duplicate copy of the complete study for my perusal.

Thank you,

Aran H. Dokovna

email: dokovna@pacbell.net

smail: 27235 Trenton Place, Valencia, CA 91354

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: Rockcod fishing
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Wed, 19 Jun 2002 16:08:30 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GXZ6Y700.A21 for <john.devore@noaa.gov>; Wed, 19 Jun 2002 16:08:31 -0700
Message-ID: <3eb6873e8b3b.3e8b3b3eb687@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
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X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--5481c2e23d05fc1"

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7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Rockcod fishing
From: <Calshm@cs.com>
Date: Sat, 15 Jun 2002 16:13:32 EDT
To: pfmc.comments@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GXZ6Y700.A21 for <john.devore@noaa.gov>; Wed, 19 Jun 2002 16:08:31 -0700
Message-ID: <3eb6873e8b3b.3e8b3b3eb687@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--5481c2e23d05fc1"

why ruin a sport fisherman's pleasure, while allowing commericals to pilage the sea, then take it out on the sport fisherman. Its the same as letting bulldozers scrape the face of the earth and taking away the privelege of hikers walking through the outdoors(deserts and deserts).

PFMC Comments <pfmc.comments@noaa.gov>

Subject: Fwd: Rockfish closures
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Wed, 19 Jun 2002 16:08:57 -0700
To: john.devore@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GXZ6YX00.QZE for <john.devore@noaa.gov>; Wed, 19 Jun 2002 16:08:57 -0700
Message-ID: <3e9c623e7930.3e79303e9c62@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--84b39163f1d68a9"

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Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Rockfish closures
From: David & Lori Joseph <djoseph1@socal.rr.com>
Date: Sun, 16 Jun 2002 19:17:19 -0700
To: pfmc.comments@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GXZ6YX00.QZE for <john.devore@noaa.gov>; Wed, 19 Jun 2002 16:08:57 -0700
Message-ID: <3e9c623e7930.3e79303e9c62@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--84b39163f1d68a9"

Gentlemen:

I am recreational angler who has been fishing the Southern California Bight for more than 15 years. During this time I have spent a good deal of time fishing for rockfish (Sebastes). I understand that you are considering blanket closures that would include recreational fishing for these fish. I urge you to PLEASE RECONSIDER YOUR POSITION.

To force a closure on the sports angler would be a blow to not only the angler itself but to the people who feed their families from not only the fish that were caught but by the paychecks they earn by working on the boats and tackle shops. How are these people going to feed their families?? As it stands now you have a 4 month closure on rock fish, can't we just leave that in place? Why do you want to take away a sport that so many fathers have been able to share with their sons?

Sme of the studies that you have been presented with indicate that bocaccio are on the verge of extinction. It is my experience, at least in the areas that I fish, that nothing could be farther from the truth. Down here, sportfishermen and sportboat captains regard bocaccio as over-abundant pests, and because of our lack of interest in this undesirable species, we go out of our way to avoid them. They are more abundant down here, in all sizes, than they have been for more than twenty years.

Obviously, something is wrong with your studies, your data and your assumptions about bocaccio. I'm certain that other Sebastes species have been wrongly placed on the "overfished" list because of bad data.

I urge you to make a thorough study of the anecdotal experiences of long time recreational anglers and sportboat captains on a regional basis. In California, we are talking about a constituency of nearly 1 million anglers that pay to use and conserve the resource, not exploit and profit from it.

Sincerely,

David Joseph

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: Closures??
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Wed, 19 Jun 2002 16:10:01 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
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X-Accept-Language: en
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On the web at: http://www.pcouncil.org

Subject: Closures??
From: "Roger King" <yupurs@earthlink.net>
Date: Tue, 18 Jun 2002 20:24:01 -0700
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GXZ70P00.V8E for <john.devore@noaa.gov>; Wed, 19 Jun 2002 16:10:01 -0700
Message-ID: <3ee17b3e76fa.3e76fa3ee17b@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--5d0840746e35439e"

If the fishing is closed in the Santa Barbara / Channel Island area, someone is going to have to come up with a lot of money!! I just bought a new boat so I can go fishing. I have a lifetime fishing license. If I can't go fishing I want to be reimbursed for the cost of my license, boat and gear!!!
Roger King
Carpinteria CA

PFMC Comments <pfmc.comments@noaa.gov>

Subject: Fwd: Fishing restrictions
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Wed, 19 Jun 2002 16:10:17 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
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X-Mailer: Netscape Webmail
MIME-Version: 1.0
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Fax: 503-820-2299
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On the web at: http://www.pcouncil.org

Subject: Fishing restrictions
From: <llahodges@aol.com>
Date: Wed, 19 Jun 2002 12:36:06 EDT
To: pfmc.comments@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:50 2002
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X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--2eb7d51437da6"

To whom it may concern

We are also in ther fishing industry and cannot understand where you are coming up with the figures you have on the rock fish which you say are so endangered. What ever happened to proving something before you shut down a complete industry which may never be rebuilt. We hear about fish rebuilding programs but what about an industry rebuilding program. It has already happened with the salmon industry. They have lost any viable markets they had and now forced to fish for a fraction of what they should be getting.

I have spoken with a NMFS research person and was told that there have not been real research tests performed on the shelf so where does the information to shut it down come from?

It is becoming obvious that the fleet needs to be reduced and the cheapest and easiest way for government to do that is to force us out ob business.

There was a statement made by Hans Radtke that his advice was to downsize and cut their costs. Boy what a bunch of BULL. How do you downsize a boat? Costs can not be cut without putting lives in danger. It cost so much to maintain these vessels regardless just to keep them safe. That sounds like a corporation comment.

What ever happened to the rights of the people who simply trying to make a living in this business? It's not like we make nothing but money. With the restrictions we have faced every year there is nothing left. We hope you people that we are paying can sleep at night knowing you are forcing so many into BANKRUPTCY because we have no way out. Our boats which we have our whole lives invested in are absolutely worthless. We couldn't sell if we wanted.

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: bottom trawling
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Fri, 21 Jun 2002 08:24:47 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:51 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY2ATB00.GIF for <john.devore@noaa.gov>; Fri, 21 Jun 2002 08:24:47 -0700
Message-ID: <4044763ff2d8.3ff2d8404476@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--27df4bec1e56535"

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: bottom trawling
From: "Yeh Pharm. D. MD, Tobias" <YehT2@sutterhealth.org>
Date: Thu, 20 Jun 2002 19:27:32 -0700
To: "'pfmc.comments@noaa.gov'" <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 08: 51:51 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY2ATB00.GIF for <john.devore@noaa.gov>; Fri, 21 Jun 2002 08:24:47 -0700
Message-ID: <4044763ff2d8.3ff2d8404476@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--27df4bec1e56535"

I sure hope you get rid of bottom trawling.
I have seen small red rockfish partially "moldy" covering an area 1 mile in diameter off of Half Moon Bay. The size of these fish was about to 6 inches in length.
I know you are aware that these are "not wanted" by the fisherman who kill them in their nets.
I had a friend who got perfectly edible red rockfish by following a trawler and picking up their "discards".
I know you must be aware of the damage done to the ecosystem (bottom), and indiscrminate killing of eggs, larvae and habitat by those who drag their nets on the bottom.
It "galls" those of us who are really interested in keeping fish available for future generations.
I do not believe "limited" hook and line fishing would seriously endanger the fisheries resources.
Too bad there are not enough people to enforce any of the rules that are made.
Clearly, if the "authorities" are interested in protecting fishing for future generations, BOTTOM TRAWLING HAS TO BE STOPPED!!

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd:
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Mon, 24 Jun 2002 10:23:52 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80BS00.QV8 for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:23:52 -0700
Message-ID: <414f114150d3.4150d3414f11@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--59b1545c2f3c38a4"

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From: "RDemera" <rdemera@ccent.com>
Date: Mon, 24 Jun 2002 08:42:20 -0700
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80BS00.QV8 for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:23:52 -0700
Message-ID: <414f114150d3.4150d3414f11@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--59b1545c2f3c38a4"

Commercial fisherman catch more bottom fish in one week then sportfisherman catch in one year. Therefore why don't they close bottom fishing to commercial fisherman only and put more stringent size and limit restrictions on sportfisherman. Also will the new regulations ban halibut for sportsfisherman also.
Thanks,

Rich

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: Groundfish/continental shelf
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Mon, 24 Jun 2002 10:24:11 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80CB00.2SJ for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:24:11 -0700
Message-ID: <41080d414a12.414a1241080d@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--7b2a69a03bca2d20"

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Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Groundfish/continental shelf
From: "William E. Dutra" <wdutra@owensfinancial.com>
Date: Fri, 21 Jun 2002 15:46:41 -0700
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80CB00.2SJ for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:24:11 -0700
Message-ID: <41080d414a12.414a1241080d@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--7b2a69a03bca2d20"

Sirs:

I am a third generation Californian and fifth generation recreational fisherman who is astounded and upset by the mismanagement of your agency.

Only in a governmental agency could as preposterous a management scheme as letting the very users who most profit from a resource actually manage use of the resource. Your bias towards the wasteful commercial fisheries, most especially the trawlers would seem unusual, were it not for the fact that your council is populated with commercial trawlers. Talk about putting the fox in charge of the henhouse! While we are at it, lets make sure that we don't have observers aboard our vessels lest the public figure out what we are up to.

You have continued to allow wasteful fishing practices, resulting in millions of pounds of dead sebastes bycatch, in order that members of your council be allowed to continue to profit from the plunder of the public resource.

Now you want to close down recreational fishing in water deeper than 60 feet, while allowing trawlers certain types of bottom gear which will continue to kill tremendous quantities of bycatch.

In the private sector, you would all be convicted of fraud and sent off to jail. Perhaps it is time to resign so that the agency can be reorganized to function in the manner most beneficial to the taxpayers of this country. Quickly, before we taxpayers find a way to see that you are sentenced to the jail time you so richly deserve.

William E. Dutra
2221 Olympic Blvd.
Walnut Creek, CA 94595

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: Rockfish Closures
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Mon, 24 Jun 2002 10:24:30 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80CU00.UZ0 for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:24:30 -0700
Message-ID: <4176e24168f8.4168f84176e2@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--847ead1b9a58a4"

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Subject: Rockfish Closures
From: "David Colby" <dcolby3@mindspring.com>
Date: Sat, 22 Jun 2002 4:33:38 -0700
To: pfmc.comments@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80CU00.UZ0 for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:24:30 -0700
Message-ID: <4176e24168f8.4168f84176e2@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--847ead1b9a58a4"

As an avid fisherman, I am disturbed by but fully support your decision on rockfish fishing closures. It is unfortunate that we have to pay now for past excesses. I applaud your actions.

--- David Colby
--- dcolby3@mindspring.com
--- EarthLink: It's your Internet.

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: rockfish closure
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Mon, 24 Jun 2002 10:26:17 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80FT00.SZ5 for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:26:17 -0700
Message-ID: <4156e6415ec2.415ec24156e6@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--b7d269311173ab4"

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Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: rockfish closure
From: <HALBOYFISH@aol.com>
Date: Sun, 23 Jun 2002 11:46:24 EDT
To: pfmc.comments@noaa.gov
CC: bigtunabill@home.com

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80FT00.SZ5 for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:26:17 -0700
Message-ID: <4156e6415ec2.415ec24156e6@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--b7d269311173ab4"

There seems to be more rockfish in our local waters, within 3 miles or 40 fathoms, than in the last 5 years. You are now closing this area to me and hundreds of others. I believe you, and your "research teams" needs a little more knowledge and understanding of ocean waters.

Yes, the gill nets and other commercial limitations have made a huge impact, but it seems the "average" man also gets punished. Why don't you get involved with the Mexican government which corruptly allows others countries to take millions of pounds of fish. I still see seiners within 100 yards of this country. This constant slaughter is hurting the worldwide population of fish more than the local anglers who like to fish within 3 miles of the coastline. Oh, by the way the limit of ling cod and bocaccio was only 2 fish, now ZERO!

I do pay my taxes, also the 18 and 15 cents gas tax to the state and federal government. What next, you'll tell me where I can and can't drive!

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: Fishing restrictions
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Mon, 24 Jun 2002 10:26:32 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80G800.UZ3 for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:26:32 -0700
Message-ID: <41210c411e49.411e4941210c@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--c9c278453acbe5"

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Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Fishing restrictions
From: <Ilahodges@aol.com>
Date: Sun, 23 Jun 2002 22:58:32 EDT
To: pfmc.comments@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jun 24 10: 31:40 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GY80G800.UZ3 for <john.devore@noaa.gov>; Mon, 24 Jun 2002 10:26:32 -0700
Message-ID: <41210c411e49.411e4941210c@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--c9c278453acbe5"

We are also in the fishing industry and are extremely concerned as to what is going to be happening in the near future. We know that you are under great pressure from the environmental groups eventhough the data is not what is should be. If you listen to the people on the water which I am sure you have already heard that the fish in question are better than you think but due to lack of proper information are forced to have closures.
We have heard that the black cod is going to be increased next year and that there will possibly be mid-water fishing allowed for widow and yellow tail. I am sure that you have already heard from fisherman that these fish are more plentiful that have seen in years. If we are allowed to have this fishery again it will be a tremendous help and relieve pressure on the other fish in question. The reason there has been so much effort in the grounds is because pf such short limits we have to catch everything possible.
If there is a closure to the shelf in Sept for the rest of the year being allowed to catch mid-water rock would be a way to al least to survive until something gets worked out.
Also what are the thoughts on the petrale fishing if the shelf does have to be closed. What if we can develope a net which avoids round fish and only targets flats?
Please respond so we all can have an idea what we can consider in the future.
Thank You
Ila Hodges

F/V Betty A
F/V Kangaroo

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: bocacio
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Wed, 26 Jun 2002 08:17:57 -0700
To: john.devore@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Wed Jun 26 08: 45:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYBJTX00.1KX for <john.devore@noaa.gov>; Wed, 26 Jun 2002 08:17:57 -0700
Message-ID: <42b9f742b492.42b49242b9f7@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--3e820037f493b2f"

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Fax: 503-820-2299
Toll-Free: 1-866-806-7204
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Subject: bocacio
From: Bob DeRenard <foxxbear@pacbell.net>
Date: Tue, 25 Jun 2002 21:12:22 -0700
To: pfmc.comments@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Wed Jun 26 08: 45:50 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYBJTX00.1KX for <john.devore@noaa.gov>; Wed, 26 Jun 2002 08:17:57 -0700
Message-ID: <42b9f742b492.42b49242b9f7@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--3e820037f493b2f"

Please inform me as to when you started weighing sport caught Bocacio, where you where weighing them, and exactly how much over the 56 metric ton limit the sport caught Bocacio were.
I am fed up with your (fish and game council) ASSUMING something is so, or taking the word of some one less informed than you (God forbid) and making it so.
Only God can do that.
Bocacio are not endangered in southern waters. The 14 mile bank, 9 mile bank, Cortez bank all have plentiful amounts of 8 to 12 pound fish. I have seen them floating on the surface where the Sporties have had to release them because they had their limits.
Please, get good science before you start taking drastic uncalled for actions. If, however, your intent is to just shut down fishing, period, why just go right ahead. But start with the commercials, who waste 70% of what they catch. And the illegal netters I see out there. And then the sporties and private boaters, and while your at it, look for a job. Because you won't have one.
Bob DeRenard

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: Ban on rockfish applauded...somewhat
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Wed, 26 Jun 2002 14:57:25 -0700
To: john.devore@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Wed Jun 26 15: 05:28 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYC2BP00.PJG for <john.devore@noaa.gov>; Wed, 26 Jun 2002 14:57:25 -0700
Message-ID: <43161a432801.43280143161a@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--5d256e4a5df53078"

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Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Ban on rockfish applauded...somewhat
From: "David Garland" <david.garland@medtronic.com>
Date: Wed, 26 Jun 2002 15:22:41 -0500
To: <pfmc.comments@noaa.gov>
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Wed Jun 26 15: 05:28 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYC2BP00.PJG for <john.devore@noaa.gov>; Wed, 26 Jun 2002 14:57:25 -0700
Message-ID: <43161a432801.43280143161a@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--5d256e4a5df53078"

Greetings,

Although I applaud your recent drastic actions on reclaiming the West Coast rockfish population, I would have to agree with sentiments of most commercial and sport fisherman..."You should all be put in prison."

Perhaps the threat of penalty weighed against state and federal councils and regulatory committees, such as yours, would scare your members into acting responsibly and correctly managing our natural resources.

The greatest teacher I ever had once told me, "You can summarize the effect of your actions (in my case, doing my homework) into two categories: Results or Excuses." How would your own council weigh in against such a theory? I wonder...

We want Results,

David

David Garland
Database Administrator
Medtronic, AVE

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: Rockfish
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Wed, 26 Jun 2002 09:39:40 -0700
To: john.devore@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Wed Jun 26 09: 45:27 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYBNM400.SJ1 for <john.devore@noaa.gov>; Wed, 26 Jun 2002 09:39:40 -0700
Message-ID: <432dbc42c86e.42c86e432dbc@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--2f053e44c7f63bd"

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Rockfish
From: Larry Lowman <lllowman1940@yahoo.com>
Date: Wed, 26 Jun 2002 08:19:09 -0700 (PDT)
To: pfmc.comments@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Wed Jun 26 09: 45:27 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYBNM400.SJ1 for <john.devore@noaa.gov>; Wed, 26 Jun 2002 09:39:40 -0700
Message-ID: <432dbc42c86e.42c86e432dbc@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--2f053e44c7f63bd"

I want to thank you for being concerned about the resources in our oceans. But concern and action should be managed with good information. You have not been recieving legitimate information. Spot studies, seasonal evaluations, and taking information from those that only spend enough time on the water to do studies is not valid information. There are many other and more valid ways of getting good information about the status of our fisheries. Spending more time with those that use them wisely and legally would be one way to accumulate good information. Of course that is the sport angler.

He has no ax to grind, because he does not make a living from the sport, and in fact supports the entire industry with his purchase of products and services. There are many private boaters and sport boat operators that would love to be part of the solution of finding out what is real and what is bunk.

I know there are some rockfish that are in short supply and I also know there are a lot that are not in short supply.

I fish, I kill very few fish, I enjoy the sport in the what is the American peoples property. Any closure ruling(s) made because of bad data, or the will to exercise control over an American heritage right will be resisted with every legal means the sport fishing public has.

We are slow to rise and we are not organized to be a political force but we can be and the ground swell is building. Watch the 2002 elections!!!!

Larry L. Lowman
Sport Fisherman

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: [Fwd: Buyback]
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Fri, 28 Jun 2002 16:29:45 -0700
To: john.devore@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Fri Jun 28 16: 39:36 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from noaa.gov ([65.215.224.18]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYFW1300.1CA for <john.devore@noaa.gov>; Fri, 28 Jun 2002 16:31:51 -0700
Message-ID: <3D1CF169.6060807@noaa.gov>
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.0; en-US; rv:0.9.4) Gecko/20011128 Netscape6/6.2.1
X-Accept-Language: en-us
MIME-Version: 1.0
Content-Type: multipart/alternative; boundary="------------010907070706060703060300"

-------- Original Message --------
Subject: Buyback
Date: Fri, 28 Jun 2002 19:12:16 EDT
From:<Ilahodges@aol.com>
To:pfmc.comments@noaa.gov

We read in the paper Wed that congress had approved the buyback and are wondering what will come of that. Is there anything happening with IFQs? If the fleet really has to be reduced it will take more than just the buyback as you should all know.
We read this morning in the Oregonian about the summer chinook salmon coming into the Columbia River in record numbers. The biologists say that part of the reason is the water temperature in the ocean and the food supply is better than in the past. It seems that if that is true for tha salmon it would be the same for the other species. What years did the information that has been used to decide our fate come from? If it is not current then how can acurate assessments be figured? We all simply do not believe that the science is correct and something must be done before peoples lives are destroyed.
We have seen that the shelf will be closed but there are not suppose to be petrale limits. This makes no sense since the petrale live on the shelf. How are suppose to catch them?
Ila Hodges
F/V Betty A
& Kangaroo

Subject: Fwd: rock fish closure
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Fri, 05 Jul 2002 09:33:04 -0700
To: john.devore@noaa.gov
CC: john.coon@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jul 08 10: 18:37 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYSBB400.EJU; Fri, 5 Jul 2002 09:33:04 -0700
Message-ID: <48b62a4909d5.4909d548b62a@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--1aa04ad4437341f8"

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Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: rock fish closure
From: Jodi Burton <jodib@pacbell.net>
Date: Thu, 04 Jul 2002 00:50:16 -0700
To: pfmc.comments@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Jul 08 10: 18:37 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GYSBB400.EJU; Fri, 5 Jul 2002 09:33:04 -0700
Message-ID: <48b62a4909d5.4909d548b62a@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--1aa04ad4437341f8"

I notice that there has been a closure of rockfishing of the Southern California coast in waters deeper than 20 fathoms. As I understand the logic behind this closure there has been a limit of a specfic rockfish, Bocaccio, of 56 metric tons imposed imposed on recreational fisherman so that these fish can rebuild. I also notice that the recreational fisherman had caught 60 metric tons of bocaccio by the end of April which leads me to this question. How was it determined that recreational fisherman had caught 60 tons and not 59 tons or 61 tons. I would be very interested in the methods that were used to come up with the 60 ton figure.
60 tons of fish is 120,000 pounds, if these fish, one of which I have never caught in my 50 years of fishing in Southern California, average 3 pounds, which is more that most of the rockfish I have ever caught that would mean 40,000 fish have been caught. I am a member of a fishing club with approx. 4000 members and ask the question on the web site how many Boccaccio any of the members had caught this year. I did not get one response from anyone who had caught one. These are guys that do a lot of year round fishing mostly in Southern California waters. I would be most interested in who is catching all of the Bocaccio and again how your numbers were compiled.

Roy Megahan
5661 Sepulveda bl.
Van Nuys Ca. 91411
jodib@earthlink.net

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: (no subject)
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Thu, 18 Jul 2002 16:53:17 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Thu Jul 18 16: 46:09 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GZGYCT00.SW3 for <john.devore@noaa.gov>; Thu, 18 Jul 2002 16:53:17 -0700
Message-ID: <35d82333f6.333f635d82@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--661d25605b222838"

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Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: (no subject)
From: <WassRacer1@cs.com>
Date: Thu, 18 Jul 2002 19:17:05 EDT
To: pfmc.comments@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Thu Jul 18 16: 46:09 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id GZGYCT00.SW3 for <john.devore@noaa.gov>; Thu, 18 Jul 2002 16:53:17 -0700
Message-ID: <35d82333f6.333f635d82@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--661d25605b222838"

I have fished the Straits of Juan De Fuca for about 30 years.I also have caught many yelloweye.The fact that hundeds of people fish one small area only 70 to 100ft. deep,keeps all anglers like myself from enjoying the fishing.Myself and my friends fish from 250 to as deep as 700 ft.in search of yelloweye and ling cod,which also has been limited by the same people.There are alot of yelloweye and ling cod available if you stay off the tops of reefs.I have seen as many as thirty boats including charter boats in one spot off of the lighthouse on SanJuan Island.That's where all the low numbers come from.Myself and my friends no longer come to the islands,because you have taken away the fishing on the word of a few people.First the salmon then the ling cod now the yelloweye.I'm sure that the true cod,cabazon and others will follow soon.

Thank You
Larry Wass

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: [Fwd: Fwd: Near Shore Fisheries Management]
From: "Donald McIsaac" <Donald.McIsaac@noaa.gov>
Date: Wed, 31 Jul 2002 17:19:53 -0700
To: "DeVore John" <John.DeVore@noaa.gov>, "Porter Carolyn" <carolyn.porter@noaa.gov>
CC: "Coon John" <John.Coon@noaa.gov>, "Gilden Jennifer" <Jennifer.Gilden@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Aug 05 08: 19:14 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <donald.mcisaac@noaa.gov>
Received: from noaa.gov ([65.215.224.18]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H0529500.LPN; Wed, 31 Jul 2002 17:19:53 -0700
Message-ID: <3D487EA9.4E94303B@noaa.gov>
Organization: Pacific Fishery Management Council
X-Mailer: Mozilla 4.7 [en] (WinNT; U)
X-Accept-Language: en,pdf
MIME-Version: 1.0
Content-Type: multipart/mixed; boundary="------------B1F9C43BFE39E4D9E6ECACBC"

for BB

-------- Original Message --------
Subject: Fwd: Near Shore Fisheries Management
Date: Wed, 24 Jul 2002 09:54:14 -0700
From: "PFMC Comments" <pfmc.comments@noaa.gov>
To: donald.mcisaac@noaa.gov
CC: john.coon@noaa.gov

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7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
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Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Near Shore Fisheries Management
From: "fullerjana" <fullerjana@prodigy.net>
Date: Tue, 23 Jul 2002 23:32:08 -0000
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Aug 05 08: 19:14 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <donald.mcisaac@noaa.gov>
Received: from noaa.gov ([65.215.224.18]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H0529500.LPN; Wed, 31 Jul 2002 17:19:53 -0700
Message-ID: <3D487EA9.4E94303B@noaa.gov>
Organization: Pacific Fishery Management Council
X-Mailer: Mozilla 4.7 [en] (WinNT; U)
X-Accept-Language: en,pdf
MIME-Version: 1.0
Content-Type: multipart/mixed; boundary="------------B1F9C43BFE39E4D9E6ECACBC"

Dear Council Members,

Looking at your web site information I saw that what I have been hearing about the management decisions seems to be true. I am disappointed that you would seem to be leaning so heavily in favor of reducing recreational fishing at the same time that you are granting increases to the commercial fishing industry.

Recreational fishermen are not your enemies. Having fished along the coast of California for more than 40 years, I am very aware that recreational fishermen have been much slower to recognize the need to protect our fisheries than some other segments of our population. Many of my own early efforts to point that out to fellow fishermen resulted only in insults and scorn. But that has changed dramatically in the last ten years. Once it was hard to get fishermen to see the need to conserve, now, I rarely encounter a fisherman who does not understand that we need bag limits and may need closures at times to help restore a fishery. The Council does not seem to understand that recreational fisherment are on your side. This is leading to fruitless conflict.

If the Council could change its tactics, and truly include recreational fishing interests as full partners in the study and negotiations relating to fisheries mangament, they would gain a strong ally in their efforts. All of us know that if we over fish a species, or a location, that it is our sport we put at risk. Instead, you seem to be intent upon excluding, and therefore alienating and antagonizing those of us who fish recreatioinally.

As you move closer to making your decisions about the new shore fisheries closures, please reach out to and encourage participation by recreational fishermen. I also hope that as you consider how to allocate these resources between "commercial" fishing and "Recreational" fishing, be aware that both of these are industries that produce employment and food over protecting / over allocating to commercial interests, also costs jobs and hurts t to Californias economy.

Jim Fuller
Lancaster, CA

Subject: Fwd: Tougher Groundfish Regulations Needed
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Wed, 31 Jul 2002 13:20:31 -0700
To: john.devore@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Aug 05 08: 19:05 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H04R6700.1JY for <john.devore@noaa.gov>; Wed, 31 Jul 2002 13:20:31 -0700
Message-ID: <c9005ca2e3.ca2e3c9005@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--13de71bd4906eb2"

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Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Tougher Groundfish Regulations Needed
From: (Larry Bales) mtntop@snowcrest.net
Date: Mon, 29 Jul 2002 16:19:09 -0700
To: rhight@dfg.ca.gov
CC: rtreanor@dfg.ca.gov, mvojkovi@dfg2.ca.gov, governor@governor.ca.gov, Assemblymember.Wayne@assembly.ca.gov, Assemblymember.Hollingsworth@assembly.ca.gov, carol.wallisch@sen.ca.gov, Senator.Oller@sen.ca.gov, pfmc.comments@noaa.gov
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Aug 05 08: 19:05 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H04R6700.1JY for <john.devore@noaa.gov>; Wed, 31 Jul 2002 13:20:31 -0700
Message-ID: <c9005ca2e3.ca2e3c9005@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--13de71bd4906eb2"

I believe most SPORTFISHERMAN would think it reasonable to have a reduced daily and weekly limit on bottom fish short of a kneejerk closure of all ocean bottom fishing that seems to be being discussed in some circles. It would truely be interesting to see what data has been collected on the "sports catch" vs. the "commercial catch" to see just who is overfishing this resource. I'm limited to one pole when fishing, also in some cases hook size, wieght size,etc.,etc....and find it hard to believe that sportfishermen who fish occasionally and with the current regulations are some how decimating the bottom fish in our Northcoast fishery.

I, as a California recreational angler, find the increasing body of evidence indicating the severe depletion of California's groundfish stocks alarming. I believe the interim CDFG regulations will prove inadequate to stop further deterioration of the stocks and urge the department to implement the following measures.

Immediately end the use of traps for catching fish.

Restrict commercial fishing to the use of rod-and-reel gear in waters less than 60 fathoms, and limit the number of fish caught per day per vessel. We are in agreement with, and support the United Anglers proposed limit of 20 fish per day per commercial fishing vessel.

Require all rockfish catches be landed at designated landing sites where DFG employees are present to monitor and sample the catch.
Documentation of the catch by CDFG would be provided. Charging commercial vessels would fund the program.

Require all merchants to document purchases and sales of rockfish so they could be tracked back to the fisherman.

Seasonal closures should be timed when the majority of species in an area are spawning, such as banning ling cod fishing in water less than 20 fathoms in December and January.

Begin recruitment and training of an enforcement staff large enough to make the regulations effective.

Dramatically increase penalties for any violation of Fish & Game regulations associated with groundfish; including poaching and possession of undocumented catch, to include seizure of assets.

Begin moving to a computer based licensing system such as in use by the State of Oregon. This would allow limiting the amount of days the recreational anglers could target rockfish through the use of stamps affixed to the license.

These emergency measures, if enacted and enforced, may allow us to save this valuable public resource while the while the long-term solutions and regulations required to create a sustainable fishery are established.

Sincerely,
Larry Bales
Douglas City

ARTICLE:
Tougher Interim Regulations Needed to Protect Rockfish Stocks

By: Richard Alves 2-12-01
Fishsniffer.com

"The West Coast groundfish fishery cannot ever reach sustainable levels, either biologically or economically, if it continues as is," wrote the Pacific Marine Conservation Council in their newsletter last summer. The PMCC is a non-profit group based in Astoria Oregon.

Government agencies, commercial fishermen and sport anglers agree the California groundfish fishery is in trouble. After years of inaction, and many species of rockfish being on the verge of collapse, the California Department of Fish and Game, at the insistence of the Pacific Fishery Management Council Commission have enacted interim regulations aimed at protecting the fishery while the long-term solutions are to be determined over the course of the year.

The caveat being, the regulations have been formulated without any accurate data regarding the fishery or the fishery harvest. I can't tell you how hard it has been to find any data on the fishery, and the information published by CDFG, http://www.dfg.ca.gov/mrd/mlma/reports/ (Only the Acrobat Files have the numbers), is unbelievable if given more than a cursory reading.

The problem with the Interim Regulations, http://www.fishsniffer.com/steelhead/020201rockfishregs.html, is they fail to address the most serious threats to the fishery, highly efficient commercial gear, blanket harvest (http://www.fishsniffer.com/steelhead/021201bgrockfish.html#fishtrap), and illegal catch, while at the same time create economic havoc for the sportfishing and coastal tourism industry.

Regulations enacted without effective enforcement and severe penalties will prove futile. Unfortunately the history of CDFG enforcement is not encouraging. They are simply understaffed for the challenges they are facing. Unless manpower is increased and the agency is better organized, whatever regulations are adopted, are doomed to failure.

For Example:

An interim rockfish species quota has been adopted by the California Fish And Game Commission, however, the CDFG has yet to establish verification methods or obtain the funding to pay for them.

Meanwhile, the commercial livefish boats are systematically cleaning out the nearshore fishery. "On Friday, October 27, 2000, five commercial livefish boats were working 50 traps in a kelp bed the size of a football field inside Noyo Cove. The traps were set five or ten yards apart," a Fish Sniffer Reader reported.

A 1996 NMFS study showed that most of the live fish sold in their sample of San Francisco fish markets and restaurants were sub legal and/or undocumented.

At this moment we are heading into another season where the documentation of the commercial catch will be spotty at best, while the unreported illegal catch goes completely undocumented. Current lack of enforcing reporting statutes for commercial passenger fishing vessels, party boats, also brings into question the validity of that source of data, http://www.fishsniffer.com/steelhead/021201bgrockfish.html#available.

But rest assured, the fishery will be hammered for another year while we attend endless hearings to develop another set of temporary regulations, which the State can't enforce. Unless California can find the courage and determination to make meaningful change stick, the future of the groundfish species in California is bleak.

Where do we go from here?

Immediately end the use of traps for catching fish.

Restrict commercial fishing to the use of rod-and-reel gear in waters less than 60 fathoms, and limit the number of fish caught per day per vessel. We are in agreement with, and support the United Anglers proposed limit of 20 fish per day per commercial fishing vessel.

Require all rockfish catches be landed at designated landing sites where DFG employees are present to monitor and sample the catch.
Documentation of the catch by CDFG would be provided. Charging commercial vessels would fund the program.

Require all merchants to document purchases and sales of rockfish so they could be tracked back to the fisherman.

Seasonal closures should be timed when the majority of species in an area are spawning, such as banning ling cod fishing in water less than 20 fathoms in December and January.

Begin recruitment and training of an enforcement staff large enough to make the regulations effective.

Dramatically increase penalties for any violation of Fish & Game regulations associated with groundfish; including poaching and possession of undocumented catch, to include seizure of assets.

Begin moving to a computer based licensing system such as in use by the State of Oregon. This would allow limiting the amount of days the recreational anglers could target rockfish through the use of stamps affixed to the license.

These emergency measures, if enacted and enforced, may allow us to save this valuable public resource while the while the long-term solutions and regulations required to create a sustainable fishery are established.

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: [Fwd: Fwd: Get responciable]
From: "Donald McIsaac" <Donald.McIsaac@noaa.gov>
Date: Wed, 31 Jul 2002 17:21:01 -0700
To: "DeVore John" <John.DeVore@noaa.gov>, "Porter Carolyn" <carolyn.porter@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Aug 05 08: 19:15 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <donald.mcisaac@noaa.gov>
Received: from noaa.gov ([65.215.224.18]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H052B000.AS0; Wed, 31 Jul 2002 17:21:00 -0700
Message-ID: <3D487EED.22E05B86@noaa.gov>
Organization: Pacific Fishery Management Council
X-Mailer: Mozilla 4.7 [en] (WinNT; U)
X-Accept-Language: en,pdf
MIME-Version: 1.0
Content-Type: multipart/mixed; boundary="------------E9629C90B4508CFB53DFF386"

for BB

-------- Original Message --------
Subject: Fwd: Get responciable
Date: Wed, 24 Jul 2002 09:51:10 -0700
From: "PFMC Comments" <pfmc.comments@noaa.gov>
To: donald.mcisaac@noaa.gov
CC: john.coon@noaa.gov

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Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Get responciable
From: "Jim Chesebro" <n6wof@onemain.com>
Date: Tue, 23 Jul 2002 21:23:04 -0700
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Aug 05 08: 19:15 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <donald.mcisaac@noaa.gov>
Received: from noaa.gov ([65.215.224.18]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H052B000.AS0; Wed, 31 Jul 2002 17:21:00 -0700
Message-ID: <3D487EED.22E05B86@noaa.gov>
Organization: Pacific Fishery Management Council
X-Mailer: Mozilla 4.7 [en] (WinNT; U)
X-Accept-Language: en,pdf
MIME-Version: 1.0
Content-Type: multipart/mixed; boundary="------------E9629C90B4508CFB53DFF386"

Dear Commission,
If you are responsible for the management of the fisheries along the west coast of the Unites States from Mexico to Canada then get responsible. First and foremost, the Pacific Ocean is United States territorial waters to three miles out from shore. This is where the private recreational fisherman and citizens of the United States with a valid fishing license should be able to fish according to law. This three mile territorial limit should be off limits to commercial fisherman, this is public water, United Sates water. If commercial fisherman want a certain spot to fish, with in the three mile limit, then they should lease or rent the land from the owner as farmers do from the land owners. The farmers of California do not get a free ride, why should the commercial fisherman?
Jim

Subject: FW: Comments on Groundfish
From: Charmaine Marie Gallagher <gallagch@onid.orst.edu>
Date: Thu, 01 Aug 2002 01:17:56 -0700
To: <john.devore@noaa.gov>
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
>From - Mon Aug 05 08: 19:19 2002
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <gallagch@onid.orst.edu>
Received: from relay-west.nems.noaa.gov ([161.55.16.21]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H05OG800.BS9 for <John.DeVore@mercury.akctr.noaa.gov>; Thu, 1 Aug 2002 01:19:20 -0700
Received: from nems.noaa.gov ([161.55.16.20]) by relay-west.nems.noaa.gov (Netscape Messaging Server 4.15) with ESMTP id H05ODU00.PQE for <john.devore@noaa.gov>; Thu, 1 Aug 2002 01:17:54 -0700
Received: by nems.noaa.gov; id BAA08040; Thu, 1 Aug 2002 01:17:54 -0700 (PDT)
Received: from ucs.orst.edu(128.193.4.5) by scan-west.nems.noaa.gov via csmap (V4.1) id srcAAAJDa4Sp; Thu, 1 Aug 02 01:17:54 -0700
Received: from [128.193.171.145] (Galag1.HMSCAD.ORST.EDU [128.193.171.145]) by ucs.orst.edu (8.9.3/8.9.3) with ESMTP id BAA472065 for <john.devore@noaa.gov>; Thu, 1 Aug 2002 01:17:53 -0700 (PDT)
User-Agent: Microsoft-Outlook-Express-Macintosh-Edition/5.02.2022
Message-ID: <B96E3CC4.24BA%gallagch@onid.orst.edu>
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Mime-version: 1.0
Content-type: multipart/mixed; boundary="MS_Mac_OE_3111009476_918759_MIME_Part"

Just in case you don't like attachments, I have encoded my response into my email

www.pcouncil.org Councilmembers, Management Staff and Supporting Scientists,

I wish to express serious caution to the Council in pursuing broadbased fishery closures.
Broadbased fishery closures can only support the concept of a regulation experiment. My concerns are over the scientific information, the regulation implications and the accountability of the Council to the communities affected.

Lack of Supporting Science

The Council does not have the best available science if it makes references to the nearshore waters north of Point Conception (Humbolt Current) based on stock assessments completed south of Point Conception (Southern California Bight). These are vastly different waters, with different currents. One is composed of a strong upwelling current (supporting Pacific whiting migration), the other contains a strong downwelling area (supporting Pacific Whiting recruitment). Boccacio, are not migratory species, instead rockfish maintain hydrogeographical containment through basin containment and recruitment. Assessments in San Francisco on recruits do not apply to assessments in San Luis Obispo for rockfish species.

Lack of landings of a specific species (Boccacio) should not be the only way to consider the health of a population. Comparisons from landings from 1970 to 2002 do not identify the condition of the fish but do identify less fish retained. At present Boccacio are not favored by processors due to lesions and worms in their flesh. Nowhere is there information from markets to identify if these species are targeted or if they are incidental catch. If Boccacio are incidental catch, then the council has access to information to reduce the amount of incidental catch in nearly all fisheries. Harvesters also have methods of moving and relocating to avoid incidental catch. Such unmarketable catch will not be harvested or landed or included in the catch.

Management Implications

In the Proposed Nearshore Fishery Restricted Access Program Timeline, dated 13 September 2001, There is no plan for:

1) re-assessment of over-restrictive or un-substantiated management policies,
2) modification as science becomes available,
3) ammendments to this regulation experiment, or
4) action on this fishery closure beyond April 2003.

For how long should harvesters, processors, and fishery communities hold onto their capital assets with the expectation that perhaps, someday, they may resume the noble livelihoods they once had? It is up to the Council, management staff and supporting scientists to identify future expectations for coastal communities. Local governments and land use management must make decisions for directly related coastal uses in the very communities affected by these broadbased closures to protect specific species.

It is in the harvesters interest to inform themselves of the merits of ownership of natural resources. However, the learning process takes time and there are many fears of loss of power to overcome. The environmental community has educated itself and favors ITQ¹s.

Fishing Communities

I may not change your minds, but I challenge the Council, management staff and supporting scientists to be accountable for their actions and to ensure they:

1) Identify the financial, economic and social impacts to communities threatened by these closures. Identification from the harvesting level, ports and processors, the community level and the planning agencies of these communities for their future,

2) Pursue Quality Information exchange on management options with tradeoffs transfer the knowledge of the future benefits of transferrable quota shares in the fishery and hold yourselves responsible for the potential loss of livelihoods, and upsetting historical community structure,

3) Continue to identify additional sources of fish population threats including entrainment by power generation plants, pollution (heat, chemical, erosion) and lack of recruitment of these nearshore rockfish species for the last 25 years. Recruitment of these species are not necessarily density dependent, but may be susceptible to environmental conditions unrelated to the spawning population.

In supporting these closures and not addressing the broader issues of recruitment, pollution and entrainment by power generation plants along the coast, the Council succumbs to the increasing public opinion. Public opinion has preached that the harvest of our oceans is out of control and that harvesters have raped, pillaged and plundered our nearshore waters. Such attitudes reduce a once noble profession into criminals. This reasoning is unacceptable and I challenge the Council to make this distinction.

In San Luis Obispo county there exist a group of informed professionals capable of working with the harvest, the science, the economics, the social and local governmental issues directly and indirectly affected by these closures. It is important you do not shut these people out of your circle of information, your scientific committees, your social and economic discussions. These people can work with the Council and our community and should be given the respect of local knowledge and open communication. Do not shut them out of your public process. These people have been a part of the process and continue interest and are willing to participate. They are: Steve Rebuck, Bill James, Caroline Pomeroy, and Monica Hunter. You have testimony from each of them, each is a professional and each is interested in the better welfare of San Luis Obispo County and its coastal residents, harvesters, processors and port dependent businesses.

Charmaine Gallagher
Interested Citizen and consumer of fish!

Subject: Fwd: Fisheries purposed closer
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Fri, 16 Aug 2002 15:07:56 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H0YIT800.AIU for <john.devore@noaa.gov>; Fri, 16 Aug 2002 15:07:56 -0700
Message-ID: <1b05d71b2d70.1b2d701b05d7@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--3a7f4a0741377930"

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Fisheries purposed closer
From: "eternalpeace" <eternalpeace@email.msn.com>
Date: Fri, 16 Aug 2002 15:01:05 -0700
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H0YIT800.AIU for <john.devore@noaa.gov>; Fri, 16 Aug 2002 15:07:56 -0700
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X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--3a7f4a0741377930"

8-16-2002

Pacific Fisheries Management Council!

I attended your workshop in CoosBay on 8-15-2002. I wanted to try to figure out the best way to not catch rock fish.
For me on the depth zone fisheries idea would be from 0-250 fathoms to use aset back headrope net with maybe a excluder near the cod end. Or even a large mesh on the top of the net near the cod end.
Please let us use the 14" roller gear because You Know as well as I do that the 8" foot rope does damage to the bottom killing vegetation and small fish.
Outside of 250 fathoms we don"t need any net changes!
We don"t catch any rock fish in that depth. Please let us use what ever foot rope which would not be a *" because of the damage
I will try any of the net designs if I can continue fishing for petrole this year. If I can not fish petrole I will lose everything. This our money fish in the winter.

Thank You
Tom Leach
91482 Kellogg Ln
CoosBay,Or97420
541-888-3925
eternalpeace@msn.com

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: Fishery in Oregon
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Mon, 19 Aug 2002 11:28:05 -0700
To: john.devore@noaa.gov
CC: john.coon@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H13SMT00.PUF; Mon, 19 Aug 2002 11:28:05 -0700
Message-ID: <1bec401bf762.1bf7621bec40@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--34a12c384ab91b63"

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Fishery in Oregon
From: "eternalpeace" <eternalpeace@email.msn.com>
Date: Sat, 17 Aug 2002 12:09:36 -0700
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H13SMT00.PUF; Mon, 19 Aug 2002 11:28:05 -0700
Message-ID: <1bec401bf762.1bf7621bec40@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--34a12c384ab91b63"

Ladies an Gentlemen;

I am sending this to propose a solution. Its time to stop this game playing an get down to brass taxs. There is clearly a problem with data issues. So in order to resolve them we need to call on Congress and The Dept of Commerce. We need to hold meeting like juries do an not leave until these issues are cleared up. Scientist know these are problems. Problems that must be resolved. Not at the risk of destroying human life and a historical industry . Especially based on shady an poor data. It is time to clear up all these problems. In a court of law a judge would through the case out of court with such poor evidence. Evidence that has enough wholes to see thru. Stop this natural disaster and show you have a heart and show the people you are willing to do the right thing.
Call on Congress and Ask for time to resolve these issues. Let them know that this is a true problem and it deserves the time to resolve. Let the people of America know you can be counted on to do the right thing. Not just set ting there cold and unmoved. This industry deserves better then what it has been given in the past.So far it has been steam rolled into a corner. Each of you need to take a good look at your self. Have you truly done everything possible to get to the truth. Have you look at all the evidence from every direction?
God is the only one who can say how many fish are there. That is a question you will never have the answer to. But I feel what effort the fisheries have made to prove to the scientist is more important then you have given it credit for.
I ask you to request right here an now a Hearing for readdress of grievances. Before any closer. Oregon deserves it an the industry as well as the people.I want this email read at the PFMC meeting so that everyone knows some one does care enough to speak out. Not for personal gain or to make a name or better there job but for the love of God and the Ocean. I wish to thank each one of you for listening and allowing the truth to be heard and letting Commerce and Congress know issues need resolved before anyone can proceed.

Thank you
Donna Leach
91482 Kellogg Ln
CoosBay,Or.97420
eternalpeace@msn.com

Subject: Fwd: Fw: Fisheries purposed closer
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Mon, 19 Aug 2002 11:27:32 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
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Message-ID: <1c60251c0dab.1c0dab1c6025@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--7d701739a3143ab"

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
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Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Fw: Fisheries purposed closer
From: "eternalpeace" <eternalpeace@email.msn.com>
Date: Fri, 16 Aug 2002 15:08:34 -0700
To: <pfmc.comments@noaa.com>
CC: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
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Return-Path: <pfmc.comments@noaa.gov>
Received: from mercury.akctr.noaa.gov ([127.0.0.1]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H13SLW00.TRB for <john.devore@noaa.gov>; Mon, 19 Aug 2002 11:27:32 -0700
Message-ID: <1c60251c0dab.1c0dab1c6025@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--7d701739a3143ab"

----- Original Message -----
From: eternalpeace
To: pfmc.comments@noaa.gov
Sent: Friday, August 16, 2002 3:01 PM
Subject: Fisheries purposed closer

8-16-2002

Pacific Fisheries Management Council!

I attended your workshop in CoosBay on 8-15-2002. I wanted to try to figure out the best way to not catch rock fish.
For me on the depth zone fisheries idea would be from 0-250 fathoms to use aset back headrope net with maybe a excluder near the cod end. Or even a large mesh on the top of the net near the cod end.
Please let us use the 14" roller gear because You Know as well as I do that the 8" foot rope does damage to the bottom killing vegetation and small fish.
Outside of 250 fathoms we don"t need any net changes!
We don"t catch any rock fish in that depth. Please let us use what ever foot rope which would not be a *" because of the damage
I will try any of the net designs if I can continue fishing for petrole this year. If I can not fish petrole I will lose everything. This our money fish in the winter.

Thank You
Tom Leach
91482 Kellogg Ln
CoosBay,Or97420
541-888-3925
eternalpeace@msn.com

PFMC Comments
<pfmc.comments@noaa.gov>

August 19, 2002

RECEIVED
AUG 2 1 2002
PFMC

Pacific Fishery Management Council
7700 N.E. Ambassador Place, Suite 200
Portland, OR 97220-1384

Dear Council Member:

I am a small business owner in Newport, Oregon located on the Central Oregon Coast. I am writing to express my concerns over the recent proposed groundfish cuts which will severely affect my business.

We are a metal fab shop. I have approximately $900,000.00 in sales each year and estimate that my revenue will drop by 30 %.

I ask the Council members to take into consideration, not only the economic impact on my business, but the social and economic impact on our fishing community as well as the entire Oregon Coast when you make your final decision on groundfish quotas for 2002 and 2003.

Thank you for your consideration in this important matter.

Sincerely,

August 19, 2002

RECEIVED
AUG 21 2002
PFMC

Pacific Fishery Management Council
7700 N.E. Ambassador Place, Suite 200
Portland, OR 97220-1384

Dear Council Member:

I am a small business owner in Newport, Oregon located on the Central Oregon Coast. I am writing to express my concerns over the recent proposed groundfish cuts which will severely affect my business.

We sell Fuel, Filters & Lubricants, have approximately $1,000,000.00 in sales each year to groundfish vessels and estimate that my revenue will drop by 50%.

I ask the Council members to take into consideration, not only the economic impact on my business, but the social and economic impact on our fishing community as well as the entire Oregon Coast when you make your final decision on groundfish quotas for 2002 and 2003.

Thank you for your consideration in this important matter.

Sincerely,

[signature] V.P.
PMK Distributing, Inc.

B & F Marine Electronics, Inc.

134 SW Bay Blvd.
Newport, OR 97365

Phone: (541) 265-8839
Fax: (541) 265-2659

August 21, 2002

RECEIVED
AUG 2 2 2002
PFMC

Pacific Fishery Management Council
7700 NE Ambassador Place
Suite 200
Portland, OR 97220-1384

Dear Council Member,

I am a small business owner in Newport, Oregon, located on the Central Oregon Coast. I am writing to express my concerns over the recent proposed groundfish cuts that will severely affect my business.

We sell and service Marine Electronic Equipment and have 5 full-time employees. We have approximately $900,000.00 in gross sales each year and estimate a revenue loss of 35-40% should this proposal be put into effect.

I ask the Council members to take into consideration, not only the economic impact on my business, but the social and economic impact on our fishing community and the entire Oregon Coast when you make your final decision on groundfish quotas for 2002 and 2003.

Thank you for your consideration in this matter.

Sincerely,

Dennis L. Fisher, President
B & F Marine Electronics, Inc.

CITY OF ASTORIA
OFFICE OF THE MAYOR

August 12, 2002

RECEIVED
AUG 22 2002
PFMC

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

Dear Councilors:

I am writing on behalf of the citizens of Astoria and at the request of the Astoria City Council to ask for your full consideration of proposals before you regarding adjustments to the Coastal Pelagic Species Fishery Management Plan.

Astoria has a very long and very rewarding history. Fish and fisheries have been a constant central thread in that history. In recent decades most developments in our fisheries have been negative, much to the decrement of Astoria's economic well being. The recent emergence of the sardine fishery has been a beacon of hope for improved economic times. There are now four sardine-processing operations in Astoria providing jobs and an influx of capital and operating funds to the area.

We are advised that your agenda includes a request for an adjustment of sardine quotas between Southern Region and Northern Region areas. We believe that this action is appropriate and indicated. We ask that you give it your fullest professional consideration. We are confident that you will arrive at a decision that is just and equitable. Thank you for your consideration.

Sincerely,

THE CITY OF ASTORIA

Willis L. Van Dusen

Willis L. Van Dusen
Mayor

CITY HALL • 1095 DUANE STREET • ASTORIA, OREGON 97103 • (503) 325-5821 • FAX (503) 325-2017
Founded 1811

Rodney L. Manser CPA, P.C.

928 SW Hurbert | Newport, OR 97365
(541) 265-6609 | Fax: (541) 265-2378

August 20, 2002

RECEIVED
AUG 22 2002
PFMC

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

Dear Sir:

I am a certified public accountant in Newport, Oregon, located on the Central Oregon Coast. I am concerned with the proposed groundfish cuts you are proposing for 2002 and 2003. They will severely affect my business, my fishing client's business and the local economy on the coast. In addition to the scientific data, have you considered the economic impact such a cut will have on this area and on the west coast. In addition to the economic impact, there will be increased social and economic costs related to your actions. I ask the Council members to take this into consideration when you make your final decision on the groundfish quotas for 2002 and 2003.

Thank you for your consideration.

Sincerely

Rodney L. Manser

Rodney L. Manser
Certified Public Accountant

8/4/02

RECEIVED

AUG 12 2002

PFMC

DEAR COUNCIL MEMBERS,

MY NAME IS ERIC KRAMER. I COMMERCIAL FISH FOR CALIF. SCORPIONFISH (SCULPIN) OUT OF SAN PEDRO. I HAVE BEEN FISHING THE SOUTHERN CALIF. OCEAN WATERS AS BOTH A SPORT AND COMMERCIAL FISHERMAN FOR OVER THIRTY FIVE YEARS SO I HAVE A FIRST HAND KNOWLEDGE OF ALOT OF FISH STOCKS. I WILL MAKE THREE MAIN POINTS:

1. THE WATERS OF SO. CALIF. (SOUTH OF PT. CONCEPTION) ARE VASTLY DIFFERENT FROM THOSE TO THE NORTH AND NEED TO BE MANAGED SEPERATELY. IN SO. CALIF. THERE ARE ALMOST NO BOCCACIO, NOR COWCOD FOR THAT MATTER, IN WATERS SHALLOWER THAN 60-70 FATHOMS. THE VAST MAJORITY OF ADULT BOCCACIO ARE FOUND BETWEEN 70-120 FATHOMS IN THE SAME AREAS BEING PROTECTED ALREADY BY THE COWCOD CLOSURE.

2. THERE ARE ALMOST NO GROUNDFISH OF ANY KIND TO BE FOUND IN WATERS LESS THAN 40 OR 50 FATHOMS, CERTAINLY NONE IN WATERS UNDER 20 FATHOMS, ITS TOO WARM. BY SETTING THE DEPT LIMIT AT 20 FATHOMS YOU WILL ELIMINATE ALMOST ALL SPORT AND COMMERCIAL FISHING FOR ABUNDENT SPECIES LIKE SCULPIN, WHITEFISH, VERMILLIONS, OLIVES, SHEEPHEAD, AND SANDABS. TWENTY FATHOM DEPTHS NORTH OF PT. CONCEPTION ARE LOADED WITH FISH, SOUTH OF CONCEPTION THEY ARE EMPTY.

3. BOCCACIO ARE NOT ON THE VERGE OF EXTINCTION. THERE ARE STILL PLENTY. I COULD CATCH 300-400 LBS A DAY WITHIN TEN MILES OF LOS ANGELES HARBOR IF IT WERE ALLOWED. BUT EVEN IF IT WAS LEGAL I WOULDNT.

BOCCACIO ARE NOT A HIGHLY DESIRABLE SPECIES FOR MOST HOOK AND LINE FISHERMAN BE THEY SPORT OR COMMERCIAL. WE DON'T REALLY WANT THEM, WE WANT REDS. PLEASE DO NOT SHUT DOWN A VERY HEALTHY SHELF AND NEARSHORE GROUNDFISHERY TO PROTECT AN ABUNDENT, UNDESIRABLE FISH THAT DOESN'T EVEN FREQUENT THE PROPOSED CLOSURE AREAS. SET THE CLOSURE DEPTH AT 60-70 FATHOMS FOR SOUTHERN CALIF. WATERS. IT MAKES ALOT MORE SENSE.

SINCERELY,

Eric A Kramer

203 20TH ST.
HUNT. BEACH, CA. 92648

RECEIVED

AUG 1 2 2002

PFMC

Aug. 8, 2002
Arroyo Grande, Ca.

From Travis O. Evans
270 Larchmont
Arroyo Grande,Ca. 93420

Dear Dr. Mcisaac;
We are concerned that the current restrictions on rockcod landings, particularly boccacio, will trigger a closure of the directed California halibut fishery.

I am enclosing a document distributed by the Ca. Dept. of Fish and Game,that gives the impression that there is a tremendous by-catch of groundfish and rockfish in the halibut fishery. This is simply not true. The directed Ca. halibut fishery is a very clean fishery that only occurs from near San Francisco and southward.

The Ca. CDF document is misleading because it includes all of the landings of any vessel that might have halibut. Oftimes an A-trawl permitted vessel, when finishing it's trip, will need to adjust it's arrival time in port. It is a simple matter while crossing the halibut grounds to make a tow or two, thereby confusing the landing data. California attempted to limit this by putting in a 500 pound limit on other fish while within the Calif. halibut trawl grounds. But in another section of the code the Calif. halibut trawl grounds is described as waters lying between one and three nautical miles from the mainland shore between Pt. Arguello and Pt. Mugu. Probably less than one half of the Ca. halibut are taken from that area.
There appears to be at least two solutions to the problem without destroying the livelihood of several small boat families.

I have fished for 60 years, many as a small boat trawler targeting on Ca. halibut. Going back thru my records, I can not find a boccacio landing while fishing for halibut.
The Ca. DFG. researched my landings and determined that I had landed 11 pounds of rockfish for the past several years.None were on the federal prohibited lists.

We sell most of our fish alive, so we make short tows. Most of the by-catch is returned alive. We land a few live english sole, sand sole, roundnose sole and starry flounder. All of these bring a much better price on the live market. The total by-catch is usually less than 50 pounds per day. We deliver daily. We fish from the 3 mile line out to about 40 fathoms.

I am also enclosing a copy of a letter we sent to Mr. L.B. Boydston telling him of our concerns. The Magnuson Act mandates that we use the best available science in fisheries management, not just numbers drawn from a hat. We also have asked Mr. Jim Glock to read our concerns into the P.F.M.C. records at the next Council meeting.

We appreciate the burdensome efforts of the Council, and believe they do a great service for the fisheries, when they have all the true data. I served on the G.A.P. several years ago. Thank you for hearing our concerns. I believe strongly in good stewardship, and pray for the Council regularly.

Respectfully submitted;
Yours, and "His"
Travis O. Evans
Ph. 805-489-6221
E-mail kattrav 16 @ aol. com

Travis O. Evans

STATE OF CALIFORNIA
RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

STATEMENT OF REGULATORY ACTION [1]

STATEMENT OF FACTS

Existing laws provide for prawn, shrimp, and sea cucumber trawling under regulations adopted by the Fish and Game Commission. Trawling for California halibut occurs under laws established by the Legislature. In all California non-groundfish trawl fisheries (referred to as exempted trawl in the federal regulations), there is bycatch of federal groundfish[2], which co-mingle with the target species. Federal regulations address take of federal groundfish in these fisheries and normally provide for some level of catch and landing of federal groundfish.

During 2000 and 2001, federal groundfish landings associated with trawl landings containing halibut, prawns, shrimp and sea cucumber totaled 661,800 and 611,000 pounds, respectively. Landings of state-managed species in these same years totaled 1.4 million and 2.6 million pounds, respectively. The two largest fishery landings, by far, were for California halibut and prawns (primarily spot prawn). The halibut fishery landed more groundfish than halibut in both 2000 and 2001. Conversely, the prawn fishery landed relatively few groundfish, as did the cucumber and shrimp fisheries (Table 1). The amount or rate of discard in these latter fisheries has not been studied. However, a recent study by the DFG showed that most groundfish caught in the spot prawn fishery are discarded (DFG Spot Prawn Bycatch Observer Program. July 2002)

not True See Tables

Due to the status of overfished rockfish stocks[3] and the need to eliminate fishing on most areas of the continental shelf (especially in depths of 20 to 150 or 250 fathoms[4]), as of July 1 there is no provision, with one exception, for retention of federal groundfish in trawl fisheries south of Cape Mendocino (Humboldt County). The exception is for

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[1] Prepared July 18, 2002

[2] There are about 80 species of federal groundfish, managed under a fishery management plan developed by the Pacific Fishery Management Council. These are generally bottom-dwelling species that include such species as rockfishes, lingcod, sablefish, Dover, petrale, and English soles, and Pacific whiting.

[3] Stocks estimated to be below 20% of their unfished population size are classified as overfished by the National Marine Fisheries Service and are required by law to be rebuilt to 40% of their unfished population level within a specified period of time.

[4] One fathom (fm) is equal to six feet.

Section 8830 of the Fish and Game Code (FGC) requires all trawl nets to conform to federal groundfish regulations adopted under the Magnuson Act. Section 7652, FGC, allows the Director to conform State regulations to PFMC plans if the action is necessary to achieve optimum yield in California and will avoid a substantial and adverse effect on the plan in order to continue state jurisdiction. A federal-state conflict arises when one regime permits what the other forbids. Here, the federal regime prohibits take of groundfish, while the state regime allows the take of species that co-mingle with groundfish. This clearly raises a conflict, since the fishermen cannot both take prawns, shrimp, sea cucumber, and California halibut without taking groundfish. By selectively closing these fisheries to prevent groundfish bycatch, the state avoids a federal-state conflict. A public hearing will take place August 2, 2002 in San Luis Obispo as required under Section 7652.1 (a), FGC. The purpose of this public hearing is to "take evidence of the effects any proposed regulation would have on the state's fishery resources, the commercial or recreational fishing industry, and the state's ability to manage the fishery resource in state waters," as required under Section 7652.1 (c), FGC.

INFORMATIVE DIGEST

Existing laws provide for prawn, shrimp, sea cucumber trawling along the California coast under regulations adopted by the Fish and Game Commission. Trawling for California halibut occurs under laws established by the Legislature. In all fisheries, there is a bycatch of federal groundfish which co-mingle with the target species. Federal groundfish regulations normally provide for some level of incidental catch and landing of federal groundfish in these state-managed fisheries. Due to the status of overfished rockfish stocks and the need to eliminate fishing on most areas of the continental shelf (especially from 20 to 150 or 250 fathoms) there currently is no provision for retention of federal groundfish in trawl fisheries south of Cape Mendocino (Humboldt County), effective since July 1, 2002, except in limited entry trawl fisheries targeting deep water (over 150 fms) fishes (Dover sole, thornyheads, and sablefish). This means that federal groundfish taken in state-managed non-groundfish trawl fisheries, which usually operate in waters inside 150 fms, must be discarded, usually dead. Some of the discarded fish are likely bocaccio rockfish, the species the federal regulations are intended to protect.

The adopted regulations will prohibit trawling for prawn, shrimp, sea cucumber, and California halibut during times and in areas that retention of federal groundfish is prohibited. The regulation is expected to be amended by October 1, 2002 to prohibit retention of federal groundfish in waters between 50 and 150 or 250 fms south an north of Point Reyes, respectively. The restriction north of Point Reyes (through Oregon and Washington as well) is aimed at protecting darkblotched rockfish, another overfished groundfish species, in addition to bocaccio rockfish. The amended regulation will allow the California non-groundfish trawl fisheries to resume operations inside and outside the federal no-fishing zone.

Failure to conform State law to the federal regulations could lead to pre-emption of the State's authority to regulate its fisheries. Thus, the Department has determined it is necessary to conform State law to the federal groundfish regulations regarding take of federal groundfish in state managed trawl fisheries during time and in areas that take of federal groundfish is prohibited.

Authority: Section 7652, Fish and Game Code.
References: Sections, 8591, 8405.3 and 8830, Fish and Game Code.

limited entry trawl fisheries targeting deep water (over 150 fms) groundfishes (Dover sole, thornyheads, and sablefish). (See attached *Federal Register* Notice). This means that federal groundfish taken in state-managed trawl fisheries, which usually operate in waters inside 150 fms, must be discarded, usually dead. Some of the discarded fish are likely bocaccio rockfish, the species the federal regulations are largely intended to protect.

Analysis of rockfish landings sorted by market category for trawl halibut landings containing at least 50 pounds of halibut in 2001 revealed that 5% of the rockfish catch was composed of bocaccio (Table 2). Applying this percentage to the total rockfish catch by non-groundfish trawlers landing state-managed species that year of 101,300 pounds (Table 1), this indicates the bocaccio landed catch was about 5,100 pounds. During 2001, trawlers were allowed to land a limited amount of bocaccio per trip (to discourage targeting on the species while allowing them to fish for other species). Thus, the actual catch was probably larger than the landed catch due to discard of fish in excess of federal landing limits or fish that could not be marketed.

The recent DFG spot prawn study estimated that the 2000 spot prawn fishery impacted about 5 mt of bocaccio, most of which was discarded dead. The DFG is addressing regulations for the spot prawn fishery in a separate regulatory action through the California Fish and Game Commission.

Available catch and study data reveal that trawling activites for non-groundfish species result in the take of federal groundfish, including rockfishes. Thus, in order to conform to the federal regulation prohibiting the take of federal groundfish, these state managed trawl fisheries must also be restricted. Simply prohibiting landing of federal groundfish does not address the issue of take (and discard) of these species.

The proposed regulations prohibit trawling for prawn, shrimp, sea cucumber, and California halibut during times and in areas that retention of federal groundfish is prohibited. The current federal regulation which prohibits take and landing of federal groundfish (except for deep water species) is expected to be amended by October 1, 2002 to prohibit retention of federal groundfish in waters between 50 and 150 or 250 fms south and north of Point Reyes, respectively (see attached *Federal Register* notice). The restriction north of Point Reyes (through Oregon and Washington as well) is aimed at protecting darkblotched rockfish, another overfished groundfish species, in addition to bocaccio rockfish. When these depth restrictions are implemented it will allow California non-groundfish trawlers to resume fishing in waters inside and outside of the federal groundfish conservation zone with a provision for retention of federal groundfish (provided they do not fish in the groundfish conservation zone).

A provision is included in the proposed regulation that would allow trawlers to transport their catches of state-managed species through the no fishing zone provided no fishing gear is in the water.

Adopt new Section 175, Title 14, California Code of Regulations, as follows:

Section 175. Trawl Nets.

Notwithstanding any other provision of these regulations or the Fish and Game Code, trawling for, take, and possession of prawns, shrimp, sea cucumber, or California halibut is prohibited during those times and in those areas when retention of federal groundfish is prohibited pursuant to regulations adopted by the U.S. Secretary of Commerce pursuant to the Magnuson Fishery Conservation and Management Act and published in Title 50, Code of Federal Regulations (CFR), Parts 600 and 660, except that prawns, shrimp, sea cucumber and California halibut may be possessed if the vessel is transiting a closed area with no fishing gear in the water.

Authority: Section 7652, Fish and Game Code.
References: Sections, 8591, 8405.3 and 8830, Fish and Game Code.

TABLE 1. LANDED TRAWL BYCATCH OF GROUNDFISH (GRND) AND ROCKFISH (ROCK) IN THE CALIFORNIA HALIBUT, PRAWN, SEA CUCUMBER AND PINK SHRIMP FISHERIES, AND POUNDS AND VALUE OF THE LANDED TRAWL TARGET FISHERY PORT OF LANDING - CAPE MENDOCINO TO MEXICO BORDER

1. AT LEAST 1 POUND OF TARGET FISH IN THE LANDING

2001 POUNDS	GRND	ROCK	TARGET POUNDS	VALUE
CALIFORNIA HALIBUT	583,238	92,959	390,554	$ 1,105,966
PRAWN (SPOT, GOLDEN, RIDGEBACK)	27,135	8,127	554,016	$ 2,196,959
SEA CUCUMBER	463	96	250,810	$ 164,666
PINK SHRIMP	164	159	249,118	$ 88,141

2000 POUNDS	GRND	ROCK	POUNDS	VALUE
CALIFORNIA HALIBUT	623,768	116,360	345,465	$ 950,724
PRAWN (SPOT, GOLDEN, RIDGEBACK)	33,540	13,080	1,815,752	$ 3,934,832
SEA CUCUMBER	1,106	34	68,791	$ 48,084
PINK SHRIMP	3,375	259	375,712	$ 233,298

2001 VESSEL COUNT	GRND	ROCK
CALIFORNIA HALIBUT	66	35
PRAWN (SPOT, GOLDEN, RIDGEBACK)	29	23
SEA CUCUMBER	5	3
PINK SHRIMP	2	2

2000 VESSEL COUNT	GRND	ROCK
CALIFORNIA HALIBUT	63	35
PRAWN (SPOT, GOLDEN, RIDGEBACK)	43	33
SEA CUCUMBER	3	2
PINK SHRIMP	6	5

2. AT LEAST 50 POUNDS OF TARGET FISH IN THE LANDING

2001 POUNDS	GRND	ROCK	TARGET POUNDS	VALUE
CALIFORNIA HALIBUT	504,473	81,884	368,498	$ 1,031,753
PRAWN (SPOT, GOLDEN, RIDGEBACK)	29,668	6,512	550,515	$ 2,183,860
SEA CUCUMBER	252	50	250,036	$ 164,142
PINK SHRIMP	164	159	249,017	$ 88,079

misleading

2000 POUNDS	GRND	ROCK	POUNDS	VALUE
CALIFORNIA HALIBUT	496,307	88,642	331,034	$ 903,349
PRAWN (SPOT, GOLDEN, RIDGEBACK)	16,256	7,499	1,811,957	$ 3,917,689
SEA CUCUMBER	538	8	67,835	$ 47,235
PINK SHRIMP	3128	62	375,430	$ 232,931

2001 VESSEL COUNT	GRND	ROCK
CALIFORNIA HALIBUT	54	25
PRAWN (SPOT, GOLDEN, RIDGEBACK)	28	22
SEA CUCUMBER	4	2
PINK SHRIMP	2	2

2000 VESSEL COUNT	GRND	ROCK
CALIFORNIA HALIBUT	51	25
PRAWN (SPOT, GOLDEN, RIDGEBACK)	38	30
SEA CUCUMBER	3	1
PINK SHRIMP	3	2

CFIS 7-18-2002

Table 2. LANDED BYCATCH IN THE HALIBUT TRAWL FISHERY, 2001 ROCKFISH MARKET CATEGORIES PORT OF LANDING BELOW CAPE MENDOCINO AT LEAST 50 POUNDS OF HALIBUT IN THE LANDING (from Table 1).

MARKET	COMMON NAME	LBS
247	Rockfish, canary	421
249	Rockfish, vermilion	5744
250	Rockfish, unspecified	306
252	Rockfish, black	594
253	Rockfish, bocaccio	4024
254	Rockfish, chilipepper	58398
255	Rockfish, greenspotted	255
257	Rockfish, darkblotched	1550
259	Rockfish, yellowtail	584
267	Rockfish, brown	321
269	Rockfish, widow	1221
655	Rockfish, copper	4
663	Rockfish, bank	2726
664	Rockfish, rosethorn	27
665	Rockfish, blue	1
667	Rockfish, blackgill	135
956	Rockfish, group boc/chili	26
957	Rockfish, group bolina	344
959	Rockfish, group red	297
960	Rockfish, group small	33
961	Rockfish, group rosefish	2649
973	Rockfish, group nearshor	448
974	Rockfish, group shelf	57
975	Rockfish, group slope	1722
TOTAL		81,884

PORT SAN LUIS COMMERCIAL FISHERMEN'S ASSOCIATION
P.O. Box 513, Avila Beach, Ca. 93424

Aug.5, 2001
Arroyo Grande, Ca.

Dear Mr. Boydston;
This letter is in reference to the "Statement of Facts" mailed July 29, 2002 from Sacramento by the Dept. of Fish and Game. We have attached the cover page of same for reference.
Most fishermen did not receive that mailing until after the two day meeting of the Commission on Aug. 1 and 2, 2002. This prevented the fishers from giving adequate testimony and refute the statements made in that mailing.
In the second paragraph of the Fish and Game's "Statement of Facts", the sentence reads, " The halibut fishery landed more groundfish than halibut in both 2001 and 2002." This simply is untrue and could result in closure of a very important clean fishery.This would also trigger many illegal landings, for the current regulations prohibit more bycatch landings than halibut.

We believe the statistics furnished by the Department are misleading - because fish landings of A-Trawl permitted vessels were included. This is certainly not a true and factual picture of the directed halibut fishery. The high- rise trawl nets of the offshore fleet is far different than the paranzella type nets used for halibut and sea cucumbers. The bottom habitat for halibut is far different than that for rockcod.
Many times when an A-trawl permitted vessel is finishing it's offshore fishing trip, it will need to regulate it's time of arrival in port, for various reasons. Since they are crossing the halibut grounds, making a halibut tow or two is a good method of regulating their arrival. While this is legal under the current regulations, it does not mean that any rockfish were actually caught on the halibut grounds.
Because of the very harmful impacts to the halibut fishers, the coastal communities and the consuming public, we hereby respectfully request that the Department immediately research the information and delete all landings of A-trawl vessels, except those strictly targeting halibut. This then will present a true picture of the targeted halibut fishery.
We are supposed to manage the fishery with the best science available, not just numbers picked from a hat.
If the Commission truly wants to partner with the industry and others as written in their "Mission Statement", then we need a level playing field, not one biased by poor research.
We thank you for hearing our concerns, and for your immediate attention to this very serious matter. The Commission will be voting on the proposed regulations in the Aug.29 meeting at Oakland.

Respectfully submitted;
Port San Luis Commercial Fisherman's Assoc.

cc. Mr. Robert C. Hight
Mr. Robert Treanor
Dr. Isaacs P.F.M.C.
Mr. Jim Glock P.F.M.C.-Gap

[illegible] P. PSLCFA
Bill James V.P PSLCF.

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AUG 2 3 2002
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Kenyon Hensel
871 Elk Valley rd
Crescent City
CA
95531
707-456-6857
chensel1@earthlink.net

Two short observations.

As the council decides some of the severest restrictions ever placed on the west coast ground fish fisheries, I feel compelled to offer two short observations on how proposed regulations will affect current management policies.

1. Rebuilding plans have inherent contradictions. When fishermen are asked to reduce catch levels to rebuild stocks, the intention and results are to increase that stock, what do fishermen do as their interactions with these fish also increase. Recently I have been encountering more juvenile yellowtail rockfish in the near shore waters. There seems to be a good recent recruitment in yellow tail stocks in my fishing area. The same may soon be true with canary rockfish. When a species of fish has large protective set-asides in the form of closed areas. Fishermen should have areas where catch is not constrained by the fear of interacting with those stocks. Otherwise rebuilding plans simply put all fishermen at risk as stocks grow and interaction with that fish contributes to the closure of fishing effort

2. Allocation philosophy also changes with area closures of the magnitude being considered for next year. If commercial and sport effort is limited to inshore waters, then the states policy of relegating commercial fisheries offshore cannot be continued. Allocation must take into account the fact that consumers of commercially caught fish are users just as sport fishermen are. The resource must be allocated so that all users have access to what ever is deemed an allowable harvest.

Curry Marine
1211 S.E. Bay Boulevard
P.O. Box 610
Newport, Oregon 97365
(541) 265-7955
FAX (541) 265-4226

August 20 2002

Pacific Fishery Management Council
7700 N.E. Ambassador Place, Suite 200
Portland OR 97220-1384

Dear Council Member

I am a small business owner in Newport, Oregon located on the Central Oregon Coast. I am writing to express my concerns over the recent proposed groundfish cuts which will severely affect my business.

We sell and service marine diesel engines and equipment for the commercial fishing fleet. Our gross annual sales are in excess of 3 million dollars. I have estimated our annual revenue will drop by 25-35% if the proposed cuts become effective.

I ask the Council members to take into consideration, not only the economic impact on my business and employees, but the social and economic impact on our fishing community as well as the entire Oregon Coast when you make your final decision on groundfish quotas for 2002 and 2003.

Thank you for your consideration in this important matter.

Sincerely,
Scott Graf

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SCHIEWE MARINE SUPPLY
COMMERCIAL FISHING SUPPLIES
103 S.E. BAY BLVD.
NEWPORT, OREGON 97365
(541) 265-7382

PACIFIC FISHERY MANAGEMENT COUNCIL
7700 N.E. AMBASSADOR PLACE SUITE 200
PORTLAND, OR 97220-1384

DEAR COUNCIL MEMBER:

I AM A SMALL BUSINESS OWNER AND HAVE BEEN IN BUSINESS 29 YEARS, SUPPLYING THE COMMERCIAL FISHING INDUSTRY.

I WOULD LIKE TO EXPRESS MY CONCERNS OVER PROPOSED GROUNDFISH CUTS BASED ON INCOMPLETE DATA AND FEAR OF ECOLOGICAL PARANOIAL LAWSUITS.

THESE PROPOSALS SERIOUSLY AFFECT MY ABILITY TO PROVIDE EMPLOYMENT AND SUPPORT MY LOCAL COMMUNITY SUCH AS SPONSORING A LITTLE LEAGUE BASEBALL TEAM, SUPPORTING SCHOOL SPORTS THAT ARE ALREADY IMPACTED FROM LACK OF TAX BASED FUNDING.

FOR ECONOMIC REASONS THESE PROPOSALS SHOULD BE RECONSIDERED

SINCERELY
Roy Schiewe

Marine Discovery Tours™

August 23, 2002

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

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Dear Council Member,

I am a small business owner in Newport, Oregon, located on Oregon's central coast. I am writing to express my concerns over the recently proposed ground fish cuts which will severely affect my community.

Our family retired from the fisheries in the early 90's to venture into natural resource tourism. The narration aboard our cruise boats include updates on the latest news in the fisheries, as well as other coastal culture.

I attended a recent Chamber of Commerce meeting where the new director of the Hatfield Marine Science Center noted that much of the scientific data accumulated over the last couple of decades is considered "inconclusive". He said that incorrect science has led to incorrect management decisions that ends up on the fisherman's door step, making him look like the "bad guy".

I ask the Council to question this issue of "inconclusive data" when you make your final decision on ground fish quotas for 2002 – 03. Your decision will have a major impact on the social and economic picture of the fishing community as well as the entire Oregon Coast.

Thank you for your consideration on this important matter.

Sincerely,

Fran Mathews

Fran Mathews, President

345 S.W. BAY BOULEVARD · NEWPORT, OREGON 97365 · 541-265-6200 · 800-903-BOAT · FAX 541-265-6894
www.marinediscovery.com E-MAIL: captain@marinediscovery.com

21 August 2002
Dr. Hans Radtke
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220

RE: 2003 Pacific Groundfish Management Measures

Dear Mr. Radtke,

The Institute for Fisheries Resources (IFR) is a nonprofit organization affiliated with the Pacific Coast Federation of Fishermen's Associations (PCFFA). IFR works as a public service research and conservation organization to help protect marine and anadromous fishery resources.

While we are not commenting on the current management alternatives before the council, we are obviously concerned about their impacts on fishermen and the coastal communities they support. In response to this current crisis we would like to respectfully encourage the Council to use this opportunity to increase the amount of scientific study and knowledge of our marine resources.

Specifically, we propose that the Council increase the amount of experimental fishing permits (EFP), such as the EFP proposed for Steve Fitz at the June 2002 Council meeting for research using Scottish Seine gear. These permits, as long as they are carefully observed and well researched, enable fishermen, researchers, and managers to accurately assess different fishing methods and their impacts on fisheries resources.

In correlation with this we also would encourage the Council to help foster more cooperative research using fishermen's knowledge. Collaborative research

projects between fishermen and scientists can benefit all involved. Fishermen will be more likely to validate scientific studies in which their knowledge and expertise has played a part in shaping. Likewise, scientists can benefit from fishermen's knowledge of accessible areas, and be more likely to get a complete picture of what is happening in the ocean when collaborating with those individuals who are in the water the most. These research projects should also be enlarged to include representative samples from the entire area over which the Council has jurisdiction. It will be increasingly difficult to justify basing management decisions for the Pacific Coast on surveys that do not include samples from the entire Pacific Coast.

Lastly, we encourage the Council to increase stock assessments to an annual or semi-annual timeline. It is obvious from the current situation that the tri-annual approach is not satisfactory. There is too much time for a situation to escalate to a crisis when there is so much time between assessments. When using fishermen to help collect data and encouraging cooperative studies, there could be a continual presence of data collection throughout the year, allowing for this type of innovative methodology.

We encourage the Council to form and enhance a collaborative research committee that can help to foster these types of activities. We at IFR would be happy to help with this, as we are connected with both scientists and fishermen through our current work.

Thank you for this opportunity to comment. We appreciate all of the work that you are doing and understand the tough decisions you will be forced to make in the coming weeks. We hope that you will be able to create a model for increasing science and research collaborations to help our fisheries and the overall marine environment.

Thank you,

Ky Russell
Sustainable Fisheries Coordinator
Institute for Fisheries Resources
kr_ifr@pacbell.net

Troyer's Marine Supply
1244 S.E. Bay Blvd.
Newport, OR 97365
Phone: 541-265-6653
Fax: 541-265-5489

FAX TRANSMISSION 8/23/02

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Pacific Fishery Management Council
7700 N.E. Ambassador Place, Suite 200
Portland, OR 97220-1384

Dear Council Member:

I own a marine supply business in Newport, located on the Oregon Coast. I am extremely concerned about the recent proposed groundfish cuts, which will severely impact my business. This could cut our income by a third or more. There are dozen's of businesses that rely on the groundfish fleet. In addition, the hundred's of employee's of these businesses could be let go. The economic impact to the coastal communities will be devastating.

I ask the Council members to consider the people, jobs, and businesses that you are affecting with your decisions. Please do not let the questionable computer models and environmentalist lawsuits shut down our industry and livelihoods.

Thank you for you consideration in this important matter.

Sincerely,

Ed Troyer
Troyer's Marine Supply, Inc.

APEX
asia pacific environmental exchange

NRDC
THE EARTH'S BEST DEFENSE

The Ocean Conservancy

22 July 2002

Mr. Robert Treanor
Executive Director
California Fish and Game Commission
1416 Ninth Street
Sacramento, CA 94244-2090

Re: Spot prawn trawl fishery and bycatch

Dear Mr. Treanor:

We are writing on behalf of the Natural Resources Defense Council (NRDC), the Ocean Conservancy and the Asia Pacific Environmental Exchange (APEX). We want to commend the California Fish and Game Commission (the Commission) and the California Department of Fish and Game (the Department) for ensuring that the much needed analysis and summation of the spot prawn observer program data was completed. We look forward to receiving the final report, *Results of California Department of Fish and Game Spot Prawn Trawl and Trap Fisheries Bycatch Observer Program 2000-2001 (the Report),* in advance of the August 2, 2002 Commission meeting.

The *Report's* analysis and findings indicate that urgent action is needed to address the ecological and economic impacts of the spot prawn trawl fishery on overfished groundfish populations— an urgency heightened by the severity of the groundfish crisis. We urge the Commission to close the spot prawn trawl fishery within groundfish habitat to address the bycatch and potential habitat damage of this fishery, and to conform to the Pacific Fishery Management Council's (PFMC's) groundfish closure on California's continental shelf. If the fishery continues in any area, we recommend appropriate steps be taken to ensure that it fully complies with the Marine Life Management Act (MLMA).

Current management of the spot prawn fishery, particularly the trawl component, presents numerous management challenges and concerns. These include the destruction of critical habitat, the lack of ecosystem-based management, and a dearth of essential fishery information. In addition, the Department's *Report* indicates that the trawl component of the California's prawn fishery produces unacceptable bycatch levels despite the mandatory use of fish excluder devices, threatens the long-term viability and recovery of several vulnerable groundfish species, and clearly calls into question the fishery's compliance with several MLMA mandates. The MLMA demands information supporting management measures that conserve the health and diversity of marine ecosystems,[1] are sustainable and do not sacrifice long-term health for short-term benefits,[2] maintain and restore fishery habitat,[3] limit bycatch,[4] and minimize the adverse impact of fishery management on small scale fisheries and local economies.[5]

The PFMC recently took unprecedented management measures that resulted in a closure of the shelf south of Cape Mendocino to all groundfish fishing outside 20 fathoms (and to all trawling except for limited activity on the slope) for the remainder of this year. This is a direct result of the failure to stem the overfishing of West Coast groundfish populations and the need to avoid exceeding the rebuilding targets for boccacio rockfish. More extensive groundfish closures are under consideration for next year due to new evidence of deepening declines of yelloweye and additional rockfish species. The National Marine Fisheries Service has determined that nine of the 16 fully assessed groundfish species are overfished, and a scientific panel of the American Fisheries Society recently identified a number of these species as at risk of extinction. Furthermore, the status of most rockfish managed by the PFMC is "unknown". While regulatory recommendations have only looked at the 2002 and 2003 fishing seasons, extensive reductions in effort could be with us for decades. Scientists predict that it will take yelloweye rockfish over 100 years to recover; boccacio recovery is now estimated at 90 years.

The magnitude of this PFMC decision is such that virtually every fishery and economy along the coast will be affected. The rebuilding requirements of several groundfish species is expected to result in catch levels too low to accommodate their bycatch in other fisheries operating on the continental shelf and beyond. The implications of these restrictions become clear when one considers that the International Pacific Halibut Commission's annual survey is likely to incidentally take the whole allocation of yelloweye rockfish for next year, effectively shutting down every other West Coast fishery that takes yelloweye. The potential impact of the spot prawn fishery becomes even clearer when one considers that the 2003 boccacio limits are likely to be set between zero and 14 tons. By our calculation the Department's *Report* indicates that

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[1] See e.g., Fish and Game Code (FGC)§7050 (b) (1).
[2] See e.g., FGC §7056 (a)
[3] Id. at (b)
[4] Id at (d)
[5] Id.at (j).

approximately 5 metric tons of boccacio were incidentally caught in the 2000-01 season; this tonnage could amount to the entire California quota in 2003.

The severity of the groundfish declines—and their impact on fishing communities and the broader Pacific Ocean ecosystem—is unprecedented, and makes the spot prawn trawl fishery's impact on the ecology and economies of the West Coast untenable. It is imperative that the Commission take immediate action to close California's spot prawn trawl fishery. Under less dramatic circumstances than a groundfish shelf closure, we believe the mandates of the MLMA would also oblige the Commission to phase out this fishery. But given the current circumstances, we see no way to reduce groundfish bycatch to the necessary levels other than through an immediate closure of the trawl fishery in groundfish habitat. For the longer term, we would like to see the Commission initiate a public process that will lead to the development of a fishery management plan for spot prawn fishing that guarantees sustainability and ensures its compatibility with healthy ecosystems, most probably by developing a trap-only fishery.

Thank you again for your efforts to secure analysis and publication of the spot prawn observer data. We look forward to working with you to affect a sustainable course for California's spot prawn fishery. Please feel free to contact us anytime with concerns or questions. We look forward to speaking with you again in the near future.

Sincerely,

Karen Garrison
Senior Policy Analyst
Natural Resources Defense Council
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San Francisco, CA 94105
Tel: 415.777.0220
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kreyna@oceanconservancyca.org

cc: Dr. Don McIsaac, Executive Director, PFMC

FISHERMAN'S MARKETING ASSOCIATION
OF BODEGA BAY
P. O. Box 321, Bodega Bay, Ca. 94923

Pacific Fisheries Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR. 97220-1384

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PFMC

Dear Sirs,

I've fished salmon commercially for 25 years, mainly in central California waters (home port Bodega Bay). When I first started fishing it was almost impossible to keep from catching bottom fish. In fact, we tried to fish where we caught the fewest, because you couldn't catch a salmon if the hook was occupied by a cod. Over the years I've hooked fewer and fewer until in the last five years my contact with ground fish has shrunken to almost zero. My gear is in the waters fishing between forty and sixty days each year and with the exception of an occasional ling cod almost no other cod fish are being caught. I think the council is absolutely correct in taking drastic action to try and rebuild these endangered stocks. I worry though that the fallout may cause boats to shift to other fisheries causing serious over capitalization problems there (i.e. mainly crab and salmon).

George Boos

George Boos,
FMABB
Treasurer

dbf

SPORTFISHING ASSOCIATION OF CALIFORNIA

1084 BANGOR STREET
SAN DIEGO, CALIFORNIA 92106
(619) 226-6455 FAX (619) 226-0175

ROBERT C FLETCHER
PRESIDENT

W. A. NOTT
PRESIDENT-EMERITUS

August 26, 2002

Pacific Fishery Management Council
7700 NE Ambassador Pl., Suite 200
Portland, OR 97220-1384

Dear Chairman Radtke & Council members:

The Sportfishing Association of California (SAC) represents the majority of the commercial passenger fishing vessels (CPFVs) in southern California. Most of these vessels fish rockfish for a portion of the year, and many rely heavily on harvest of rockfish for their livelihood. SAC has the following comments on the 2003 rockfish regulations. As a top priority, SAC urges the Council to adopt an option with a 20-fathom closure for 2003 recreational rockfish angling regulations. There is scant justification for the more restrictive 10-fathom option, and it would most likely eliminate many small sportfishing operations that need some realistic access to rockfish for their survival, as well as create safety issues around the Channel Islands where boiler rocks are fairly common and can be killers.

FURTHER SAC COMMENTS ON THE OPTIONS:

A key area in the options is the "Nearshore Rec/Commercial Split". SAC questions why there was not an option that gave **more fish** to the recreational anglers? Historically, the commercial fishing sector accounted for 90-95% of the take of all rockfish species, and look where we are today! It seems only fair and equitable, therefore, that an option be included that allocates 90-95 % of the nearshore rockfish quota to recreational anglers. As an alternative, SAC could support the status quo.

Regarding bag limits, SAC supports the 10 rockfish bag, and we would like to depart from the written options for a minute to recommend that the Council consider allowing the take of up to four reds (Vermilion) within the 10 fish bag. This species of shelf rockfish is very abundant at present, and can be targeted in waters less than 20-fathoms. With no fishing in waters deeper than 20-fathoms, a huge de facto marine protected area for vermilion and other shelf species has been created! Allowing four reds in the bag would substantially reduce any transfer of effort onto the nearshore rockfish stocks, while not increasing the possible bycatch of bocaccio, as red rockfish can be found independent of the bocaccio.

SAC is also concerned about options that would close all rockfish take for up to 6 months. Nearshore stocks live in waters much deeper than 20-fathoms, and are therefore protected in that 'de facto closed area' that is gigantic! In southern California, fishing for nearshore rockfish during fall and winter months is often the difference in carrying passengers and being tied to the dock. While the numbers of passengers is most often modest, it provides a chance for crews to make a wage and for boat owners to pay a few of their ongoing bills. If it would make the difference between closure and opportunity, SAC would support a bag limit of 5 rockfish and 5 sculpin during the late fall and winter months as a way to minimize impact on those nearshore stocks. In addition, SAC would support a bag limit of three lingcod, with min. size at 22 - 24 inches.

In an effort to assist in documenting the abundance of rockfish (and bocaccio) that have been seen by the CPFV skippers over the last year or two south of Pt. Conception, SAC members met in July with Dr. Liz Clarke and Steve Ralston of NMFS, and are helping to design an at-sea hook and line survey. Progress is being made on that effort, and it is hoped that the first survey in 25 years will be conducted this fall. With the apparent abundance of these species in the southern California bight, SAC believes that this information will be a critical piece of any future bocaccio stock assessments.

Finally, SAC still has serious concerns regarding the use of MRFSS and its' phone survey of anglers (?) in California. We would strongly encourage NMFS to consider ways to eliminate this portion of the MRFSS and substitute a more focused list of anglers to survey.

Sincerely,

Bob Fletcher

Bob Fletcher, President

21 August 2002

Dr. Don McIsaac, Executive Director
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

RE: Proposed Management Measures for 2003 Pacific Groundfish Fishery

Dear Dr. McIsaac:

The Pacific Coast Federation of Fishermen's Associations (PCFFA) represents working men and women in the West Coast commercial fishing fleet. Most of the fishermen belonging to our member associations are either engaged in directed fisheries for species in the groundfish complex (e.g., rockfish in nearshore fisheries, sand dabs in trawl and seine fisheries, blackcod in longline fisheries) or are in fisheries that may have an incidental take of species in the groundfish complex (e.g., trawl fishery for California halibut). PCFFA wishes to make the following recommendations for the 2003 groundfish management measures:

Limited Entry Trawl and Fixed Gear

Given the restrictions that have already been imposed and the economic hardships that have befallen these fisheries, PCFFA recommends the least conservative fishery measures possible that are consistent with stock rebuilding plans, preventing overfishing, minimizing discards and protecting critical habitats. To that end, PCFFA recommends the expediting of experimental gear permits, with full observer coverage, for the purpose of:

1) Delineating areas where species of abundance may be targeted (e.g., sand dabs) with minimal or zero bycatch of species of concern (e.g., boccacio); and
2) Evaluating modified or alternative fishing gear (e.g., Scottish seine) for the purpose of developing more selective fishing gear.

In this regard, PCFFA further urges the Pacific Council recommend to the National Marine Fisheries Service that the experimental gear permit program be bifurcated, with the Northwest Region responsible for authorizing experimental fisheries offshore Washington and Oregon, and the Southwest Region given authority over all experimental fisheries offshore California. This would greatly assist in the expediting of the permits and provide for more effective control.

Exempted Trawl

For the area north of Cape Mendocino (40'10°N.Lat), we recommend Option 3, and for the area south we recommend Option 4. The reason for picking the least restrictive option for the area south of Cape Mendocino is that it is already heavily impacted by the cowcod closures and the restrictions on bocaccio.

Open Access

For the Open Access fishery, PCFFA recommends Option 3, except that for California, in waters inside of one mile or 20 fathoms, whichever is farthest from shore, the State be delegated management authority pursuant to a Nearshore Fishery Management Plan, under the following caveats:

1) Viable commercial and recreational fisheries in the nearshore areas be provided for;
2) Regional management of the fishery with not less than four regions (i.e., Oregon border to Cape Mendocino, Cape Mendocino to Ano Nuevo, Ano Nuevo to Point Conception, Point Conception to the Mexican Border);
3) TACs and an OY for all managed species;
4) Limited access commercial fishery; and
5) Such other measures that are consistent with the national standards in the Magnuson-Stevens Act and that do not conflict with the Council's management measures for groundfish in the EEZ.

Recreational Fishery

For California, either Option 2 or Option 3, and a delegation of management authority to the State to manage the nearshore waters pursuant to the recommendations above for the commercial Open Access fishery.

Salmon Troll Fishery

For the salmon troll fishery in ocean waters off the three states, PCFFA recommends a prohibition only on the sale (retention required, but proceeds of sale would go to a conservation fund, not to the fisherman) of canary, yelloweye and bocaccio. The retention and sale of Pacific halibut would continue to be allowed.

Other Measures

PCFFA recommends the Council put in place a program for the full retention of all fish taken in the groundfish fishery, with a requirement that all prohibited species become property of the National Marine Fisheries Service with the proceeds from the receipt of the sales of those prohibited species to be deposited into a groundfish conservation fund to offset enforcement and research costs associated with the fishery (such as proposed above for the salmon troll fishery). A full retention program will allow for a full accounting of all fish taken in the fishery.

Finally, PCFFA urges the Pacific Council, when it submits its recommendations to the Secretary for approval, that it **emphatically** request:

1) Administration support for a government funded, wholly or partially, Pacific groundfish vessel/permit buyback program. This is consistent with the Council's recommended reduction of fishing capacity in this fleet by 50 percent and essential for the Council both to meet its mandates for rebuilding stocks while providing for economically viable fisheries.
2) Funding and administrative support from Commerce for semi-annual stock surveys (not tri-annual) that would include provisions for cooperative research utilizing fishermen and their vessels from the groundfish fishery; and
3) Reallocation of Saltonstall-Kennedy Act fishery development funds from subsidy programs for aquaculture (much of this is currently for non-sustainable forms of aquaculture and/or programs competing with existing U.S. fisheries) to assistance with development of more selective fishing gear for the groundfish fishery.

If you, members of the Council, or staff have any questions regarding these comments on the proposed 2003 groundfish management measures, please do not hesitate to contact our office. It is our understanding these comments will be made available for council members and public review and will become part of the administrative record. Your attention to this matter is appreciated.

Sincerely,

W.F. "Zeke" Grader, Jr.
Executive Director

Subject: Public Comment for Supp BB
From: "Donald McIsaac" <Donald.McIsaac@noaa.gov>
Date: Tue, 03 Sep 2002 17:22:57 -0700
To: "Porter Carolyn" <carolyn.porter@noaa.gov>
CC: "DeVore John" <John.DeVore@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <donald.mcisaac@noaa.gov>
Received: from noaa.gov ([65.215.224.18]) by mercury.akctr.noaa.gov (Netscape Messaging Server 4.15 mercury Jun 21 2001 23:53:48) with ESMTP id H1W15E00.73Q; Tue, 3 Sep 2002 17:24:50 -0700
Message-ID: <3D755261.16957C94@noaa.gov>
Organization: Pacific Fishery Management Council
X-Mailer: Mozilla 4.7 [en] (WinNT; U)
X-Accept-Language: en,pdf
MIME-Version: 1.0
Content-Type: multipart/mixed; boundary="------------584509514473D256C600EA34"

-------- Original Message --------
Subject: Fwd: Balanced Fisheries Management
Date: Tue, 03 Sep 2002 08:53:05 -0700
From: PFMC Comments <pfmc.comments@noaa.gov>
To: donald.mcisaac@noaa.gov
CC: jennifer.gilden@noaa.gov

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Balanced Fisheries Management
From: "Gary Brunner" <beaubosco@teleport.com>
Date: Fri, 30 Aug 2002 20:05:04 -0700
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <donald.mcisaac@noaa.gov>
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Message-ID: <3D755261.16957C94@noaa.gov>
Organization: Pacific Fishery Management Council
X-Mailer: Mozilla 4.7 [en] (WinNT; U)
X-Accept-Language: en,pdf
MIME-Version: 1.0
Content-Type: multipart/mixed; boundary="------------584509514473D256C600EA34"

I am responding to encouragement by the Newport News-Times to provide comments regarding fisheries controls which may be established/updated by the Pacific Fishery Management Council.

We have lived in Newport since buying a residence here in 1996. Since we're retired, we have no agenda regarding economic benefits. We chose Newport because of the variety of its attractions. The largest city on Oregon's coast, it has both an historic beach and an historic bay front. It is a major tourist mecca. However, it is also a viable commercial fishing harbor. Something of Newport is lost if any of those attributes is compromised. The City, and the private investment community, has done a great deal to enhance its infrastructure. An example is the restoration of Nye Beach to a pedestrian-friendly, vibrant community. The new recreation center, and restoration/redesignation of the new City Hall are also indicative of the direction in which this community is heading. Regardless of how each of us views the details of these developments, it is unquestionable that the focus of Newport has been one of self-improvement.

Both the fishing and logging industries have suffered in recent years. I was raised in Grants Pass on the income of my logger father, so I am sensitive to the plight of those who depend upon the harvesting of our natural resources. Unfortunately, my father logged without a thought to replanting or ecology or the environment or the future. Not that he was a bad man. In fact, he was a very good man. He just didn't realize the larger picture. If he had, and others like him, perhaps the logging industry wouldn't be as restricted as it is today.

It is clear that mankind has been guilty of irresponsibly exploiting our natural resources -- perhaps to the point of creating larger problems for ourselves. Therefore, we need to be cognizant of the ramifications of our harvesting, and reign ourselves in from time to time if circumstances warrant it.

That said, I also believe that we, all too frequently, allow the "pendulum to swing" too far in the other direction. As a reaction to something we may have been doing that we finally figure out may cause problems, all of a sudden we make a 180 degree turn. I think this "about turn" can often perturb and complicate the situation further.

I urge the Council to exercise restraint in its deliberations. A balanced, moderate approach to bringing the fisheries back into health would probably benefit not only the environment, but the countless people who depend, directly and indirectly, upon a sustainable harvest. We like Newport's commercial, as well as recreational, attributes. I think that a viable fishery is an integral part of what Newport is. I don't pretend to understand all of the variables which the Council must consider, and I apologize if my position appears too simplistic. But, please consider all aspects of the situation and avoid drastic measures unless absolutely necessary.

Thank you,

Gary Brunner
Newport

Subject: Fwd: Comments on Groundfish Proposals
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Tue, 03 Sep 2002 14:00:32 -0700
To: john.devore@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
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Message-ID: <275c2d27989e.27989e275c2d@mercury.akctr.noaa.gov>
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MIME-Version: 1.0
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X-Accept-Language: en
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Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Comments on Groundfish Proposals
From: "MCCULLOCH,MARK (HP-Corvallis,ex1)" <mmcculloch@hp.com>
Date: Tue, 3 Sep 2002 12:02:00 -0700
To: "'pfmc.comments@noaa.gov'" <pfmc.comments@noaa.gov>
CC: "MCCULLOCH,MARK (HP-Corvallis,ex1)" <mmcculloch@hp.com>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
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Message-ID: <275c2d27989e.27989e275c2d@mercury.akctr.noaa.gov>
X-Mailer: Netscape Webmail
MIME-Version: 1.0
Content-Language: en
X-Accept-Language: en
Content-Type: multipart/mixed; boundary="--41d498d488b2716"

To: PFMC

From: Mark McCulloch
2575 NW Windsor Place
Corvallis OR 97330

Subject: Comments on Groundfish Proposals

Date: 3 September, 2002

Dear PFMC Staff,

I am a concerned sportfisher in Oregon. I have been closely following the developments regarding groundfish, especially the plight of yelloweye & canary rockfish and the impact on other fishing opportunities. I have some specific feedback regarding the proposed options. But first I want to emphasize that, whatever decisions are made, I urge you to give due preference to the sport fisheries. Doing what's best for "the greater good of society" aligns with sport fishing opportunities first, commercial fisheries second.

I refer to the proposals listed on your website at: http://www.pcouncil.org/groundfish/gfcurr.html , "Harvest Levels, Management Measures Proposed for 2003 <gfcurr/gfpropsd03.html> "

1. Under "Oregon Recreational Options", I favor option 3, primarily because options 2 and 3 shut off the deeper water access. It's not that we want to target or keep any canary or yelloweye, it's that other fishing opportunities exist here for healthy stocks, such as yellowtail rockfish. Closing off this area denies us access to yellowtail, while other commercial options allow the take of thousands of pounds of yellowtail. This is not fair at all.
2. For recreational halibut, I favor option 3, only because I believe it is unnecessary to prohibit halibut fishing in deep water and at Stonewall Bank in order to substantially prevent by-catch of yelloweye and canary. From my own experience and from conversations with charter boat operators, very few yelloweye or canary are taken while targeting halibut in the areas off of Newport and Depoe Bay.

3. Regarding a possible prohibition of salmon mooching: I believe this idea has not been thought out very well (no disrespect intended to whomever came up with it). When mooching for salmon, one usually lets out 30 to 60 feet of line, sometimes deeper, but rarely more than 100 feet. The concern for keeping gear off the bottom to avoid yelloweye and canary has very little overlap with salmon mooching. If you really want to ensure that salmon moochers avoid yelloweye & canary, we should be looking at gear restrictions such as a maximum weight size (i.e. 8 ounces) while drift fishing in the depth range of concern (20 - 50 fathoms).

I personally would be very willing to participate in any validation efforts of gear restrictions, and I would support observer programs. I understand that Oregon Sea Grant might have the resources to investigate such "experimental gear", so I would be happy to approach them about this. I would ask that the PFMC open their minds to the idea of sport gear restrictions as a way to keep sport fishing opportunities open while satisfying the objective of minimizing impact to yelloweye and canary.

Thank you for your time and consideration.

Respectfully,

Mark McCulloch

PFMC Comments
<pfmc.comments@noaa.gov>

Subject: Fwd: 2003 West Coast Groundfish Management Public Coments
From: "PFMC Comments" <pfmc.comments@noaa.gov>
Date: Tue, 03 Sep 2002 08:53:29 -0700
To: john.devore@noaa.gov
CC: john.coon@noaa.gov

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Return-Path: <pfmc.comments@noaa.gov>
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Content-Language: en
X-Accept-Language: en
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Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: 2003 West Coast Groundfish Management Public Coments
From: "Mark Turley" <mturley@attbi.com>
Date: Sat, 31 Aug 2002 23:23:26 -0700
To: <pfmc.comments@noaa.gov>

X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
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Content-Type: multipart/mixed; boundary="--11a774402002172"

August 31, 2002

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

RE: 2003 West Coast Groundfish Management

Dear Council Members,

I am a private Oregon Sportsfisher who participates in both the nearshore and offshore fisheries. I believe that private and Charter recreational fishers provide huge economic benefits to our coastal communities while harvesting fish in a non-habitat damaging way and with minimal bycatch. I believe that the rockfish problems we are seeing today are a result of Commercial over-harvest and bycatch.

I urge the Council to stop the Commercial destruction of fish habitat and the Commercial over-harvest and bycatch of fish stocks. This can be accomplished by restricting Commercial gear and activities that are non-selective and which destroy fish habitat, and by reducing harvest levels. I trust that the Council will do what is necessary to prevent the complete collapse and shutdown of our offshore goundfishing, both Commercial and Recreational.

For recreational fishers, the Council should enact rules which both protect and enhance the existing stocks while still providing for continued sports fishing opportunity for offshore groundfish. In the Council's Oregon Recreational Options, it appears that Option 3 is basically a status quo option. If this option is sufficient to adequately protect and rebuild our Commercially depleted rockfish populations, then this option is obviously the best option for recreational fishers. This option is good for the sportsfisher, while at the same time giving the Council the ability to implement inseason closures if necessary.

If Option 3 is inadequate to rebuild the depleted populations, then the Council will look at Option 1 or 2. I believe that these options are too restrictive. I would rather see a recreational limited entry system where I could get a permit to fish groundfish offshore maybe 3 or 4 times per summer with daily catch limits similar to those we have now. This would reduce and limit the fishing pressure and bycatch on depleted species while still giving me some opportunity to fish offshore during the summer months.

In the future, I would like to see the Council (in cooperation with ODFW and NMFS) investigate the feasibility of recreational gear modifications and restrictions that would be effective to harvest selected species while eliminating or greatly reducing bycatch of depleted species.

I know these are very difficult times for the Council and you have some very serious decisions to make. Please do what is required to protect recreational fishing opportunities now and for future generations.

Thank you for your consideration.

Sincerely,

Mark Turley
1857 NW Scenic Dr.
Albany, OR 97321
(541) 715-6548

PFMC Comments
<pfmc.comments@noaa.gov>

21 August 2002
Dr. Hans Radtke
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220

RE: 2003 Pacific Groundfish Management Measures

Dear Mr. Radtke,

The Institute for Fisheries Resources (IFR) is a nonprofit organization affiliated with the Pacific Coast Federation of Fishermen's Associations (PCFFA). IFR works as a public service research and conservation organization to help protect marine and anadromous fishery resources.

While we are not commenting on the current management alternatives before the council, we are obviously concerned about their impacts on fishermen and the coastal communities they support. In response to this current crisis we would like to respectfully encourage the Council to use this opportunity to increase the amount of scientific study and knowledge of our marine resources.

Specifically, we propose that the Council increase the amount of experimental fishing permits (EFP), such as the EFP proposed for Steve Fitz at the June 2002 Council meeting for research using Scottish Seine gear. These permits, as long as they are carefully observed and well researched, enable fishermen, researchers, and managers to accurately assess different fishing methods and their impacts on fisheries resources.

In correlation with this we also would encourage the Council to help foster more cooperative research using fishermen's knowledge. Collaborative research

projects between fishermen and scientists can benefit all involved. Fishermen will be more likely to validate scientific studies in which their knowledge and expertise has played a part in shaping. Likewise, scientists can benefit from fishermen's knowledge of accessible areas, and be more likely to get a complete picture of what is happening in the ocean when collaborating with those individuals who are in the water the most. These research projects should also be enlarged to include representative samples from the entire area over which the Council has jurisdiction. It will be increasingly difficult to justify basing management decisions for the Pacific Coast on surveys that do not include samples from the entire Pacific Coast.

Lastly, we encourage the Council to increase stock assessments to an annual or semi-annual timeline. It is obvious from the current situation that the tri-annual approach is not satisfactory. There is too much time for a situation to escalate to a crisis when there is so much time between assessments. When using fishermen to help collect data and encouraging cooperative studies, there could be a continual presence of data collection throughout the year, allowing for this type of innovative methodology.

We encourage the Council to form and enhance a collaborative research committee that can help to foster these types of activities. We at IFR would be happy to help with this, as we are connected with both scientists and fishermen through our current work.

Thank you for this opportunity to comment. We appreciate all of the work that you are doing and understand the tough decisions you will be forced to make in the coming weeks. We hope that you will be able to create a model for increasing science and research collaborations to help our fisheries and the overall marine environment.

Thank you,

Ky Russell
Sustainable Fisheries Coordinator
Institute for Fisheries Resources
kr_ifr@pacbell.net

www.pcouncil.org Councilmembers, Management Staff and Supporting Scientists,

I wish to express serious caution to the Council in pursuing broadbased fishery closures. Broadbased fishery closures can only support the concept of a regulation experiment. My concerns are over the scientific information, the regulation implications and the accountability of the Council to the communities affected.

Lack of Supporting Science

The Council does not have the best available science if it makes references to the nearshore waters north of Point Conception (Humbolt Current) based on stock assessments completed south of Point Conception (Southern California Bight). These are vastly different waters, with different currents. One is composed of a strong upwelling current (supporting Pacific whiting migration), the other contains a strong downwelling area (supporting Pacific Whiting recruitment). Boccacio, are not migratory species, instead rockfish maintain hydrogeographical containment through basin containment and recruitment. Assessments in San Francisco on recruits do not apply to assessments in San Luis Obispo for rockfish species.

Lack of landings of a specific species (Boccacio) should not be the only way to consider the health of a population. Comparisons from landings from 1970 to 2002 do not identify the condition of the fish but do identify less fish retained. At present Boccacio are not favored by processors due to lesions and worms in their flesh. Nowhere is there information from markets to identify if these species are targeted or if they are incidental catch. If Boccacio are incidental catch, then the council has access to information to reduce the amount of incidental catch in nearly all fisheries. Harvesters also have methods of moving and relocating to avoid incidental catch. Such unmarketable catch will not be harvested or landed or included in the catch.

Management Implications

In the Proposed Nearshore Fishery Restricted Access Program Timeline, dated 13 September 2001, There is no plan for:

1) re-assessment of over-restrictive or un-substantiated management policies,
2) modification as science becomes available,
3) ammendments to this regulation experiment, or
4) action on this fishery closure beyond April 2003.

For how long should harvesters, processors, and fishery communities hold onto their capital assets with the expectation that perhaps, someday, they may resume the noble livelihoods they once had? It is up to the Council, management staff and supporting scientists to identify future expectations for coastal communities. Local governments and land use management must make decisions for directly related coastal uses in the very communities affected by these broadbased closures to protect specific species.

It is in the harvesters interest to inform themselves of the merits of ownership of natural resources. However, the learning process takes time and there are many fears of loss of power to overcome. The environmental community has educated itself and favors ITQ's.

Fishing Communities

I may not change your minds, but I challenge the Council, management staff and supporting scientists to be accountable for their actions and to ensure they:

1) Identify the financial, economic and social impacts to communities threatened by these closures. Identification from the harvesting level, ports and processors, the community level and the planning agencies of these communities for their future,

2) Pursue Quality Information exchange on management options with tradeoffs – transfer the knowledge of the future benefits of transferrable quota shares in the fishery and hold yourselves responsible for the potential loss of livelihoods, and upsetting historical community structure,

3) Continue to identify additional sources of fish population threats including entrainment by power generation plants, pollution (heat, chemical, erosion) and lack of recruitment of these nearshore rockfish species for the last 25 years. Recruitment of these species are not necessarily density dependent, but may be susceptible to environmental conditions unrelated to the spawning population.

In supporting these closures and not addressing the broader issues of recruitment, pollution and entrainment by power generation plants along the coast, the Council succumbs to the increasing public opinion. Public opinion has preached that the harvest of our oceans is out of control and that harvesters have raped, pillaged and plundered our nearshore waters. Such attitudes reduce a once noble profession into criminals. This reasoning is unacceptable and I challenge the Council to make this distinction.

In San Luis Obispo county there exist a group of informed professionals capable of working with the harvest, the science, the economics, the social and local governmental issues directly and indirectly affected by these closures. It is important you do not shut these people out of your circle of information, your scientific committees, your social and economic discussions. These people can work with the Council and our community and should be given the respect of local knowledge and open communication. Do not shut them out of your public process. These people have been a part of the process and continue interest and are willing to participate. They are: Steve Rebuck, Bill James, Caroline Pomeroy, and Monica Hunter. You have testimony from each of them, each is a professional and each is interested in the better welfare of San Luis Obispo County and its coastal residents, harvesters, processors and port dependent businesses.

Charmaine Gallagher
Interested Citizen and consumer of fish!

APEX
asia pacific environmental exchange

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NRDC
THE EARTH'S BEST DEFENSE

The Ocean Conservancy

August 27, 2002

Mr. Robert Treanor, Executive Director
California Fish and Game Commission
1416 Ninth Street
Sacramento, CA 94244-2090

Re: Spot prawn trawl fishery closure (agenda item #17)

Dear Mr. Treanor and Fish and Game Commissioners:

The Natural Resources Defense Council (NRDC), the Ocean Conservancy, and the Asia Pacific Environmental Exchange (APEX) support the proposed emergency closure of the spot prawn trawl fishery. We ask the Commission to immediately take emergency measures to prohibit prawn trawling for the next two months in addition to the normal November through January closure for prawn-spawning. During that time, we urge you to conduct a rulemaking to permanently close the spot prawn trawl fishery.

A closure of this fishery is scientifically based, legally justified, and ecologically imperative. In short, it is good public policy. DFG recently completed a report[1] that reveals very high bycatch in this fishery, including significant amounts of overfished rockfish. Catches of bocaccio, one of the bycatch species, have already exceeded rebuilding targets for 2002. Unlike the trap fishery, members of the spot prawn trawl fleet have failed to initiate a limited entry program, leaving the fishery wide open to displaced groundfish trawlers seeking opportunities to keep fishing. Any resulting increase in effort could push bycatch levels even higher this year.

Fortunately, there is an alternative—the spot prawn *trap* fishery—that has minimal bycatch and shows every indication of being sustainable if managed appropriately. Given the availability of cleaner and less damaging alternatives to trawls, the dire situation of groundfish, the fact that bocaccio catch levels have already been exceeded this year, the vulnerability of this fishery to

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[1] See California Department of Fish and Game, 2002, *Results of California Department of Fish and Game Spot Prawn Trawl and Trap Fisheries Bycatch Observer Program 2000-2001.*

effort increases, and the virtual certainty that rockfish catches will be further cut next year, we believe emergency action and long-term closure of the prawn trawl fishery are the soundest course you can take at this time.

As you know, the Commission has been evaluating the viability of this fishery for several years, and participants in the fishery have been well aware of that fact. Almost three years ago, you considered a proposal to phase out the trawl fishery and help convert it to traps. Instead of choosing that option in 1999, you required fish excluder devices on trawls and an observer program funded by the trawl and trap fleet, in the interest of making sure your decisions were based on sound science. The results of that program were significant and unequivocal: they reveal that in the study period of 2000 to 2001, *while using mandatory fish excluders* or net configurations considered their equivalent, *the southern prawn trawl fishery caught over 20 pounds of bycatch (including depressed groundfish species) for every pound of spot prawns, and the northern fishery caught about 9 pounds for each pound of prawns.*

Those numbers are stunningly high, and they make a persuasive scientific case for moving to a trap-only prawn fishery. In the Gulf of Mexico shrimp fishery, ratios of 4 or 5 lbs of bycatch to 1 lb of shrimp made this fishery infamous for harmfully high bycatch. Public scrutiny compelled the adoption of bycatch reduction devices aimed at reducing those levels by 60 percent. Bycatch in the California prawn trawl fishery is double to more than quadruple the unacceptable levels in the Gulf.

The possibility has been raised that different excluder devices, specifically those used in the Oregon pink shrimp fishery, could be more effective than those currently used by prawn trawlers. However, pink shrimpers use fairly high-rise nets because pink shrimp rise up off the mud bottom. Spot prawns behave differently and live in a variety of habitats, making it unlikely that the same gains could be realized. And even if those devices did work here, bycatch of rockfish would still be an order of magnitude higher than in traps, and the risk of catching overfished rockfish would continue to be high.

In addition, trawl gear has been shown in other regions to damage the kinds of habitat structures that are essential to groundfish. A National Research Council report released this year[2] found that stable communities of low mobility, long-lived species are more vulnerable to acute and chronic physical disturbance than are short-lived species in changeable environments. The report concluded that significant habitat alterations by trawls potentially alter the composition and productivity of fish communities that depend on seafloor habitats for food and refuge. Rockfish are examples of the long-lived, low-mobility species whose habitat is most vulnerable to these types of disturbance, and the substantial numbers of them caught by prawn trawls suggest that trawlers are affecting rockfish habitat. In addition, a study of trawling in Monterey Bay shows that repeated trawling can reduce biological diversity.[3]

The Commission clearly has the ability to take protective action immediately, using your authority under state law to regulate spot prawn trawls (California Fish & Game Code Sec.8842) and the Marine Life Management Act's requirements (F&G Code Sec.7056). In addition, federal emergency regulations that took effect in July of this year declare it prohibited to "take and retain, possess, or land groundfish" with exempted trawl gear south of 40 10' N lat. In applying that

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[2] National Research Council, 2002. *Effects of Trawling and Dredging on Seafloor Habitat,* National Academy Press.

[3] See Engel, Jonna and Rikk Kvitek, 1998. *Effects of Otter Trawling ion a Benthic Community in Monterey Bay National Marine Sanctuary*, Conservation Biology V 12, N 6

language to groundfish trawls, limited entry fixed gear, open access gears, and recreational hook and line vessels that catch groundfish, managers have interpreted it to require closure of those fisheries on much of the California shelf, not continuation of fishing with forced discard of vulnerable species. The same interpretation should apply to spot prawn trawls, for similar reasoning—the need to reduce mortality of groundfish, rather than reducing landings while dead fish are shoveled over the side.

To achieve the goal of conserving the health and diversity of marine ecosystems and marine living resources, the MLMA requires that commercial fisheries be managed with objectives including the following: limit bycatch to acceptable types and amounts; base decisions on best available scientific information, and rebuild depressed fisheries. We discuss below why the prawn trawl fishery is inconsistent with these objectives.

Limit bycatch to acceptable levels. Bycatch observed in prawn trawling is unacceptable because:

- It involves significant amounts of depleted groundfish, including bocaccio, lingcod, darkblotched and widow rockfish, and hake. For bocaccio, the estimated annual bycatch of 5 metric tons for spot prawn trawls could well exceed the total allowable mortality for next year, in which case this fishery will undermine, not support, the rebuilding of this depressed species. Because bocaccio is a candidate for listing under the Endangered Species Act, perpetuation of this wasteful catch could increase the risk of extinction.
- The rates of bycatch are extremely high, and levels of groundfish and invertebrates suggest that this fishery impacts groundfish habitat.
- Alternative gears already in use catch spot prawns with minimal bycatch.
- Fundamental equity concerns are raised by allocating a substantial part of the quota of an overfished rockfish to waste in a fishery for which clean alternatives are available, while shutting down less damaging gears like hook and line.

Base decisions on science. The Commission now has scientific information it lacked three years ago, and that information points in a clear direction. We believe the Pacific Council's refusal to stop year-round groundfish trawling, instead confining less damaging hook and line gears to shorter and shorter seasons, contributed to the severity of the current crisis. We hope you will take a different course, based on the ample evidence of unacceptable impacts of prawn trawling on groundfish.

Rebuild depleted populations. During the years since the Commission last considered measures for this fishery, the condition of several depleted groundfish species affected by spot prawn trawling has worsened, and new species have been added to the overfished list. The Council, the National Marine Fisheries Service (NMFS), and the state have now taken emergency measures to rebuild these species; to do so they have closed groundfish trawl and commercial and recreational hook and line bottom fisheries across most of the California shelf. To stay within rebuilding targets, *mortality*, not just landed catch, must be kept under certain limits. Allowing continued spot prawn trawling as long as bocaccio are thrown overboard dead would undermine rebuilding programs and undercut the actions taken in other fisheries.

The continuation of this fishery in its current form appears contradictory to sustaining healthy ecosystems, while the trap fishery appears conducive to sustainable management. We have focused here on groundfish impacts, but we also have concerns about the status of spot prawns. There is no stock assessment, little fishery information, no quota and no effort limitation. The trawl fleet may threaten not only groundfish, but also the viability of the spot prawn population and an otherwise sustainable trap fishery.

Can the Commission help trawlers make a transition to more sustainable fishing methods? About 20 operators landed over 1000 lbs in this fishery in 2000, and fewer still make a substantial part of their living from this fishery. Some of those have permits in other fisheries. There may be a way to help trawl participants, particularly those with a long history in the fishery and few alternatives, convert to traps without undermining the very necessary access restrictions of the current trap fleet. If the Commission decides to pursue such a program, we recommend that no more than five to ten experimental fishery permits be issued for that purpose with conditions designed to ensure full compliance with MLMA. Fees for the permits should cover the costs of the program, gear use should be restricted to traps in areas not fished by the existing trap fleet, and vessel monitoring systems or observers should be required on each boat to track fishing locations and minimize impacts on the existing trap fleet.

Under less dramatic circumstances than a groundfish shelf closure, the mandates of the MLMA would, in our view, oblige the Commission to phase out this fishery. But given the current circumstances, we see no way to reduce groundfish bycatch to the necessary levels other than through an immediate closure of the trawl fishery in groundfish habitat. For the longer term, we think the state will be best served by a trawl closure and a public process aimed at developing a spot prawn management plan that ensures this fishery's compatibility with healthy ocean ecosystems. We look forward to working with you toward a sustainable course for California's spot prawn fishery. Please feel free to contact us anytime with concerns or questions.

Sincerely,

Karen Garrison, NRDC
71 Stevenson, Suite 1825
San Francisco, CA 94105
Tel: 415.777.0220

Cristina Mormorunni, APEX
P.O. Box 9295
Santa Fe, NM 87504
Tel. 505.466.4696

Karen Reyna and Doug Obegi
The Ocean Conservancy
116 New Montgomery Street, Suite 810
San Francisco, CA 94105
Tel: 415.979.0900

cc: Robert Hight, Director, DFG
Dr. Don McIsaac, Executive Director, PFMC
Bill Robinson, National Marine Fisheries Service

SALMON HARBOR MARINA

A Department of Douglas County and Port of Umpqua

"SERVING OUR COMMUNITY WITH PRIDE"

August 30, 2002

Dr. Hans Radtke
Chair
Pacific Fisheries Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR. 97220-1384

RE: Proposed Regulations for Rockfish and Related Species

Dear Chairman and Council Members:

Please accept this letter on behalf of Salmon Harbor Marina and the many businesses in our community that benefit from the rockfish industry.

As one of the largest marinas on the Oregon coast, we stand united with local regional efforts to approach this issue in a reasonable manner. We are not scientists nor can we refute the fact that certain rockfish species are suffering. At this time, we do know the economic results of fishing closures on our economy. The economic impact of the decision regulating Coho is well documented. Whenever the quota is increased the economy thrives. The same is true of the rockfish industry. We support any option or alternative that would allow the commercial fleet to continue operating.

With regards to our recreational fleet and charter boats, we believe our marina is being discriminated against with the arbitrary 27-fathom line. We do not have the luxury of a reef within 27 fathoms as most boat fleets do on the Oregon coast. Our closest reef is six miles out.

We ask for an exception in the regulations for our recreational and charter boat fleet in Winchester Bay to operate beyond the 27-fathom line in order to have access to our nearest fishery reef which is six miles away and beyond the 27-fathom line.

P. O. Box 1007, Winchester Bay, Oregon 97467 - Office (541) 271-3407 • FAX (541) 271-2060

Thank you. We understand that these are difficult decisions but for the benefit of all our coastal communities we respectfully ask that you consider the economic impacts.

Sincerely,

Jeff Vander Kley

Jeff Vander Kley
Harbor Manager

c: Salmon Harbor Management Committee

Washington Mutual

August 26, 2002

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Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

Dear Council Member:

I am a business manager at Washington Mutual Bank in Newport, Oregon located on the Central Oregon Coast. I am writing to express my concerns over the recent proposed groundfish cuts which will severely affect my business. Many of our banking customers are dependent on the fishing industry to continue to support their livelihood.

I ask the Council members to take into consideration, not only the economic impact on my business, but the social and economic impact on our fishing community as well as the entire Oregon Coast when you make your final decision on groundfish quotas for 2002 and 2003.

Thank you for your consideration in this important matter.

Sincerely,

Rick Patino

Rick Patino
Manager
Newport Financial Center

Newport
Financial Center
150 N.E. 20th Street
P.O. Box 948
Newport, OR 97366-0071
phone 541.265.4571
fax 541.265.2336

Subject: [Fwd: Public Comment for Supp BB]
Date: Wed, 04 Sep 2002 16:02:31 -0700
From: "Carolyn Porter" <Carolyn.Porter@noaa.gov> Internal
Organization: Pacific Fishery Management Council
To: Carolyn Porter <Carolyn.Porter@noaa.gov>

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384
Phone: 503-820-2280
Fax: 503-820-2299
Toll-Free: 1-866-806-7204
On the web at: http://www.pcouncil.org

Subject: Balanced Fisheries Management
Date: Fri, 30 Aug 2002 20:05:04 -0700
From: "Gary Brunner" <beaubosco@teleport.com>
To: <pfmc.comments@noaa.gov>

I am responding to encouragement by the Newport News-Times to provide comments regarding fisheries controls which may be established/updated by the Pacific Fishery Management Council.

We have lived in Newport since buying a residence here in 1996. Since we're retired, we have no agenda regarding economic benefits. We chose Newport because of the variety of its attractions. The largest city on Oregon's coast, it has both an historic beach and an historic bay front. It is a major tourist mecca. However, it is also a viable commercial fishing harbor. Something of Newport is lost if any of those attributes is compromised. The City, and the private investment community, has done a great deal to enhance its infrastructure. An example is the restoration of Nye Beach to a pedestrian-friendly, vibrant community. The new recreation center, and restoration/redesignation of the new City Hall are also indicative of the direction in which this community is heading. Regardless of how each of us views the details of these developments, it is unquestionable that the focus of Newport has been one of self-improvement.

Both the fishing and logging industries have suffered in recent years. I was raised in Grants Pass on the income of my logger father, so I am sensitive to the plight of those who depend upon the harvesting of our natural resources. Unfortunately, my father logged without a thought to replanting or ecology or the environment or the future. Not that he was a bad man. In fact, he was a very good man. He just didn't realize the larger picture. If he had, and others like him, perhaps the logging industry wouldn't be as restricted as it is today.

It is clear that mankind has been guilty of irresponsibly exploiting our natural resources -- perhaps to the point of creating larger problems for ourselves. Therefore, we need to be cognizant of the ramifications of our harvesting, and reign ourselves in from time to time if circumstances warrant it.

That said, I also believe that we, all too frequently, allow the "pendulum to swing" too far in the other direction. As a reaction to something we may have been doing that we finally figure out may cause problems, <u>all of a sudden</u> we make a 180 degree turn. I think this "about turn" can often perturb and complicate the situation further.

I urge the Council to exercise restraint in its deliberations. A balanced, moderate approach to bringing the fisheries back into health would probably benefit not only the environment, but the countless people who depend, directly and indirectly, upon a sustainable harvest. We like Newport's commercial, as well as recreational, attributes. I think that a viable fishery is an integral part of what Newport is. I don't pretend to understand all of the variables which the Council must consider, and I apologize if my position appears too simplistic. But, please consider all aspects of the situation and avoid drastic measures unless absolutely necessary.

Thank you,

Gary Brunner

Macpherson, Gintner, Gordon & Diaz

LAWYERS
423 North Coast Highway
P.O. Box 1270
Newport, Oregon 97365
(541) 265-8881 \ (800) 829-8881
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email: eder@mggdlaw.com

Michele Longo Eder
Of Counsel

August 19, 2002

Dr. Donald O. McIsaac
Executive Director
Pacific Fisheries Management Council
7700 NE Ambassador Place
Suite 200
Portland, OR 97220

Re: Allocation Committee Meeting
August 28-29, 2002

Dr. Hans Radtke
Chairman
Pacific Fisheries Management Council
P.O. Box 244
Yachats, OR 97498

Dear Dr. McIsaac and Dr. Radtke:

I have not seen an agenda for the allocation committee meeting on August 28-29, but I thought I would ask you to include the following as a discussion and action item on the agenda. Please also include the subject of this letter as an agenda item for the GAP at the September Council meeting, and consider it a public comment for the September briefing book under the appropriate agenda item.

Recognizing that a part of the role of the allocation committee is to examine ways of reducing effort by the groundfish fleet in the groundfish fishery, I would suggest that the regulations and/ or the management plan be amended as follows:

> **To allow the fixed gear fishery to stack more than (3) three permits per vessel, up to (6) six permits per vessel**

First and foremost, from a conservation standpoint, allowing an increase in the number of permits stacked in the fixed gear fishery, from three to six permits, will assist in reducing fishing effort on rockfish and associated bycatch. As I understand it, the stacking of fixed gear sablefish permits does not allow for any stacking of other groundfish limits associated with the permit, thereby lessening this fishery's impact on other groundfish, and in particular , upon species of concern.

Secondly, there are people in the fixed gear fishery who would sell the sablefish endorsed permits, but because of the restriction on the number of permits that can be stacked, have a limited market in which to sell them. Conversely, there are buyers who will purchase permits, but have no market because of the current limits on numbers of permits allowed to be stacked.

We encourage the Council to act proactively, both in regard to the effect on species of concern, and in regard to the economic viability of the businesses in the fishery. Allowing an increase in the number of permits stacked will encourage the survival of those that remain in the fishery , and provide an economic benefit to those who wish to, or because of other business pressures, are forced to exit the fishery.

It may be of use to illustrate to you what the decrease of limits have been in the fixed gear fishery for Sablefish for the last three years:

	2000	**2001**	**2002**
Tier 1	**81,000**	**57,000**	**36,000**
Tier 2	**37,000**	**26,000**	**16,500**
Tier 3	**21,000**	**15,000**	**9,500**

As you will note, the poundage associated with each of the tiers has decreased by more than 50% in the last 3 years. Although we are aware that there may be an increase in the amount of sablefish allowed to be caught in 2003, this increase, if indeed it occurs, may only be temporary, and in any event, the amount of any increase cannot compensate for the significant loss of income during the past two years.

Although the Council is primarily concerned with groundfish, and the effect of restrictions in the groundfish fleet, be aware that the West Coast fishery as a whole is experiencing an overall depression. Depressed prices for salmon, shrimp, crab and tuna are adding to the general poor outlook for fisheries. There will be a smaller fleet regardless of what this Council does, and regardless of what happens in groundfish. This proposal, however, will provide some economic relief both to those who choose to leave, and those who choose to stay.

The limits on the number of permits stacked was initially justified, in part, by a concern that the fixed gear sablefish endorsed fleet not become "too" small, or "too" consolidated. Given the fact that the stated goal of the Council in its long term management plan is to reduce the fleet by 50%, it would appear that allowing an increase in the number of permit to be stacked in this fishery is a specific action that this Council can take now, and by emergency regulation if necessary, in order to meet one of its long term goals.

Because of prior commitments, I will be unable to attend the Committee's meeting on August 28th, but I would be available to join the meeting by conference call and answer any questions by phone on the 29th.

Very truly yours,

Michele Longo Eder

MLE:ae

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August 22, 2002

Dr. Donald O. McIsaac
Executive Director
Pacific Fisheries Management Council
7700 NE Ambassador Place
Suite 200
Portland, OR 97220

Dr. Hans Radtke
Chairman
Pacific Fisheries Management Council
PO Box 244
Yachats, OR 97498

Dear Dr. McIsaac and Dr. Radtke:

This is a letter in support of Michele Longo Eder's letter to you dated August 19, 2002 regarding Allocation Committee Meeting August 28-29, 2002.

I have reviewed the subject letter and feel Mrs. Eder has set out very justifiable reasons to implement an emergency order for increasing the current stacking limit.

As Mrs. Eder points out, an increase in permit stacking will result in decreased amounts of rockfish harvested, which will further allow the Council to attain its strategic plan of fleet reduction. I support this course of action.

In addition to Mrs. Eder's ideas, I would like you to consider the thought of allowing fix-gear vessels to acquire trawl permits.

Please submit this letter as my testimony at the August 28-29 meeting. Thank you for your time and consideration of this matter.

Sincerely,

Scott R. Hartzell
Owner F/V OSSIAN

Cc: Michile Longo Eder

FOR IMMEDIATE RELEASE
September 9, 2002

CONTACT: Joe Sheffo *(Smith)*
202/228-1823
Carol Guthrie *(Wyden)*
202/224-5244

SMITH, WYDEN URGE NMFS TO SUPPORT PACIFIC FISHERY MANAGEMENT COUNCIL

Letter to Sec. Evans Urges NMFS to Listen to Fishers

WASHINGTON, D.C.–Senators Gordon Smith (R-OR) and Ron Wyden (D-OR) today sent a letter to Secretary of Commerce Evans asking that he intervene to ensure that the National Marine Fisheries Service (NMFS) seriously consider the recommendations of the Pacific Fishery Management Council. The request comes as the Council meets in Portland to decide its recommendations for 2003 groundfish catch limits.

A complete text of the letter is available upon request.

"The National Marine Fisheries Service should respect the insights and input of the Pacific Fishery Management Council and include them in its final decision on groundfish catch limits," said Smith. "It is my hope that Secretary Evans will direct NMFS to accept reasonable and scientifically justifiable 2003 groundfish catch guidelines made by the Council."

"Fishers who were encouraged to increase capacity a few years ago have been forced into bankruptcy by new Federal mandates. A capacity reduction program is an essential step in addressing the crisis facing West Coast fishers, and I'm working to make it happen."

Congress created the regional Council structure to better inform federal fishery management. Earlier this year, however, NMFS overturned the Council's recommendations regarding the whiting fishery. Management of the multi-species Pacific groundfish fishery has been complicated by indications of population declines in some of the groundfish species caught off the West Coast. Members of the Pacific Fishery Management Council - including fishermen, environmentalists and regulators - all agree that these fish stocks must be rebuilt and have made management recommendations consistent with this goal.

The Magnuson-Stevens Act, which established the Council, requires it to fully consider local economic impacts in making its recommendations. As such, the Council has tried to balance the need to protect and rebuild particular stocks with the continued harvesting of healthy stocks when and where possible.

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Exhibit C.3.v
Supplemental EC Report
September 2002

ENFORCEMENT CONSULTANTS REPORT ON 2003 GROUNDFISH MANAGEMENT MEASURES

Based on the new information received from the U.S. Coast Guard this week regarding the diversion of the primary first quarter, fiscal year 2003 medium endurance cutter from its fisheries enforcement mission to homeland security, the Enforcement Consultants (EC) remains concerned about its ability to enforce the depth-based management measures in the exclusive economic zone off the Pacific Northwest. The uncertainty of at-sea enforcement presence requires the EC, with Council support and understanding, to continue exploring alternative enforcement strategies which support depth-based management.

Additionally, the Council needs to be conservative in its evaluation and adoption of fishery options which complicate the basic depth-based fishing regimes to the extent that it compromises existing enforcement capability. The following are examples of options which, if implemented on vessels authorized to fish inside the restricted zone or seaward of the western boundary (where an on-the-water enforcement presence will may be unpredictable), may help reduce the risk of further overfishing to stressed groundfish species:

- A federal declaration system for consistence across all three states, or the continuation of the state systems being proposed for period 6 in 2002 for vessels allowed to fish in the restricted area. Expand this declaration system in 2003 for vessels allowed to fish in the restricted area and seaward of the western boundary of the restricted area.

- An experimental fishing permit (or regulation) that allows fishing in the restricted area or seaward of the western boundary of the restricted area only with a vessel monitoring system (VMS) unit or an observer.

- Expanded observer coverage (50% or more).

- Close the fishery.

In preparation for the November Council meeting, the EC recommend creating an Ad Hoc VMS Committee composed of:

- One (1) limited entry fixed gear representative from each state.

- One (1) limited entry trawl gear representative from each state.

- The Chairman of the Groundfish Advisory Subpanel (GAP), for a total of seven (7) GAP participants to work with the EC.

This ad hoc committee will meet once in person prior to the November meeting and as necessary by conference call to develop a draft regulatory package for final adoption at the November Council meeting.

PFMC
09/13/02

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON 2003 GROUNDFISH MANAGEMENT MEASURES

The Groundfish Advisory Subpanel (GAP) has spent several days considering groundfish management measures. During that time, we have met with the Groundfish Management Team (GMT), received guidance from the Council, and listened to presentations from the California Department of Fish and Game, the Enforcement Consultants, and the Oregon Department of Fish and Wildlife. There has been substantial participation by the public and these comments reflect a wide variety of views.

Our comments are in two parts: a discussion of trip limits and other normal management measures based on information from the GMT and state agencies, followed by comments on specific issues that are under consideration by the Council.

TRIP LIMITS AND NORMAL MANAGEMENT MEASURES

The GAP supports the trip limits presented by the GMT as reflected on Tables **** (Exhibit ****). The GAP understands that, as more data on bycatch is available from the observer program and other sources later in the year, these limits are subject to change through the in-season management process. We expect the Council and NMFS to be as reactive to good news - i.e., data that shows less than expected bycatch - as they have been to bad news. We recognize why the limits are low - or non-existent - in many cases, but we expect the Council and NMFS to recognize that there will be a significant economic impact on local communities on the west coast. The Council has already received testimony on the economic and social affects being experienced under existing harvest levels. We can only expect it to get worse.

The GAP does need clarification on the yellowtail allowance in landings with flatfish. Fishermen have reported different interpretations used by enforcement in determining which situation - yellowtail as bycatch or yellowtail harvested as a target - applies. A clear interpretation for both fishermen and enforcement would be helpful.

The GAP also supports the State recreational options as presented in Exhibit C.3.i, Supplemental WDFW Report (as modified); Exhibit C.3.w, Supplemental ODFW Report; and Exhibit C.3.w, Supplemental CDFG Report 2.

SPECIFIC ISSUES

“CAPPING” FISHERIES - Both the California Department of Fish and Game and the Oregon Department of Fish and Wildlife presented proposals to “cap” nearshore fisheries at certain levels. Although the management proposals made at the Council meeting in June indicated a possibility of fisheries being capped, concern has been expressed that overall caps are being accompanied by allocation proposals. Council procedure and the Pacific groundfish FMP provide that allocation issues must be handled in a 3 meeting process. As a point of procedure, the GAP notes that the 3 meeting requirement is not being met.

VESSEL MONITORING SYSTEM - While the GAP recognizes that VMS may be a good tool in certain situations, there are still several questions that remain unanswered. In that regard the GAP suggests the following:

1. Enforcement should establish an advisory committee of knowledgeable and representative vessel operators to help design and implement the system.
2. Before full implementation occurs, Enforcement should establish a pilot program to weed out potential problems.
3. Equipment manufacturers should be invited to meet with fishermen, as there are many technical questions which cannot be answered by Enforcement.
4. When implementing a program, Enforcement needs to maintain flexibility, recognizing the wide diversity of vessels and the constantly changing management system.
5. As has been done in other areas of the country, VMS equipment should be provided by the

government without cost.

SABLEFISH PERMIT STACKING - The GAP held a brief discussion on the issue of increasing to 6 the number of permits that can be stacked by a fixed gear sablefish vessel. Proponents pointed to efficiency and economy as benefits that would accrue as a result of increased stacking. Others questioned whether sufficient data was available to determine the impacts, both on vessels that stack permits and those that don't.

Because there was only limited attendance at the GAP during this discussion and views appear evenly divided, the GAP neither endorses nor opposes a regulatory amendment on sablefish permit stacking at this time.

CALIFORNIA ROCKFISH CONSERVATION AREA - The GAP spent several hours in discussion of the CRCA paper that was provided by the California Department of Fish and Game. The GAP unanimously opposes the proposal as presented.

The GAP notes that the CRCA has a double standard on bocaccio savings. Under two exemptions, gear use is prohibited when bocaccio impact levels are reached, while under another set of exemptions fisheries can continue even though bocaccio impacts are exceeded. The proposal contemplates a trigger mechanism for revising catch levels, but that mechanism appears inconsistent with rebuilding requirements.

The GAP was greatly concerned about the process used to develop and bring forward this proposal. The CRCA has impacts on fishermen from other states, yet they had no opportunity to participate in its design. Even California fishermen had no real opportunity to be deeply involved in the process. This proposal should have been made in June and the public given full opportunity to comment.

Finally, the GAP notes that the Council has already taken action to promote conservation in the waters off California and sees no reason to push through a new proposal at this time.

TRAWL LIMITS IN CALIFORNIA - This issue is being raised as a separate topic as it surfaced early this afternoon. The GAP had a discussion with Mr. Bill Robinson on the subject of reducing or eliminating the trawl fishery inside of 50 fathoms south of Cape Mendocino. It is our understanding that NMFS does not intend to raise the issue at this meeting and that no direction has come from NMFS headquarters to eliminate trawling in this area.

The GAP notes that eliminating trawling as suggested would be a case of guilty until proven innocent. There is no data to indicate that trawl impacts are exceptional, and the scarcity of data which has been noted as an item of concern applies equally to <u>all</u> fisheries. Indeed, it even applies to NMFS stock assessments. If we are to take no action when data is scarce, then we probably need to start shutting fisheries down now along the entire coast.

Further, if the intent were to use a limited EFP system to gather data <u>before</u> allowing a fishery, how would NMFS choose the vessels? How would NMFS determine the different effects among the 9 ports where trawlers deliver in this area, and apply that data in a rational manner?

The GAP strongly opposes any action to remove the trawl fishery from inside the 50 fathom zone south of Cape Mendocino.

GROUNDFISH MANAGEMENT TEAM REPORT ON 2003 MANAGEMENT MEASURES AND BYCATCH ACCOUNTABILITY

The GMT worked with the GAP to develop groundfish management measures for 2003 that provide for harvest opportunities while staying within the OYs adopted by the Council earlier this week. These management measures, including depth restrictions by time and area, and trip limits are contained in Tables 3-5.

The projected harvest levels of overfished species expected to be taken under the preferred alternatives are captured in Table 1. It is important to note that these estimates are based on the Council and state preferred alternatives and would need to be adjusted if these alternatives are changed. The GMT had an opportunity to discuss the rationales for the recommended depth restrictions and estimated bycatch impacts for species of concern. The results of those discussions and our recommendations for various fisheries are provided below:

Limited Entry Trawl

Bycatch Estimates - The bycatch estimates in the attached table for the limited entry trawl fishery are calculated through the trawl bycatch model.

<u>Canary Rockfish</u>
Depth Restriction Rationale - Based on information in the NMFS triennial trawl survey, the 2002 canary rockfish stock assessment, and the trawl logbook data, it appears that canary rockfish are available in depths between 20 fms and 200 fms. The distribution of canary varies seasonally, and trawl logbook data indicates higher catches in shallower depths in the summer months. Therefore, moving the inside line in the trawl fishery north of 40°10' to 75 fms would afford protection for canary rockfish during this period. Also, based on the NMFS trawl survey data and the trawl logbook data, the canary catch outside 150 fms is fairly minimal (< 0.5%); therefore, having the outside line at 150 fms in periods 1 and 6 would afford protection for canary rockfish while providing for a directed petrale fishery.

<u>Bocaccio Rockfish</u>
Depth Restriction Rationale - NMFS trawl survey data indicate that bocaccio are available from 45 fms to 160 fms and trawl logbook data indicate that bocaccio are primarily caught between 60 fms and 150 fms. Specifically, since 1994, approximately 3% of the cumulative CPUE in the NMFS trawl survey data occurred outside of 150 fms. Therefore, the closure south of 40°10' between 50 fms and 150-250 fms would provide protection for bocaccio.

<u>Darkblotched Rockfish</u>
Depth Restriction Rationale - NMFS trawl survey data indicate that darkblotched are available from 70 fms to 250 fms and trawl logbook data indicate that darkblotched are primarily caught between 100 and 250 fms. NMFS trawl data also demonstrate that catches of darkblotched rockfish are negligible south of 38° N latitude. Based on these data, the closure south of 40°10' to 38° between 50 fms and 250 fms would provide protection for darkblotched. In the area north of 40°10', the proposed closures between 75 fms and 250 fms would also provide protection for darkblotched.

<u>Slope Rockfish 38°N Line</u>
In the first four months of 2002 significantly higher than normal landings of darkblotched rockfish occurred south of Cape Mendocino. A review of fish landing tickets, trawl logbooks, and NMFS trawl survey data suggest that it is likely these catches came from the northern Monterey INPFC area south of Cape Mendocino. The bycatch implications of darkblotched catch south of Cape Mendocino disrupted trawl opportunities in 2002 due to unexpected early attainment of the 2002 darkblotched OY. To avoid such impacts in 2003, the GMT recommends moving the slope rockfish management line further south to Point Reyes at 38° N. lat.

California Nearshore Flatfish Fishery Recommendation

Regarding the California nearshore flatfish fishery, based on the comments the GMT received on the likelihood of encounters of undersized flatfish in areas less than 50 fms, we believe it is important that further consideration be given to increasing mesh size or changing the attributes of the mesh to minimize these encounters. Analysis of 2001 California trawl logbook data demonstrates that 47% of trawl tows and 29% of trawl hours occurred in depths of 50 fms or less.

Limited Entry and Open Access Fixed Gear

Yelloweye Rockfish

Depth Restriction Rationale - The GMT reviewed the depth distribution of catches from the International Pacific Halibut Commission (IPHC) setline halibut survey (1997-2000) which indicates that 99.5% of the yelloweye caught in the survey were caught in depths of 100 fms or less. Based on this data, as well as information from participants in the hook and line fishery, a depth restriction for the limited entry fixed gear and open access fisheries at 100 fms (closed inside) would provide protection for yelloweye rockfish.

Bycatch Estimate - If the ratio of yelloweye to halibut in the survey were experienced in the commercial halibut fishery, we might expect a yelloweye catch in the 4 - 5 mt level in a fishery with no depth restriction (from an ad hoc expansion of survey ratios). Given that only 0.5% of the yelloweye survey catch was outside of 100 fms, and the fishery will be constrained to outside of 100 fms, the GMT felt that 0.5 mt of yelloweye should accommodate incidental catches in the commercial directed halibut fishery. No rockfish species composition estimates are available, by depth, for other fixed gear fisheries. Following the approach used for the halibut fishery, the GMT set aside an additional 1.5 mt of yelloweye to accommodate bycatch mortality for groundfish directed limited entry and open access fixed gear fisheries occurring outside 100 fathoms.

Canary Rockfish

Depth Restriction and Bycatch Estimate - With regard to canary rockfish, Washington species composition estimates from limited entry hook-and-line fisheries for the past 5 years show very minor amounts of canary (less than 0.1% of the total rockfish landed). There are also very few canary encountered in the IPHC survey, and all of the canary were caught inside 100 fms. Although we have no depth distribution information for hook and line catches, examination of trawl logbook information shows only 0.7% of the canary catch to occur inside 50 fms, and 13.6% of the catch occurs outside 100 fms. Therefore, we anticipate only a minor amount of canary bycatch in limited entry and open access fixed gear fisheries outside of 100 fms or inside 27 fms. The GMT set aside 1.3 mt of canary to accommodate this bycatch.

Bocaccio Rockfish

Depth Restriction and Bycatch Estimate - South of 40°10', based on a review of the NMFS trawl survey data and trawl logbook data, bocaccio rockfish primarily occur in depths less than 150 fms. Therefore, a depth restriction for the limited entry fixed gear and open access fisheries south of 40°10' at 150 fms will provide protection for bocaccio rockfish. The GMT is estimating 0.3 mt of bocaccio to accommodate bycatch in these fisheries.

California Nearshore

The GMT discussed CDFG proposed recreational and commercial management measures for the nearshore area. The GMT discussed a provision for an incidental allowance of shelf rockfish associated with nearshore rockfish fishing (primarily vermillion). The GMT believes that providing a shelf rockfish limit of one-half the level of shallow nearshore rockfish would provide for incidental catches without creating discard of nearshore rockfishes from targeting shelf species. The GMT also notes that limits set too aggressive early in the season risk fishery closures later in the year.

General Open Access Recommendation

It was brought to our attention that some permit holders in California may have taken multiple trips on different vessels within cumulative periods, the CDFG representative on the GMT assured us that this would be addressed at the state level in the near future. The GMT feels that addressing this issue as soon as possible would be beneficial to the management process by helping us anticipate catches and set appropriate trip limits. The GMT will be working with CDFG this winter to document the extent to which taking multiple trips may have contributed to unanticipated impacts in the summer of 2002. To the extent that this could be an issue in other open access fisheries, the GMT believes that this needs to be addressed as soon as possible.

Non-Groundfish Fisheries

Shrimp Trawl
Bycatch Estimates and Recommendations - The GMT recommends that finfish excluders be mandatory in the pink shrimp fishery. Bycatch estimates for the pink shrimp fishery are based upon the use of excluders in all three states for the entire season are contained in the attached table. Extrapolations of bycatch of overfished species are based upon the reductions observed when excluders were required inseason in 2001 and 2002 (all of 2002 in California). The GMT is estimating 0.5 mt of canary and 2.5 mt of yelloweye rockfish to be taken in the pink shrimp trawl fisheries in 2003.

The GMT understands that spot prawn trawl fisheries will be eliminated in 2003 and supports this decision; therefore, there is no anticipated bycatch for this fishery. The GMT does not have sufficient data to estimate bycatch in the spot prawn pot fishery.

Salmon Troll
Bycatch Estimates and Recommendations - Groundfish impacts from the commercial troll salmon fisheries are incidental, and therefore strongly correspond to effort. Because effort for the 2003 salmon fisheries can not be estimated at this time, total groundfish mortality for the 2003 commercial salmon troll fisheries was estimated as the maximum landed groundfish catch for 2000-2001plus a 5% dropoff mortality rate, and assumed negligible discard. This results in an estimated bycatch of 1.6 mt of canary and 0.2 mt of yelloweye rockfish in the salmon troll fishery.

Recreational Fisheries

The GMT does not have specific comments on individual state proposals for management measures for their respective recreational fisheries. However, the GMT did evaluate the implications of the recreational fishery proposals relative to their impacts on overfished species, particularly canary and yelloweye rockfish in the north. Specifically, the GMT is concerned that the one fish bag limit of canary rockfish in both Washington and Oregon, as well as the one fish bag limit of yelloweye in Oregon, may be inconsistent with the spirit of rebuilding in as fast a time period as possible. The 2002 assessment of canary documents that recreational removals (both landed and bycatch mortality) have a disproportionately negative effect on rebuilding trajectories compared to commercial removals due to recreational fishing effort occurring in shallower areas and therefore removing smaller (younger) fish. Although the GMT generally does not favor creating potential discard, there is some concern that even a one fish bag limit will encourage a limited amount of targeting of these overfished species and may also increase associated bycatch by encouraging fishing in canary and yelloweye habitat.

The magnitude of the yelloweye catch is of particular concern given the uncertainty in both the status and future productivity of the stock as estimated in the assessment and projected in the rebuilding analysis that was subsequently used as the basis of the OY recommendation. The authors of the assessment encourage managers to be cautious and use the projected catches produced in the rebuilding plan as an upper limit of catch due to the possibility that the assessment has not captured the true extent of the decline of the stock and to account for the possibility of local depletions.

The GMT recommends consideration of management measures that include zero retention of both canary and yelloweye that would discourage any targeting by recreational fisheries to reduce the potential of additional targeted catch of those species beyond true unavoidable catch. This action is favored even if it means creating some limited discard (estimated to be very small by the states) because of the low and uncertain stock status of those species, the uncertainty in our ability to track actual removals in all fisheries and the disproportionate effects of recreational removals on rebuilding trajectories.

Table 3. 2003 Trip Limits[1/] and Gear Requirements[2/] for Limited Entry Trawl Gear

9/13/2002

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North: depth lines TBA	1,800 lb/ 2 months					
3	South						
4	40°10' - 38° N. lat.: lines TBA	1,800 lb/ 2 months					
5	South of 38° N. lat. z/	30,000 lb/ 2 months					
6	**Splitnose - South**						
7	40°10' - 38° N. lat.: lines TBA	1,800 lb/ 2 months					
8	South of 38° N. lat. z/	30,000 lb/ 2 months					
9	**Pacific ocean perch - North[6/]**: lines TBA	3,000 lb/ 2 months					
14	**DTS complex - North**						
15	Sablefish	6,000 lb/2 months		7,000 lb/ 2 months			6000 lb/ 2 months
16	Longspine thornyhead	8,000 lb/2 months	9,000 lb/ 2 months				7000 lb/ 2 months
17	Shortspine thornyhead	2,300 lb/2 months	2,400 lb/ 2 months				2,200 lb/ 2 months
18	Dover sole	26,000 lb/2 months		25,000 lb/ 2 months			26,000 lb/ 2 months
19	**DTS complex - South**						
20	Sablefish	6,000 lb/2 months		7,000 lb/ 2 months			6000 lb/ 2 months
21	Longspine thornyhead	8,000 lb/2 months	9,000 lb/ 2 months				7000 lb/ 2 months
22	Shortspine thornyhead	2,300 lb/2 months	2,400 lb/ 2 months				2,200 lb/ 2 months
23	Dover sole	26,000 lb/2 months		25,000 lb/ 2 months			26,000 lb/ 2 months
24	**Flatfish - North**						
25	All other flatfish [3/]	100,000 lb/ 2 months	100,000 lb/ 2 months, no more than 30,000 lb/ 2 months of which may be petrale sole				100,000 lb/ 2 months
26	Petrale sole	No limit					No limit
27	Rex sole	Included in all other flatfish					
28	Arrowtooth flounder	No limit	60,000 lb/ 2 months				No limit
29	**Flatfish - South**						
30	All other flatfish [3/]	50,000 lb/ 2 months	50,000 lb/ 2 months, no more than 10,000 lb/ 2 months of which may be petrale sole				50,000 lb/ 2 months
31	Petrale sole	No limit					No limit
32	Rex sole	Included in all other flatfish					
33	Arrowtooth flounder	No limit	1,000 lb/ 2 months				No limit
35	**Whiting** [4/]	20,000 lb/ trip		Primary Season		10,000 lb/ trip	
37	**Minor shelf rockfish, widow, and chilipepper**						
38	North	300 lb/ month		1,000 lb/ month, no more than 200 lb/ month of which may be yelloweye rockfish			300 lb/ month
39	South						
40	**Canary rockfish**						
	North	100 lb/ month		300 lb/ month		100 lb/ month	
	South						
	Widow rockfish						
41	North						
42	mid-water trawl	CLOSED[7/]		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative widow limit of 1,500 lb/ month		CLOSED[7/]	12,000 lb/ 2 months
43	small footrope trawl	1,000 lb/ month (widow taken w/small footrope trawl counts toward midwater limit)					
	South						
	mid-water trawl	CLOSED[7/]					12, 000 lb/ 2 months
	small footrope trawl	Included in minor shelf rockfish limit					
44	**Yellowtail - North[6/]**						
45	mid-water trawl	CLOSED[7/]		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative yellowtail limit of 2,000 lb/ month			18,000 lb/ 2 months
46	small footrope trawl	In landings without flatfish, 1,000 lb/ month. As flatfish bycatch, per trip limit is the sum of 33% (by weight) of all flatfish except arrowtooth flounder, plus 10% (by weight) of arrowtooth flounder. Combined with and without flatfish, not to exceed 3 (**3,000? Will also need to specify that any yellowtail on board must meet ratio requirements? See Hans**)					
47	**Bocaccio - South[6/]**	CLOSED[7/]					

48	**Cowcod**	CLOSED[7/]		
49	**Minor nearshore rockfish**			
50	North	300 lb/ month		
51	South	300 lb/ month		
	Lingcod[8/]			
	North	800 lb/ 2 months	1,000 lb/ 2 months	800 lb/ 2 months
	South	800 lb/ 2 months	1,000 lb/ 2 months	800 lb/ 2 months
52	**Other Fish**[9/]	Not limited		

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ Gear requirements and prohibitions are explained above. See IV.A.(14).

3/ "Other" flatfish means all flatfish at 50 CFR 660.302 except those in this Table 3 with species specific management measures, including trip limits.

4/ The whiting "per trip" limit in the Eureka area inside 100 fm is 10,000 lb/trip from January 1 - August 31, 2002. From September 1 - December 31, 2002, the whiting fishery is closed.

5/ Small footrope trawl means a bottom trawl net with a footrope no larger than 8 inches (20 cm) in diameter. In areas where trawl gear is restricted, only one type of trawl gear is allowed on board at ony one time. See above.

6/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

7/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

8/ The minimum size limit for lingcod is 24 inches (61 cm) total length.

9/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

x/ restricted to outside of 100 ftm, or inside 27 ftm south of 46°16'

z/ restricted to outside of 150 ftm or inside 20 ftm

Table 5. 2003 Trip Limits [1/] for Open Access Gears

9/13/2002

<table>
<tr><th>line</th><th>Species/groups</th><th>JAN-FEB</th><th>MAR-APR</th><th>MAY-JUN</th><th>JUL-AUG</th><th>SEP-OCT</th><th>NOV-DEC</th></tr>
<tr><td>1</td><td>Minor slope rockfish</td><td colspan="6"></td></tr>
<tr><td>2</td><td>North /x</td><td colspan="6">Per trip, no more than 25% of weight of the sablefish landed</td></tr>
<tr><td>4</td><td>40°10' - 38° N. lat. z/</td><td colspan="6">Per trip, no more than 25% of weight of the sablefish landed</td></tr>
<tr><td>5</td><td>South of 38° N. lat. z/</td><td colspan="6">10,000 lb/ 2 months</td></tr>
<tr><td>6</td><td>Splitnose - South z/</td><td colspan="6">200 lb/ month</td></tr>
<tr><td>7</td><td>Pacific ocean perch - North 4/ x/</td><td colspan="6">100 lb/ month</td></tr>
<tr><td>8</td><td>Sablefish</td><td colspan="6"></td></tr>
<tr><td>9</td><td>North of 40°10' N. lat. x/</td><td colspan="6">300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 3,200 lb/ 2 months</td></tr>
<tr><td></td><td>40°10' - 38° N. lat. z/</td><td colspan="6">300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 3,200 lb/ 2 months</td></tr>
<tr><td>10</td><td>South of 36° N. lat. z/</td><td colspan="6">350 lb/ day, or 1 landing per week of up to 1,050 lb</td></tr>
<tr><td>11</td><td>Thornyheads</td><td colspan="6"></td></tr>
<tr><td>12</td><td>North of 34° 27' N. lat.</td><td colspan="6">CLOSED 3/</td></tr>
<tr><td>13</td><td>South of 34° 27' N. lat. z/</td><td colspan="6">50 lb/ day, no more than 2,000 lb/ 2 months</td></tr>
<tr><td>14</td><td>Dover sole</td><td colspan="6" rowspan="5">3,000 lb/month, no more than 300 lb of which may be species other than Pacific sanddabs, North of 40°10' x/; South of 40o10' z/</td></tr>
<tr><td>15</td><td>Arrowtooth flounder</td></tr>
<tr><td>16</td><td>Petrale sole</td></tr>
<tr><td>17</td><td>Rex sole</td></tr>
<tr><td>18</td><td>All other flatfish 2/</td></tr>
<tr><td>19</td><td>Whiting</td><td colspan="6">300 lb/ month, North of 40o10' x/; South of 40o10' z/</td></tr>
<tr><td>20</td><td colspan="7">Shelf rockfish, including minor shelf rockfish, chilipepper, widow and yellowtail rockfish 5/</td></tr>
<tr><td>21</td><td>North x/</td><td colspan="6">200 lb/ month</td></tr>
<tr><td>22</td><td>South</td><td colspan="6"></td></tr>
<tr><td>23</td><td>40°10' - 34°27' N. lat. z/</td><td rowspan="2">100 lb/ 2 month</td><td rowspan="2">CLOSED 4/</td><td rowspan="2">200 lb/ 2 moths</td><td rowspan="2">250 lb/ 2 months</td><td rowspan="2">200 lb/ 2 months</td><td rowspan="2">100 lb/ 2 months</td></tr>
<tr><td>24</td><td>South of 34°27' N. lat. z/</td></tr>
<tr><td>25</td><td>Canary rockfish</td><td colspan="6">CLOSED 3/</td></tr>
<tr><td>26</td><td>Yelloweye rockfish</td><td colspan="6">CLOSED 3/</td></tr>
<tr><td>27</td><td>Cowcod</td><td colspan="6">CLOSED 3/</td></tr>
<tr><td>28</td><td>Bocaccio - South 4/</td><td colspan="6"></td></tr>
<tr><td>29</td><td>40°10' - 34°27' N. lat.</td><td colspan="6">CLOSED 3/</td></tr>
<tr><td>30</td><td>South of 34°27' N. lat.</td><td colspan="6">CLOSED 3/</td></tr>
<tr><td>34</td><td>Minor nearshore rockfish</td><td colspan="6"></td></tr>
<tr><td>35</td><td>North x/</td><td colspan="6">3,000 lb/ 2 months, no more than 900 lb of which may be species other than black or blue rockfish 6/</td></tr>
<tr><td>36</td><td>South</td><td colspan="6"></td></tr>
<tr><td>37</td><td>shallow nearshore</td><td>200 lb/ 2 months</td><td rowspan="2">CLOSED 4/</td><td>400 lb/ 2 months</td><td>500 lb/ 2 months</td><td>400 lb/ 2 months</td><td>200 lb/ 2 months</td></tr>
<tr><td>38</td><td>deep nearshore</td><td>200 lb/ 2 months</td><td>200 lb/ 2 months</td><td>400 lb/ 2 months</td><td>200 lb/ 2 months</td><td>200 lb/ 2 months</td></tr>
<tr><td>39</td><td>California scorpionfish</td><td colspan="2">CLOSED 4/</td><td colspan="2">800 lb/ 2 months</td><td colspan="2">CLOSED 4/</td></tr>
<tr><td></td><td>Lingcod 7/</td><td colspan="6"></td></tr>
<tr><td>40</td><td>North x/</td><td colspan="2">CLOSED 3/</td><td colspan="3">300 lb/ month</td><td>CLOSED 3/</td></tr>
<tr><td>41</td><td>South z/</td><td colspan="6"></td></tr>
<tr><td>42</td><td>40°10' - 34°27' N. lat.</td><td rowspan="2">300 lb/ month</td><td rowspan="2">CLOSED 4/</td><td colspan="4" rowspan="2">300 lb/ month</td></tr>
<tr><td>43</td><td>South of 34°27' N. lat.</td></tr>
<tr><td></td><td>PINK SHRIMP EXEMPTED TRAWL GEAR</td><td colspan="6"></td></tr>
<tr><td></td><td>North</td><td colspan="6" rowspan="2">Effective April 1 - October 31, 2003: groundfish 500 lb/day, multiplied by the number of days of the trip, not to exceed 1,500 lb/trip. The following sublimits apply: lingcod 300 lb/ month (minimum 24 inch size limit); sablefish 2,000 lb/ month; canary, thornyheads and yelloweye rockfish are PROHIBITED.</td></tr>
<tr><td></td><td>South</td></tr>
</table>

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. To the U.S.-Canada border. "South" means 40°10' N. lat. To the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 5 with species specific management measures, including trip limits.

3/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

4/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. Pop in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

5/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

6/ The size limit for lingcod is 24 inches (61 cm) total length.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

x/ restricted to outside of 100 ftm, or inside 27 ftm south of 46 °16'

z/ restricted to outside of 150 ftm or inside 20 ftm

Table 5. 2003 Trip Limits[1/] for Open Access Gears

9/13/2002

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North /x	Per trip, no more than 25% of weight of the sablefish landed					
4	40°10' - 38° N. lat. z/	Per trip, no more than 25% of weight of the sablefish landed					
5	South of 38° N. lat. z/	10,000 lb/ 2 months					
6	**Splitnose - South z/**	200 lb/ month					
7	**Pacific ocean perch - North**[4/ x/]	100 lb/ month					
8	**Sablefish**						
9	North of 40°10' N. lat. x/	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 3,200 lb/ 2 months					
	40°10' - 38° N. lat. z/	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 3,200 lb/ 2 months					
10	South of 36° N. lat. z/	350 lb/ day, or 1 landing per week of up to 1,050 lb					
11	**Thornyheads**						
12	North of 34° 27' N. lat.	CLOSED[3/]					
13	South of 34° 27' N. lat. z/	50 lb/ day, no more than 2,000 lb/ 2 months					
14	**Dover sole**	3,000 lb/month, no more than 300 lb of which may be species other than Pacific sanddabs, North of 40°10' x/; South of 40o10' z/					
15	**Arrowtooth flounder**						
16	**Petrale sole**						
17	**Rex sole**						
18	**All other flatfish**[2/]						
19	**Whiting**	300 lb/ month, North of 40o10' x/; South of 40o10' z/					
20	**Shelf rockfish, including minor shelf rockfish, chilipepper, widow and yellowtail rockfish**[5/]						
21	North x/	200 lb/ month					
22	South						
23	40°10' - 34°27' N. lat. z/	100 lb/ 2 month	CLOSED[4/]	200 lb/ 2 moths	250 lb/ 2 months	200 lb/ 2 months	100 lb/ 2 months
24	South of 34°27' N. lat. z/						
25	**Canary rockfish**	CLOSED[3/]					
26	**Yelloweye rockfish**	CLOSED[3/]					
27	**Cowcod**	CLOSED[3/]					
28	**Bocaccio - South**[4/]						
29	40°10' - 34°27' N. lat.	CLOSED[3/]					
30	South of 34°27' N. lat.	CLOSED[3/]					
34	**Minor nearshore rockfish**						
35	North x/	3,000 lb/ 2 months, no more than 900 lb of which may be species other than black or blue rockfish[6/]					
36	South						
37	shallow nearshore	200 lb/ 2 months	CLOSED[4/]	400 lb/ 2 months	500 lb/ 2 months	400 lb/ 2 months	200 lb/ 2 months
38	deep nearshore	200 lb/ 2 months		200 lb/ 2 months	400 lb/ 2 months	200 lb/ 2 months	200 lb/ 2 months
39	California scorpionfish	CLOSED[4/]		800 lb/ 2 months		CLOSED[4/]	
	Lingcod[7/]						
40	North x/	CLOSED[3/]		300 lb/ month			CLOSED[3/]
41	South z/						
42	40°10' - 34°27' N. lat.	300 lb/ month	CLOSED[4/]	300 lb/ month			
43	South of 34°27' N. lat.						
	PINK SHRIMP EXEMPTED TRAWL GEAR						
	North	**Effective April 1 - October 31, 2003:** groundfish 500 lb/day, multiplied by the number of days of the trip, not to exceed 1,500 lb/trip. The following sublimits apply: lingcod 300 lb/ month (minimum 24 inch size limit); sablefish 2,000 lb/ month; canary, thornyheads and yelloweye rockfish are PROHIBITED.					
	South						

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. To the U.S.-Canada border. "South" means 40°10' N. lat. To the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 5 with species specific management measures, including trip limits.

3/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

4/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. Pop in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

5/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

6/ The size limit for lingcod is 24 inches (61 cm) total length.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

TABLE 1. Estimated mortality (mt) of overfished West Coast groundfish species by fishery in 2003 under Council-preferred management measures (Page 1 of 2).

Fishery	Bocaccio [1/]	Canary	Cowcod	Dark-blotched	Lingcod	POP	Whiting	Widow	Yelloweye
Limited Entry Groundfish									
Trawl- Non-whiting [2/]	1.4	12.3	UR	86.7	63.1	96.5	1,800	11.8	1.5
Trawl- at-sea whiting	NA	3.0	NA	5.0	0.3	9.0	70,300	182.0	0.0
Trawl- shoreside whiting	NA	0.4	NA	1.5	0.2	0.2	50,900	30.0	TR
Fixed Gear	0.1	1.0	0.1	TR	20.0	TR	TR	TR	1.0
Recreational									
WA	NA	1.5	NA	NA	35.0	NA	UR	TR	3.5
OR	NA	10.0	NA	NA	105.0	NA	UR	4.0	3.7
CA (N)	NA	0.5	NA	NA	195.0	NA	UR	1.0	0.1
CA (S)	5.0	3.0	UR	NA	20.0	NA	UR	0.0	0.4
Tribal									
Midwater Trawl	NA	1.1	NA	0.0	0.9	0.0	25,000	45.0	0.0
Bottom Trawl	NA		NA	0.0		0.0	UR		
Troll	NA	0.5	NA	0.0	0.9	0.0	UR	UR	0.1
Fixed gear	NA	0.7	NA	0.0	3.4	0.0	UR	0.0	3.0
Open Access									
Groundfish directed	0.2	0.3	0.02	TR	50.0	TR	UR	TR	0.5
CA Halibut	0.5	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
CA Gillnet [3/]	0.5	UR	UR	UR	UR	UR	UR	UR	UR
CA Sheephead [3/]	TR	UR	UR	UR	UR	UR	UR	UR	UR
CPS- wetfish [3/]	0.5	UR	UR	UR	UR	UR	UR	UR	UR
CPS- squid [4/5/]	TR	UR	UR	UR	UR	UR	UR	UR	UR
Dungeness crab [3/]	TR	NA	TR	0.0	UR	NA	NA	NA	TR
HMS [3/]	TR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific Halibut [3/]	0.0	0.02	NA	0.0	UR	0.0	0.0	0.0	0.5
Pink shrimp	0.03	0.5	UR	0.02	0.5	0.0	1.0	0.1	2.5
Ridgeback prawn	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmon troll	0.2	1.6	UR	UR	0.3	UR	UR	0.0	0.2

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LE 1. Estimated mortality (mt) of overfished West Coast groundfish specie ishery in 2003 under Council-preferred management measures (Page 2 of 2

Fishery	Bocaccio 1/	Canary	Cowcod	Dark-blotched	Lingcod	POP	Whiting	Widow	Yelloweye
Sea Cucumber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spot Prawn (trawl)	Prohibited in 2003								
Spot Prawn (trap)	UR	UR	UR	UR	UR	UR	UR	UR	UR
Research: Review of most recent 2 NMFS trawl shelf and slope surveys with expanded estimates for south of Pt. Conception									
	0.2	1.0	UR	1.6	3.0	3.0	200.0	1.5	0.6
EFPs: Caps subject to change by Council action									
CA: NS FF trawl	1.6	1.5	1.5	NA	NA	NA	NA	NA	1.5
OR: selective FF trawl	NA	4.0	NA	3.1	13.0	TR	UR	1.0	1.7
WA: AT trawl	NA	0.3	NA	1.0	2.0	1.0	UR	NA	0.0
WA: MW YT trawl	NA	1.0	NA	0.0	0.0	0.0	UR	12.0	0.0
WA: dogfish LL	NA	1.0	NA	0.0	0.2	0.0	0.0	0.0	1.0
WA: pollock	NA	0.0	NA	0.0	0.0	0.0	50.0	1.0	0.0
TOTAL	**10.3**	**45.3**	**1.7**	**98.9**	**512.8**	**109.7**	**148,251**	**289.4**	**21.9**

NA- Not applicable.
TR- Trace amount (<0.01 mt).
UR- Unreported in available data sources.
1/ South of 40°10' N. lat.
2/ Based on the trawl bycatch model (Hastie 2002), except yelloweye bycatch which was extrapolated on the expected change in landings.
3/ Mortality estimates are not hard numbers; based on CDFG staff best professional judgement.
4/ Bycatch amounts by species unavailable, but bocaccio occurred in 0.1% of all port samples and other rockfish in another 0.1% of all port samples (and squid fisheries usually land their whole catch). In 2001, out of 84,000 mt total landings 1 mt was groundfish. This suggests that total bocaccio was caught in trace amounts.
5/ Expected landed catch only. Discards/total mortality estimates not available.

Summary of depth and trip-limit management alternatives for the 2003 groundfish trawl fishery.
Council Meeting Draft #3, Friday the 13th, 2002

Region/ Option/ Species Group	Jan/Feb	Mar/Apr	May/Jun	Jul/Aug	Sep/Oct	Nov/Dec	Proj. target species mts In this area	Coastwide
	Target species trip limits under this option (lbs/2-mo)							
Council Preferred-OY/management Alternative [1]								
North of 40°10'								
Shallow line (fm)	100	100	100	75	100	100		
Deep line (fm)	150	250	250	250	250	150		
Sablefish	6,000	6,000	7,000	7,000	7,000	6,000	1,897	2,304
Longspines	8,000	9,000	9,000	9,000	9,000	7,000	1,460	1,991
Shortspines	2,300	2,400	2,400	2,400	2,400	2,200	564	735
Dover sole	26,000	26,000	25,000	25,000	25,000	26,000	5,389	6,978
Arrowtooth	No limit	60,000	60,000	60,000	60,000	No limit	1,388	1,391
Petrale sole	No limit	30,000	30,000	30,000	30,000	No limit	1,567	1,709
Other Flatfish	100,000	100,000	100,000	100,000	100,000	100,000	1,544	2,100
South of 40°10'								
Shallow line (fm)	50	50	50	50	50	50		
Deep line (fm)	150	250	250	250	250	150		
Sablefish	6,000	6,000	7,000	7,000	7,000	6,000	407	2,304
Longspines	8,000	9,000	9,000	9,000	9,000	7,000	531	1,991
Shortspines	2,300	2,400	2,400	2,400	2,400	2,200	171	735
Dover sole	26,000	26,000	25,000	25,000	25,000	26,000	1,589	6,978
Arrowtooth	No limit	1,000	1,000	1,000	1,000	No limit	3	1,391
Petrale sole	No limit	10,000	10,000	10,000	10,000	No limit	142	1,709
Other Flatfish	50,000	50,000	50,000	50,000	50,000	50,000	556	2,100
Proj. coastwide ex-vessel revenue from all species								**34,905,286**
Proj. coastwide bycatch (mt)	**Lingcod**	**Canary**	**POP**	**Darkblot.**	**Widow**	**Bocaccio**		
	63.1	12.3	96.5	86.7	11.8	1.4		

[1] Includes mid-water limit of 12,000 lb/2-months (coastwide) for widow and 18,000 lb/2-months (north of 40°10') for yellowtail during period 6.

Alternative shallow lines south of 40°10'

	Jan/Feb	Mar/Apr	May/Jun	Jul/Aug	Sep/Oct	Nov/Dec		Coastwide $
South of 40°10' - year-long 70 fm shallow line								
Shallow line (fm)	**70**	**70**	**70**	**70**	**70**	**70**		
Deep line (fm)	150	150	250	250	150	150		
Proj. coastwide ex-vessel revenue from all species								**$ 35,232,417**
Proj. coastwide bycatch (mt)	Lingcod	Canary	POP	Darkblot.	Widow	**Bocaccio**		
	61.6	12.4	96.5	86.7	13.8	**8.00**		
Change from base case						**6.56**		**$ 327,132**
South of 40°10' - year-long 80 fm shallow line								
Shallow line (fm)	**80**	**80**	**80**	**80**	**80**	**80**		
Deep line (fm)	150	150	250	250	150	150		
Proj. coastwide ex-vessel revenue from all species								**$ 35,348,843**
Proj. coastwide bycatch (mt)	Lingcod	Canary	POP	Darkblot.	Widow	**Bocaccio**		
	61.8	12.5	96.5	86.7	14.6	**10.89**		
Change from base case						**9.44**		**$ 443,557**
South of 40°10' - variable shallow line #1								
Shallow line (fm)	**50**	**60**	**70**	**70**	**70**	**60**		
Deep line (fm)	150	150	250	250	150	150		
Proj. coastwide ex-vessel revenue from all species								**$ 35,139,932**
Proj. coastwide bycatch (mt)	Lingcod	Canary	POP	Darkblot.	Widow	**Bocaccio**		
	61.3	12.5	96.5	86.7	13.7	**2.84**		
Change from base case						**1.39**		**$ 234,646**
With 70,000 lb limits	64.1	13.1	97.7	87.0	14.4	**3.39**		**$ 35,414,906**
Change from base case						**1.94**		**$ 509,620**
South of 40°10' - variable shallow line #2								
Shallow line (fm)	**50**	**70**	**60**	**60**	**70**	**50**		
Deep line (fm)	150	150	250	250	150	150		
Proj. coastwide ex-vessel revenue from all species								**$ 35,070,549**
Proj. coastwide bycatch (mt)	Lingcod	Canary	POP	Darkblot.	Widow	**Bocaccio**		
	63.1	12.4	96.5	86.7	11.9	**2.92**		
Change from base case						**1.48**		**$ 165,263**

Distribution of projected bycatch of overfished species among target fisheries and periods, by area.

Region/		Bycatch amounts (mt)					
Target Fishery	Bimo. Pd.	Lingcod	Canary	POP	Dark-blotched	Widow	Bocaccio
N. of Cape Mendocino							
Arrowtooth	Nov/Dec	0.01	0.00	3.09	0.23	0.07	0.00
	Mar/Apr	0.00	0.00	0.85	0.19	0.01	0.00
	Year	0.01	0.00	3.94	0.42	0.08	0.00
Petrale sole	Jan/Feb	1.84	0.00	8.08	13.45	0.56	0.00
	Nov/Dec	0.58	0.00	7.92	3.37	0.03	0.00
	Year	2.43	0.00	16.00	16.82	0.59	0.00
Flatfish	Jan/Feb	1.15	0.05	7.65	10.16	1.33	0.00
	Mar/Apr	10.67	1.04	5.98	1.10	1.33	0.00
	May/Jun	13.99	3.83	19.85	4.34	2.14	0.00
	Jul/Aug	12.06	3.80	0.00	0.00	1.10	0.00
	Sep/Oct	13.94	2.87	3.11	2.94	0.18	0.00
	Nov/Dec	2.08	0.07	2.38	1.79	0.04	0.00
	Year	53.89	11.65	38.96	20.35	6.12	0.00
DTS Complex	Jan/Feb	0.28	0.00	4.97	10.75	2.96	0.00
	Mar/Apr	0.00	0.00	6.67	0.00	0.00	0.00
	May/Jun	0.00	0.00	5.69	0.00	0.00	0.00
	Jul/Aug	0.00	0.00	5.18	0.00	0.00	0.00
	Sep/Oct	0.00	0.00	1.77	0.00	0.00	0.00
	Nov/Dec	0.64	0.00	12.05	30.16	0.50	0.00
	Year	0.92	0.00	36.32	40.91	3.46	0.00
Widow/Ytail	Nov/Dec	0.00	0.08	0.00	0.20	0.00	
Leftover	Jan/Feb	0.05	0.00	0.32	0.16	0.16	
	Mar/Apr	0.04	0.01	0.02	0.06	0.03	
	May/Jun	0.57	0.34	0.34	0.47	0.34	0.00
	Jul/Aug	0.34	0.14	0.00	0.05	0.10	0.00
	Sep/Oct	0.67	0.03	0.09	0.10	0.15	
	Nov/Dec	0.16	0.01	0.46	0.37	0.03	
	Year	1.84	0.53	1.23	1.20	0.81	0.00
S. of Cape Mendocino							
Petrale sole	Jan/Feb	0.15	0.00	0.00	2.47	0.11	0.02
	Nov/Dec	0.25	0.00	0.00	1.72	0.00	0.00
	Year	0.40	0.00	0.00	4.19	0.11	0.02
Flatfish	Jan/Feb	0.10	0.00	0.00	0.52	0.06	0.53
	Mar/Apr	0.05	0.00	0.00	0.00	0.00	0.50
	May/Jun	0.30	0.00	0.00	0.00	0.05	0.17
	Jul/Aug	2.29	0.00	0.00	0.00	0.00	0.00
	Sep/Oct	0.14	0.00	0.00	0.00	0.03	0.00
	Nov/Dec	0.16	0.00	0.00	0.55	0.04	0.13
	Year	3.02	0.00	0.00	1.07	0.18	1.32
DTS Complex	Jan/Feb	0.05	0.00	0.00	0.58	0.02	0.03
	Mar/Apr	0.00	0.00	0.00	0.00	0.00	0.00
	May/Jun	0.00	0.00	0.00	0.00	0.00	0.00
	Jul/Aug	0.00	0.00	0.00	0.00	0.00	0.00
	Sep/Oct	0.00	0.00	0.00	0.00	0.00	0.00
	Nov/Dec	0.16	0.00	0.00	0.89	0.04	0.01
	Year	0.21	0.00	0.00	1.47	0.06	0.04
Widow/Ytail	Nov/Dec	0.00	0.00	0.00	0.00	0.00	0.00
Slope rock	Jan/Feb	0.00	0.00	0.00	0.02	0.30	0.06
	Mar/Apr	0.00	0.00	0.00	0.00	0.00	0.00
	May/Jun	0.00	0.00	0.00	0.00	0.00	0.00
	Jul/Aug	0.00	0.00	0.00	0.00	0.00	0.00
	Sep/Oct	0.00	0.00	0.00	0.00	0.00	0.00
	Nov/Dec	0.19	0.00	0.00	0.02	0.09	0.00
	Year	0.35	0.00	0.00	0.04	0.38	0.06
Leftover	Jan/Feb	0.00	0.00	0.00	0.00	0.00	0.00
	Mar/Apr	0.00	0.00	0.00	0.00	0.00	0.00
	May/Jun	0.00	0.00	0.00	0.00	0.00	0.00
	Jul/Aug	0.00	0.00	0.00	0.00	0.00	0.00
	Sep/Oct	0.00	0.00	0.00	0.00	0.00	0.00
	Nov/Dec	0.02	0.00	0.00	0.00	0.01	0.00
	Year	0.02	0.00	0.00	0.00	0.01	0.00

Distribution of coastwide projected bycatch of overfished species among target fisheries and periods.

Region/	Target Fishery	Bimo. Pd.	Bycatch amounts (mt) Lingcod	Canary	POP	Dark-blotched	Widow	Bocaccio
Coastwide								
	Arrowtooth	Jan/Feb	0.01	0.00	3.09	0.23	0.07	0.00
		Nov/Dec	0.00	0.00	0.85	0.19	0.01	0.00
		Year	0.01	0.00	3.94	0.42	0.08	0.00
	Petrale sole	Jan/Feb	2.00	0.00	8.08	15.92	0.67	0.02
		Nov/Dec	0.83	0.00	7.92	5.09	0.03	0.00
		Year	2.83	0.00	16.00	21.01	0.70	0.02
	Flatfish	Jan/Feb	1.25	0.05	7.65	10.68	1.40	0.53
		Mar/Apr	10.72	1.04	5.98	1.10	1.33	0.50
		May/Jun	14.28	3.83	19.85	4.34	2.19	0.17
		Jul/Aug	14.35	3.80	0.00	0.00	1.10	0.00
		Sep/Oct	14.07	2.87	3.11	2.94	0.22	0.00
		Nov/Dec	2.24	0.07	2.38	2.34	0.08	0.13
		Year	56.91	11.65	38.96	21.41	6.30	1.32
	DTS Complex	Jan/Feb	0.33	0.00	4.97	11.32	2.99	0.03
		Mar/Apr	0.00	0.00	6.67	0.00	0.00	0.00
		May/Jun	0.00	0.00	5.69	0.00	0.00	0.00
		Jul/Aug	0.00	0.00	5.18	0.00	0.00	0.00
		Sep/Oct	0.00	0.00	1.77	0.00	0.00	0.00
		Nov/Dec	0.80	0.00	12.05	31.05	0.54	0.01
		Year	1.13	0.00	36.32	42.38	3.53	0.04
	Widow/Ytail	Nov/Dec	0.00	0.08	0.00	0.20	0.00	0.00
	Slope rock	Jan/Feb	0.15	0.00	0.00	0.02	0.30	0.06
		Mar/Apr	0.00	0.00	0.00	0.00	0.00	0.00
		May/Jun	0.00	0.00	0.00	0.00	0.00	0.00
		Jul/Aug	0.00	0.00	0.00	0.00	0.00	0.00
		Sep/Oct	0.00	0.00	0.00	0.00	0.00	0.00
		Nov/Dec	0.19	0.00	0.00	0.02	0.09	0.00
		Year	0.35	0.00	0.00	0.04	0.38	0.06
	Leftover	Jan/Feb	0.05	0.00	0.32	0.16	0.16	0.00
		Mar/Apr	0.04	0.01	0.02	0.06	0.03	0.00
		May/Jun	0.57	0.34	0.34	0.47	0.34	0.00
		Jul/Aug	0.34	0.14	0.00	0.05	0.10	0.00
		Sep/Oct	0.67	0.03	0.09	0.10	0.15	0.00
		Nov/Dec	0.17	0.01	0.46	0.37	0.04	0.00
		Year	1.86	0.53	1.23	1.20	0.82	0.00
	Arrowtooth	All Periods	0.01	0.00	3.94	0.42	0.08	0.00
	Petrale sole	All Periods	2.83	0.00	16.00	21.01	0.70	0.02
	Flatfish	All Periods	56.91	11.65	38.96	21.41	6.30	1.32
	DTS Complex	All Periods	1.13	0.00	36.32	42.38	3.53	0.04
	Widow/Ytail	All Periods	0.00	0.08	0.00	0.20	0.00	0.00
	Slope Rock	All Periods	0.35	0.00	0.00	0.04	0.38	0.06
	Leftover	All Periods	1.86	0.53	1.23	1.20	0.82	0.00
	Total	All Periods	63.08	12.25	96.47	86.66	11.80	1.44

Summary of projected vessel changes in groundfish revenue from between 2000/2001 and 2003, modeled with mid-water opportunity for widow/yellowtail in period 6, with limits of 12,000 widow (coastwide) and 18,000 lb of yellowtail (N. of 40o10').

Fleet/ Avg. 2000-01 revenue / Direction of change	< 20% change in projected revenue					> 20% change in projected revenue					All vessels				
	# of ves.	Avg. 2000-01 GF ($)	Proj. 2,003 GF ($)	Average change in GF revenue $	%	# of ves.	Avg. 2000-01 GF ($)	Proj. 2,003 GF ($)	Average change in GF revenue $	%	# of ves.	Avg. 2000-01 GF ($)	Proj. 2,003 GF ($)	Average change in GF revenue $	%
Non-whiting vessels															
$21 - $100,000															
Lower 2003 revenue	12	62,734	56,970	-5,764	-9%	19	44,735	28,799	-15,936	-37%	31	51,702	39,704	-11,999	-26%
Higher 2003 revenue	12	53,693	58,874	5,181	12%	30	46,712	67,718	21,005	55%	42	48,707	65,191	16,484	43%
Total	24	58,214	57,922	-291	1%	49	45,946	52,627	6,681	19%	73	49,979	54,368	4,389	14%
> $100,000															
Lower 2003 revenue	38	163,361	145,716	-17,645	-10%	48	235,515	158,320	-77,194	-33%	86	203,633	152,751	-50,882	-23%
Higher 2003 revenue	25	138,878	147,711	8,833	7%	8	113,281	143,159	29,878	27%	33	132,673	146,607	13,935	12%
Total	63	153,645	146,508	-7,138	-4%	56	218,053	156,154	-61,898	-25%	119	183,955	151,047	-32,907	-14%
All															
Lower 2003 revenue	50	139,210	124,417	-14,793	-10%	67	181,413	121,590	-59,823	-34%	117	163,378	122,798	-40,579	-24%
Higher 2003 revenue	37	111,250	118,899	7,648	9%	38	60,727	83,600	22,873	49%	75	85,652	101,014	15,362	29%
Total	87	127,319	122,070	-5,249	-2%	105	137,736	107,841	-29,895	-4%	192	133,016	114,289	-18,727	-3%
Whiting vessels															
$21 - $100,000															
Lower 2003 revenue	1	30,052	25,388	-4,664	-16%	3	69,995	44,351	-25,645	-37%	4	60,009	39,610	-20,399	-32%
Higher 2003 revenue	2	83,478	91,421	7,943	10%	2	59,159	84,905	25,746	44%	4	71,319	88,163	16,844	27%
Total	3	65,669	69,410	3,741	1%	5	65,661	60,572	-5,088	-5%	8	65,664	63,887	-1,777	-2%
> $100,000															
Lower 2003 revenue	5	242,593	216,527	-26,067	-10%	24	331,049	212,180	-118,869	-37%	29	315,798	212,929	-102,869	-33%
Higher 2003 revenue	2	139,444	150,309	10,864	7%	.	.	.	.	.	2	139,444	150,309	10,864	7%
Total	7	213,122	197,607	-15,515	-5%	24	331,049	212,180	-118,869	-37%	31	304,420	208,889	-95,531	-30%
All															
Lower 2003 revenue	6	207,170	184,670	-22,499	-11%	27	302,043	193,532	-108,511	-37%	33	284,793	191,921	-92,872	-33%
Higher 2003 revenue	4	111,461	120,865	9,404	9%	2	59,159	84,905	25,746	44%	6	94,027	108,878	14,851	20%
Total	10	168,886	159,148	-9,738	-3%	29	285,292	186,041	-99,252	-32%	39	255,445	179,145	-76,299	-24%
All vessels															
$21 - $100,000															
Lower 2003 revenue	13	60,220	54,541	-5,679	-10%	22	48,180	30,919	-17,260	-37%	35	52,652	39,693	-12,959	-27%
Higher 2003 revenue	14	57,948	63,523	5,575	12%	32	47,490	68,792	21,301	55%	46	50,673	67,188	16,515	41%
Total	27	59,042	59,199	157	1%	54	47,771	53,362	5,591	17%	81	51,528	55,308	3,780	12%
> $100,000															
Lower 2003 revenue	43	172,574	153,950	-18,624	-10%	72	267,359	176,274	-91,086	-35%	115	231,918	167,927	-63,991	-26%
Higher 2003 revenue	27	138,920	147,903	8,983	7%	8	113,281	143,159	29,878	27%	35	133,060	146,819	13,759	11%
Total	70	159,593	151,618	-7,975	-4%	80	251,952	172,962	-78,990	-29%	150	208,851	163,001	-45,850	-17%
All															
Lower 2003 revenue	56	146,492	130,873	-15,619	-10%	94	216,062	142,254	-73,808	-35%	150	190,089	138,005	-52,084	-26%
Higher 2003 revenue	41	111,271	119,090	7,820	9%	40	60,649	83,665	23,017	49%	81	86,272	101,596	15,324	29%
Total	97	131,605	125,893	-5,712	-2%	134	169,670	124,765	-44,905	-10%	231	153,686	125,239	-28,447	-7%

Total shoreside groundfish ex-vessel revenue in the 2000-2001 trawl fishery.................................. $ 35,501,425
Total projected shoreside groundfish ex-vessel revenue in the 2000-2001 trawl fishery.................... $ 28,930,126
Change in fleet revenue from the 2000-2001 period to 2003.. $ (6,571,299)
Percentage change in fleet revenue from the 2000-2001 period to 2003...................................... -18.5%

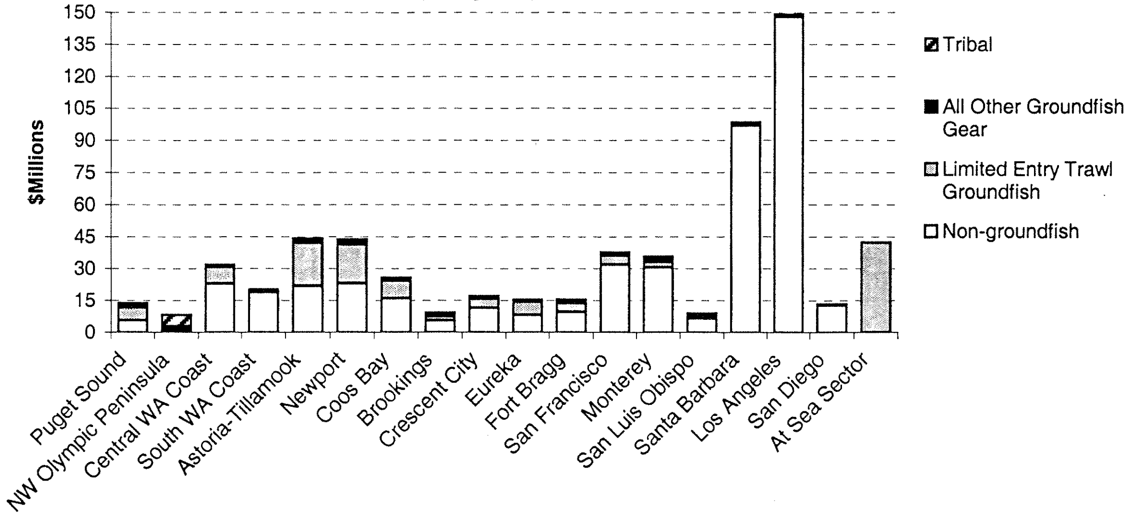
Estimates of effects on coast-wide local community income impacts (direct, indirect and induced) based on draft EIS OYs and managment measure options.

	Base (11/00-10/01)	Low OYs	High OYs	No Depth Restricts.	Allocation Committee Option	Sept. Meeting Option
Total Income ($ mil.)						
Total West Coast (All Ocean Fisheries, 0-200 miles)	732	693	714	696	709	
Groundfish (including all at-sea, excluding tribes)	155	116	137	119	131	
Limited Entry Trawl Groundfish	130	99	115	100	110	
All Other Gears	25	17	21	19	22	
Change from Base ($ mil.)						
Total West Coast (All Ocean Fisheries, 0-200 miles)		-39	-18	-36	-23	
Groundfish (including all at-sea, excluding tribes)		-39	-18	-36	-23	
Limited Entry Trawl Groundfish		-31	-15	-30	-20	
All Other Gears		-8	-3	-6	-3	
% Change from Base						
Total West Coast (All Ocean Fisheries, 0-200 miles)		-5.3	-2.5	-4.9	-3.2	
Groundfish (including all at-sea, excluding tribes)		-25.2	-11.6	-23.1	-15.0	
Limited Entry Trawl Groundfish		-23.9	-11.4	-22.8	-15.8	
All Other Gears		-32.0	-13.0	-24.6	-11.3	

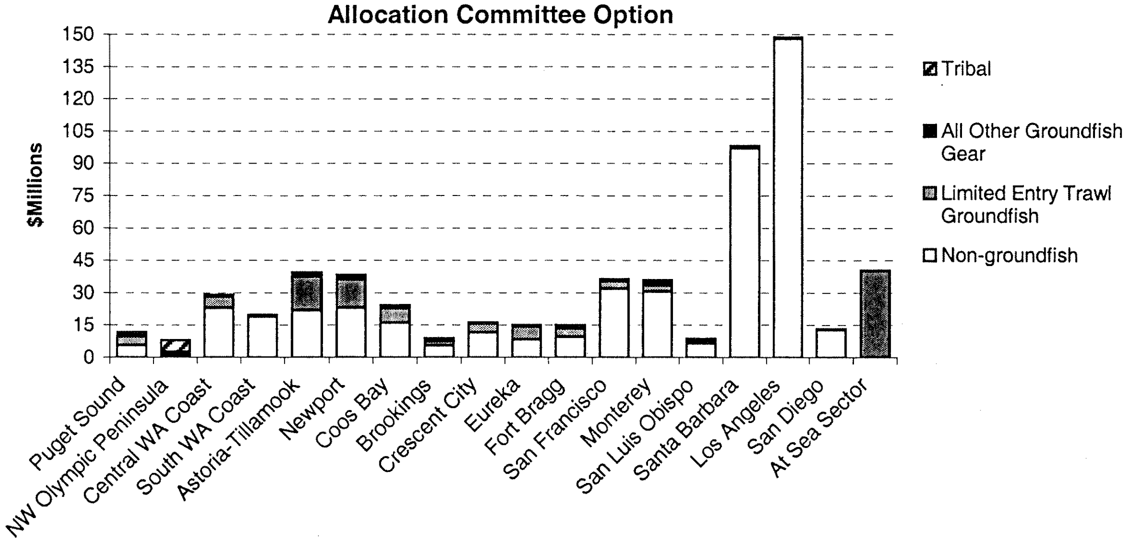
Direct: Wages, Salary and Profits to Harvesters and Processors
Indirect: Wages, Salary and Profits Earned by Suppliers (e.g. ice, bait, gear, vessel maintenance)
Induced: Wages, Salary and Profits Earned When Direct and Indirect Income is Spent (grocery stores, home expenditures, etc.)

Notes: Only effects on groundfish fisheries are modeled here. Effects of restrictions on nongroundfish fisheries has not yet been incorporated.
For nontrawl fishery the estimates are rough and based on association of species with depth areas to be closed.

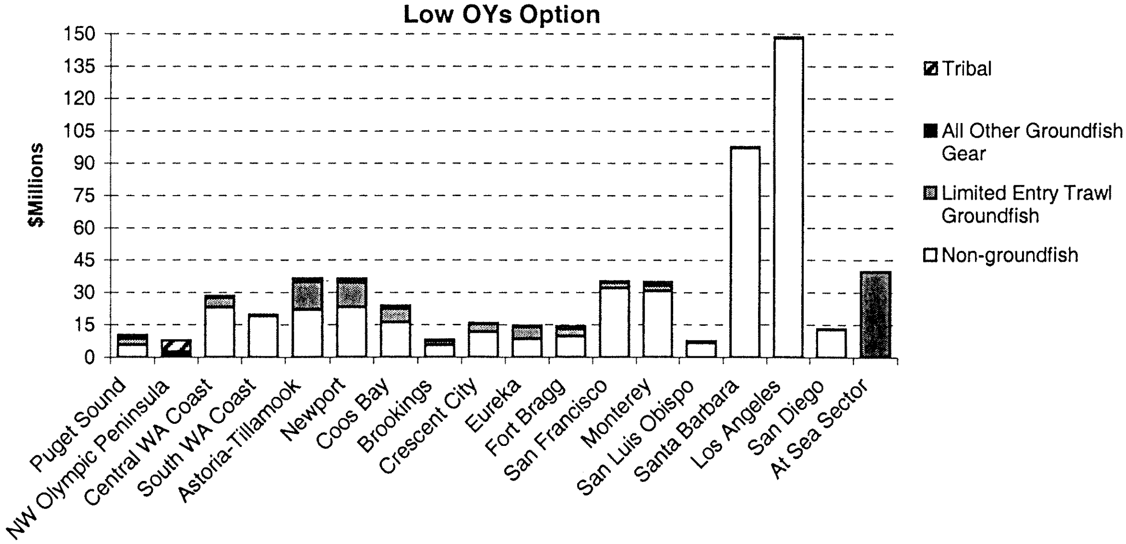
Components of Total Commercial Ocean Fishery-Related Income: Base Scenario



Components of Total Commercial Ocean Fishery-Related Income: Allocation Committee Option



Components of Total Commercial Ocean Fishery-Related Income: Low OYs Option



Estimated total income* associated with commercial fishing by major port area under alternative groundfish management measures ($,000) (p. 1 of 2)

	WASHINGTON					OREGON				
Base (11/00-10/01)	Puget Sound	NW Olympic Peninsula	Central WA Coast	South WA Coast	Washington TOTAL	Astoria-Tillamook	Newport	Coos Bay	Brookings	Oregon TOTAL
Total West Coast (All Ocean Fisheries, 0-200 miles)	65,356	8,220	31,804	20,333	129,300	44,237	43,682	25,864	9,291	123,074
Groundfish (including at-sea, excluding tribes)	8,117	2,337	8,846	1,414	20,717	22,320	20,529	9,738	3,751	56,337
Limited Entry Trawl Groundfish	5,981	1,165	7,889	1,231	16,267	20,295	18,401	8,167	1,982	48,844
All Other Groundfish Gear	2,136	1,172	956	183	4,450	2,025	2,128	1,571	1,769	7,493
Low OYs										
Total West Coast (All Ocean Fisheries, 0-200 miles)	61,768	7,753	28,383	19,710	121,202	36,535	36,452	23,815	8,113	104,916
Groundfish (including at-sea, excluding tribes)	4,530	1,869	5,425	791	12,619	14,618	13,299	7,689	2,573	38,179
Limited Entry Trawl Groundfish	2,737	742	4,490	627	8,596	12,794	11,247	6,197	1,928	32,166
All Other Groundfish Gear	1,793	1,127	935	164	4,023	1,824	2,052	1,492	645	6,013
High OYs										
Total West Coast (All Ocean Fisheries, 0-200 miles)	63,229	7,933	28,148	19,943	122,840	41,096	40,265	24,929	8,511	114,801
Groundfish (including at-sea, excluding tribes)	5,991	2,049	5,190	1,025	14,258	19,178	17,112	8,802	2,971	48,064
Limited Entry Trawl Groundfish	3,854	878	4,234	842	9,809	17,259	15,004	7,271	2,141	41,674
All Other Groundfish Gear	2,136	1,171	956	182	4,449	1,920	2,108	1,531	830	6,390
All Depth Management										
Total West Coast (All Ocean Fisheries, 0-200 miles)	61,685	7,821	28,923	19,781	121,797	37,445	37,772	23,458	8,318	106,993
Groundfish (including at-sea, excluding tribes)	4,447	1,938	5,965	862	13,214	15,528	14,619	7,332	2,778	40,256
Limited Entry Trawl Groundfish	2,674	828	5,040	702	9,245	13,768	12,573	5,820	1,598	33,759
All Other Groundfish Gear	1,772	1,109	925	160	3,970	1,759	2,045	1,512	1,180	6,496
Allocation Committee Option										
Total West Coast (All Ocean Fisheries, 0-200 miles)	63,293	7,986	29,113	19,839	123,819	39,500	38,312	24,333	8,901	111,047
Groundfish (including at-sea, excluding tribes)	6,055	2,102	6,155	920	15,236	17,583	15,159	8,207	3,361	44,310
Limited Entry Trawl Groundfish	3,919	931	5,199	738	10,787	15,619	13,050	6,653	1,976	37,297
All Other Groundfish Gear	2,136	1,171	956	182	4,449	1,964	2,109	1,554	1,386	7,013

* Includes direct, indirect and induced income impacts.

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Estimated local income* associated with commercial fishing by major port area under alternative groundfish management measures ($,000) (p. 2 of 2)

	CALIFORNIA											
	Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	San Luis Obispo	Santa Barbara	Los Angeles	San Diego	California TOTAL	At Sea Sector	Grand Total
Base (11/00-10/01)												
Total West Coast (All Ocean Fisheries, 0-200 miles)	17,066	15,549	15,522	37,760	35,761	8,967	98,393	149,056	13,431	437,045	42,372	731,791
Groundfish (including at-sea, excluding tribes)	5,477	7,268	5,967	5,784	5,152	2,423	1,398	1,149	625	35,245	42,372	154,672
Limited Entry Trawl Groundfish	4,249	6,197	4,287	4,205	2,611	1,025	19	2	4	22,599	42,372	130,083
All Other Groundfish Gear	1,228	1,071	1,680	1,579	2,541	1,398	1,379	1,147	621	12,646	0	24,589
Low OYs												
Total West Coast (All Ocean Fisheries, 0-200 miles)	15,813	14,598	14,380	35,177	34,865	7,456	97,690	148,735	13,313	427,567	39,610	693,294
Groundfish (including at-sea, excluding tribes)	4,224	6,317	4,826	3,202	4,256	912	695	828	507	25,767	39,610	116,174
Limited Entry Trawl Groundfish	3,748	5,606	3,490	2,456	2,439	903	1	2	4	18,649	39,610	99,021
All Other Groundfish Gear	476	711	1,336	746	1,817	10	693	827	503	7,118	0	17,153
High OYs												
Total West Coast (All Ocean Fisheries, 0-200 miles)	16,415	15,652	15,469	36,274	35,923	8,801	98,319	148,901	13,429	434,722	41,477	713,840
Groundfish (including at-sea, excluding tribes)	4,826	7,371	5,914	4,299	5,314	2,257	1,325	994	622	32,922	41,477	136,720
Limited Entry Trawl Groundfish	4,247	6,614	4,257	3,159	2,893	1,111	12	2	4	22,299	41,477	115,258
All Other Groundfish Gear	579	756	1,657	1,140	2,421	1,146	1,313	992	618	10,623	0	21,462
All Depth Management												
Total West Coast (All Ocean Fisheries, 0-200 miles)	15,398	14,044	14,016	35,354	35,153	8,537	97,608	148,248	13,042	426,941	40,339	696,070
Groundfish (including at-sea, excluding tribes)	3,809	5,763	4,461	3,378	4,544	1,993	613	342	236	25,141	40,339	118,950
Limited Entry Trawl Groundfish	3,132	4,965	2,867	2,575	2,587	939	6	1	0	17,073	40,339	100,416
All Other Groundfish Gear	676	798	1,594	803	1,957	1,054	607	341	236	8,068	0	18,534
Allocation Committee Option												
Total West Coast (All Ocean Fisheries, 0-200 miles)	16,307	15,075	15,071	36,420	35,865	8,766	98,255	148,723	13,298	433,318	40,339	708,523
Groundfish (including at-sea, excluding tribes)	4,717	6,794	5,516	4,444	5,256	2,222	1,260	816	491	31,518	40,339	131,404
Limited Entry Trawl Groundfish	4,064	6,017	3,859	3,304	2,834	1,076	12	1	4	21,172	40,339	109,596
All Other Groundfish Gear	653	777	1,657	1,140	2,421	1,146	1,248	815	487	10,346	0	21,808

* Includes direct, indirect and induced income impacts.

Estimated percent change (from Base scenario) in total fishery related-income* by major port area under alternative groundfish mgt. measures (p. 1 of 2)

	WASHINGTON					OREGON				
Base (11/00-10/01) *($,000)*	Puget Sound	NW Olympic Peninsula	Central WA Coast	South WA Coast	Washington TOTAL	Astoria-Tillamook	Newport	Coos Bay	Brookings	Oregon TOTAL
Total West Coast (All Ocean Fisheries, 0-200 miles)	*65,356*	*8,220*	*31,804*	*20,333*	*129,300*	*44,237*	*43,682*	*25,864*	*9,291*	*123,074*
Groundfish (including at-sea, excluding tribes)	*8,117*	*2,337*	*8,846*	*1,414*	*20,717*	*22,320*	*20,529*	*9,738*	*3,751*	*56,337*
Limited Entry Trawl Groundfish	*5,981*	*1,165*	*7,889*	*1,231*	*16,267*	*20,295*	*18,401*	*8,167*	*1,982*	*48,844*
All Other Groundfish Gear	*2,136*	*1,172*	*956*	*183*	*4,450*	*2,025*	*2,128*	*1,571*	*1,769*	*7,493*
Low OYs										
Total West Coast (All Ocean Fisheries, 0-200 miles)	-5%	-6%	-11%	-3%	-6%	-17%	-17%	-8%	-13%	-15%
Groundfish (including at-sea, excluding tribes)	-44%	-20%	-39%	-44%	-39%	-35%	-35%	-21%	-31%	-32%
Limited Entry Trawl Groundfish	-54%	-36%	-43%	-49%	-47%	-37%	-39%	-24%	-3%	-34%
All Other Groundfish Gear	-16%	-4%	-2%	-10%	-10%	-10%	-4%	-5%	-64%	-20%
High OYs										
Total West Coast (All Ocean Fisheries, 0-200 miles)	-3%	-3%	-11%	-2%	-5%	-7%	-8%	-4%	-8%	-7%
Groundfish (including at-sea, excluding tribes)	-26%	-12%	-41%	-28%	-31%	-14%	-17%	-10%	-21%	-15%
Limited Entry Trawl Groundfish	-36%	-25%	-46%	-32%	-40%	-15%	-18%	-11%	8%	-15%
All Other Groundfish Gear	0%	0%	0%	0%	0%	-5%	-1%	-3%	-53%	-15%
All Depth Management										
Total West Coast (All Ocean Fisheries, 0-200 miles)	-6%	-5%	-9%	-3%	-6%	-15%	-14%	-9%	-10%	-13%
Groundfish (including at-sea, excluding tribes)	-45%	-17%	-33%	-39%	-36%	-30%	-29%	-25%	-26%	-29%
Limited Entry Trawl Groundfish	-55%	-29%	-36%	-43%	-43%	-32%	-32%	-29%	-19%	-31%
All Other Groundfish Gear	-17%	-5%	-3%	-12%	-11%	-13%	-4%	-4%	-33%	-13%
Allocation Committee Option										
Total West Coast (All Ocean Fisheries, 0-200 miles)	-3%	-3%	-8%	-2%	-4%	-11%	-12%	-6%	-4%	-10%
Groundfish (including at-sea, excluding tribes)	-25%	-10%	-30%	-35%	-26%	-21%	-26%	-16%	-10%	-21%
Limited Entry Trawl Groundfish	-34%	-20%	-34%	-40%	-34%	-23%	-29%	-19%	0%	-24%
All Other Groundfish Gear	0%	0%	0%	0%	0%	-3%	-1%	-1%	-22%	-6%

* Includes direct, indirect and induced income impacts.

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Estimated percent change (from Base scenario) in local fishery related-income* by major port area under alternative groundfish mgt. measures (p. 2 of 2)

	CALIFORNIA											
Base (11/00-10/01) *($,000)*	Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	San Luis Obispo	Santa Barbara	Los Angeles	San Diego	California TOTAL	At Sea Sector	Grand Total
Total West Coast (All Ocean Fisheries, 0-200 miles)	*17,066*	*15,549*	*15,522*	*37,760*	*35,761*	*8,967*	*98,393*	*149,056*	*13,431*	*437,045*	*42,372*	*731,791*
Groundfish (including at-sea, excluding tribes)	*5,477*	*7,268*	*5,967*	*5,784*	*5,152*	*2,423*	*1,398*	*1,149*	*625*	*35,245*	*42,372*	*154,672*
Limited Entry Trawl Groundfish	*4,249*	*6,197*	*4,287*	*4,205*	*2,611*	*1,025*	*19*	*2*	*4*	*22,599*	*42,372*	*130,083*
All Other Groundfish Gear	*1,228*	*1,071*	*1,680*	*1,579*	*2,541*	*1,398*	*1,379*	*1,147*	*621*	*12,646*	*0*	*24,589*
Low OYs												
Total West Coast (All Ocean Fisheries, 0-200 miles)	-7%	-6%	-7%	-7%	-3%	-17%	-1%	0%	-1%	-2%	-7%	-5%
Groundfish (including at-sea, excluding tribes)	-23%	-13%	-19%	-45%	-17%	-62%	-50%	-28%	-19%	-27%	-7%	-25%
Limited Entry Trawl Groundfish	-12%	-10%	-19%	-42%	-7%	-12%	-93%	0%	0%	-17%	-7%	-24%
All Other Groundfish Gear	-61%	-34%	-21%	-53%	-29%	-99%	-50%	-28%	-19%	-44%		-30%
High OYs												
Total West Coast (All Ocean Fisheries, 0-200 miles)	-4%	1%	0%	-4%	0%	-2%	0%	0%	0%	-1%	-2%	-2%
Groundfish (including at-sea, excluding tribes)	-12%	1%	-1%	-26%	3%	-7%	-5%	-13%	0%	-7%	-2%	-12%
Limited Entry Trawl Groundfish	0%	7%	-1%	-25%	11%	8%	-38%	0%	0%	-1%	-2%	-11%
All Other Groundfish Gear	-53%	-29%	-1%	-28%	-5%	-18%	-5%	-14%	0%	-16%		-13%
All Depth Management												
Total West Coast (All Ocean Fisheries, 0-200 miles)	-10%	-10%	-10%	-6%	-2%	-5%	-1%	-1%	-3%	-2%	-5%	-5%
Groundfish (including at-sea, excluding tribes)	-30%	-21%	-25%	-42%	-12%	-18%	-56%	-70%	-62%	-29%	-5%	-23%
Limited Entry Trawl Groundfish	-26%	-20%	-33%	-39%	-1%	-8%	-67%	-29%	-100%	-24%	-5%	-23%
All Other Groundfish Gear	-45%	-25%	-5%	-49%	-23%	-25%	-56%	-70%	-62%	-36%		-25%
Allocation Committee Option												
Total West Coast (All Ocean Fisheries, 0-200 miles)	-4%	-3%	-3%	-4%	0%	-2%	0%	0%	-1%	-1%	-5%	-3%
Groundfish (including at-sea, excluding tribes)	-14%	-7%	-8%	-23%	2%	-8%	-10%	-29%	-21%	-11%	-5%	-15%
Limited Entry Trawl Groundfish	-4%	-3%	-10%	-21%	9%	5%	-36%	-29%	0%	-6%	-5%	-16%
All Other Groundfish Gear	-47%	-27%	-1%	-28%	-5%	-18%	-10%	-29%	-22%	-18%		-11%

* Includes direct, indirect and induced income impacts.

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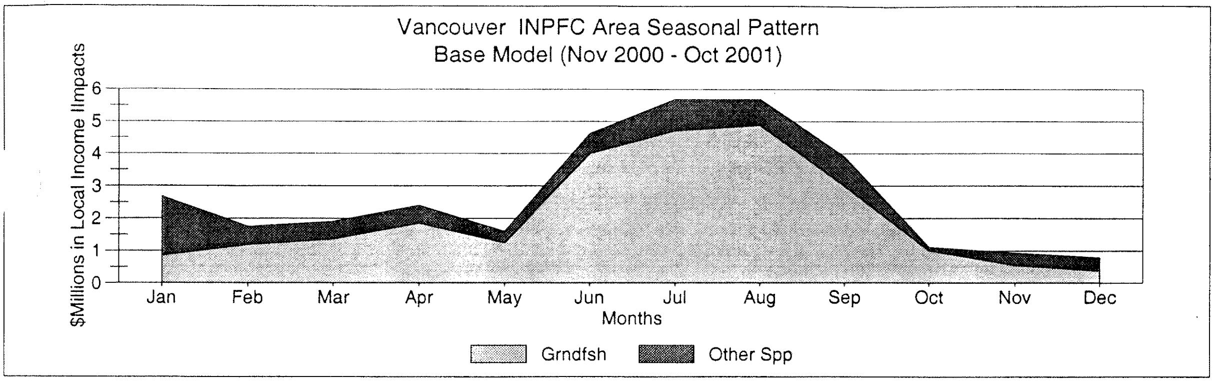
TABLE: Recreational personal income impact expenditures related to trip expenditures in the recreational groundfish fishery in 2001. (Washington and Oregon effort data from the state programs, California data from the MRFSS suvery administered by the RecFIN program).

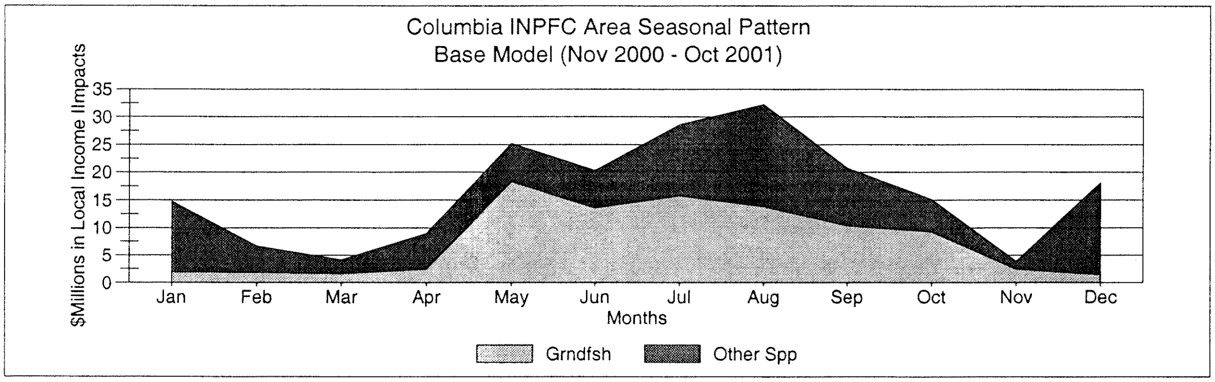
Area		Angler Trips (thousands)			Economic Value of Fishery (thousands of dollars)		
		Charter	Private	Total	Charter	Private	Total
Washington Coast	Total Recreational Trips	44	135	179	$3,992	$5,035	$9,026
	Groundfish Trips	12	10	22	$1,130	$372	$1,502
	Sept Mtg Option		no short term change			no short term change	
Oregon	Total Recreational Trips	70	140	211	$6,382	$4,911	$11,293
	Groundfish Trips	47	22	69	$4,227	$783	$5,011
	Sept Mtg Option		no short term change			no short term change	
North/Central California	Total Recreational Trips	221	901	1,122	$27,294	$54,172	$81,466
	Groundfish Trips	141	164	305	$17,414	$9,860	$27,274
	Sept Mtg Option	76	101	177	$9,367	$6,065	$15,432
Southern California	Total Recreational Trips	577	1,757	2,334	$72,321	$81,023	$153,345
	Groundfish Trips	204	252	456	$25,569	$11,621	$37,190
	Sept Mtg Option	128	137	265	$16,041	$6,332	$22,372
California Total	Total Recreational Trips	798	2,658	3,456	$99,616	$135,195	$234,811
	Groundfish Trips	345	416	761	$42,983	$21,481	$64,465
	Sept Mtg Option	204	238	442	$25,408	$12,397	$37,804
Grand Total	Total Recreational Trips	912	2,933	3,845	$109,989	$145,141	$255,130
	Groundfish Trips	404	448	852	$48,341	$22,637	$70,978

NOTE 1. Income impact estimates based on per trip expenditures and do not include capital and equipment costs.

NOTE 2. Increased restrictions not projected to result in a change in effort over the short term may deteriorate the quality of the recreational experience and have a long term effect on demand for recreational trips.

OK


Vancouver INPFC Area Seasonal Pattern
Base Model (Nov 2000 - Oct 2001)
$Millions in Local Income Impacts
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months
Grndfsh
Other Spp


Columbia INPFC Area Seasonal Pattern
Base Model (Nov 2000 - Oct 2001)
$Millions in Local Income Impacts
0
5
10
15
20
25
30
35
Jan
Feb
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Jun
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Aug
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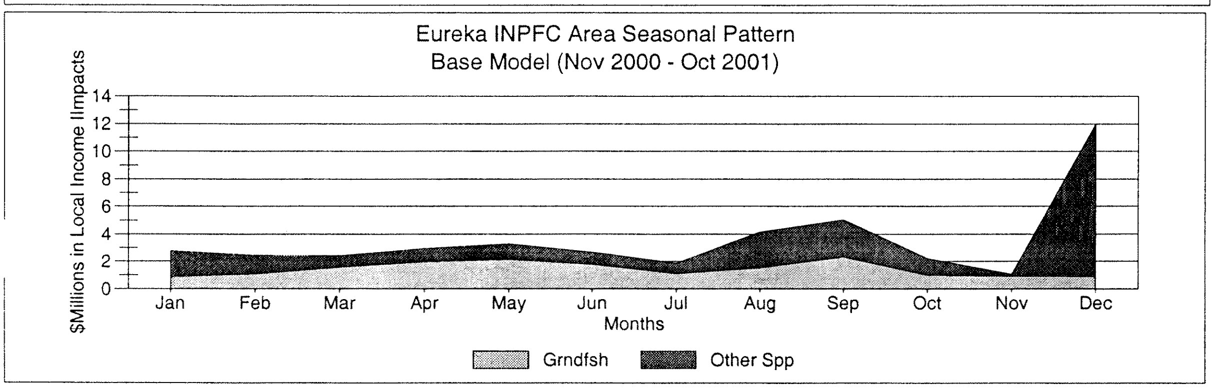
Nov
Dec
Months
Grndfsh
Other Spp


Eureka INPFC Area Seasonal Pattern
Base Model (Nov 2000 - Oct 2001)
$Millions in Local Income Impacts
0
2
4
6
8
10
12
14
Jan
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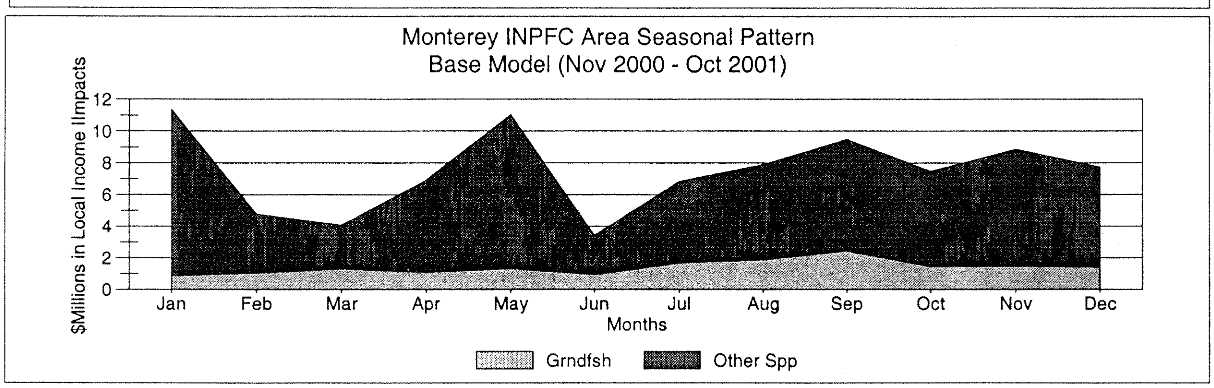
Jul
Aug
Sep
Oct
Nov
Dec
Months
Grndfsh
Other Spp


Monterey INPFC Area Seasonal Pattern
Base Model (Nov 2000 - Oct 2001)
$Millions in Local Income Impacts
0
2
4
6
8
10
12
Jan
Feb
Mar
Apr
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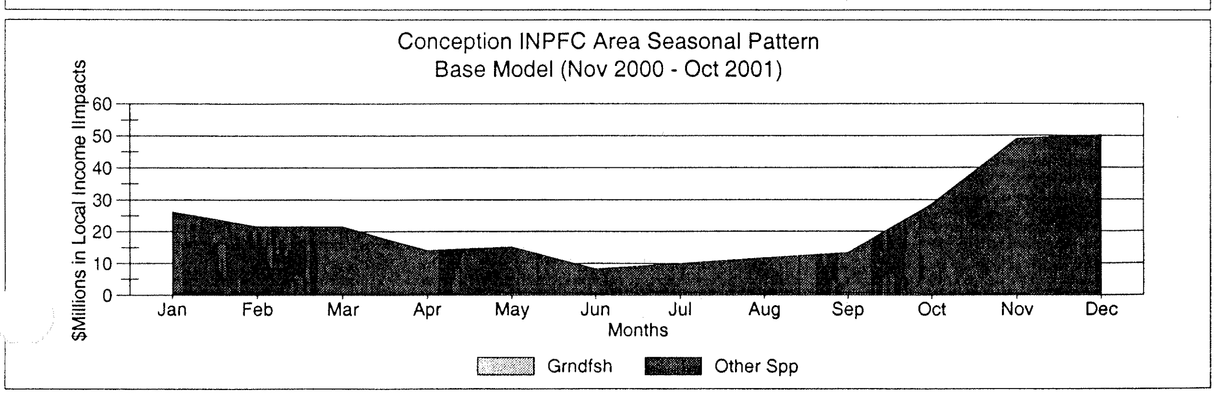
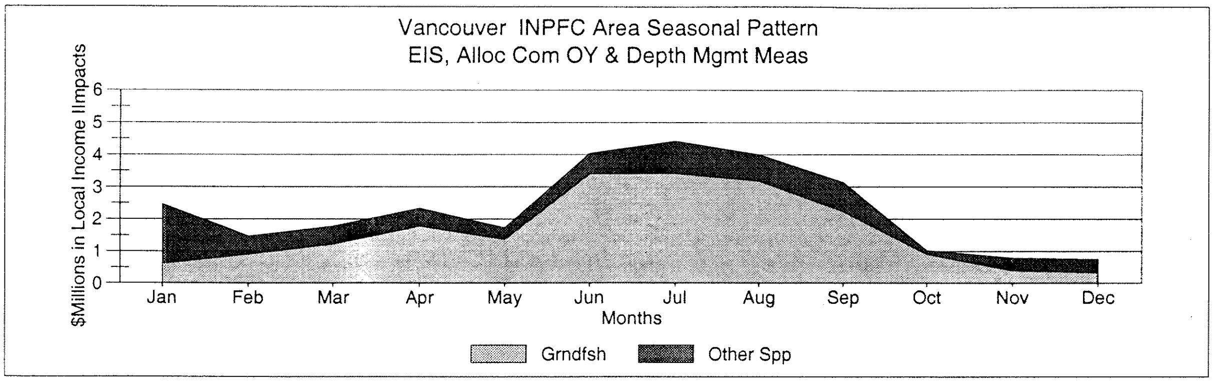
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months
Grndfsh
Other Spp


Conception INPFC Area Seasonal Pattern
Base Model (Nov 2000 - Oct 2001)
$Millions in Local Income Impacts
0
10
20
30
40
50
60
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months
Grndfsh
Other Spp

OK



Vancouver INPFC Area Seasonal Pattern
EIS, Alloc Com OY & Depth Mgmt Meas
$Millions in Local Income Iimpacts
0
1
2
3
4
5
6
Jan
Feb
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Jun
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Aug
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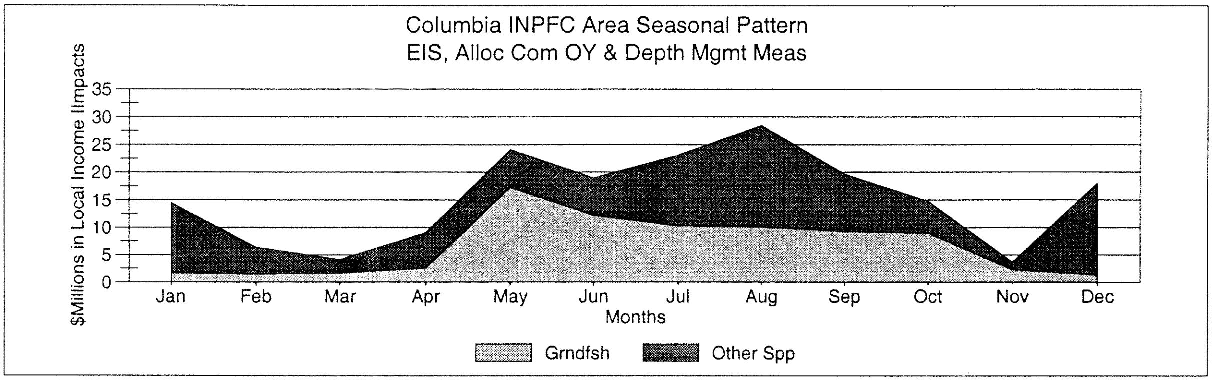
Oct
Nov
Dec
Months
Grndfsh
Other Spp



Columbia INPFC Area Seasonal Pattern
EIS, Alloc Com OY & Depth Mgmt Meas
$Millions in Local Income Iimpacts
0
5
10
15
20
25
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35
Jan
Feb
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Jun
Jul
Aug
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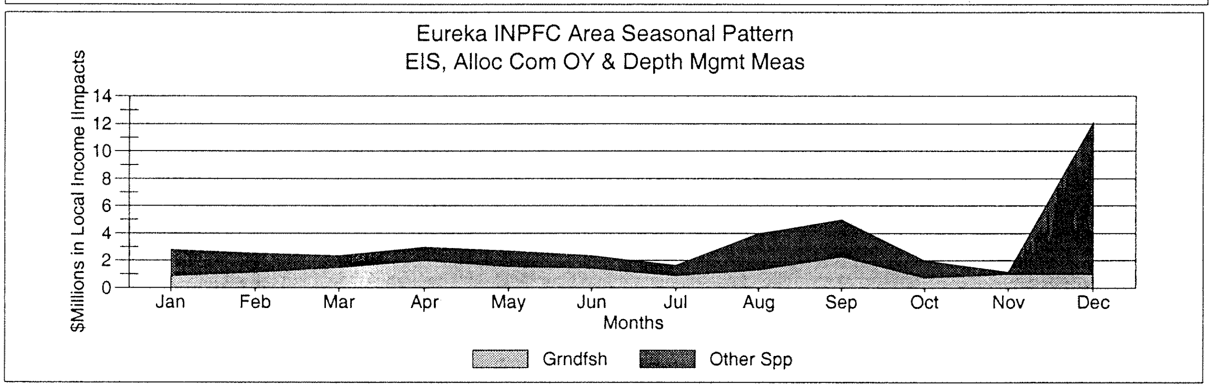
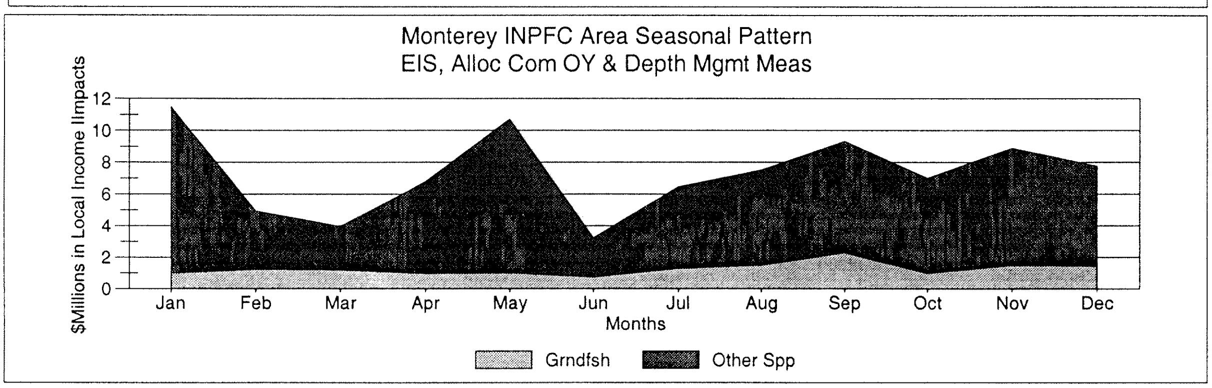
Oct
Nov
Dec
Months
Grndfsh
Other Spp



Eureka INPFC Area Seasonal Pattern
EIS, Alloc Com OY & Depth Mgmt Meas
$Millions in Local Income Iimpacts
0
2
4
6
8
10
12
14
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Months
Grndfsh
Other Spp



Monterey INPFC Area Seasonal Pattern
EIS, Alloc Com OY & Depth Mgmt Meas
$Millions in Local Income Iimpacts
0
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Jan
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Jun
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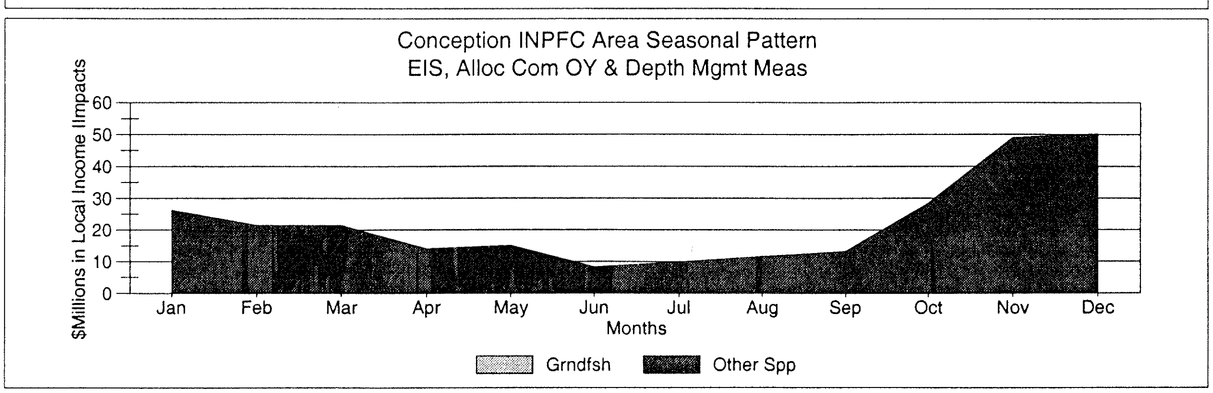
Sep
Oct
Nov
Dec
Months
Grndfsh
Other Spp



Conception INPFC Area Seasonal Pattern
EIS, Alloc Com OY & Depth Mgmt Meas
$Millions in Local Income Iimpacts
0
10
20
30
40
50
60
Jan
Feb
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Oct
Nov
Dec
Months
Grndfsh
Other Spp

Bycatch rates used in modeling trawl fishery consequences north of 40°10' for the 2003 season

2-mo per.	Target fishery	All depths	In depths shallower than				In depths deeper than			
			50 fm	75 fm	100 fm	125 fm	150 fm	180 fm	200 fm	250 fm
Lingcod										
1	DTS	0.030%	0.000%	0.000%	0.000%	0.000%	0.030%	0.000%	0.000%	0.000%
2	DTS	0.275%	0.000%	0.300%	0.000%	1.032%	0.272%	0.000%	0.000%	0.000%
3	DTS	0.651%	0.000%	1.594%	1.335%	5.156%	0.334%	0.000%	0.000%	0.000%
4	DTS	0.818%	0.000%	3.783%	4.651%	4.189%	0.206%	0.000%	0.000%	0.000%
5	DTS	1.175%	0.000%	4.609%	4.900%	6.557%	0.778%	0.000%	0.000%	0.000%
6	DTS	0.055%	0.000%	0.000%	0.000%	1.951%	0.052%	0.000%	0.000%	0.000%
1	Flatfish	0.214%	1.395%	1.303%	1.184%	1.611%	0.160%	0.000%		
2	Flatfish	1.493%	2.440%	2.752%	4.830%	6.215%	0.649%	0.000%		
3	Flatfish	1.558%	0.345%	0.953%	1.594%	2.095%	0.635%	0.000%		
4	Flatfish	2.123%	0.767%	1.383%	2.016%	2.546%	0.765%	0.000%		
5	Flatfish	2.370%	0.619%	1.905%	2.370%	2.971%	1.014%	0.000%		
6	Flatfish	1.080%	2.802%	3.653%	2.778%	2.816%	0.715%	0.000%		
1	Arrowtooth	0.030%					0.005%	0.000%		
2	Arrowtooth	0.200%					0.115%	0.000%		
6	Arrowtooth	0.030%					0.005%	0.000%		
1	Petrale	0.612%					0.551%	0.000%		
2	Petrale	1.752%					1.250%	0.000%		
6	Petrale	0.759%					0.532%	0.000%		
1	Midwater W/Yt	0.072%								
2	Midwater W/Yt	0.000%								
3	Midwater W/Yt	0.000%								
4	Midwater W/Yt	0.681%								
5	Midwater W/Yt	0.712%								
6	Midwater W/Yt	0.000%								
1	Other	1.650%	0.330%	1.238%	1.650%	1.650%	0.330%	0.000%	0.000%	0.000%
2	Other	0.500%	0.100%	0.375%	0.500%	0.500%	0.100%	0.000%	0.000%	0.000%
3	Other	0.850%	0.170%	0.638%	0.850%	0.850%	0.170%	0.000%	0.000%	0.000%
4	Other	2.900%	0.580%	2.175%	2.900%	2.900%	0.580%	0.000%	0.000%	0.000%
5	Other	3.150%	0.630%	2.363%	3.150%	3.150%	0.630%	0.000%	0.000%	0.000%
6	Other	1.950%	0.390%	1.463%	1.950%	1.950%	0.390%	0.000%	0.000%	0.000%
Canary										
1	DTS	0.010%	0.000%	0.101%	0.101%	0.101%	0.000%	0.000%	0.000%	0.000%
2	DTS	0.010%	0.000%	0.200%	0.035%	0.021%	0.000%	0.000%	0.000%	0.000%
3	DTS	0.010%	0.000%	0.119%	0.208%	0.130%	0.000%	0.000%	0.000%	0.000%
4	DTS	0.300%	0.000%	1.362%	1.403%	1.690%	0.000%	0.000%	0.000%	0.000%
5	DTS	0.797%	0.000%	10.359%	6.348%	5.170%	0.000%	0.000%	0.000%	0.000%
6	DTS	0.010%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
1	Flatfish	0.048%	0.191%	0.098%	0.230%	0.202%	0.000%	0.000%		
2	Flatfish	0.120%	0.386%	0.335%	0.469%	0.586%	0.000%	0.000%		
3	Flatfish	0.236%	0.030%	0.257%	0.437%	0.373%	0.000%	0.000%		
4	Flatfish	0.895%	0.091%	0.436%	1.260%	1.132%	0.000%	0.000%		
5	Flatfish	0.367%	0.405%	0.431%	0.488%	0.519%	0.000%	0.000%		
6	Flatfish	0.050%	0.046%	0.264%	0.214%	0.274%	0.000%	0.000%		
1	Arrowtooth	0.010%					0.000%	0.000%		
2	Arrowtooth	0.010%					0.000%	0.000%		
6	Arrowtooth	0.010%					0.000%	0.000%		
1	Petrale	0.012%					0.000%	0.000%		
2	Petrale	0.452%					0.000%	0.000%		
6	Petrale	0.012%					0.000%	0.000%		
1	Midwater W/Yt	0.013%								
2	Midwater W/Yt	0.058%								
3	Midwater W/Yt	2.758%								
4	Midwater W/Yt	0.971%								
5	Midwater W/Yt	0.775%								
6	Midwater W/Yt	0.011%								
1	Other	0.010%	0.004%	0.009%	0.010%	0.010%	0.000%	0.000%	0.000%	0.000%
2	Other	0.100%	0.040%	0.090%	0.100%	0.100%	0.000%	0.000%	0.000%	0.000%
3	Other	0.500%	0.200%	0.450%	0.500%	0.500%	0.000%	0.000%	0.000%	0.000%
4	Other	1.000%	0.400%	0.900%	1.000%	1.000%	0.000%	0.000%	0.000%	0.000%
5	Other	0.150%	0.060%	0.135%	0.150%	0.150%	0.000%	0.000%	0.000%	0.000%
6	Other	0.100%	0.040%	0.090%	0.100%	0.100%	0.000%	0.000%	0.000%	0.000%

Bycatch rates used in modeling trawl fishery consequences north of 40°10' for the 2003 season

		All	In depths shallower than				In depths deeper than			
bimo	target	depths	50 fm	75 fm	100 fm	125 fm	150 fm	180 fm	200 fm	250 fm
POP										
1	DTS	0.522%	0.000%	0.000%	0.631%	0.631%	0.521%	0.472%	0.474%	0.395%
2	DTS	1.243%	0.000%	0.000%	3.285%	4.672%	1.202%	1.132%	1.017%	0.472%
3	DTS	1.985%	0.000%	0.000%	2.743%	4.029%	1.705%	1.280%	1.116%	0.482%
4	DTS	1.562%	0.000%	0.000%	1.926%	4.545%	1.078%	0.918%	0.714%	0.497%
5	DTS	0.646%	0.000%	0.000%	0.764%	2.423%	0.385%	0.316%	0.298%	0.141%
6	DTS	1.014%	0.000%	0.000%	0.000%	15.454%	0.992%	0.777%	0.397%	0.329%
1	Flatfish	1.315%	0.000%	0.000%	0.306%	0.859%	1.330%	0.884%		
2	Flatfish	3.003%	0.000%	0.000%	2.706%	2.733%	2.391%	1.225%		
3	Flatfish	4.464%	0.000%	0.000%	2.262%	3.218%	6.824%	5.771%		
4	Flatfish	1.865%	0.000%	0.000%	0.627%	1.461%	2.570%	1.698%		
5	Flatfish	2.929%	0.000%	0.000%	0.529%	1.602%	4.211%	2.155%		
6	Flatfish	1.319%	0.000%	0.000%	0.481%	0.707%	1.325%	1.378%		
1	Arrowtooth	2.369%					2.369%	2.369%		
2	Arrowtooth	3.160%					1.129%	1.184%		
6	Arrowtooth	2.276%					2.276%	2.276%		
1	Petrale	2.337%					2.415%	1.454%		
2	Petrale	5.555%					6.122%	4.163%		
6	Petrale	6.903%					7.232%	7.477%		
1	Midwater W/Yt	0.000%								
2	Midwater W/Yt	0.009%								
3	Midwater W/Yt	0.000%								
4	Midwater W/Yt	0.000%								
5	Midwater W/Yt	0.241%								
6	Midwater W/Yt	0.001%								
1	Other	11.500%	0.000%	0.000%	1.150%	4.600%	6.900%	3.450%	2.300%	0.000%
2	Other	2.750%	0.000%	0.000%	0.275%	1.100%	1.650%	0.825%	0.550%	0.000%
3	Other	5.000%	0.000%	0.000%	0.500%	2.000%	3.000%	1.500%	1.000%	0.000%
4	Other	10.750%	0.000%	0.000%	1.075%	4.300%	6.450%	3.225%	2.150%	0.000%
5	Other	4.250%	0.000%	0.000%	0.425%	1.700%	2.550%	1.275%	0.850%	0.000%
6	Other	5.650%	0.000%	0.000%	0.565%	2.260%	3.390%	1.695%	1.130%	0.000%
Darkblotched										
1	DTS	0.656%	0.000%	0.000%	0.000%	2.000%	1.127%	1.028%	0.896%	0.000%
2	DTS	0.564%	0.000%	0.000%	0.000%	20.000%	1.047%	1.036%	0.974%	0.000%
3	DTS	2.374%	0.000%	0.000%	0.000%	6.890%	1.930%	1.728%	1.452%	0.000%
4	DTS	1.570%	0.000%	0.000%	0.000%	6.286%	1.139%	0.915%	0.683%	0.000%
5	DTS	0.825%	0.000%	0.000%	0.000%	2.442%	1.325%	1.202%	1.153%	0.000%
6	DTS	0.408%	0.000%	0.000%	0.000%	0.000%	2.483%	2.484%	2.330%	0.000%
1	Flatfish	1.804%	0.000%	0.000%	0.500%	10.279%	1.764%	1.721%		
2	Flatfish	1.983%	0.000%	0.000%	0.500%	2.621%	1.909%	1.432%		
3	Flatfish	3.170%	0.000%	0.000%	0.500%	2.809%	3.006%	2.510%		
4	Flatfish	3.701%	0.000%	0.000%	0.500%	4.074%	3.258%	2.617%		
5	Flatfish	3.264%	0.000%	0.000%	0.500%	5.791%	2.149%	1.207%		
6	Flatfish	1.141%	0.000%	0.000%	0.500%	6.183%	0.973%	0.955%		
1	Arrowtooth	0.180%					0.180%	0.180%		
2	Arrowtooth	0.537%					0.533%	0.551%		
6	Arrowtooth	0.500%					0.500%	0.500%		
1	Petrale	3.940%					4.020%	4.317%		
2	Petrale	5.456%					5.164%	4.587%		
6	Petrale	3.037%					3.072%	2.870%		
1	Midwater W/Yt	0.030%								
2	Midwater W/Yt	0.030%								
3	Midwater W/Yt	0.030%								
4	Midwater W/Yt	0.030%								
5	Midwater W/Yt	0.030%								
6	Midwater W/Yt	0.030%								
1	Other	5.250%	0.000%	0.525%	1.050%	2.100%	3.150%	0.788%	0.525%	0.000%
2	Other	3.500%	0.000%	0.350%	0.700%	1.400%	2.100%	0.525%	0.350%	0.000%
3	Other	3.500%	0.000%	0.350%	0.700%	1.400%	2.100%	0.525%	0.350%	0.000%
4	Other	3.000%	0.000%	0.300%	0.600%	1.200%	1.800%	0.450%	0.300%	0.000%
5	Other	2.250%	0.000%	0.225%	0.450%	0.900%	1.350%	0.338%	0.225%	0.000%
6	Other	4.250%	0.000%	0.425%	0.850%	1.700%	2.550%	0.638%	0.425%	0.000%

Bycatch rates used in modeling trawl fishery consequences north of 40°10' for the 2003 season

		All	In depths shallower than				In depths deeper than			
bimo	target	depths	50 fm	75 fm	100 fm	125 fm	150 fm	180 fm	200 fm	250 fm
Widow										
1	DTS	0.401%	0.000%	15.467%	15.467%	15.467%	0.311%	0.000%	0.000%	0.000%
2	DTS	0.152%	0.000%	0.200%	0.051%	0.028%	0.152%	0.000%	0.000%	0.000%
3	DTS	0.198%	0.000%	0.000%	0.144%	1.089%	0.158%	0.000%	0.000%	0.000%
4	DTS	0.303%	0.000%	0.576%	0.610%	0.665%	0.132%	0.000%	0.000%	0.000%
5	DTS	0.259%	0.000%	3.484%	1.934%	1.394%	0.149%	0.000%	0.000%	0.000%
6	DTS	0.051%	0.000%	0.000%	6.710%	6.245%	0.041%	0.000%	0.000%	0.000%
1	Flatfish	0.220%	0.013%	0.000%	1.358%	1.172%	0.185%	0.000%		
2	Flatfish	0.146%	0.000%	0.015%	0.602%	0.502%	0.095%	0.000%		
3	Flatfish	0.200%	0.016%	0.210%	0.244%	0.246%	0.137%	0.000%		
4	Flatfish	0.471%	0.011%	0.126%	0.443%	0.552%	0.174%	0.000%		
5	Flatfish	0.108%	0.025%	0.013%	0.031%	0.067%	0.059%	0.000%		
6	Flatfish	0.098%	0.011%	0.001%	0.112%	0.323%	0.003%	0.000%		
1	Arrowtooth	0.050%					0.050%	0.000%		
2	Arrowtooth	0.085%					0.026%	0.000%		
6	Arrowtooth	0.030%					0.030%	0.000%		
1	Petrale	0.160%					0.167%	0.000%		
2	Petrale	0.162%					0.039%	0.000%		
6	Petrale	0.147%					0.028%	0.000%		
1	Other	10.000%	0.500%	4.000%	5.000%	10.000%	1.000%	0.000%	0.000%	0.000%
2	Other	0.700%	0.035%	0.280%	0.350%	0.700%	0.070%	0.000%	0.000%	0.000%
3	Other	1.000%	0.050%	0.400%	0.500%	1.000%	0.100%	0.000%	0.000%	0.000%
4	Other	1.600%	0.080%	0.640%	0.800%	1.600%	0.160%	0.000%	0.000%	0.000%
5	Other	1.400%	0.070%	0.560%	0.700%	1.400%	0.140%	0.000%	0.000%	0.000%
6	Other	0.800%	0.040%	0.320%	0.400%	0.800%	0.080%	0.000%	0.000%	0.000%

Bycatch rates used in modeling trawl fishery consequences south of 40°10' for the 2003 season

2-mo per.	Target fishery	All depths	In depths shallower than 50 fm	75 fm	100 fm	125 fm	In depths deeper than 150 fm	180 fm	200 fm	250 fm
Lingcod										
1	Petrale						0.614%	0.000%		
2	Petrale						2.074%	0.000%		
6	Petrale						0.855%	0.000%		
1	Flatfish	0.131%	0.000%	0.154%	0.075%	0.071%	0.092%			
2	Flatfish	0.246%	0.142%	0.065%	0.166%	0.163%	0.138%			
3	Flatfish	0.746%	0.657%	0.658%	0.384%	0.297%	0.314%			
4	Flatfish	0.603%	2.697%	2.125%	0.322%	0.383%	0.050%			
5	Flatfish	0.512%	0.666%	0.141%	0.105%	0.201%	0.282%			
6	Flatfish	0.471%	0.736%	0.856%	0.714%	0.462%	0.044%			
1	DTS	0.012%					0.012%	0.000%		0.000%
2	DTS	0.008%					0.008%	0.000%		0.000%
3	DTS	0.053%					0.016%	0.000%		0.000%
4	DTS	0.053%					0.015%	0.000%		0.000%
5	DTS	0.083%					0.065%	0.000%		0.000%
6	DTS	0.038%					0.038%	0.000%		0.000%
1	Other	0.368%	0.074%	0.147%	0.257%	0.294%	0.074%	0.000%	0.000%	0.000%
2	Other	3.269%	0.654%	1.308%	2.288%	2.615%	0.654%	0.000%	0.000%	0.000%
3	Other	6.098%	1.220%	2.439%	4.268%	4.878%	1.220%	0.000%	0.000%	0.000%
4	Other	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
5	Other	0.840%	0.168%	0.336%	0.588%	0.672%	0.168%	0.000%	0.000%	0.000%
6	Other	0.858%	0.172%	0.343%	0.601%	0.686%	0.172%	0.000%	0.000%	0.000%
Canary										
1	Petrale						0.000%	0.000%		
2	Petrale						0.000%	0.000%		
6	Petrale						0.000%	0.000%		
1	Flatfish	0.011%	0.000%	0.000%	0.000%	0.000%	0.000%			
2	Flatfish	0.098%	0.000%	0.000%	0.033%	0.134%	0.000%			
3	Flatfish	0.064%	0.000%	0.000%	0.000%	0.000%	0.000%			
4	Flatfish	0.046%	0.000%	0.000%	0.000%	0.000%	0.000%			
5	Flatfish	0.082%	0.000%	0.071%	0.099%	0.089%	0.000%			
6	Flatfish	0.039%	0.000%	0.561%	0.048%	0.020%	0.000%			
1	DTS	0.000%					0.000%	0.000%		0.000%
2	DTS	0.020%					0.000%	0.000%		0.020%
3	DTS	0.002%					0.000%	0.000%		0.000%
4	DTS	0.015%					0.000%	0.000%		0.001%
5	DTS	0.002%					0.000%	0.000%		0.000%
6	DTS	0.000%					0.000%	0.000%		0.000%
1	Other	0.010%	0.004%	0.006%	0.008%	0.010%	0.000%	0.000%	0.000%	0.000%
2	Other	0.010%	0.004%	0.006%	0.008%	0.010%	0.000%	0.000%	0.000%	0.000%
3	Other	0.010%	0.004%	0.006%	0.008%	0.010%	0.000%	0.000%	0.000%	0.000%
4	Other	0.010%	0.004%	0.006%	0.008%	0.010%	0.000%	0.000%	0.000%	0.000%
5	Other	0.010%	0.004%	0.006%	0.008%	0.010%	0.000%	0.000%	0.000%	0.000%
6	Other	0.121%	0.048%	0.073%	0.097%	0.115%	0.000%	0.000%	0.000%	0.000%

Bycatch rates used in modeling trawl fishery consequences south of 40°10' for the 2003 season

2-mo per.	Target fishery	All depths	In depths shallower than				In depths deeper than			
			50 fm	75 fm	100 fm	125 fm	150 fm	180 fm	200 fm	250 fm
Darkblotched										
1	Petrale						11.487%	11.402%		
2	Petrale						8.399%	13.075%		
6	Petrale						7.161%	6.725%		
1	Flatfish						1.426%			
2	Flatfish						1.055%			
3	Flatfish						2.058%			
4	Flatfish						1.089%			
5	Flatfish						1.833%			
6	Flatfish						3.187%			
1	DTS	0.567%					0.280%	0.280%		0.000%
2	DTS	0.596%					0.298%	0.298%		0.000%
3	DTS	1.483%					0.717%	0.649%		0.000%
4	DTS	0.563%					0.279%	0.222%		0.000%
5	DTS	1.168%					0.584%	0.557%		0.000%
6	DTS	0.731%					0.365%	0.350%		0.000%
1	Other	3.675%	0.000%	0.184%	0.184%	0.368%	2.205%	0.551%	0.368%	0.000%
2	Other	2.450%	0.000%	0.123%	0.123%	0.245%	1.470%	0.368%	0.245%	0.000%
3	Other	2.450%	0.000%	0.123%	0.123%	0.245%	1.470%	0.368%	0.245%	0.000%
4	Other	2.100%	0.000%	0.105%	0.105%	0.210%	1.260%	0.315%	0.210%	0.000%
5	Other	1.575%	0.000%	0.079%	0.079%	0.158%	0.945%	0.236%	0.158%	0.000%
6	Other	2.975%	0.000%	0.149%	0.149%	0.298%	1.785%	0.446%	0.298%	0.000%
Widow										
1	Petrale						0.446%	0.000%		
2	Petrale						1.410%	0.000%		
6	Petrale						0.008%	0.000%		
1	Flatfish	0.112%	0.000%	0.000%	0.043%	0.022%	0.062%			
2	Flatfish	0.059%	0.000%	0.000%	0.017%	0.014%	0.026%			
3	Flatfish	0.900%	0.102%	0.049%	0.073%	0.058%	0.167%			
4	Flatfish	1.191%	0.000%	0.000%	1.174%	1.007%	0.148%			
5	Flatfish	0.255%	0.156%	0.316%	0.163%	0.118%	0.086%			
6	Flatfish	0.791%	0.000%	0.000%	0.000%	1.496%	0.056%			
1	DTS	0.006%					0.006%	0.000%		0.000%
2	DTS	0.020%					0.020%	0.000%		0.000%
3	DTS	0.283%					0.141%	0.000%		0.000%
4	DTS	0.003%					0.003%	0.000%		0.000%
5	DTS	0.009%					0.009%	0.000%		0.000%
6	DTS	0.010%					0.010%	0.000%		0.000%
1	Other	7.000%	0.350%	1.400%	2.100%	2.800%	0.700%	0.000%	0.000%	0.000%
2	Other	0.490%	0.025%	0.098%	0.147%	0.196%	0.049%	0.000%	0.000%	0.000%
3	Other	0.700%	0.035%	0.140%	0.210%	0.280%	0.070%	0.000%	0.000%	0.000%
4	Other	1.120%	0.056%	0.224%	0.336%	0.448%	0.112%	0.000%	0.000%	0.000%
5	Other	0.980%	0.049%	0.196%	0.294%	0.392%	0.098%	0.000%	0.000%	0.000%
6	Other	0.560%	0.028%	0.112%	0.168%	0.224%	0.056%	0.000%	0.000%	0.000%

Bycatch rates used in modeling trawl fishery consequences south of 40°10' for the 2003 season

2-mo per.	Target fishery	All depths	In depths shallower than 50 fm	75 fm	100 fm	125 fm	In depths deeper than 150 fm	180 fm	200 fm	250 fm
Bocaccio										
1	Petrale						0.080%	0.053%		
2	Petrale						1.000%	0.000%		
6	Petrale						0.000%	0.000%		
1	Flatfish	2.840%	0.000%	2.017%	3.879%	4.082%	0.504%			
2	Flatfish	2.320%	1.548%	0.623%	2.113%	4.494%	0.105%			
3	Flatfish	2.279%	0.373%	0.373%	0.595%	0.981%	1.724%			
4	Flatfish	2.163%	0.000%	0.000%	0.459%	0.682%	0.021%			
5	Flatfish	2.032%	0.000%	0.000%	0.596%	0.724%	0.503%			
6	Flatfish	2.648%	0.000%	0.000%	5.236%	3.039%	0.204%			
1	DTS	0.017%					0.007%	0.007%		0.000%
2	DTS	0.066%					0.026%	0.026%		0.000%
3	DTS	0.146%					0.049%	0.045%		0.000%
4	DTS	0.067%					0.002%	0.001%		0.000%
5	DTS	0.195%					0.070%	0.070%		0.000%
6	DTS	0.007%					0.003%	0.003%		0.000%
1	Other	1.400%	0.070%	0.140%	0.280%	0.350%	0.140%	0.070%		0.000%
2	Other	0.050%	0.003%	0.005%	0.010%	0.013%	0.005%	0.003%		0.000%
3	Other	21.193%	1.060%	2.119%	4.239%	5.298%	2.119%	1.060%		0.000%
4	Other	0.050%	0.003%	0.005%	0.010%	0.013%	0.005%	0.003%		0.000%
5	Other	0.619%	0.031%	0.062%	0.124%	0.155%	0.062%	0.031%		0.000%
6	Other	0.162%	0.008%	0.016%	0.032%	0.041%	0.016%	0.008%		0.000%

Latitudinal distribution of NMFS shelf and slope trawl survey catch-per-unit-effort (CPUE) for darkblotched rockfish, in surveys conducted since 1994.

Latitude range	Cumulative CPUE across depths in latitude range	Percentage of coastwide CPUE	
		within each latitude range	cumulative, from north
North of 47°	554	23%	23%
46° - 47°	167	7%	30%
45° - 46°	598	25%	56%
44° - 45°	251	11%	66%
43° - 44°	129	5%	72%
42° - 43°	174	7%	79%
41° - 42°	104	4%	84%
40° - 41°	83	4%	87%
39° - 40°	103	4%	91%
38° - 39°	124	5%	97%
37° - 38°	75	3%	100%
36° - 37°	3	0%	100%
South of 36°	1	0%	100%
	2,367		

Exhibit C.3.w
Supplemental CDFG Report 2
September 2002

UPDATE
(9/13/02)
DEPARTMENT RECOMMENDATIONS
2003 ROCKFISH AND LINGCOD REGULATIONS

General

1) North of Cape Mendocino. Uniform regulations with Oregon.
2) South of Cape Mendocino. Adopt the following:

Recreational

3) Depth Restriction. Prohibit rockfish, cabezon, greenling, sculpin, ocean whitefish and lingcod fishing in waters 20 fms and greater in depth.
4) Bag Limits and Open Season Dates. See attached.
5) Lingcod. Retain current 2-fish bag limit and 24-inch minimum size limit.
6) Rockfish Minimum Size Limits. Do not implement these at this time.
7) DFG Authority to Close Rockfish and Lingcod Seasons. Give DFG authority same authority as it has for other nearshore fish stocks and shelf rockfish and lingcod.
8) Shore Fishing. Same regulations for shore and boat fisheries.

Commercial
(Fixed Gear)

9) Depth Restriction. Prohibit rockfish, sculpin, and lingcod fishing in waters 20-150 fms in depth.
10) Shelf Rockfish. 50% of shallow nearshore trip limits.
11) Stick Gear. Defer to Commission.

General

12) Overfished Rockfish. Prohibit retention of bocaccio, canary and yelloweye rockfish (cowcod already prohibited).
13) Nearshore Rockfish and Sculpin OY. Adopt Overall Nearshore OY with separate HGs for Shallow Water Rockfish, Sculpin and Deeper Nearshore Rockfish. DONE.
14) Cabezon. Retain current 15-inch minimum size limit in both fisheries.
15) Nearshore Rockfish and Sculpin Allocations (recreational/commercial):

Overall Nearshore OY: 80/20
Shallow Water HG: 63/37
Sculpin HG: 75/25
Deeper Nearshore HG: 86/14

16) Bocaccio. Set aside 57% of OY for recreational and 43% for commercial.
17) Lingcod. No set-asides.

Attachment

SOUTHERN NEARSHORE ROCKFISH (south of $40^{0}10'$ N. lat.)
RECOMMENDED MANAGEMENT MEASURES FOR 2003

CDFG has considered the impacts of the significant changes that have been adopted for southern nearshore rockfish during 2003. The overall OY will be reduced from 662 mt during 2002 to 451-541 mt during 2003. The upper OY for 2003 (541 mt) would only be available if the fishery is concentrated during summer and autumn months, when nearshore rockfish stocks tend to be fully available within the 20 fathom line due to onshore seasonal migration patterns. In addition to the lower overall OY limits, the OY will be divided into 3 separate components, as described below:

1) A shallow HG group composed of kelp, grass, black-and-yellow, China, and gopher rockfishes. This sub-set-of nearshore species also forms the rockfish basis of the California nearshore live-fish fishery, and the commercial fishery for these rockfish species (along with California scorpionfish, cabezon, greenlings, and California sheephead) is restricted by a nearshore finfish permit required by the state of California.
2) A deeper nearshore rockfish HG group composed of treefish, olive, brown, copper, quillback, calico, black, and blue rockfish.
3) California scorpionfish is provided as a single-species HG.

It is clear that the lower OY range, new HG sub-groups, and new depth restrictions will require changes to the current regulations. In order to provide an expectation that the 2003 fishery will conform to Scenario #1B-revised (given in C.3.i, Supplemental CDFG Report 2), the CDFG recommends the following recreational and commercial management measures.

Proposed Recreational Fishery Management Measures

Nearshore Groundfish (0-20 fathoms)
Season: July-December
Bag limits:
10 fish nearshore groundfish bag limit, of which:
No more than 10 rockfish, of which:
No more than 2 shallow nearshore rockfish
No more than 2 greenlings
No more than 3 cabezon

California Scorpionfish
Season: January-February and July-December
Bag limit: 5 fish bag limit

Proposed Commercial Fishery Management

Fixed Gear Species/Groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
Shallow NS Rockfish	200/2 mo		400/2 mo	500/2 mo	400/2 mo	200/2 mo
Deep NS Rockfish	200/2 mo		200/2 mo	400/2 mo	200/2 mo	200/2 mo
CA Scorpionfish			800/2 mo	800/2 mo		
Shelf Rockfish	100/2 mo		200/2 mo	250/2 mo	200/2 mo	100/2 mo

Trawl: Same as 2002.

Exhibit C.3
Attachment 1
September 2002

Initial Draft Environmental Impact Statement/ Regulatory Impact Review/ Initial Regulatory Flexibility Analysis

Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures

DRAFT

For the

2003 Pacific Coast Groundfish Fishery

Prepared by the Pacific Fishery Management Council

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September 2002

DRAFT

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1.0 PURPOSE AND NEED FOR ACTION

1.1 How This Document is Organized

This document provides background information about and analysis of harvest specifications and management measures for fisheries covered by the Pacific Coast Fishery Management Plan (Groundfish FMP) and developed by the Pacific Fishery Management Council (hereafter, the Council). These measures must conform to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act, or MSA), the principal legal basis for fishery management within the Exclusive Economic Zone (EEZ), which extends from the outer boundary of the territorial sea to a distance of 200 miles from shore. In addition to addressing MSA mandates, this document is organized so that it contains the analyses required under the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), and Executive Order 12866, which mandates an analysis similar to the RFA. For the sake of brevity, this document is referred to as an Environmental Impact Statement (EIS), although it address all of the mandates just mentioned and may also be considered an Initial Regulatory Flexibility Analysis (IRFA) pursuant to the RFA and a Regulatory Impact Review (RIR) pursuant to E.O. 12866.

The rest of this chapter discusses why the Council must establish management measures for fisheries anticipated to catch groundfish in 2003 and the process that has been used to develop these measures. This description of ***purpose and need*** defines the scope of the subsequent analysis. Chapter 2 outlines different ***alternatives*** that the Council considered to address the purpose and need. One of these alternatives was chosen by the Pacific Fishery Management Council as its preferred alternative, representing the harvest specifications and management measures that will apply in 2003. Chapter 3 describes the ***affected environment***. This information provides the basis for the analysis contained in Chapter 4, which assesses the potential ***environmental and socio-economic impacts*** of the alternatives outlined in Section2. Chapter 5 details how these management measures are consistent with the Groundfish FMP and 10 National Standards set forth in the MSA (§301(a)) and governing plans, plan amendments and pursuant regulations. Chapter 6 describes how this EIS addresses relevant laws and Executive Orders, other than the MSA. As appropriate, it also includes additional information and determinations required by these mandates.

This EIS analyzes possible environmental and socioeconomic impacts of harvesting at the proposed range of 2003 OY specifications as compared to the 2002 harvest guideline specifications. It also analyzes the management measures accompanying each set of harvest level alternatives, season structure alternatives, and bycatch/discard rate alternatives.

1.2 Purpose and Need

The *proposed action* evaluated in this document is the implementation of calendar year 2003 management measures for federally managed Pacific groundfish fisheries occurring off the coasts of Washington, Oregon, and California (WOC). The Groundfish FMP establishes a framework authorizing the range and type of measures that may be used, enumerates 18 objectives that management measures must satisfy (organized under three broad goals), and describes more specific criteria for determining the level of harvest that will provide the greatest overall benefit to the Nation (termed "optimum yield" or OY). The management regime described in the Groundfish FMP is itself consistent with 10 National Standards described in governing legislation, the Magnuson-Stevens Act.

The *purpose* of this action is to ensure that Pacific coast groundfish subject to federal management are harvested at optimum yield during 2003 and in a manner that is consistent with the aforementioned FMP and National Standards Guidelines (50 CFR 600 Subpart D). Chapter 5 of this EIS describes how the proposed action (preferred alternative) is consistent with the FMP and MSA.

The proposed action *is needed* because marine fish are "common pool" resources with access and use stemming from the public trust doctrine. It is difficult to exclude people from using a common pool resource, because of their physical characteristics (Ostrom 1990). (Fish are a relatively mobile, "fugitive" resource, making it impossible for any one individual to precisely know their location or control their distribution.) A fish stock is also "subtractable," meaning that exploitation by any one person diminishes the total amount available to others. Under the common law public trust doctrine resources in ocean areas under U.S. jurisdiction are believed to be held in trust by government to satisfy a broadly-defined public interest (NRC 1999). This doctrine also makes a legally defensible exclusive property right to fish difficult or impossible (at least before they are harvested). The Magnuson-Stevens Act, originally enacted in 1976 as part of the extension of jurisdiction to the 200-mile Exclusive Economic Zone (and most recently amended in 1996), establishes the goals, standards, responsibilities, and processes needed to address the characteristics of the fishery resource. A paramount purpose is to "conserve and manage the fishery resources found off the coasts of the United States" (§2(b)(1)). This Act delegates management responsibility to the Secretary of Commerce (Secretary) who, with the aid of eight regional fishery management councils and through the National Marine Fisheries Service (NOAA Fisheries), implements measures to ensure the conservation and management goals of the MSA and fulfills the trust responsibility. Councils develop FMPs describing how particular species and fisheries will be managed. The Pacific Fishery Management Council was assigned stewardship responsibilities for the fish resources in the Exclusive Economic Zone (EEZ) off the Pacific Coast (see Figure 1-1) and first approved the Groundfish FMP in 1982.[1]

The broad need for federal fishery management just described can be specified to the proposed action based on the framework established in the Groundfish FMP. Chapter 6 in the FMP describes the management measures the Council may recommend NOAA Fisheries use and the process of establishing and adjusting such measures. Various biological reference points and information on fishery performance are used to determine, on an annual basis, the optimum yield for particular species or species groups. (See Section 3.2.1 for a description of these reference points.) The FMP also describes "points of concern" and socioeconomic frameworks; these frameworks help managers determine whether and what types of management measures are needed. Section 6.2 of the FMP describes the deliberative process the Council must follow, and the parallel process that NOAA Fisheries uses to translate Council recommendations into regulations. NEPA-mandated environmental impact assessment is a central component of this process. (Due to recent litigation the current process differs somewhat from what is described in the FMP; the NEPA analysis has gained greater prominence and there is more opportunity for public notice and comment during rulemaking.) In summary, in addition to a general need to manage fisheries for sustainable harvests, the proposed action is needed because of the management framework laid out in the Groundfish FMP.

1.3 Background

The FMP enumerates three overall goals to guide the management process:

1. Conservation - prevent overfishing by managing for appropriate harvest levels, and prevent any net loss of habitat of living marine resources;
2. Economics - maximize the value of the groundfish resource as a whole; and
3. Utilization - achieve the maximum biological yield of the overall groundfish fishery, promote year round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

A variety of management measures have been employed to achieve these goals, including gear restrictions, a license limitation program, time/area closures, the specification of OYs or other harvest limitations for some species, seasons, and trip/cumulative landing limits, which are limitations on the amount of certain species that may be caught, retained, and landed by any vessel. The FMP allows harvest guidelines and quotas to be re-specified on a periodic basis. Harvest guidelines are specified numerical harvest objectives which are treated as targets but not absolute limitations. (Therefore, a fishery does not have to be closed if its harvest guideline is reached, although the Council may choose to do so.) All recent numerical harvest specifications, including OY values, have been harvest guidelines. A quota is defined as a specified numerical harvest objective, the attainment (or expected attainment) of which causes closure of the fishery for that species or species group. The main use of harvest guidelines and quotas recently has been to designate allocations and sub-components of a specified OY.

Although the FMP was first implemented 20 years ago, changes in the fishery and the Magnuson-Stevens Act have resulted in substantial modification through plan amendments. Three recent amendments (numbered

[1] The FMP has been amended 13 times to date.

11 through 13), which in part respond to new requirements imposed by the 1996 Sustainable Fisheries Act (SFA) reauthorizing and amending the MSA, have affected the framework for specifying harvest levels and management measures. Approved in 1999, Amendment 11 establishes a default OY policy that reduces the numerical OY of any stock believed to be below its precautionary threshold, which is defined as smaller than 40% of its pristine (unfished or virgin) abundance (denoted B_0) unless better information is available.[2] A groundfish stock is defined to be overfished if its abundance is less than 25% of its unfished abundance. (The procedures and criteria for determining OYs for Pacific groundfish are detailed in Section 3.2.1.) Amendment 12, although subsequently remanded in part by court order, establishes procedures to rebuild overfished stocks. To date, nine groundfish stocks have been declared overfished; rebuilding measures therefore have an important influence on annual management. The guidelines in the FMP added by these amendments address MSA National Standard 1: *Conservation and management measures shall prevent overfishing while achieving on a continuing basis, the optimum yield from each fishery for the United States fishing industry.* Amendment 13 was developed in response to SFA requirements to address bycatch and bycatch accounting. (It also added to the list of routine management measures that are part of the FMP framework. This allows more effective management of overfished species and bycatch.) This amendment addresses MSA National Standard 9: *Conservation and management measures shall, to the extent practicable (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize mortality of such bycatch.* Bycatch (fish that are discarded at sea for regulatory or economic reasons) has emerged as a difficult problem in groundfish management. In order to manage for overfished stocks, it is necessary to estimate total catch, rather than only the catch that is unloaded at the dock. At the same time, reductions in cumulative landing limits can increase the amount of fish discarded, since these limits are based on landed catch rather than total catch. (Until the recent development of an observer program, it has been difficult to effectively monitor discards, confounding the ability to accurately estimate total catch.)

Although the FMP states all specifications will remain in effect until changed, they are announced annually on or about January 1. These management specifications are developed by the Council, based on a review available stock status information, over the course of several meetings. Until this year this occurred at the September meeting, when the Council would adopt a range of alternatives representing preliminary harvest specifications (the Allowable Biological Catch and OY for species or species groups) and management measures intended to limit catches to those targets. At its November meeting the Council would then choose a preferred alternative, representing final harvest specifications and management measures. However, a court ruling decided in 2001 found that NOAA Fisheries was not allowing sufficient time for public notice and comment on the regulations promulgated to implement Council-recommended harvest specifications and management measures (the preferred alternative). In order to allow enough time for the required comment period and still implement management measures early in the year, the Council must make its final decision at its September meeting, with the development of alternatives pushed back to the June meeting.[3]

1.4 Scoping Summary

Scoping is an "early and open process" for determining the scope of issues and range of alternatives for implementing the proposed action (40 CFR 1501.7). NEPA regulations stress that agencies should make diligent efforts to provide public notice of NEPA-related proceedings and hold public hearings whenever appropriate during EIS development (40 CFR 1506.6). Fortunately, the process by which the Council adopts annual harvest specifications and management measures, described above in general terms, accommodates early and open scoping, and public involvement as well. In fact, public and stakeholder involvement lies at

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[2] Sometimes spawning stock biomass is used instead of total stock biomass, and sometimes spawning potential is used. Where there is insufficient information to develop a numerical OY, the FMP still allows establishment of a non-numerical OY.

[3] Even with the earlier decisionmaking framework regulations cannot be promulgated by January 1. Therefore, NOAA Fisheries must promulgate emergency regulations, which are exempt from regular rulemaking procedures, for January and February, with the full rulemaking procedure applying to regulations implemented March 1. (This EIS covers the March 1 regulations; an environmental assessment is prepared for the regulations covering January and February.) It should also be noted that the Council planned to implement a three-meeting decision process in 2002 in order to allow more time for deliberations. Under this scenario harvest specification alternatives would be developed at the June meeting, final harvest specifications (a preferred alternative) and management measure alternatives would be determined in September, and final management measures (a preferred alternative) adopted at the November meeting. Because of the court decision and the need for the Council's preferred alternatives to be identified at the September meeting, this process was not used.

the core of the council process. More specifically, the Council and its subcommittees and advisory bodies hold public meetings, with opportunity for public comment. Further, advisory bodies directly represent stakeholders. For groundfish management these bodies include the Groundfish Management Team, with representation from state and federal fishery scientists, the Groundfish Advisory Subpanel, whose members are drawn from different fishery sectors, and the Ad Hoc Allocation Committee, which provides advice on allocating harvest opportunity among the various fishery sectors. In the past, the development of annual specifications has been accompanied by an environmental assessment (EA). An EA was also planned for the 2003 specifications, but early scoping revealed that the action entails potentially significant impacts and is expected to generate substantial controversy. Therefore, the Council and NOAA Fisheries decided to proceed directly to preparation of an EIS without first preparing an EA. Although scoping had been initiated, scoping must also occur after the agency publishes a Notice of Intent (NOI) to prepare an EIS in the Federal Register. NOAA Fisheries published the NOI for this EIS on August 14 2002. The NOI identified the August 28-29, 2002, Allocation Committee meeting as an opportunity for public input into the development of this EIS. The September Council meeting, during which the Council identifies its preferred alternative, provides another venue for scoping, including public input, after NOI publication. Discussion at the various meetings that constitute the scoping process is summarized below. (Meeting minutes, which provide more detail are available from the Council office.)

Groundfish Management Team meeting, May 13-17: During this meeting Team members reviewed new stock assessments, which provide the basis for 2003 harvest specifications and management measures. The assessments suggested the OY values for yelloweye rockfish and bocaccio would have to be set at very low levels. Managers would likely have to limit catches (by setting low cumulative landing limits) in a range of fisheries because of the potential for bycatch of overfished species. The Team began discussing the use of depth-based restrictions as a way to manage bycatch of certain overfished species.

Ad Hoc Allocation Committee teleconference, May 21, 2002: The Committee reviewed new stock assessments and the difficulties raised because OY values for overfished species such as yelloweye rockfish and canary rockfish, which will have the main impact in the northern part of the management area, and bocaccio, affecting the southern part, would have to be set at very low levels. These low values will necessitate better accounting of all sources of fishing mortality, including research fisheries (including surveys used to assess various fisheries). The Committee discussed whether the mixed-stock exception, described in National Standards Guidelines (50 CFR 310(d)(5)), could be invoked to allow higher OYs for selected overfished species. Various management measures, but primarily depth restrictions, that could limit harvest of overfished species were discussed. The Committee also discussed the feasibility of implementing a vessel monitoring system (VMS), which would be an important tool in enforcing any depth-based management regime.

Ad Hoc Allocation Committee meeting, June 3-4: This meeting covered many of the same issues as the May 21 teleconference, but in more detail. The Committee discussed the stock assessments again, and particularly the data and assumptions that were used in modeling the bocaccio stock. NOAA Fisheries gave a presentation on VMS technology and the different options that could be implemented in support of depth-based management. The cost of such systems, and who will bear those costs is a key issue. Enforcement personnel also emphasized that depth-based restrictions based on depth contours need to be translated into relatively straight boundary lines and this can be a difficult task. The Committee devoted a large part o the meeting to developing preliminary ideas for the management measures for each fishery that would satisfy the most conservative assumptions about acceptable harvest levels.

Council meeting, June 18-21: As noted above, the Council developed a preliminary range of harvest specifications and management measures during this meeting, based on input from the Allocation Committee, advisory bodies and public comment. These are presented as three alternatives sets of harvest specifications covering a range from most to least conservative in terms of possible harvest levels. A range of management measures that would satisfy these harvest specifications was also developed. (After the meeting, this information was made available on the Council website.)

Groundfish Management Team meeting, July 29-31: The GMT further refined the alternatives developed by the Council at its June meeting, especially to ensure that management measures would be likely to result in harvest levels within the range of specifications.

State-sponsored public hearings: State fish and wildlife departments held a series of public hearings at various locations in all three states between July 23 and August 9. Although the Council did not sponsor these hearings, they received written summaries of the proceedings. This public input is an important consideration when the Council develops its preferred alternative at the September meeting. Council members, representatives from NOAA Fisheries, stock assessment scientists also attended the meetings to explain the need for 2003 management measures, the range of measures being considered and the scientific basis for decisionmaking.

Ad Hoc Allocation Committee meeting, August 28-29: In addition to Committee business, this meeting was announced as an opportunity for public comments on the scope of the EIS, including the range of alternatives and issues that will be analyzed.

Council Meeting, September 10-13:

2.0 ALTERNATIVES INCLUDING PROPOSED ACTION

At their June meeting the Council adopted several sets of alternatives. The first set, described in Section 2.1 concerns harvest levels, expressed in terms of ABC and OY levels, for groundfish stocks and stock complexes. The remaining sets of alternatives represent different management measures intended to constrain fisheries to the harvest levels identified in the first set of alternatives. Separate management measure alternatives were identified for commercial and tribal groundfish fisheries, the salmon troll fishery, and recreational fisheries. OY/ABC alternatives are not associated with specific management measure alternatives; but generally, more restrictive (or conservative) management measures are more likely to result in harvests closer to the lower end of ABC/OY alternatives while less restrictive measures will result in harvests at or above the high end ABC/OY values. As described in Section 1.4, these management measures were developed with input from key Council advisory bodies, representing state and federal fishery managers, fishermen, scientists, economists, and others.

2.1. Harvest Level Alternatives

The Council adopted three alternatives, representing sets of harvest levels for managed species, at its June 17-21, 2002 meeting in Foster City, CA. These ABC/OY values are depicted in Table 2-1.

2.1.1 The *No Action* Alternative

Specify the 2002 groundfish ABCs and total catch OYs for management of 2003 West Coast groundfish fisheries.

2.1.2 The *Council-Preferred* Alternative

The Council is expected to adopt the *Council-Preferred* alternative at its September 9-13 2002 meeting in Portland, Oregon. *To be completed prior to formal public review of the draft EIS.*

2.1.3 The *Low ABC/OY* Alternative

Specify the low 2003 groundfish ABCs and total catch OYs (Table 2-1) for management of 2003 West Coast groundfish fisheries. Most bottom fishing activities on the U.S. West Coast within the 0-150 fm depth zone would be prohibited or restructured to avoid overfished shelf rockfish species. There would be a zero tolerance for bocaccio bycatch south of Cape Mendocino, CA (south of 40°10' N. lat.) and a near-zero tolerance for yelloweye rockfish bycatch north of 36° N. lat. in 2003 fisheries. The limited entry groundfish trawl fishery fishery north of Pt. Reyes, CA (north of 38° N. lat.) would be maximally constrained in the 150-250 fm depth zone by the need to rebuild darkblotched rockfish.

2.1.4 The *Medium ABC/OY* Alternative

Specify the medium 2003 groundfish ABCs and total catch OYs (Table 2-1) for management of 2003 West Coast groundfish fisheries. Most bottom fishing activities on the U.S. West Coast within the 0-150 fm depth zone would be prohibited or restructured to avoid overfished shelf rockfish species. There would be a zero tolerance for bocaccio bycatch south of Cape Mendocino, CA (south of 40°10' N. lat.) and a near-zero tolerance for yelloweye rockfish bycatch north of 36° N. lat in 2003 fisheries. The effects of proposed actions under the *Medium ABC/OY* alternative within the 0-150 fm depth zone on the West Coast are not considered significantly different than those analyzed in the *Low ABC/OY* alternative. The limited entry groundfish trawl fishery fishery north of Pt. Reyes, CA (north of 38° N. lat.) would be constrained to an intermediate degree relative to the *Low ABC/OY* and *High ABC/OY* alternatives in the 150-250 fm depth zone by the need to rebuild darkblotched rockfish.

2.1.5 The *High ABC/OY* Alternative

Specify the high 2003 groundfish ABCs and total catch OYs (Table 2-1) for management of 2003 West Coast groundfish fisheries. Most bottom fishing activities on the U.S. West Coast within the 0-150 fm depth zone south of Cape Mendocino, CA (south of 40°10' N. lat.) would be prohibited or restructured to avoid overfished shelf rockfish species. There would be a zero (or near-zero?) tolerance for bocaccio bycatch south of Cape Mendocino, CA (south of 40°10' N. lat.). The effects of proposed actions under the *High ABC/OY* alternative within the 0-150 fm depth zone south of Cape Mendocino are not considered significantly different than those analyzed under the *Low ABC/OY* alternative. The effects of proposed actions on fisheries in the 0-150 fm depth zone north of Cape Mendocino under the *High ABC/OY* alternative would be less than effects under the *Low ABC/OY* and *Medium ABC/OY* alternatives; yet constraints are significantly greater than under the *No Action* alternative given the more pessimistic outlook for rebuilding canary rockfish. The limited entry groundfish trawl fishery operating north of Pt. Reyes, CA (north of 38° N. lat.) in the 150-250 fm depth zone would be least constrained relative to the *Low ABC/OY*, *Medium ABC/OY*, and *No Action* alternatives by the need to rebuild darkblotched rockfish.

2.1.6 Other Harvest Level Alternatives

This initial draft EIS has not analyzed alternatives other than those listed above. Alternatives resulting in higher targets than those described in the *High ABC/OY* alternative could be considered, if the new stock assessment and rebuilding analysis anticipated for yelloweye rockfish that provide a more optimistic outlook for rebuilding the species. Alternatives that invoke the mixed stock exception described in National Standard Guidelines (50 CFR 600.310(d)(6)) may also be developed. Finally, alternative management measures that are more likely to meet the range of harvest specification (ABC/OY) alternatives already proposed, and consistent with harvest levels for the most constraining overfished groundfish species depicted in Table 2-1, are likely to be developed.

2.2 Management Measure Alternatives

2.2.1 Commercial Fisheries

Table 2.2.1-1 presents five management measure options for groundfish fisheries adopted by the Council at its June meeting and the status quo option. In order to minimize or prevent harvest of overfished species with very low OYs, all of the options—except for the status quo—propose the implementation of depth-based restrictions in addition two the two-month cumulative trip limits employed in previous years. The status quo alternative is the continuation of 2002 management measures into 2003, recognizing that these measures could be adjusted in-season in order to constrain total fishing mortality below a given OY level.

Table 2.2.1-2a presents management measure options to minimize incidental catch of overfished species in non-groundfish fisheries adopted by the Council at its June meeting. The number of options varies depending on the fishery in question. These fisheries are non-Indian commercial salmon troll, Pacific halibut, coastal pelagic species (CPS), pink shrimp, and exempted trawl. Table 2.2.1-2b presents a set of options developed by the Salmon Advisory Subpanel for non-Indian commercial salmon troll fisheries.

Table 2.2.1-3 presents two options for tribal groundfish fisheries prosecuted by tribes in Washington state.

2.2.2 Recreational Fisheries

Table 2.2.2-1a presents the recreational management measure alternatives adopted by the Council at its June meeting, subdivided by state. Table 2.2.2-1b presents a set of options developed by the Salmon Advisory Subpanel for recreational salmon fisheries.

2.3 Alternatives Eliminated From Detailed Study

To be completed prior to formal public review of the draft EIS.

2.4 Comparison of the Environmental Consequences

Table 2.4-1 summarizes the analysis of physical, biological, and socioeconomic effects of the alternatives presented in Chapter 4. Anticipated effects to bottom fishing activities and groundfish-dependent economies on the West Coast will be severe. Potential negative economic effects of proposed actions are likely to be especially acute in California south of Cape Mendocino (south of 40°10' N. lat.) where bocaccio rebuilding constraints require curtailing or closing fisheries that incidentally catch this species.

CHAPTER 2
TABLES

TABLE 2-1. Acceptable biological catch (ABC) and total catch optimum yield (OY) alternatives (metric tons) for 2003 for the Washington, Oregon, and California region under the Council-proposed alternatives. (Overfished stocks in CAPS).

Stock	Status Quo Alternative 2002 ABCs/OYs		Alternative 1 Low 2003 ABCs/OYs		Alternative 2 Medium 2003 ABCs/OYs		Alternative 3 High 2003 ABCs/OYs	
	ABC	OY	ABC	OY	ABC	OY	ABC	OY
LINGCOD	745	577	841	555	841	651	841	725
Pacific Cod	3,200	3,200			3,200	3,200		
PACIFIC WHITING	166,000	129,600	188,000	129,600	188,000	148,200	188,000	173,600
Sablefish								
North of Conception	4,644	4,367	8,113	4,381	8,113	7,359	8,113	8,091
Conception INPFC area	333	229	441	233	441	323	441	346
PACIFIC OCEAN PERCH	640	350	689	311	689	377	689	496
Shortbelly Rockfish	13,900	13,900			13,900	13,900		
WIDOW ROCKFISH	3,727	856	3,871	656 (= T_{MID})	3,871	832	3,871	916
CANARY ROCKFISH								
(50% Comm.-50% Rec.)	228	93	256	30	256	41	256	45
(80% Comm.-20% Rec.)			309	38	309	52	309	57
Chilipepper Rockfish	2,700	2,000			2,700	2,000		
BOCACCIO	122	100	198	0	198	SSC rec =	198	5.8
Splitnose Rockfish	615	461			615	461		
Yellowtail Rockfish	3,146	3,146			3,146	3,146		
Shortspine Thornyhead	1,004	955			1,004	955		
Longspine Thornyhead	2,461	2,461			2,461	2,461		
S. of Pt. Conception	390	195			390	195		
COWCOD (S. Concep)	5	2.4			5	2.4		
N. Concep & Monterey	19	2.4			19	2.4		
DARKBLOTCHED	187	168	205	100 (option for analysis 130 (option for analysis) 172 (= T_{MID})	205	184	205	205
YELLOWEYE - Coastwide	27	13.5	27	2.10	27	3.90	27	13.50
N of 40°10' latitude	22	11	22	2.03	22	3.63	22	11.00
Monterey	5	2.5	5	0.07	5	0.27	5	2.50
Minor Rockfish North	4,795	3,115			4,795	3,115		
Minor Rockfish South	3,506	2,015			3,506	2,015		
Remaining Rockfish North	2,727				2,727			
Black	1,115				1,115			
Bocaccio	318				318			
Chilipepper - Eureka	32				32			
Redstripe	576				576			
Sharpchin	307				307			
Silvergrey	38				38			
Splitnose	242				242			
Yellowmouth	99				99			
Remaining Rockfish South	854				854			
Bank	350				350			
Blackgill	343				343			

[1]A new bocaccio rebuilding analysis developed subsequent to the June 2002 Council meeting indicates no harvest can occur in 2003 (see section 4.2.2.1).

TABLE 2-1. **Acceptable biological catch (ABC) and total catch optimum yield (OY) alternatives (metric tons) for 2003 for the Washington, Oregon, and California region under the Council-proposed alternatives. (Overfished stocks in CAPS).**

Stock	Status Quo Alternative 2002 ABCs/OYs		Alternative 1 Low 2003 ABCs/OYs		Alternative 2 Medium 2003 ABCs/OYs		Alternative 3 High 2003 ABCs/OYs	
	ABC	OY	ABC	OY	ABC	OY	ABC	OY
Sharpchin	45				45			
Yellowtail	116				116			
Other Rockfish North	2,068				2,068			
South	2,652				2,652			
Dover Sole	8,510	7,440			8,510	7,440		
English Sole	3,100				3,100			
Petrale Sole	2,762				2,762			
Arrowtooth Flounder	5,800				5,800			
Other Flatfish	7,700				7,700			
Other Fish	14,700				14,700			

TABLE 2.2.1-1. Management measure options for 2003 West Coast commercial groundfish fisheries.

Fishery/Area	Status Quo: 2001 Management Measures	Option 1 Most Conservative	Option 2	Option 3	Option 4 Least Conservative
Limited Entry Trawl					
North of 40°10' N. Lat.		No trawling.	Closure inside 250 fm, except allow a midwater trawl fishery for yellowtail and widow subject to time/area restrictions, allow Pacific whiting midwater trawl with possible depth restrictions; [OR only]: nearshore groundfish landings capped at 2000 or 2002 OY levels for the following species categories: black and blue rockfish combined, other nearshore rockfish combined, cabezon (16" min. length with a suboption of 15" min. length), greenling spp. [OR only] nearshore flatfish trawl open 0 - 50 fm (allow EFP to test experimental flatfish trawls outside this depth zone).	Closure inside 150 fm, except allow a midwater trawl fishery for yellowtail and widow subject to time/area restrictions, allow Pacific whiting midwater trawl with possible depth restrictions; Consider seasonal flatfish opportunities inside a line approximating either 50, 75, 100, or 125 fm; [OR only]: nearshore groundfish landings capped at 2000 or 2002 OY levels (see Option 2). [OR only] nearshore flatfish trawl open 0 - 50 fm (allow EFP to test experimental flatfish trawls outside this depth zone).	Seasonal closures between 100 and 200 fm; allow a midwater trawl fishery for yellowtail and widow subject to time/area restrictions, allow Pacific whiting midwater trawl with possible depth restrictions; Consider seasonal flatfish opportunities inside a line approximating either 50, 75, 100, or 125 fm; [OR only]: nearshore groundfish landings capped at 2000 or 2002 OY levels (see Option 2); small footrope required shallower than 100 fm. [OR only] nearshore flatfish trawl open 0 - 75 fm (allow EFP to test experimental flatfish trawls outside this depth zone).
40°10' N. Lat. - 36° N. Lat. (38° N. Lat. for slope rockfish)		Permanent closure from 50 to 250 fm; small footrope required shallower than 50 fm.	Seasonal closures between 150 and 200 fm; permanent closure from 60 to 150 fm; small footrope required shallower than 60 fm.		Permanent closure from 65 to 125 fm; small footrope required shallower than 65 fm.
South of 36° N. Lat. (38° N. Lat. for slope rockfish)		Permanent closure from 50 to 150 fm, small footrope required shallower than 50 fm.	Seasonal closures between 150 and 200 fm; permanent closure from 60 to 150 fm; small footrope required shallower than 60 fm.		Permanent closure from 65 to 125 fm; small footrope required shallower than 65 fm.

TABLE 2.2.1-1. Management measure options for 2003 West Coast commercial groundfish fisheries.

Fishery/Area	Status Quo: 2001 Management Measures	Option 1 Most Conservative	Option 2	Option 3	Option 4 Least Conservative
Limited Entry Fixed Gear					
North of 40°10' N. Lat.		Close inside a line approximating 150 fm; Sablefish DTL: 800 lbs/week; Slope rockfish: 5,000 lbs/2 mos; Thornyheads: Same as trawl limits.	Close inside a line approximating 100 fm; Sablefish DTL: 300 lbs/day, 800 lbs/week; Slope rockfish: 10,000 lbs/2 mos; Thornyheads: Same as trawl limits.	Close inside a line approximating 100 fm; Sablefish DTL: 300 lbs/day, 800 lbs/week; Slope rockfish: 20,000 lbs/2 mos; Thornyheads: Same as trawl limits.	Sablefish DTL: 300 lbs/day, 800 lbs/week; Slope rockfish: 30,000 lbs/2 mos; Thornyheads: Same as trawl limits.
40°10' N. Lat. - 36° N. Lat. (38° N. Lat. for slope rockfish)		Sablefish DTL: 300 lbs/day, 800 lb/week; Slope rockfish: 5,000 lbs/2 mos.; Thornyheads: Same as trawl limits.	Sablefish DTL: 300 lbs/day, 800 lb/week; Slope rockfish: 15,000 lbs/2 mos.; Thornyheads: Same as trawl limits.	Sablefish DTL: 300 lbs/day, 800 lb/week; Slope rockfish: 20,000 lbs/2 mos.; Thornyheads: Same as trawl limits	Sablefish DTL: 300 lbs/day, 800 lbs/week; Slope rockfish: 25,000 lbs/2 mos.; Thornyheads: Same as trawl limits.
South of 36° N. Lat. (38° N. Lat. for slope rockfish)		Sablefish DTL: 300 lbs/day, 900 lbs/week; Slope rockfish: 15,000 lbs/2 mos.; Thornyheads: Same as trawl limits.	Sablefish DTL: 300 lbs/day, 900 lbs/week; Slope rockfish: 25,000 lbs/2 mos.; Thornyheads: Same as trawl limits.		Sablefish DTL: 350 lbs/day, 1,050 lbs/week; Slope rockfish: 30,000 lbs/2 mos.; Thornyheads: Same as trawl limits.

TABLE 2.2.1-1. Management measure options for 2003 West Coast commercial groundfish fisheries.

Fishery/Area	Status Quo: 2001 Management Measures	Option 1 Most Conservative	Option 2	Option 3	Option 4 Least Conservative
Open Access					
North of 40°10' N. Lat.		Hook and line and pot fishing for nearshore rockfish restricted to same depths as recreational fishery; Closed between 150 fm and deepest depth allowed for recreational fishery; Cap nearshore groundfish limits at 2000 or 2002 OY level; Up to 200 lbs/2 mos yellowtail, widow, vermillion rockfish in any combination; Slope rockfish: 1,800 lbs/2 mos; Cabezon: 16" min. size (OR and WA), state min. size (CA); Dogfish fishing outside 150 fm only.	Hook and line and pot fishing for nearshore rockfish restricted to same depths as recreational fishery; Closed between 150 fm and deepest depth allowed for recreational fishery; Cap nearshore groundfish limits at 2000 or 2002 OY level; Up to 200 lbs/2 mos yellowtail, widow, vermillion rockfish in any combination; Slope rockfish: 7,500 lbs/2 mos; Cabezon: 16" min. size (OR and WA), state min. size (CA); Dogfish fishing outside 150 fm only.	Hook and line and pot fishing for nearshore rockfish restricted to same depths as recreational fishery; Closed between 150 fm and deepest depth allowed for recreational fishery; Cap nearshore groundfish limits at 2000 or 2002 OY level; Up to 200 lbs/2 mos yellowtail, widow, vermillion rockfish in any combination; Slope rockfish: 10,000 lbs/2 mos Cabezon: 16" min. size (OR and WA), state min. size (CA); Dogfish fishing outside 150 fm only.	Hook and line and pot fishing for nearshore rockfish restricted to same depths as recreational fishery; Closed between 150 fm and deepest depth allowed for recreational fishery; Cap nearshore groundfish limits at 2000 or 2002 OY level; Up to 200 lbs/2 mos yellowtail, widow, vermillion rockfish in any combination; Slope rockfish: 12,500 lbs/2 mos; Cabezon: 16" min. size (OR and WA), state min. size (CA); Dogfish fishing outside 100 fm only.

TABLE 2.2.1-1. Management measure options for 2003 West Coast commercial groundfish fisheries.

Fishery/Area	Status Quo: 2001 Management Measures	Option 1 Most Conservative	Option 2	Option 3	Option 4 Least Conservative
40°10' N. Lat. - 36° N. Lat. (38° N. Lat. for slope rockfish)		Open shoreward of 10 fm; Season closed Nov-Apr.; Vermillion rockfish: 200 lbs/mo; Nearshore rockfish: 800 lbs/2 mos; Slope rockfish: 1,800 lbs/2 mos; Unless otherwise specified, cumulative limits same as 2002 minus 100 lbs/period; Lingcod: 24" min. size; No stick gear allowed.	Open shoreward of 20 fm; Season closed Mar-Apr and Nov-Dec; Vermillion rockfish: 200 lbs/mo; Nearshore rockfish: 1,000 lbs/2 mos; Slope rockfish: 7,500 lbs/2 mos; Unless otherwise specified, cumulative limits same as 2002 minus 100 lbs/period; Lingcod: 24" min. size; Stick gear to be closely attended, use biodegradable cotton of size 60 or less between the hook and stick.	Open shoreward of 20 fm; Season closed Mar-Apr and possibly Nov-Dec; Vermillion rockfish: 200 lbs/mo; Nearshore rockfish: 1,000 lbs/2 mos; Slope rockfish: 10,000 lbs/2 mos; Unless otherwise specified, cumulative limits same as 2002 minus 100 lbs/period; Lingcod: 24" min. size; Stick gear to be closely attended, use biodegradable cotton of size 60 or less between the hook and stick.	Open shoreward of 20 fm; Year round season; Shelf rockfish: 200 lbs/mo; Nearshore rockfish: 1,200 lbs/2 mos; Slope rockfish: 12,500 lbs/2 mos; Unless otherwise specified, cumulative limits same as 2002; Lingcod: 24" min. size; Stick gear to be closely attended, use biodegradable cotton of size 60 or less between the hook and stick.
South of 36° N. Lat. (38° N. Lat. for slope rockfish)		Closed 20 to 150 fm; Season closed Nov-Apr.; Sablefish DTL: 300 lbs/day, 900 lbs/week; Slope rockfish: 5,000 lbs/2 mos; Thornyheads: 50 lbs/day south of Pt. Conception. No stick gear allowed.	Closed 20 to 150 fm; Season closed Mar-Apr and Nov-Dec; Sablefish DTL: 300 lbs/day, 900 lbs/week; Slope rockfish: 10,000 lbs/2 mos; Thornyheads: 50 lbs/day south of Pt. Conception. Stick gear to be closely attended, use biodegradable cotton of size 60 or less between the hook and stick.	Closed 20 to 150 fm; Season closed Mar-Apr and possibly Nov-Dec; Sablefish DTL: 300 lbs/day, 900 lbs/week; Slope rockfish: 10,000 lbs/2 mos; Thornyheads: 50 lbs/day south of Pt. Conception. Stick gear to be closely attended, use biodegradable cotton of size 60 or less between the hook and stick.	Closed 20 to 150 fm; Year round season; Sablefish DTL: 350 lbs/day, 1,050 lbs/week; Slope rockfish: 12,500 lbs/2 mos; Thornyheads: 50 lbs/day south of Pt. Conception. Stick gear to be closely attended, use biodegradable cotton of size 60 or less between the hook and stick.

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Table 2.2.1-2a. Management measure options for 2003 non-groundfish fisheries.

Fishery/Area	Status Quo: 2002 Management Measures	Option 1 Most Conservative	Option 2	Option 3	Option 4 Least Conservative
Salmon troll- WA		Close in Marine Catch Areas 3 and 4 outside of a line approximating 25 fm	No halibut retention; no canary and yelloweye retention.		Increase the distance between the cannonball and the first spread (see SAS proposed options below).
Salmon troll- OR		No halibut retention; no canary an yelloweye retention			Increase the distance between the cannonball and the first spread (see SAS proposed options below).
Pacific halibut - WA south of Point Chehalis			Close directed halibut fishery between 25 fm and 150 fm.		Allow directed halibut fishery subject to time/area/observer restrictions and requirements.
Pacific halibut - OR			Close directed halibut fishery inside 150 fm.		Close directed halibut fishery inside 100 fm.
Pacific halibut in sablefish fishery north of Point Chehalis			No halibut retention with sablefish.		Status quo.
CPS			No change in current regulations.		
Pink shrimp			Require finfish excluders; mandatory retention of marketable groundfish.		
Exempted trawl north of 40°10' N. Lat.			Require finfish excluders; no groundfish retention allowed.	Require finfish excluders; groundfish retention allowed under half the 2002 limits; no retention of shelf rockfish including canary, cowcod, and yelloweye.	Require finfish excluders; groundfish retention allowed under 2002 limits; no retention of shelf rockfish including canary, cowcod, and yelloweye.

Exempted trawl south of 40°10' N. Lat.			Except for California halibut, require finfish excluders; no groundfish retention allowed.	Except for California halibut, require finfish excluders; groundfish retention allowed under half the 2002 limits; no retention of shelf rockfish including bocaccio, canary, cowcod, and yelloweye.	Except for California halibut, require finfish excluders; groundfish retention allowed under 2002 limits; no retention of shelf rockfish including bocaccio, canary, cowcod, and yelloweye.

Table 2.2.1-2b. Management measure options developed by the Salmon Advisory Subpanel for2003 non-Indian commercial salmon troll fisheries.

Area / Fishery	Status Quo: 2002 Management Measures	Option 1 Most Conservative	Option 2	Option 3	Option 4 Least Conservative
Washington		Outside 50 fm, minimum of 4 fm between cannonball and lower most spread. No retention of canary or yelloweye rockfish. Salmon troll incidental halibut harvest allowed.	Outside 50 fm, minimum of 4 fm between cannonball and lower most spread. Mandatory retention of legal size groundfish. Salmon troll incidental halibut harvest allowed.	Incidental groundfish and halibut harvest allowed, except no retention of canary or yelloweye rockfish.	Incidental groundfish and halibut harvest allowed with mandatory retention of legal size groundfish.
Oregon		Outside 50 fm, minimum of 4 fm between cannonball and lower most spread. No retention of canary or yelloweye rockfish. Salmon troll incidental halibut harvest allowed.	Outside 50 fm, minimum of 4 fm between cannonball and lower most spread. Mandatory retention of legal size groundfish. Salmon troll incidental halibut harvest allowed.	Incidental groundfish and halibut harvest allowed, except no retention of canary or yelloweye rockfish.	Incidental groundfish and halibut harvest allowed with mandatory retention of legal size groundfish.
California		Outside 50 fm, minimum of 6 fm between cannonball and lower most spread. No retention of bocaccio, canary, or yelloweye rockfish. Incidental halibut harvest allowed.	Outside 50 fm, minimum of 6 fm between cannonball and lower most spread. Mandatory retention of legal size groundfish. Incidental halibut harvest allowed.	Incidental groundfish and halibut harvest allowed, except no retention of bocaccio, canary, or yelloweye rockfish.	Incidental groundfish and halibut harvest allowed with mandatory retention of legal size groundfish.

TABLE 2.2.1-3. Management measure options for 2003 West Coast tribal groundfish fisheries		
Fishery	Status Quo: 2001 Management Measures	Proposed Action
Black rockfish		Harvest guideline of 20,000 lbs for the management area between Cape Alava and the U.S./Canada border; harvest guideline of 10,000 lbs for the management area between Leadbetter Pt. and Destruction Island; no restrictions between Destruction Island and Cape Alava.
Sablefish		Harvest guideline = 10% of the total catch OY adopted for the Monterey through U.S./Vancouver INPFC areas; allocation among tribes and gear types to be determined by tribes.
Pacific whiting		Harvest guideline based on the Makah Tribe's sliding scale allocation framework.
Lingcod		300 lbs/day, not to exceed 900 lbs/week.
Thornyheads		300 lb trip limit for shortspine and longspine combined.
Canary rockfish		300 lb trip limit.
Other minor nearshore, shelf, and slope rockfish		300 lb trip limit for each species group or the limited entry trip limits if less restrictive.
Yelloweye rockfish		Consideration for area, depth, season, and bait restrictions to avoid yelloweye.
Midwater trawl		Yellowtail limit = 30,000 lbs/vessel/2 mos; widow landings ≤ 10% of yellowtail poundage/period; no carry-over of unused portions of cumulative landing limit from previous periods; cumulative limits may be adjusted to minimize incidental catch of canary and widow provided average cumulative limit does not exceed 30,000 lbs yellowtail; trip limits to be adjusted downward if there is greater effort than anticipated.
Bottom trawl		Same trip limits as in limited entry trawl for Pacific cod, petrale sole, English sole, rex sole, arrowtooth flounder, and other flatfish; limits in place at beginning of season not to be adjusted downward, nor will time restrictions or closures be imposed, unless it is demonstrated in-season the tribes have taken half the harvest in the tribal area; PFMC-approved trawl gear specified.
Observer program will be developed and implemented to enforce the above limits.		

TABLE 2.2.2-1a. Management measure options for 2003 West Coast recreational groundfish fisheries adopted by the Council.

Fishery	Status Quo: 2002 Management Measures	Option 1 Most Conservative	Option 2 Intermediate	Option 3 Least Conservative
Washington Recreational Options				
Groundfish		Options 2 and 3 with closure outside of a line approximating 25 fm (lat./long. waypoints to be defined). Less than a year round season.	Daily bag limit of 10 groundfish (including rockfish and excluding lingcod), no retention of canary or yelloweye rockfish, open year round. Daily bag limit of 2 lingcod, 24" min. size, open Mar. 16- Oct. 15.	Daily bag limit of 10 groundfish (including rockfish and excluding lingcod), sublimit of 1 canary rockfish and no retention of yelloweye rockfish, open year round. Daily bag limit of 2 lingcod, 24" min. size, open Mar. 16- Oct. 15.
Pacific Halibut		Close recreational halibut fishery outside of a line approximating 25 fm (lat./long. waypoints to be defined). Subarea seasons described in Halibut Catch Sharing Plan.		Allow recreational halibut fishing inside 1 nm^2 halibut "hotspot" areas (lat./long. waypoints to be defined). Subarea seasons described in Halibut Catch Sharing Plan.
Salmon		Close recreational salmon fishery outside of a line approximating 25 fm in Marine Catch Areas 3 and 4 (lat./long. waypoints to be defined). No downriggers allowed.	No retention of canary rockfish with a salmon onboard. No halibut retention with a salmon onboard. No downriggers allowed.	No retention of canary rockfish with a salmon onboard. No downriggers allowed.
Oregon Recreational Options				
Groundfish		Daily bag limit of 10 groundfish (including lingcod) with sublimit of 2 lingcod (24" min. length). Canary and yelloweye rockfish retention prohibited. Min. length limit of 16" for cabezon. Open 0 to 20 fathoms, during a season less than year round. Oregon landings of nearshore groundfish capped at 2000 or 2002 OY levels for the following species categories: black and blue rockfish combined, other nearshore rockfish combined, cabezon (16" min. length with a suboption of 15" min. length), greenling spp.	Daily bag limit of 10 rockfish with sublimits of 1 canary and 1 yelloweye rockfish. Two lingcod at 24" min. length. Fishery open year round, but restricted to 0-27 fm June-Oct. Min. length limit of 16" for cabezon. Oregon landings of nearshore groundfish capped at 2000 or 2002 OY levels (see Option 1).	Daily bag limit of 10 rockfish with sublimits of 1 canary and 1 yelloweye rockfish. Two lingcod at 24" min. length. Min. length limit of 16" for cabezon. Fishery open year round at all-depths. Inseason closure outside 27 fms if necessary.

TABLE 2.2.2-1a. Management measure options for 2003 West Coast recreational groundfish fisheries adopted by the Council.

Fishery	Status Quo: 2002 Management Measures	Option 1 Most Conservative	Option 2 Intermediate	Option 3 Least Conservative
Pacific Halibut		All-depth fishery closed on Stonewall Banks; description area to be identified. Nearshore open to ≤ 20 fm curve. See catch sharing plan for sub-area seasons.	Yelloweye rockfish retention prohibited if Pacific halibut is on board vessel during all-depth fishery. Nearshore fishery open in ≤ to 27 fm curve during June through September. See catch sharing plan.	Yelloweye rockfish retention prohibited if Pacific halibut is on-board vessel during all-depth fishery. See catch sharing plan.
Salmon		Mooching may be prohibited; other options may be considered.		
California Recreational Options				
Groundfish		No rockfish, lingcod, or ocean whitefish may be taken in waters outside 10 fm; daily bag limit of 5 rockfish including 0 shelf species; no retention of bocaccio, cowcod, canary rockfish, or yelloweye rockfish. Daily bag limit of 5 sculpin. Daily bag limit of 2 lingcod with 24" min. length. Season closed Jan-Apr and Nov-Dec. Partition minor nearshore rockfish into components: shallow group (black and yellow, china, gopher, grass, kelp) 80-160 mt; med group (CA scorpionfish) 50-100 mt; deeper group 402-532 mt. Total would not exceed the current 662 mt. Status quo size limits for all currently limited rockfish, with additional limits for: black and yellow = 10", china = 12", gopher = 10", grass = 12", kelp = 10". Cabezon = 16" min. length. Barbless, circle hooks required. Maintain a 50% commercial: 50% recreational apportionment of overall OY for minor nearshore group.	No rockfish, lingcod, or ocean whitefish may be taken in waters outside of 20 fm; daily bag limit of 7 rockfish including 1 shelf species; no retention of bocaccio, cowcod, canary rockfish, or yelloweye rockfish. Daily bag limit of 7 sculpin. Daily bag limit of 2 lingcod with 24" min. length. Season closed Mar-Apr and Nov-Dec (suboption of opening Nov-Dec). Provide for the shallow group and CA scorpionfish in accordance with Option 1 estimates (80-160 mt, 50-100 mt) and then adjust (decrease) the overall OY to account for expected catch of the deeper nearshore group in shallow water (<20 fm; <10 fm): 1) Fishing allowed within 20 fm, increase OY by 20-150 mt, or 2) Fishing allowed within 10 fm, increase OY by 10-100 mt. Cabezon = 16" min. length. Barbless, circle hooks may be required. Maintain a 30% commercial: 70% recreational apportionment of overall OY for minor nearshore group.	No rockfish, lingcod, or ocean whitefish may be taken in waters outside of 20 fm; daily bag limit of 10 rockfish including 2 shelf species; no retention of bocaccio, cowcod, canary rockfish, or yelloweye rockfish. Daily bag limit of 10 sculpin. Daily bag limit of 3 lingcod with 22" min. length. Year round season. Status quo minor nearshore rockfish management, but reduce to historic catch levels: shallow group 80-160 mt, scorpionfish 50-100 mt. Cabezon = 15" min. length. Barbless, circle hooks not required. Maintain a 16% commercial: 84% recreational apportionment of overall OY for minor nearshore group.

Table 2.2.2-1b. Management measure options for 2003 recreational fisheries proposed by the Salmon Advisory Subpanel.

Area / Fishery	Status Quo: 2002 Management Measures	Option 1 Most Conservative	Option 2 Least Conservative
Washington	Same groundfish season, bag, and size limits as for groundfish regulations. Close recreational salmon fishery outside of a line approximating 25 fm in Marine Catch Areas 3 and 4 (lat./long. waypoints to be defined). No downriggers allowed.	Same groundfish season, bag, and size limits as for groundfish regulations. Close recreational salmon fishery in groundfish hotspot areas (lat./long. waypoints to be defined prior to March CM). No halibut retention with a salmon onboard. Outside of a line approximating 50 fm downriggers required to have 4 fm between lead and bottom gear attachment.	Same groundfish season, bag, and size limits as for groundfish regulations, except no retention of canary rockfish with a salmon onboard.
Oregon	Same groundfish season, bag, and size limits as for groundfish regulations. Close recreational salmon fishery in groundfish hotspot areas (lat./long. waypoints to be defined prior to March CM).	Same groundfish season, bag, and size limits as for groundfish regulations, except no retention of yelloweye rockfish with a salmon onboard (same as halibut regulations).	Same groundfish season, bag, and size limits as for groundfish regulations.
California	No retention of groundfish with salmon on board. Close recreational salmon fishery in groundfish hotspot areas (lat./long. waypoints to be defined prior to March CM). Educate CPFV operators in air bladder purging techniques.	Same groundfish season, bag, and size limits as for groundfish regulations.	

TABLE 2.4-1. Ranked relative effects of alternative 2003 groundfish harvest levels to the physical (habitat), biological, and socioeconomic (economic) environment (1 is highest rank, 4 is lowest rank).

Alternative	Potential Negative Habitat Effects	Potential Negative Biological Effects	Potential Negative Economic Effects
No Action	1	1	4
Low 2003 ABCs/OYs	4	4	1
Medium 2003 ABCs/OYs	3	3	2
High 2003 ABCs/OYs	2	2	3
Council-Preferred		Not specified in this intial draft EIS	

3.0 AFFECTED ENVIRONMENT

This chapter is subdivided into five main sections, describing different components of the human environment; Chapter 4 evaluates the impacts of the alternatives on these resources and attributes. Section 3.1 describes, in general terms, the habitats of and ecological relationships between the marine species potentially affected by the proposed action. Section 3.2 describes potentially affected groundfish, non-groundfish, and non-fish species. Section 3.3 covers socioeconomic components of the human environment, including descriptions of the different fisheries and support industries exploiting groundfish and coastal communities dependent on or substantially engaged in fishing. Section 3.4 describes the management regime and Section 3.5 outlines various sources of risk and uncertainty that affect groundfish management.

3.1 Ecosystem Habitat, and Biodiversity

3.1.1 West Coast Marine Ecosystems

Ecosystem and habitat, discussed below, are closely related concepts. Ecosystems embody both the relationships between species, represented by the flow of material and energy through a network of relationships, and the sum total of the species comprising the system within a given physical setting. This overlaps with habitat as the physical and biological attributes to the space occupied by a particular species. The ecosystem concept is reflected in groundfish management through the use of biogeographic zones and species complexes to distinguish the application of management measures. These ecological divisions have both a north-south component, with Cape Mendocino representing an important break in the distribution of many groundfish species (particularly rockfish), hence the use of the 40° 10' N. line of latitude (or alternatively, 40° 30' N. lat.). Point Conception represents another important biogeographic boundary considered when crafting management measures. A second and perhaps more influential ecological demarcation depends on distance from shore, or depth. Groundfish are managed based on distinction between nearshore, continental shelf, and continental slope species. Distinct species assemblages characterize these zones; in addition, there are differences between the zones based on possible vertical distribution of species. Finally, particular species may exhibit seasonal migrations, producing some annual variation in the characteristics of these different ecological zones.

As on land, climate is an important ecological determinant. However, in the ocean's fluid medium, currents are the predominant expression of this broad environmental influence. Not only do currents influence water temperature, vertical mixing and movement can bring nutrient rich deep-bottom water into the photic zone, strongly influencing biological productivity. In the North Pacific Ocean, the large, clockwise-moving North Pacific Gyre circulates cold, subarctic surface water eastward across the North Pacific, splitting at the North American continent into the northward-moving Alaska Current and the southward-moving California Current (Figure 3-1). Along the U.S. West Coast, the surface California Current flows southward through the U.S. West Coast EEZ. The California Current is known as an eastern boundary current, meaning that it draws ocean water along the eastern edge of an oceanic current gyre. Along the continental margin and beneath the California Current flows the northward-moving California Undercurrent. Influenced by the California Current system and coastal winds, waters off the U.S. West Coast are subject to major nutrient upwelling, particularly off Cape Mendocino (Bakun 1996). Shoreline topographic features such as Cape Blanco, Point Conception and bathymetric features such as banks, canyons, and other submerged features, often create large-scale current patterns like eddies, jets, and squirts. Currents off Cape Blanco, for example, are known for a current "jet" that drives surface water offshore to be replaced by upwelling sub-surface water (Barth et al. 2000). One of the better known current eddies off the West Coast occurs in the Southern California Bight between Point Conception and Baja California (Longhurst 1998), wherein the current circles back on itself by moving in a northward and counterclockwise direction just within the Bight. The influence of these lesser current patterns and of the California Current on the physical and biological environment varies seasonally (Lynn 1987) and through larger-scale climate variation, such as El Niño, La Niña, or Pacific Decadal Oscillation climate patterns (Longhurst 1998).

Bathymetry and physical topography also influences both physical structure (and thus helps determine habitat) but also the co-occurrence of species. The U.S. West Coast is characterized by a relatively narrow continental shelf. The 200 m depth contour shows a shelf break closest to the shoreline off Cape Mendocino, Point Sur, and in the Southern California Bight, and widest from central Oregon north to the

Canadian border as well as off Monterey Bay. Deep submarine canyons pocket the EEZ, with depths greater than 4,000 m south of Cape Mendocino (Figure 3-2).

The nearshore, shelf and slope ecosystems can be characterized by combinations of the habitat composites described below, the species assemblages particular to these ecosystems, and the trophic relationships between these species. More specific information on trophic relationships may be found in the managed species descriptions in Section 3.2.

3.1.2 Essential Fish Habitat

The 1996 Sustainable Fisheries Act re-authorizing and amending the MSA obligates the Councils and NOAA Fisheries to identify and characterize essential fish habitat (EFH), which for West coast groundfish is defined as the aquatic habitat necessary to allow for groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem. To satisfy this description EFH must be described for all life history stages of managed species. EFH descriptions have been incorporated into the Groundfish FMP in both Section 11.10 and in a detailed appendix (available online at: http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html). West Coast groundfish species managed by the FMP (see section 3.2.1) occur throughout the EEZ and occupy diverse habitats at all stages in their life histories. EFH may be large, because a species' pelagic eggs and larvae are widely dispersed for example, or comparatively small as is the case with the adults of many nearshore rockfishes which show strong affinities to a particular location or type of substrate.

This section summarizes the more than 400 EFH areas identified in the FMP for all the different life history stages of West Coast groundfish species. This EFH collectively includes all waters from the mean high high water line and the upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon, and California seaward to the boundary of the U.S. EEZ.

The FMP groups the various EFH descriptions into seven major habitat types called "composite" EFHs. This approach focuses on ecological relationships among species and between the species and their habitat, reflecting an ecosystem approach in defining EFH. The seven composite EFH identifications are as follows:

1. Estuarine - Those waters, substrates and associated biological communities within bays and estuaries of the EEZ, from mean higher high water level (MHHW, which is the high tide line) or extent of upriver saltwater intrusion to the respective outer boundaries for each bay or estuary as defined in 33 CFR 80.1 (Coast Guard lines of demarcation).

2. Rocky Shelf - Those waters, substrates, and associated biological communities living on or within ten meters (5.5 fathoms) overlying rocky areas, including reefs, pinnacles, boulders and cobble, along the continental shelf, excluding canyons, from the high tide line MHHW to the shelf break (~200 meters or 109 fathoms).

3. Nonrocky Shelf - Those waters, substrates, and associated biological communities living on or within ten meters (5.5 fathoms) overlying the substrates of the continental shelf, excluding the rocky shelf and canyon composites, from the high tide line MHHW to the shelf break (~200 meters or 109 fathoms).

4. Canyon - Those waters, substrates, and associated biological communities living within submarine canyons, including the walls, beds, seafloor, and any outcrops or landslide morphology, such as slump scarps and debris fields.

5. Continental Slope/Basin - Those waters, substrates, and biological communities living on or within 20 meters (11 fathoms) overlying the substrates of the continental slope and basin below the shelf break (~200 meters or 109 fathoms) and extending to the westward boundary of the EEZ.

6. Neritic Zone - Those waters and biological communities living in the water column more than ten meters (5.5 fathoms) above the continental shelf.

7. Oceanic Zone - Those waters and biological communities living in the water column more than 20 meters (11 fathoms) above the continental slope and abyssal plain, extending to the westward boundary of the EEZ.

3.1.3 Biodiversity of Managed Fish Stocks

3.2 Biological Environment - Managed Species

This section describes the species that may be directly or indirectly affected by the proposed action. They are divided into three sections. Section 3.2.1 describes the principal groundfish species directly subject to the annual specifications and management measures evaluated in this EIS. Section 3.2.2 reviews non-groundfish species that may be affected because they are caught incidentally in groundfish fisheries, or conversely because the fisheries targeting them catch groundfish incidentally and therefore may be regulated to reduce or eliminate this incidental catch (thus indirectly affecting the catch of these non-groundfish species) Section 3.2.3 describes various legally protected species covered by the Endangered Species Act, Marine Mammal Protection Act and the Migratory Bird Treaty Act.

3.2.1 Groundfish Resources

There are over 80 species of groundfish managed under the Pacific Coast Groundfish Fishery Management Plan (FMP). These species include over 60 species of rockfish in the family *Scorpaenidae*, 7 roundfish species, 12 flatfish species, and assorted shark, skate, and a few miscellaneous bottom dwelling marine fish species. Management of these groundfish species is based on principles outlined in the MSA, FMP, and National Standard Guidelines which interpret the tenets of the MSA. Stock assessments are done using resource surveys, catch trends in West Coast fisheries, and other sources of informative data. Section 3.4.1 describes, in general terms, how stock assessments are conducted and reviewed before they are applied in West Coast groundfish management. Table 3.2-1 depicts the latitudinal and depth distributions of groundfish species managed under the FMP.

The passage of the Sustainable Fisheries Act in 1996 incorporated contemporary conservation and rebuilding mandates in the MSA. These mandates, including abundance-based standards for declaring a stock overfished, in a "precautionary" status, or at levels that can support MSY (healthy or "rebuilt"), were subsequently incorporated in the FMP with adoption of amendments 11 and 12. The abundance-based reference points for managing West Coast groundfish species are relative to an estimate of "virgin" or unexploited biomass of the stock which is denoted as "B_0" and is defined as the average equilibrium abundance of a stock's spawning biomass prior to being affected by fishing-related mortality. The MSA mandates that federally managed marine species be managed for an abundance that supports MSY (denoted as B_{MSY}). The harvest rate used to specify harvest levels designed to achieve or sustain B_{MSY} is referred to as the Maximum Fishing Mortality Threshold (MFMT, denoted as F_{MSY}). There are two harvest specification reference points defined in the FMP, a total catch optimum yield (OY) and an acceptable biological catch (ABC). The OY is typically the management target and is usually less than the ABC based on the need to rebuild stocks to B_{MSY} (see the following discussion). The ABC, which is the maximum allowable harvest, is calculated by applying an estimated or proxy F_{MSY} harvest rate to the estimated abundance of the stock.

The Council-specified proxy MSY abundance for most West Coast groundfish species is 40% of B_0 (denoted as $B_{40\%}$). The Council-specified threshold for declaring a stock overfished is when the stock's spawning biomass declines to less than 25% of B_0 (denoted as $B_{25\%}$). The MSA and National Standard Guidelines refer to this threshold as the Minimum Stock Size Threshold or MSST. A rebuilding plan that specifies how total fishing-related mortality is constrained to achieve an MSY abundance level within the legally allowed time is required by the MSA and FMP when a stock is declared overfished. The harvest levels considered for overfished groundfish stocks in 2003 are based on a range of harvest rates estimated to rebuild these stocks within the requisite time at different probabilities.

Stocks that are estimated to be above the overfishing threshold yet below an abundance level that supports MSY are considered to be in the "precautionary zone". The Council has specified precautionary reductions in harvest rate for such stocks to increase abundance to $B_{40\%}$. The methodology for determining this precautionary reduction is described in the FMP and is referred to as the "40-10" adjustment. As the stock declines below $B_{40\%}$, the total catch OY is reduced from the ABC until, at 10% of B_0, the OY is set to zero. In practicality, stocks below $B_{25\%}$ or the MSST are managed in accordance with an adopted rebuilding plan and the "40-10" adjustment is used for stocks with an estimated abundance between $B_{25\%}$ and $B_{40\%}$. Most stocks with an estimated abundance greater than $B_{40\%}$ are managed by setting harvest to the ABC. Figure 3-3 presents this framework graphically.

The remainder of Section 3.2.1 describes groundfish stocks according to the categories just described: overfished, precautionary zone, and healthy. However, it is important to realize that of the more than 80 species in the management unit only a proportion are individually managed. Thus Section 3.2.1.3, covering stocks at or above target stock size, describes five species managed under separate harvest specifications. The remaining species are managed and accounted for in groupings or stock complexes because individually they comprise a small part of the landed catch and there is thus insufficient information to develop the stock assessments necessary to set an OY based on yield estimates. (The FMP identifies the OY for these species as an average of historical catch, based on the assumption that this is below MSY.)

3.2.1.1 Overfished Stocks

Based on the Council's standards for rebuilding overfished groundfish species, nine West Coast groundfish species have been declared overfished by NOAA Fisheries. These nine species are bocaccio, canary rockfish, cowcod, darkblotched rockfish, lingcod, Pacific ocean perch, Pacific whiting, widow rockfish, and yelloweye rockfish. Rebuilding parameters estimated for these stocks are found in Tables 3.2.1-2 and 3.2.1-3.

<u>Bocaccio</u>

Distribution and Life History: Bocaccio (*Sebastes paucispinis*) are found in the Gulf of Alaska off Krozoff and Kodiak Islands, south as far as Sacramento Reef, Baja California (Hart 1973, Miller and Lea 1972). In survey catches, Allen and Smith (1988) found bocaccio to be most common at 100-150 m over the outer continental shelf. Casillas et al. (1998) determined the depth zone where the southern bocaccio stock is most prevalent is 54-82 fm. Sakuma and Ralston (1995) categorized bocaccio as both a nearshore and offshore species. Larvae and small juveniles are pelagic (Garrison and Miller 1982) and are commonly found in the upper 100 m of the water column, often far from shore (MBC 1987). Large juveniles and adults are semi-demersal and are most often found in shallow coastal waters over rocky bottoms associated with algae (Sakuma and Ralston 1995). Adults are commonly found in eelgrass beds, or congregated around floating kelp beds (Love et al. 1990, Sakuma and Ralston 1995). Young and adult bocaccio also occur around artificial structures, such as piers and oil platforms (MBC 1987). Although juveniles and adults are usually found around vertical relief, adult aggregations also occur over firm sand-mud bottoms (MBC 1987). Bocaccio move into shallow waters during their first year of life (Hart 1973), then move into deeper water with increased size and age (Garrison and Miller 1982).

Bocaccio are ovoviviparous (Garrison and Miller 1982, Hart 1973). Love et al. (1990) reported the spawning season to be protracted and last almost year-round (>10 months). Parturition occurs during January to April off Washington, November to March off northern and central California, and October to March off southern California (MBC 1987). Two or more broods may be born in a year in California (Love et al. 1990). The spawning season is not well known in northern waters. Males mature at 3 to 7 years with 50% mature in 4 to 5 years. Females mature at 3 to 8 years with 50% mature in 4 to 6 years (MBC 1987).

Larval bocaccio often eat diatoms, dinoflagellates, tintinnids, and cladocerans (Sumida and Moser 1984). Copepods and euphausiids of all life stages (adults, nauplii and egg masses) are common prey for juveniles (Sumida and Moser 1984). Adults eat small fishes associated with kelp beds, including other species of rockfishes, and occasionally small amounts of shellfish (Sumida and Moser 1984). Bocaccio are eaten by sharks, salmon, other rockfishes, lingcod, albacore, sea lions, porpoises, and whales (MBC 1987). Bocaccio directly compete with chilipepper and widow, yellowtail, and shortbelly rockfishes for both food and habitat resources (Reilly et al. 1992).

Stock Status and Management History: There are two separate West Coast bocaccio populations. The southern stock exists south of Cape Mendocino and the northern stock north of 48° N. lat. in northern Washington (off Cape Flattery). It is unclear whether the southern and northern stock separation implies stock structure. The disjoint distribution of the two populations and evidence of lack of genetic intermixing suggests stock structure, although MacCall (2002) spoke to some recent evidence for a higher possibility of genetic mixing between the two populations. Nonetheless, assessment scientists and managers have treated the two populations as independent stocks north and south of Cape Mendocino.

The northern stock has not been assessed. The southern stock has been assessed (Bence and Hightower 1990, Bence and Rogers 1992, Ralston et al. 1996b, MacCall et al. 1999) and has suffered poor recruitment during the warm water conditions that have prevailed off southern California since the late 1980's. The 1996 assessment (Ralston et al. 1996b) indicated the stock was in severe decline and overfished. NOAA Fisheries formally declared the stock overfished in March 1999 after the FMP was amended to incorporate the tenets of the Sustainable Fisheries Act. MacCall et al. (1999) confirmed the overfished status of bocaccio and estimated spawning output of the southern stock to be 2.1% of its virgin biomass and 5.1% of the MSY level.

A new assessment (MacCall 2002) done this year expanded the assessed area to both the Conception and Monterey INPFC areas (previous assessments were only for the Conception area). While abundance increased slightly in the Conception area from the last assessment (4.8% of virgin biomass), the outlook became more pessimistic with indications that potential productivity is lower than previously thought. The Council assumed a medium recruitment scenario for the 1999 year class which was not fully selected and accounted for in the surveys used by MacCall et al. (1999). The new assessment indicated that the 1999 year class experienced a relatively low recruitment. This result added to a significantly longer time series of poor recruitments. Since the pattern of past observed recruitments are used to predict future recruitment, a longer period of poor recruitment results in a more pessimistic outlook for future production.

Canary Rockfish

Distribution and Life History: Canary rockfish (*Sebastes pinniger*) are found between Cape Colnett, Baja California, and southeastern Alaska (Boehlert 1980, Boehlert and Kappenman 1980, Hart 1973, Love 1991, Miller and Lea 1972, Richardson and Laroche 1979). There is a major population concentration of canary rockfish off Oregon (Richardson and Laroche 1979). Canary primarily inhabit waters 91-183 m (50-100 fm) deep (Boehlert and Kappenman 1980). In general, canary rockfish inhabit shallow water when they are young and deep water as adults (Mason 1995). Adult canary rockfish are associated with pinnacles and sharp drop-offs (Love 1991) and are most abundant above hard bottoms (Boehlert and Kappenman 1980). Canary rockfish appear to be a reef-associated species in the southern part of its range(Boehlert 1980). In central California, newly settled canary rockfish are first observed at the seaward sand-rock interface and farther seaward in deeper water (18-24 m).

Canary rockfish off the West coast exhibit a protracted spawning period from September through March, probably peaking in December and January off Washington and Oregon (Johnson et al. 1982, Hart 1988). Female canary rockfish reach sexual maturity at roughly 8 years of age. Like many members of *Sebastes*, canary rockfish are ovoviviparous, whereby eggs are internally fertilized within females and hatched eggs are released as live young (Bond 1979; Golden and Demory 1984; Kendall and Lenarz 1987). Canary rockfish are a relatively fecund species, with egg production being correlated with size, e.g., a 49-cm female can produce roughly 0.8 million eggs and a female that has realized maximum length (say 60 cm) produces approximately 1.5 million eggs (Gunderson et al. 1980). Very little is known about the early life history strategies of canary rockfish, but limited research indicates larvae are strictly pelagic (near ocean surface) for a short period of time, begin to migrate to demersal waters during the summer of their first year of life, and develop into juveniles around nearshore rocky reefs, where they may congregate for up to three years (Boehlert 1980; Sampson 1996). Evaluations of length distributions by depth developed from NOAA Fisheries shelf trawl survey data generally supported other research that suggests this species is characterized by an increasing trend in mean size of fish with depth (Boehlert 1980; Archibald et al. 1981). Female canary rockfish generally grow faster and reach slightly larger sizes than males, but do not appear to live longer than males. Adult canary rockfish feed primarily on small fishes, as well as planktonic creatures, such as krill and euphausiids (Phillips 1964; Love 1991).

Stock Status and Management History: From 1983 through 1994, canary rockfish were managed as part of the *Sebastes* complex, with various trip limits imposed over this period. In 1995, limits specific to canary rockfish (cumulative monthly landing limit of 6,000 lb) were imposed and commercial vessels were expected to sort the canary rockfish from the mixed species categories such as the *Sebastes* complex. For 1998, catches of canary rockfish were regulated using a two-month cumulative landing limit of 40,000 pounds for the *Sebastes* complex, of which, no more than 15,000 pounds (38%) could be composed of canary rockfish. From 1998 to present, commercial groundfish fishing for canary has been drastically reduced and the only significant take is that from incidental bycatch. Canary rockfish has become a limiting factor for other non-groundfish fisheries on the West Coast shelf.

The 1999 stock assessment documented that the stock had declined below the overfished level ($B_{25\%}$) in the northern area (Columbia and U.S. Vancouver INPFC areas; Crone et al. 1999) and in the southern area (Conception, Monterey, and Eureka areas; Williams et al. 1999) and was declared overfished in January. The first rebuilding analysis (Methot 2000a) used results from the northern area assessment to project rates of potential stock recovery. The stock was found to have extremely low productivity, defined as production of recruits in excess of the level necessary to maintain the stock at its current, low level. Rates of recovery were highly dependent upon the level of recent recruitment, which could not be estimated with high certainty. The initial rebuilding OY for 2001 and 2002 was set at 93 mt based upon a 50% probability of rebuilding by the year 2057, a medium level for these recent recruitments, and maintaining a constant annual catch of 93 mt through 2002.

A new assessment was done coastwide this year for canary rockfish, treating the stock as a single unit from the Monterey INPFC area north through the U.S. Vancouver INPFC area and thus departing from the methodologies of past assessments (Methot and Piner 2002a). Although there is some evidence of genetic separation of the northern and southern stocks (Boehlert 1980, Wishard et al. 1980), the observed variability in growth rate by sex and area was not significantly different at small vs. large spatial scales. They also determined the areas of highest canary rockfish density were off headlands that separate INPFC areas, which would tend to bias results if the assessment was stratified by area. A critical uncertainty in canary rockfish assessments is the lack of older, mature females in surveys and other assessment indices. The are two competing explanations for this observation. Older females could have a higher natural mortality rate, resulting in their disproportionate disappearance from the population. Alternatively, survey and fishing gears may be less effective at catching them, because older females hide in places inaccessible to the gear, for example. If this is the case, then these fish (which, because of their higher spawning output, may make an important contribution to future recruitment) are part of the population, but remain un-sampled. Methot and Piner (2002a) combined these two hypotheses in a single age-structured version of the SSC-endorsed stock synthesis assessment model (Methot 2000b) by allowing female natural mortality to increase with the maturity function but also allowing selectivity to be domed (the model determines the selectivity of survey and fishery gear as opposed to assuming a fixed selectivity). They estimated the current abundance of canary rockfish coastwide is about 8% of B_0.

Cowcod

Distribution and Life History: Cowcod *(Sebastes levis)* occur from Ranger Bank and Guadalupe Island, Baja California to Usal, Mendocino County, California (Miller and Lea 1972). Cowcod range from 21 to 366 m in depth (Miller and Lea 1972) and are considered to be parademersal (transitional between a midwater pelagic and benthic species). Adults are commonly found at depths of 180-235 m and juveniles are most often found in 30-149 m of water (Love et al. 1990). MacGregor (1986) found that larval cowcod are almost exclusively found in southern California and may occur many miles offshore. Adult cowcod are primarily found over high relief rocky areas (Allen 1982). They are generally solitary, but occasionally aggregate (Love et al. 1990). Solitary subadult cowcod have been found in association with large white sea anemones on outfall pipes in Santa Monica Bay (Allen 1982). Juveniles occur over sandy bottom and solitary ones have been observed resting within a few centimeters of soft-bottom areas where gravel or other low relief was found (Allen 1982). Although the cowcod is generally not migratory; it may move to some extent to follow food (Love 1991). Cowcod are ovoviviparous, and large females may produce up to three broods per season (Love et al. 1990). Spawning peaks in January in the Southern California Bight (MacGregor 1986). Cowcod grow to 94 cm (Allen 1982). Larvae are extruded at about 5.0 mm (MacGregor 1986). Juveniles eat shrimp and crabs and adults eat fish, octopus, and squid (Allen 1982).

Stock Status and Management History: The cowcod stock south of Cape Mendocino has experienced a long-term decline. Abundance indices decreased approximately ten-fold between the 1960s and the 1990s based on CPFV logs (Butler et al. 1999). Recreational and commercial catch also declined substantially from peaks in the 1970s and 1980s, respectively.

The cowcod stock in the Conception INPFC area (Point Conception to the U.S./Mexico border) was assessed for the first time in 1998 (Butler et al. 1999). Virgin spawning biomass (B_0) was estimated to be 3,370 mt and 1998 spawning biomass was estimated at 7% of B_0, well below the 25% overfishing threshold. As a result, NOAA Fisheries declared cowcod in the Conception and Monterey management areas overfished in January 2000. The stock's low productivity and declined spawning biomass necessitates an extended rebuilding period, estimated at 62 years with no fishing-related mortality (T_{MIN}) , to achieve B_{MSY} (1,350 mt in the Conception management area).

Darkblotched Rockfish

Distribution and Life History: Darkblotched rockfish *(Sebastes crameri)* are found from Santa Catalina Island off southern California to the Bering Sea (Miller and Lea 1972, Richardson and Laroche 1979). Off Oregon, Washington, and British Columbia it is primarily an outer shelf/upper slope species (Richardson and Laroche 1979). Distinct population groups have been found off the Oregon coast between lat. 44 30' and 45 20'N (Richardson and Laroche 1979). Adults occur in depths of 25-600 m and 95% are between 50 and 400 m (Allen and Smith 1988). Off central California, young darkblotched rockfish recruit to soft substrate and low (<1 m) relief reefs (Love et al. 1991). Darkblotched rockfish make limited migrations after they have recruited to the adult stock (Gunderson 1997).

Darkblotched rockfish are viviparous (Nichol and Pikitch 1994). Insemination of female darkblotched rockfish occurs from August to December, fertilization and parturition occurs from December to March off Oregon and California, primarily in February off Oregon and Washington (Hart 1973, Nichol and Pikitch 1994, Richardson and Laroche 1979). Females attain 50% maturity at a greater size (36.5 cm) and age (8.4 years) than males (29.6 cm and 5.1 years) (Nichol and Pikitch 1994). Adults can grow to 57 cm (Hart 1973). Pelagic young are food for albacore (Hart 1973).

Stock Status and Management History: Darkblotched rockfish were managed as part of the coastwide *Sebastes* complex which was later segregated into north and south management units divided at 40°30' N. lat. The first assessment of darkblotched estimated the proxy MSY harvest rate and overfishing rate for the stock (Lenarz 1993). Lenarz (1993) estimated a range of likely natural mortalities (M = 0.025-0.05) for darkblotched based on a range of maximum ages (60-105 years). He also estimated fishery selectivity from length compositions from the California fishery which he converted to an age-based selectivity function. He then plotted the relative fecundity per recruit as a function of fishing-related and natural mortality to estimate $F_{35\%}$ (the target MSY proxy harvest rate at that time) and $F_{20\%}$ (the overfishing harvest rate) relative to fecundity per recruit. He estimated the range of likely harvest rates (F) at the MSY target ($F_{35\%}$) was 0.04-0.06 and the overfishing harvest rate ($F_{20\%}$) ranged between 0.07 and 0.11. While Lenarz did not calculate an ABC for darkblotched, he did note the estimated harvest rates at MSY and overfishing were lower than expected. He also noted a trend of decreasing size of darkblotched from the length composition data he evaluated.

The next assessment that was informative for darkblotched addressed all West Coast *Sebastes* without individual ABCs (Rogers et al. 1996). Two methodologies were explored for estimating an ABC for darkblotched: 1) fishing-related mortality was assumed to equal natural mortality (F=M) to estimate an $F_{35\%}$ harvest rate, and 2) estimation of $F_{35\%}$ using a simple stock synthesis model. In the F=M approach, a proxy adjustment (Q) to triennial survey data was calculated to estimate relative biomass of generic *Sebastes*. It was determined that adjusting Q by 0.5 and then by M approximated $F_{35\%}$ estimates from stock synthesis models for most rockfish. A Q of 0.8 (instead of 0.5) was assumed for darkblotched since the survey swept most of the depth range of darkblotched and caught smaller fish than the fishery. The other factors that influenced the magnitude of Q was a noted decreasing trend in estimated survey biomass over time and the estimated size at 50% maturity was greater than estimated size at 50% selectivity (i.e., the survey caught darkblotched at sizes less than those estimated for most maturing and mature fish). The F=M method was compared to a stock synthesis modeling approach that incorporated triennial survey data and a Pacific ocean perch bycatch effort index.

Rogers et al. (2000) assessed the stock's status in 2000 and determined the stock was at 14% of its unfished level ($B_{14\%}$). They incorporated five relative abundance indices in a length based stock synthesis model (Methot 1990) to derive current estimates of abundance and productivity. The five indices included three NOAA Fisheries surveys with different latitudinal and depth coverages, the Pacific ocean perch effort index developed in the generic *Sebastes* assessment (Rogers et al. 1996), and a logbook index derived from California trawl logbook and species composition data stratified by major California port (Ralston 1999). Major uncertainties in the assessment model included the uncertain foreign catch composition, which had a significant effect on estimated unfished biomass (B_0), and assumptions regarding maturity, discard rates, and unchanging selectivity over time. Of these, the foreign catch of darkblotched influences our understanding of stock status the most; larger assumed historical catches increase estimates of B_0. Four accepted model runs varied the assumed foreign catch proportion from 0%-20%, which resulted in significant differences in B_0 and the spawning index. Only one of those model runs (assuming 0% foreign catch of darkblotched) estimated the stock was not overfished.

Lingcod

Distribution and Life History: Lingcod (*Ophiodon elongatus*), a top order predator of the family Hexagrammidae, ranges from Baja California to Kodiak Island in the Gulf of Alaska. Lingcod are demersal at all life stages (Allen and Smith 1988, NOAA 1990, Shaw and Hassler 1989). Adult lingcod prefer two main habitat types: slopes of submerged banks 10-70 m below the surface with seaweed, kelp and eelgrass beds and channels with swift currents that flow around rocky reefs (Emmett et al. 1991, Giorgi and Congleton 1984, NOAA 1990, Shaw and Hassler 1989). Juveniles prefer sandy substrates in estuaries and shallow subtidal zones (Emmett et al. 1991, Forrester 1969, Hart 1973, NOAA 1990, Shaw and Hassler 1989). As the juveniles grow they move to deeper waters. Adult lingcod are considered a relatively sedentary species, but there are reports of migrations of greater than 100 km by sexually immature fish (Jagielo 1990, Mathews and LaRiviere 1987, Mathews 1992, Smith et al. 1990).

Mature females live in deeper water than males and move from deep water to shallow water in the winter to spawn (Forrester 1969, Hart 1973, Jagielo 1990, LaRiviere et al. 1980, Mathews and LaRiviere 1987, Mathews 1992, Smith et al. 1990). Mature males may live their whole lives associated with a single rock reef, possibly out of fidelity to a prime spawning or feeding area (Allen and Smith 1988, Shaw and Hassler 1989). Spawning generally occurs over rocky reefs in areas of swift current (Adams 1986, Adams and Hardwick 1992, Giorgi 1981, Giorgi and Congleton 1984, LaRiviere et al. 1980). After the females leave the spawning grounds, the males remain in nearshore areas to guard the nests until the eggs hatch. Hatching occurs in April off Washington but as early as January and as late as June at the geographic extremes of the lingcod range. Males begin maturing at about 2 years (50 cm), whereas females mature at 3+ years (76 cm). In the northern extent of their range, fish mature at an older age and larger size (Emmett et al. 1991, Hart 1973, Mathews and LaRiviere 1987, Miller and Geibel 1973, Shaw and Hassler 1989). The maximum age for lingcod is about 20 years (Adams and Hardwick 1992).

Lingcod are a visual predator, feeding primarily by day. Larvae are zooplanktivores (NOAA 1990). Small demersal juveniles prey upon copepods, shrimps, and other small crustaceans. Larger juveniles shift to clupeids and other small fishes (Emmett et al. 1991, NOAA 1990). Adults feed primarily on demersal fishes (including smaller lingcod), squids, octopi, and crabs (Hart 1973, Miller and Geibel 1973, Shaw and Hassler 1989). Lingcod eggs are eaten by gastropods, crabs, echinoderms, spiny dogfish, and cabezon. Juveniles and adults are eaten by marine mammals, sharks, and larger lingcod (Miller and Geibel 1973, NOAA 1990).

Stock Status and Management History: In 1997, U.S. scientists assessed the size and condition of the portion of the stock in the Columbia and Vancouver areas (including the Canadian portion of the Vancouver management area), and concluded the stock had fallen to below 10% of its unfished size (Jagielo et al. 1997). The Council responded by imposing substantial harvest reductions coastwide, reducing the harvest targets for the Eureka, Monterey, and Conception areas by the same percentage as in the north. In 1999, scientists assessed the southern portion of the stock, and concluded the condition of the southern stock was similar to the northern stock and thus confirming the Council had taken appropriate action to reduce harvest coastwide (Adams et al. 1999).

Jagielo et al. (2000) conducted a coastwide lingcod assessment and determined the total biomass increased from 6,500 mt in the mid-1990s to about 8,900 mt in 2000. In the south, the population has also increased slightly from 5,600 mt in 1998 to 6,200 mt in 2000. In addition, the assessment concluded previous aging methods portrayed an older population; whereas new aging efforts showed the stock to be younger and more productive. Therefore, the ABC and OY were increased in 2001 on the basis of the new assessment. A revised rebuilding analysis of coastwide lingcod (Jagielo and Hastie 2001) was adopted by the Council in September 2001. It confirmed the major conclusions of the 2000 assessment and rebuilding analysis, but slightly modified recruitment projections to stay on the rebuilding trajectory that reaches target biomass in 2009. This modification resulted in a slight decrease in the 2002 ABC and OY.

Pacific Ocean Perch

Distribution and Life History: Pacific ocean perch (POP, *Sebastes alutus*) are found from La Jolla (southern California) to the western boundary of the Aleutian Archipelago (Eschmeyer et al. 1983, Gunderson 1971, Ito 1986, Miller and Lea 1972), but are common from Oregon northward (Eschmeyer et al. 1983). Pacific ocean perch primarily inhabit waters of the upper continental slope (Dark and Wilkins 1994) and are found along the edge of the continental shelf (Archibald et al. 1983). Pacific ocean perch occur as deep as 825 m, but usually are at 100-450 m and along submarine canyons and depressions (NOAA 1990). Larvae and juveniles are pelagic; subadults and adults are benthopelagic. Adults form large schools 30 m wide, to 80 m deep, and as much as 1,300 m long (NOAA 1990). They also form spawning schools (Gunderson 1971). Juvenile Pacific ocean perch form ball-shaped schools near the surface or hide in rocks (NOAA 1990). Throughout its range, Pacific ocean perch are generally associated with gravel, rocky or boulder type substrate found in and along gullies, canyons, and submarine depressions of the upper continental slope (Ito 1986).

Pacific ocean perch winter and spawn in deeper water (>275 m), then move to feeding grounds in shallower water (180-220 m) in the summer (June-August) to allow gonads to ripen (Archibald et al. 1983, Gunderson 1971, NOAA 1990). Pacific ocean perch are slow-growing and long-lived. The maximum age has been estimated at about 98 years (Heifetz et al. 2000). Largest size is about 54 cm and 2 kg (Archibald et al. 1983, Beamish 1979, Eschmeyer et al. 1983, Ito 1986, Mulligan and Leaman 1992, NOAA 1990, Richards 1994). Pacific ocean perch are carnivorous. Larvae eat small zooplankton. Small juveniles eat copepods and larger juveniles feed on euphausiids. Adults eat euphausiids, shrimps, squids, and small fishes. Immature fish feed throughout the year, but adults feed only seasonally, mostly April-August (NOAA 1990). Predators of Pacific ocean perch include sablefish and Pacific halibut.

Stock Status and Management History: Pacific ocean perch were harvested exclusively by U.S. and Canadian vessels in the Columbia and Vancouver INPFC areas prior to 1965. Large Soviet and Japanese factory trawlers began fishing for POP in 1965 in the Vancouver area and in the Columbia area a year later. Intense fishing pressure by these foreign fleets occurred during the 1966-1975 period. The foreign fishery ended in 1977 after passage of the MSA and the transition to a domestic fishery.

The POP resource off the West Coast was overfished before implementation of the FMP. Large removals of POP in the foreign trawl fishery, followed by significant declines in catch and abundance led the Council to limit harvest beginning in 1979. A 20-year rebuilding plan for POP was adopted in 1981. Rebuilding under the original plan was largely influenced by a cohort analysis of 1966-1976 catch and age composition data (Gunderson 1979), updated with 1977-1980 data (Gunderson 1981), and an evaluation of trip limits as a management tool (Tagart et al. 1980). This was the first time trip limits were used by the Council to discourage targeting and overharvest of an overfished stock. This is a management strategy still in use today in the West Coast groundfish fishery. The OY for POP was also lowered significantly. After twenty years of rebuilding under the original plan, the stock was stabilized at a lower equilibrium than estimated in the pre-fishing condition. While continuing stock decline was abated, rebuilding was not achieved as the stock failed to increase in abundance to B_{MSY}.

Ianelli and Zimmerman (1998) estimated POP female spawning biomass in 1997 was 13% of its unfished level, thereby confirming the stock was overfished. NOAA Fisheries formally declared POP overfished in March 1999 after the FMP was amended to incorporate the tenets of the Sustainable Fisheries Act. The Council adopted and NOAA Fisheries enacted more conservative management measures in 1999 as part of a redoubled rebuilding effort.

A new assessment for POP was done in 2000 which indicated the stock was more productive than originally thought (Ianelli et al. 2000). A revised POP rebuilding analysis was completed and adopted by the Council in 2001 (Punt and Ianelli 2001). This analysis estimated a T_{MIN} of 12 years and a T_{MAX} of 42 years. It was noted in the rebuilding analysis that the ongoing retrospective analysis of historic foreign fleet catches (Rogers In Prep.) is likely to change projections of POP rebuilding downward.

Pacific Whiting

Distribution and Life History: Pacific whiting (*Merluccius productus*), also known as Pacific hake, are a semi-pelagic merlucciid (a cod-like fish species) that range from Sanak Island in the western Gulf of Alaska to Magdalena Bay, Baja California Sur. They are most abundant in the California Current System (Bailey 1982, Hart 1973, Love 1991, NOAA 1990). Smaller populations of Pacific whiting occur in several of the larger semi-enclosed inlets of the northeast Pacific Ocean, including the Strait of Georgia, Puget Sound, and the Gulf of California (Bailey et al. 1982, Stauffer 1985). The highest densities of Pacific whiting are usually between 50 and 500 m, but adults occur as deep as 920 m and as far offshore as 400 km (Bailey 1982, Bailey et al. 1982, Dark and Wilkins 1994, Dorn 1995, Hart 1973, NOAA 1990, Stauffer 1985). Pacific whiting school at depth during the day, then move to the surface and disband at night for feeding (McFarlane and Beamish 1986, Sumida and Moser 1984, Tanasich et al. 1991). Coastal stocks spawn off Baja California in the winter, then the mature adults begin moving northward and inshore following food supply and Davidson currents (NOAA 1990). Pacific whiting reach as far north as southern British Columbia by fall. They then begin a southern migration to spawning grounds further offshore (Bailey et al. 1982, Dorn 1995, Smith 1995, Stauffer 1985).

Spawning occurs from December through March, peaking in late January (Smith 1995). Pacific whiting are oviparous with external fertilization. Eggs of the Pacific whiting are neritic and float to neutral buoyancy (Baily 1981, Bailey et al. 1982, NOAA 1990). Hatching occurs in 5-6 days and within 3-4 months juveniles are typically 35 mm (Hollowed 1992). Juveniles move to deeper water as they get older (NOAA 1990). Females mature at 3-4 years (34-40 cm) and nearly all males are mature by 3 years (28 cm). Females grow more rapidly than males after four years; growth ceases for both sexes at 10-13 years (Bailey et al. 1982).

All life stages feed near the surface late at night and early in the morning (Sumida and Moser 1984). Larvae eat calanoid copepods, as well as their eggs and nauplii (McFarlane and Beamish 1986, Sumida and Moser 1984). Juveniles and small adults feed chiefly on euphausiids (NOAA 1990). Large adults also eat amphipods, squid, herring, smelt, crabs, and sometimes juvenile whiting (Bailey 1982, Dark and Wilkins 1994, McFarlane and Beamish 1986, NOAA 1990). Eggs and larvae of Pacific whiting are eaten by pollock, herring, invertebrates, and sometimes Pacific whiting. Juveniles are eaten by lingcod, Pacific cod, and rockfish species. Adults are preyed on by sablefish, albacore, pollock, Pacific cod, marine mammals, soupfin sharks, and spiny dogfish (Fiscus 1979, McFarlane and Beamish 1986, NOAA 1990).

Stock Status and Management History: The history of the coastal whiting fishery is characterized by rapid changes brought about by the development of foreign fisheries in 1966, joint-venture fisheries in the early 1980's, and domestic fisheries in 1990's. Large-scale harvesting of Pacific whiting in the U.S. zone began in 1966 when factory trawlers from the then Soviet Union began targeting on Pacific whiting. During the mid 1970's, the factory trawlers from Poland, Federal Republic of Germany, the former German Democratic Republic and Bulgaria also participated in the fishery. During 1966-1979, the catch in U.S. waters averaged 137,000 mt per year. A joint-venture fishery was initiated in 1978 between two U.S. trawlers and Soviet factory trawlers acting as motherships. By 1982, the joint-venture catch surpassed the foreign catch. In the late 1980's, joint-ventures involved fishing companies from Poland, Japan, former Soviet Union, Republic of Korea and the People's Republic of China. In 1989 the U.S. fleet capacity had grown to a level sufficient to harvest entire quota, and no foreign fishing was allowed.

Historically, the foreign and joint-venture fisheries produced fillets and headed and gutted products. In 1989, Japanese motherships began producing surimi from Pacific whiting, using a newly developed process to inhibit deterioration of the flesh resulting from myxozoan-induced proteolysis. In 1990, domestic catcher-processors and motherships entered the Pacific whiting fishery in the U.S. zone. Previously, these vessels had engaged primarily in Alaskan pollock fisheries. The development of surimi production techniques made Pacific whiting a viable alternative. In 1991 joint-venture fishery for Pacific whiting ended because of the high level of participation by domestic catcher-processors and motherships, and the growth of shore-based processing capacity. Shore-based processors of Pacific whiting had been constrained historically by a limited domestic market for Pacific whiting fillets and headed and gutted products. The construction of surimi plants in Newport and Astoria led to a rapid expansion of shore-based landings in the early 1990's.

Widow Rockfish

Distribution and Life History: Widow rockfish (*Sebastes entomelas*) range from Albatross Bank of Kodiak Island to Todos Santos Bay, Baja California (Eschmeyer et al. 1983, Miller and Lea 1972, NOAA 1990). Widow rockfish occur over hard bottoms along the continental shelf (NOAA 1990) Widow rockfish prefer rocky banks, seamounts, ridges near canyons, headlands, and muddy bottoms near rocks. Large widow rockfish concentrations occur off headlands such as Cape Blanco, Cape Mendocino, Pt. Reyes, and Pt. Sur. Adults form dense, irregular, midwater and semi-demersal schools deeper than 100 m at night and disperse during the day (Eschmeyer et al. 1983, NOAA 1990, Wilkins 1986). All life stages are pelagic, but older juveniles and adults are often associated with the bottom (NOAA 1990). All life stages are fairly common from Washington to California (NOAA 1990). Pelagic larvae and juveniles co-occur with yellowtail rockfish, chilipepper, shortbelly rockfish, and bocaccio larvae and juveniles off central California (Reilly et al. 1992).

Widow rockfish are viviparous, have internal fertilization, and brood their eggs until released as larvae (NOAA 1990, Ralston et al. 1996, Reilly et al. 1992). Mating occurs from late fall-early winter. Larval release occurs from December-February off California, and from February-March off Oregon. Juveniles are 21-31 mm at metamorphosis, and they grow to 25-26 cm over 3 years. Age and size at sexual maturity varies by region and sex, generally increasing northward and at older ages and larger sizes for females. Some mature in 3 years (25-26 cm), 50% are mature by 4-5 years (25-35 cm), and most are mature in 8 years (39-40 cm) (NOAA 1990). The maximum age of widow rockfish is 28 years, but rarely over 20 years for females and 15 years for males (NOAA 1990). The largest size is 53 cm and about 2.1 kg (Eschmeyer et al. 1983, NOAA 1990).

Widow rockfish are carnivorous. Adults feed on small pelagic crustaceans, midwater fishes (such as age-1 or younger Pacific whiting), salps, caridean shrimp, and small squids (Adams 1987, NOAA 1990). During spring, the most important prey item is salps, during the fall fish are more important, and during the winter widow rockfish primarily eat sergestid shrimp (Adams 1987). Feeding is most intense in the spring after spawning (NOAA 1990). Pelagic juveniles are opportunistic feeders and their prey consists of various life stages of calanoid copepods, and euphausiids (Reilly et al. 1992).

Stock Status and Management History:

Yelloweye Rockfish

Distribution and Life History: Yelloweye rockfish (*Sebastes ruberrimus*) range from the Aleutian Islands, Alaska to northern Baja California and are common from central California northward to the Gulf of Alaska (Eschmeyer et al. 1983, Hart 1973, Love 1991, Miller and Lea 1972, O'Connell and Funk 1986). Yelloweye rockfish occur in water 25-550 m deep with 95% of survey catches occurring from 50 to 400 m (Allen and Smith 1988). Yelloweye rockfish are bottom dwelling, generally solitary, rocky reef fish, found either on or just over reefs (Eschmeyer et al. 1983, Love 1991, O'Connell and Funk 1986). Boulder areas in deep water (>180 m) are the most densely populated habitat type and juveniles prefer shallow-zone broken-rock habitat (O'Connell and Carlile 1993). They also reportedly occur around steep cliffs and offshore pinnacles (Rosenthal et al. 1982). The presence of refuge spaces is an important factor affecting their occurrence (O'Connell and Carlile 1993).

Yelloweye rockfish are ovoviviparous and give birth to live young in June off Washington (Hart 1973). The age of first maturity is estimated at 6 years and all are estimated to be mature by 8 years (Wyllie-Echeverria 1987). Yelloweye rockfish can grow to 91 cm (Eschmeyer et al. 1983, Hart 1973). Males and females probably grow at the same rates (Love 1991, O'Connell and Funk 1986). The growth rate of yelloweye rockfish levels off at approximately 30 years of age (O'Connell and Funk 1986). Yelloweye rockfish can live to be 114 years old (Love 1991, O'Connell and Funk 1986). Yelloweye rockfish are a large predatory reef fish that usually feeds close to the bottom (Rosenthal et al. 1988). They have a widely varied diet, including fish, crabs, shrimps and snails, rockfish, cods, sand lances, and herring (Love 1991). Yelloweye have been observed underwater capturing smaller rockfish with rapid bursts of speed and agility. Off Oregon the major food items of the yelloweye rockfish include cancroid crabs, cottids, righteye flounders, adult rockfishes, and pandalid shrimps (Steiner 1978). Quillback and yelloweye rockfish have many trophic features in common (Rosenthal et al. 1988).

Stock Status and Management History:

3.2.1.2 "Precautionary Zone" Stocks

Dover Sole

Distribution and Life History: Dover sole (*Microstomus pacificus*) are distributed from the Navarin Canyon in the northwest Bering Sea and westernmost Aleutian Islands to San Cristobal Bay, Baja California (Hagerman 1952, Hart 1973, NOAA 1990). Dover sole are a dominant flatfish on the continental shelf and slope from Washington to southern California. Adults are demersal and are found from 9-1,450 m, with highest abundance below 200-300 m (Allen and Smith 1988). Adults and juveniles show a high affinity toward soft bottoms of fine sand and mud. Juveniles are often found in deep nearshore waters. Dover sole are considered to be a migratory species. In the summer and fall, mature adults and juveniles can be found in shallow feeding grounds, as shallow as 55 m off British Columbia (Westrheim and Morgan 1963). By late fall, Dover sole begin moving offshore into deep waters (400 m or more) to spawn. Although there is an inshore-offshore seasonal migration, little north-south coastal migration occurs (Westrheim and Morgan 1963).

Spawning occurs from November-April off Oregon and California (Hart 1973, NOAA 1990, Pearcy et al. 1977) in waters 80-550 m depth at or near the bottom (Hagerman 1952, Hart 1973, Pearcy et al. 1977). Dover sole are oviparous and fertilization is external. Larvae are planktonic and are transported to offshore nursery areas by ocean currents and winds for up to two years. Settlement to benthic living occurs mid-autumn to early spring off Oregon, and February-July off California (Markle et al. 1992). Juvenile fish move into deeper water with age, and begin seasonal spawning and feeding migrations upon reaching maturity.

Dover sole larvae eat copepods, eggs and nauplii, as well as other plankton. Juveniles and adults eat polychaetes, bivalves, brittlestars, and small benthic crustaceans. Dover sole feed diurnally by sight and smell (Dark and Wilkins 1994, Gabriel and Pearcy 1981, Hart 1973, NOAA 1990). Dover sole larvae are eaten by pelagic fishes like albacore, jack mackerel and tuna, as well as sea birds. Juveniles and adults are preyed upon by sharks, demersally feeding marine mammals, and to some extent by sablefish (NOAA 1990). Dover sole compete with various eelpout species, rex sole, English sole, and other fishes of the mixed species flatfish assemblage (NOAA 1990).

Stock Status and Management History:

Sablefish

Distribution and Life History: Sablefish (*Anoplopoma fimbria*) are abundant in the north Pacific, from Honshu Island, Japan, north to the Bering Sea, and southeast to Cedros Island, Baja California. There are at least three genetically distinct populations off the West Coast of North America: one south of Monterey characterized by slower growth rates and smaller average size, one that ranges from Monterey to the U.S./Canada border that is characterized by moderate growth rates and size, and one ranging off British Columbia and Alaska characterized by fast growth rates and large size. Large adults are uncommon south of Point Conception (Hart 1973, Love 1991, McFarlane and Beamish 1983a, McFarlane and Beamish 1983b, NOAA 1990). Adults are found as deep as 1,900 m, but are most abundant between 200 and 1,000 m (Beamish and McFarlane 1988, Kendall and Matarese 1987, Mason et al. 1983). Off southern California, sablefish are abundant to depths of 1,500 m (MBC 1987). Adults and large juveniles commonly occur over sand and mud (McFarlane and Beamish 1983a, NOAA 1990) in deep marine waters. They were also reported on hard-packed mud and clay bottoms in the vicinity of submarine canyons (MBC 1987).

Spawning occurs annually in the late fall through winter in waters greater than 300 m (Hart 1973, NOAA 1990). Sablefish are oviparous with external fertilization (NOAA 1990). Eggs hatch in about 15 days (Mason et al. 1983, NOAA 1990) and are demersal until the yolk sac is absorbed (Mason et al. 1983). Age-0 juveniles become pelagic after the yolk sac is absorbed. Older juveniles and adults are benthopelagic. Larvae and small juveniles move inshore after spawning and may rear for up to four years (Boehlert and Yoklavich 1985, Mason et al. 1983). Older juveniles and adults inhabit progressively deeper waters. Estimates indicate that 50% of females are mature at 5-6 years (24 inches) and 50% of males are mature at 5 years (20 inches).

Sablefish larvae prey on copepods and copepod nauplii. Pelagic juveniles feed on small fishes and cephalopods- mainly squids (Hart 1973, Mason et al. 1983). Demersal juveniles eat small demersal fishes, amphipods, and krill (NOAA 1990). Adult sablefish feed on fishes like rockfishes and octopus (Hart 1973, McFarlane and Beamish 1983a). Larvae and pelagic juvenile sablefish are heavily preyed upon by sea birds and pelagic fishes. Juveniles are eaten by Pacific cod, Pacific halibut, lingcod, spiny dogfish, and marine mammals, such as Orca whales (Cailliet et al. 1988, Hart 1973, Love 1991, Mason et al. 1983, NOAA 1990). Sablefish compete with many other co-occurring species for food, mainly Pacific cod and spiny dogfish (Allen 1982).

Stock Status and Management History: to be completed before public review

Shortspine Thornyhead

Distribution and Life History: Shortspine thornyhead (*Sebastolobus alascanus*) are found from northern Baja California to the Bering Sea and occasionally to the Commander Islands north of Japan (Jacobson and Vetter 1996). They are common from southern California northward (Love 1991). Shortspine thornyhead inhabit areas over the continental shelf and slope (Erickson and Pikitch 1993, Wakefield and Smith 1990). Although they can occur as shallow as 26 m (Eschmeyer et al. 1983), shortspine thornyhead mainly occur between 100 and 1,400 m off Oregon and California, most commonly between 100-1,000 m (Jacobson and Vetter 1996).

Spawning occurs in February and March off California (Wakefield and Smith 1990). Shortspine thornyhead are thought to be oviparous (Wakefield and Smith 1990), although there is no clear evidence to substantiate this (Erickson and Pikitch 1993). Eggs rise to the surface to develop and hatch. Larvae are pelagic for about 12-15 months. During January to June, juveniles settle onto the continental shelf and then move into deeper water as they become adults (Jacobson and Vetter 1996). Off California, they begin to mature at 5 years; 50% are mature by 12-13 years; and all are mature by 28 years (Owen and Jacobson 1992). Although it is difficult to determine the age of older individuals, Owen and Jacobson (1992) report that off California, they may live to over 100 years of age. The mean size of shortspine thornyhead increases with depth and is greatest at 1,000-1,400 m (Jacobson and Vetter 1996).

Benthic individuals are ambush predators that rest on the bottom and remain motionless for extended periods of time (Jacobson and Vetter 1996). Off Alaska, shortspine thornyhead eat a variety of invertebrates such as shrimps, crabs, and amphipods, as well as fishes and worms (Owen and Jacobson 1992). Longspine thornyhead are a common item found in the stomachs of shortspine thornyhead. Cannibalism of newly settled juveniles is important in the life history of thornyheads (Jacobson and Vetter 1996).

Stock Status and Management History: to be completed before public review

3.2.1.3 Stocks at or Above Target Levels

Arrowtooth Flounder

Distribution and Life History: Arrowtooth flounder (*Atheresthes stomias*) range from the southern coast of Kamchatka to the northwest Bering Sea and Aleutian Islands to San Simeon, California. Arrowtooth flounder is the dominant flounder species on the outer continental shelf from the western Gulf of Alaska to Oregon. Eggs and larvae are pelagic; juveniles and adults are demersal (Garrison and Miller 1982, NOAA 1990). Juveniles and adults are most commonly found on sand or sandy gravel substrates, but occasionally occur over low-relief rock-sponge bottoms. Arrowtooth flounder exhibit a strong migration from shallow water summer feeding grounds on the continental shelf to deep water spawning grounds over the continental slope

(NOAA 1990). Depth distribution may vary from as little as 50 m in summer to more than 500 m in the winter (NOAA 1990, Rickey 1995).

Arrowtooth flounder are oviparous with external fertilization. Spawning may occur deeper than 500 m off Washington (Rickey 1995). Larvae eat copepods, their eggs and copepod nauplii (Yang 1995, Yang and Livingston 1985). Juveniles and adults feed on crustaceans (mainly ocean pink shrimp and krill) and fish (mainly gadids, herring and pollock) (Hart 1973, NOAA 1990). Arrowtooth flounder exhibit two feeding peaks, at noon and midnight.

Bank Rockfish

Distribution and Life History: Bank rockfish (*Sebastes rufus*) are found from Newport, Oregon, to central Baja California, most commonly from Fort Bragg southward (Love 1992). Bank rockfish occur offshore (Eschmeyer et al. 1983) from depths of 31 to 247 m (Love 1992), although adults prefer depths over 210 m (Love et al. 1990). Observations of commercial catches indicate juveniles occupy the shallower part of the species range (Love et al. 1990). Bank rockfish are a midwater, aggregating species and are found over hard bottom (Love 1992), over high relief or on bank edges (Love et al. 1990), and along the ledge of Monterey Canyon (Sullivan 1995). They also frequent deep water over muddy or sandy bottom (Miller and Lea 1972). Spawning occurs from December to May (Love et al. 1990). Peak spawning of bank rockfish in the Southern California Bight occurs in January and a month later in central and northern California. Off California, bank rockfish are multiple brooders (Love et al. 1990). Females grow to a larger maximum size (50 cm) than males (44 cm), but grow at a slightly slower rate (Cailliet et al. 1996). Males reach first maturity at 28 cm, 50% maturity at 31 cm, and 100% at 38 cm. Females reach first maturity at 31 cm, 50% at 36 cm, and 100% maturity at 39 cm (Love et al. 1990). Bank rockfish are midwater feeders, eating mostly gelatinous planktonic organisms such as tunicates, but also preying on small fishes and krill (Love 1992).

Black Rockfish

Distribution and Life History: Black rockfish (*Sebastes melanops*) are found from southern California (San Miguel Island) to the Aleutian Islands (Amchitka Island) and they occur most commonly from San Francisco northward (Hart 1973, Miller and Lea 1972, Phillips 1957, Stein and Hassler 1989). Black rockfish occur from the surface to greater than 366 m; however, they are most abundant at depths less than 54 m (Stein and Hassler 1989). Off California, black rockfish are found along with the blue, olive, kelp, black-and-yellow, and gopher rockfishes (Hallacher and Roberts 1985). Adults are usually observed well up in the water column (Hallacher and Roberts 1985). The abundance of black rockfish in shallow water declines in the winter and increases in the summer (Stein and Hassler 1989). Densities of black rockfish decrease with depth during both the upwelling and non-upwelling seasons (Hallacher and Roberts 1985, PFMC 1996). Off Oregon, larger fish seem to be found in deeper water (20-50 m) (Stein and Hassler 1989). Black rockfish off the northern Washington coast and outer Strait of Juan de Fuca exhibit no significant movement. However, fish appear to move from the central Washington coast southward to the Columbia River, but not into waters off Oregon. Movement displayed by black rockfish off the northern Oregon coast is primarily northward to the Columbia River (Culver 1986). Black rockfish form mixed sex, midwater schools, especially in shallow water (Hart 1973, Stein and Hassler 1989). Black rockfish larvae and young juveniles (<40-50 mm) are pelagic but are benthic at larger sizes (Laroche and Richardson 1980).

Black rockfish have internal fertilization and annual spawning (Stein and Hassler 1989). Parturition occurs from February-April off British Columbia, January-March off Oregon, and January-May off California (Stein and Hassler 1989). Spawning areas are unknown, but spawning may occur in offshore waters because gravid females have been caught well offshore (Dunn and Hitz 1969, Hart 1973, Stein and Hassler 1989). Black rockfish can live to be more than 20 years in age. The maximum length attained by the black rockfish is 60 cm (Hart 1973, Stein and Hassler 1989). Off Oregon, black rockfish primarily prey on pelagic nekton (anchovies and smelt) and zooplankton such as salps, mysids, and crab megalops. Off central California, juveniles eat copepods and zoea, while adults prey on juvenile rockfish, euphausiids, and amphipods during upwelling periods. During periods without upwelling they primarily consume invertebrates. Black rockfish feed almost exclusively in the water column (Culver 1986). Black rockfish are known to be eaten by lingcod and yelloweye rockfish (Stein and Hassler 1989).

Blackgill Rockfish

Distribution and Life History: Blackgill rockfish *(Sebastes melanostomus)* are distributed from Washington to Punta Abreojos in central Baja California (Love 1991, Moser and Ahlstom 1978). Adult blackgill rockfish are found offshore at depths of 219-768 m (Eschmeyer et al. 1983). Blackgill rockfish usually inhabit rocky or hard bottom habitats along steep drop-offs, such as the edges of submarine canyons and over seamounts (Love 1991). However, they may also occur over soft bottoms (Eschmeyer et al. 1983). Blackgill rockfish are a transitional species, occupying both midwater and benthic habitats (Love et al. 1990), although they are rarely taken at more than 9 m above the bottom (Love 1991). Blackgill are considered an aggregating species (Love 1991).

Blackgill rockfish spawn from January-June (peaking in February) off southern California, and in February off central and northern California (Love 1991, Love et al. 1990, Moser and Ahlstom 1978). The largest blackgill rockfish on record is 61 cm (Eschmeyer et al. 1983, Love 1991, Love et al. 1990). Blackgill rockfish primarily prey on such planktonic prey as euphausiids and pelagic tunicates, as well as small fishes (e.g., juvenile rockfishes and Pacific whiting, anchovies, and lantern fishes) and squid (Love et al. 1990).

Chilipepper Rockfish

Distribution and Life History: Chilipepper rockfish (*Sebastes goodei*) are found from Magdalena Bay, Baja California, to as far north as the northwest coast of Vancouver Island, British Columbia (Allen and Smith 1988, Hart 1973, Miller and Lea 1972). Chilipepper have been taken as deep as 425 m, but nearly all in survey catches were taken between 50 and 350 m (Allen and Smith 1988). Adults and older juveniles usually occur over the shelf and slope; larvae and small juveniles are generally found near the surface. In California, chilipepper are most commonly found associated with deep, high relief rocky areas and along cliff drop-offs (Love et al. 1990), as well as on sand and mud bottoms (MBC 1987). They are occasionally found over flat, hard substrates (Love et al. 1990). Love (1991) does not consider this to be a migratory species. Chilipepper may migrate as far as 45 m off the bottom during the day to feed (Love 1991).

Chilipeppers are ovoviviparous and eggs are fertilized internally (Reilly et al. 1992). Chilipepper school by sex just prior to spawning (MBC 1987). In California, fertilization of eggs begins in October ands spawning occurs from September to April (Oda 1992) with the peak occurring during December to January (Love et al. 1990). Chilipepper may spawn multiple broods in a single season (Love et al. 1990). Females of the species are significantly larger, reaching lengths of up to 56 cm (Hart 1973). Males are usually smaller than 40 cm (Dark and Wilkins 1994). Males mature at 2 to 6 years of age and 50% are mature at 3 to 4 years. Females mature at 2 to 5 years with 50% mature at 3 to 4 years (MBC 1987). Females may attain an age of about 27 years whereas the maximum age for males is about 12 years (MBC 1987).

Larval and juvenile chilipepper eat all life stages of copepods and euphausiids, and are considered to be somewhat opportunistic feeders (Reilly et al. 1992). In California, adults prey on large euphausiids, squid, and small fishes such as anchovies, lanternfish and young hake (Hart 1973, Love et al. 1990). Chilipepper are found with widow rockfish, greenspotted rockfish, and swordspine rockfish (Love et al. 1990). Juvenile chilipepper compete for food with bocaccio, yellowtail rockfish, and shortbelly rockfish (Reilly et al. 1992).

English Sole

Distribution and Life History: English sole (*Parophrys vetulus*) are found from Nunivak Island in the southeast Bering Sea and Agattu Island in the Aleutian Islands, to San Cristobal Bay, Baja California Sur (Allen and Smith 1988). In research survey data, nearly all occurred at depths <250 m (Allen and Smith 1988). Adults and juveniles prefer soft bottoms composed of fine sands and mud (Ketchen 1956), but also occur in eelgrass habitats (Pearson and Owen 1992). English soles use nearshore coastal and estuarine waters as nursery areas (Krygier and Pearcy 1986, Rogers et al. 1988). Adults make limited migrations. Those off Washington show a northward post-spawning migration in the spring on their way to summer feeding grounds and a southerly movement in the fall (Garrison and Miller 1982). Tagging studies have identified separate stocks based on this species' limited movements and meristic characteristics (Jow 1969).

Spawning occurs over soft-bottom mud substrates (Ketchen 1956) from winter to early spring depending on the stock. Eggs are neritic and buoyant, but sink just before hatching (Hart 1973), juveniles and adults are demersal (Garrison and Miller 1982). Small juveniles settle in the estuarine and shallow nearshore areas all along the coast, but are less common in southerly areas, particularly south of Point Conception. Large juveniles commonly occur up to depths of 150 m. Although many postlarvae may settle outside of estuaries, most will enter estuaries during some part of their first year of life (Gunderson et al. 1990). Some females mature as 3-year-olds (26 cm), but all females over 35 cm long are mature. Males mature at 2 years (21 cm).

Larvae are planktivorous. Juveniles and adults are carnivorous, eating copepods, amphipods, cumaceans, mysids, polychaetes, small bivalves, clam siphons, and other benthic invertebrates (Allen 1982, Becker 1984, Hogue and Carey 1982, Simenstad et al. 1979). English sole feed primarily by day, using sight and smell, and sometimes dig for prey (Allen 1982, Hulberg and Oliver 1979). A juvenile English sole's main predators are probably piscivorous birds such as great blue heron (*Ardia herodias*), larger fishes, and marine mammals. Adults may be eaten by marine mammals, sharks, and other large fishes.

Longspine Thornyhead

Distribution and Life History: Longspine thornyhead (*Sebastolobus altivelis*) are found from the southern tip of Baja California to the Aleutian Islands (Eschmeyer et al. 1983, Jacobson and Vetter 1996, Love 1991, Miller and Lea 1972, Smith and Brown 1983) but are abundant from southern California northward (Love 1991). Juvenile and adult longspine thornyhead are demersal and occupy the benthic surface (Smith and Brown 1983). Off Oregon and California, longspine thornyhead mainly occur at depths of 400-1,400+ m, most between 600 and 1,000 m in the oxygen minimum zone (Jacobson and Vetter 1996). Thornyhead larvae (*Sebastolobus* spp.) have been taken in research surveys up to 560 km off the California coast (Cross 1987, Moser et al. 1993). Juveniles settle on the continental slope at about 600-1,200 m (Jacobson and Vetter 1996). Longspine thornyhead live on soft bottoms, preferably sand or mud (Eschmeyer et al. 1983, Jacobson and Vetter 1996, Love 1991). Longspine thornyheads neither school nor aggregate (Jacobson and Vetter 1996).

Spawning occurs in February and March at 600-1,000 m (Jacobson and Vetter 1996, Wakefield and Smith 1990). Longspine thornyhead are oviparous and are multiple spawners, spawning 2-4 batches per season (Love 1991, Wakefield and Smith 1990). Eggs rise to the surface to develop and hatch. Floating egg masses can be seen at the surface in March, April, and May (Wakefield and Smith 1990). Juveniles (<5.1 cm long) occur in midwater (Eschmeyer et al. 1983). After settling, longspine thornyhead are completely benthic (Jacobson and Vetter 1996). Longspine thornyhead can grow to 38 cm (Eschmeyer et al. 1983, Jacobson and Vetter 1996, Miller and Lea 1972) and live more than 40 years (Jacobson and Vetter 1996). Longspine thornyhead reach the onset of sexual maturity at 17-19 cm TL (10% of females mature) and 90% are mature by 25-27 cm (Jacobson and Vetter 1996).

Longspine thornyhead are ambush predators (Jacobson and Vetter 1996). They consume fish fragments, crustaceans, bivalves, and polychaetes and occupy a tertiary consumer level in the food web. Pelagic juveniles prey largely on herbivorous euphausiids and occupy a secondary consumer level in the food web (Love 1991, Smith and Brown 1983). Longspine thornyhead are commonly found in shortspine thornyhead stomachs. Cannibalism in newly settled longspine thornyhead may occur because juveniles settle directly onto adult habitat (Jacobson and Vetter 1996). Sablefish commonly prey on longspine thornyhead.

Pacific Cod

Distribution and Life History: Pacific cod (*Gadus macrocephalus*) are widely distributed in the coastal north Pacific, from the Bering Sea to southern California in the east, and to the Sea of Japan in the west. Adult Pacific cod occur as deep as 875 m (Allen and Smith 1988), but the vast majority occurs between 50 and 300 m (Allen and Smith 1988, Hart 1973, Love 1991, NOAA 1990). Along the West Coast, Pacific cod prefer shallow, soft-bottom habitats in marine and estuarine environments (Garrison and Miller 1982), although adults have been found associated with coarse sand and gravel substrates (Palsson 1990, Garrison and Miller 1982). Larvae and small juveniles are pelagic; large juveniles and adults are parademersal (Dunn and Matarese 1987, NOAA 1990). Adult Pacific cod are not considered to be a migratory species. There is, however, a seasonal bathymetric movement from deep spawning areas of the outer shelf and upper slope in fall and winter to shallow middle-upper shelf feeding grounds in the spring (Dunn and Matarese 1987, Hart 1973, NOAA 1990, Shimada and Kimura 1994).

Pacific cod have external fertilization (Hart 1973, NOAA 1990) with spawning occurring from late fall to early spring. Their eggs are demersal. Larvae may be transported to nursery areas by tidal currents (Garrison and Miller 1982). Half of females are mature by 3 years (55 cm) and half of males are mature by 2 years (45 cm) (Dunn and Matarese 1987, Hart 1973). Juveniles and adults are carnivorous and feed at night (Allen and Smith 1988, Palsson 1990) with the main part of the adult Pacific cod diet being whatever prey species is most abundant (Kihara and Shimada 1988, Klovach et al. 1995). Larval feeding is poorly understood. Pelagic fish and sea birds eat Pacific cod larvae, while juveniles are eaten by larger demersal fishes, including Pacific cod. Adults are preyed upon by toothed whales, Pacific halibut, salmon shark, and larger Pacific cod (Hart 1973, Love 1991, NOAA 1990, Palsson 1990). The closest competitor of the Pacific cod for resources is the sablefish (Allen 1982).

Petrale Sole

Distribution and Life History: Petrale sole (*Eopsetta jordani*) are found from Cape St. Elias, Alaska to Coronado Island, Baja California. The range may possibly extend into the Bering Sea, but the species is rare north and west of southeast Alaska and in the inside waters of British Columbia (Garrison and Miller 1982, Hart 1973). Nine separate breeding stocks have been identified, although stocks intermingle on summer feeding grounds (Hart 1973, NOAA 1990). Of these nine, one occurs off British Columbia, two off Washington, two off Oregon, and four off California (NOAA 1990). Adults are found from the surf line to 550 m, but their highest abundance is <300 m (NOAA 1990). Adults migrate seasonally between deepwater, winter spawning areas to shallower, spring feeding grounds (NOAA 1990). They show an affinity to sand, sandy mud and occasionally muddy substrates (NOAA 1990).

Spawning occurs over the continental shelf and continental slope to as deep as 550 m. Spawning occurs in large spawning aggregations in the winter. Eggs are pelagic and juveniles and adults are demersal (Garrison and Miller 1982). Eggs and larvae are transported from offshore spawning areas to nearshore nursery areas by oceanic currents and wind. Larvae metamorphose into juveniles at six months (22 cm) and settle to the bottom of the inner continental shelf (Pearcy et al. 1977). Petrale sole tend to move into deeper water with increased age and size. Petrale sole begin maturing at three years. Half of males mature by seven years (29-43 cm) and half of the females are mature by eight years (>44 cm) (Pedersen 1975a, Pedersen 1975b). Near the Columbia River, petrale sole mature one to two years earlier (Pedersen 1975a, Pedersen 1975b).

Larvae are planktivorous. Small juveniles eat mysids, sculpins and other juvenile flatfishes. Large juveniles and adults eat shrimps and other decapod crustaceans, as well as euphausiids, pelagic fishes, ophiuroids, and juvenile petrale sole (Garrison and Miller 1982, Hart 1973, NOAA 1990, Pearcy et al. 1977, Pedersen 1975a, Pedersen 1975b). Petrale sole eggs and larvae are eaten by planktivorous invertebrates and pelagic fishes. Juveniles are preyed upon (sometimes heavily) by adult petrale sole, as well as other large flatfishes. Adults are preyed upon by sharks, demersally feeding marine mammals, and larger flatfishes and pelagic fishes (NOAA 1990). Petrale sole competes with other large flatfishes. It has the same summer feeding grounds as lingcod, English sole, rex sole, and Dover sole (NOAA 1990).

Shortbelly Rockfish

Distribution and Life History: Shortbelly rockfish (*Sebastes jordani*) are found from San Benito Islands, Baja California, Mexico to La Perouse Bank, British Columbia (Eschmeyer et al. 1983, Lenarz 1980). The habitat of the shortbelly rockfish is wide ranging (Eschmeyer et al. 1983). Shortbelly rockfish inhabit waters from 50-350 m in depth (Allen and Smith 1988) on the continental shelf (Chess et al. 1988) and upper-slope (Stull and Tang 1996). Adults commonly form very large schools over smooth bottom near the shelf break (Lenarz 1992). Shortbelly rockfish have also been observed along the Monterey Canyon ledge (Sullivan 1995). During the day shortbelly rockfish are found near the bottom in dense aggregations. At night they are more dispersed (Chess et al. 1988). During the summer shortbelly rockfish tend to move into deeper waters and to the north as they grow, but they do not make long return migrations to the south in the winter to spawn (Lenarz 1980).

Shortbelly rockfish are viviparous, bearing advanced yolk sac larvae (Ralston et al. 1996). Shortbelly rockfish spawn off California during January through April (Lenarz 1992). Larvae metamorphose to juveniles at 27 mm and appear to begin forming schools at the surface at that time (Laidig et al. 1991, Lenarz 1980). A few shortbelly rockfish mature at age 2, while 50% are mature at age 3, and nearly all are mature by age 4 (Lenarz 1992). They live to be about 10 years old (Lenarz 1980, MacGregor 1986) with the maximum recorded age being 22 years (Lenarz 1992).

Shortbelly rockfish feed primarily on various life stages of euphausiids and calanoid copepods both during the day and night (Chess et al. 1988, Lenarz et al. 1991). Shortbelly rockfish play a key role in the food chain as they are preyed upon by chinook and coho salmon, lingcod, black rockfish, Pacific whiting, bocaccio, chilipepper, pigeon guillemots, western gull, marine mammals, and other taxa (Chess et al. 1988, Eschmeyer et al. 1983, Hobson and Howard 1989, Lenarz 1980).

Splitnose Rockfish

Distribution and Life History: Splitnose rockfish (*Sebastes diploproa*) occur from Prince William Sound, Alaska to San Martin Island, Baja California (Miller and Lea 1972). Splitnose rockfish occur from 0-800 m, with most survey catches occurring in depths of 100-450 m (Allen and Smith 1988). The relative abundance of juveniles (<21 cm) is quite high in the 91-272 m depth zone and then decreases sharply in the 274-475 m depth zone (Boehlert 1980). Splitnose rockfish have a pelagic larval stage and prejuvenile stage, and a benthic juvenile stage (Boehlert 1977). Benthic splitnose rockfish associate with mud habitats (Boehlert 1980). Young occur in shallow water, often at the surface under drifting kelp (Eschmeyer et al. 1983). The major types of vegetation juveniles are found under are *Fucus* spp. (dominant), eelgrass, and bull kelp (Shaffer et al. 1995). Juvenile splitnose rockfish off southern California are the dominant rockfish species found under drifting kelp (Boehlert 1977).

Splitnose are ovoviviparous and release yolk sac larvae (Boehlert 1977). They may have two parturition seasons, or may possibly release larvae throughout the year (Boehlert 1977). In general, the main parturition season get progressively shorter and later toward the north (Boehlert 1977). Splitnose rockfish growth rates vary with latitude, being generally faster in the north. Splitnose mean sizes increase with depth in a given latitudinal area. Mean lengths of females are generally greater than males (Boehlert 1980). Off California, 50% maturity occurs at 21 cm, or 5 years of age, whereas off British Columbia 50% of males and females are mature at 27 cm (Hart 1973). Adults can achieve a maximum size of 46 cm (Boehlert 1980, Eschmeyer et al. 1983, Hart 1973). Females have surface ages to 55 years and section ages to 81 years.

Adult splitnose rockfish off southern California feed on midwater plankton, primarily euphausiids (Allen 1982). Juveniles feed mainly on planktonic organisms, including copepods and cladocerans during June and August. In October, their diets shift to larger epiphytic prey and are dominated by a single amphipod species. Juvenile splitnose rockfish actively select prey (Shaffer et al. 1995) and are probably diurnally active (Allen 1982). Adults are probably nocturnally active, at least in part (Allen 1982).

Yellowtail Rockfish

Distribution and Life History: Yellowtail rockfish (*Sebastes flavidus*) range from San Diego, California, to Kodiak Island, Alaska (Fraidenburg 1980, Gotshall 1981, Lorz et al. 1983, Love 1991, Miller and Lea 1972, Norton and MacFarlane 1995). The center of yellowtail rockfish abundance is from Oregon to British Columbia (Fraidenburg 1980). Yellowtail rockfish are a common, demersal species abundant over the middle shelf (Carlson and Haight 1972, Fraidenburg 1980, Tagart 1991, Weinberg 1994). Yellowtail rockfish are most common near the bottom, but not on the bottom (Love 1991, Stanely et al. 1994). Yellowtail adults are considered semi-pelagic (Stanely et al. 1994, Stein et al. 1992) or pelagic which allows them to range over wider areas than benthic rockfish (Pearcy 1992). Adult yellowtail rockfish occur along steeply sloping shores or above rocky reefs (Hart 1973). They can be found above mud with cobble, boulder and rock ridges, and sand habitats; they are not, however, found on mud, mud with boulder, or flat rock (Love 1991, Stein et al. 1992). Yellowtail rockfish form large (sometimes greater than 1,000 fish) schools and can be found alone or in association with other rockfishes (Love 1991, Pearcy 1992, Rosenthal et al. 1982, Stein et al. 1992, Tagart 1991). These schools may persist at the same location for many years (Pearcy 1992).

Yellowtail rockfish are viviparous (Norton and MacFarlane 1995) and mate from October to December. Parturition peaks in February and March and from November-March off California (Westrheim 1975). Young-of-the-year pelagic juveniles often appear in kelp beds beginning in April and live in and around kelp in midwater during the day, descending to the bottom at night (Love 1991, Tagart 1991). Male yellowtail rockfish are 34-41 cm in length (5-9 years) at 50% maturity, females are 37-45 cm (6-10 years) (Tagart 1991). Yellowtail rockfish are long-lived and slow-growing; the oldest recorded individual was 64 years old (Fraidenburg 1981, Tagart 1991). Yellowtail rockfish have a high growth rate relative to other rockfish species (Tagart 1991). They reach a maximum size of about 55 cm in approximately 15 years (Tagart 1991). Yellowtail rockfish feed mainly on pelagic animals, but are opportunistic, occasionally eating benthic animals as well (Lorz et al. 1983). Large juveniles and adults eat fish (small Pacific whiting, Pacific herring, smelt, anchovies, lanternfishes, and others), along with squid, krill, and other planktonic organisms (euphausiids, salps, and pyrosomes) (Love 1991, Phillips 1964, Rosenthal et al. 1982, Tagart 1991).

Other Groundfish Stocks

"Other Flatfish" are those species that do not have individual ABC/OYs and include butter sole, curlfin sole, flathead sole, Pacific sanddab, rex sole, rock sole, sand sole, and starry flounder. Life history descriptions of these species may be found in the EFH appendix document described in Section 3.1.2.

3.2.2 Non-groundfish Fish Stocks

As noted at the beginning of Section 3.2, the proposed action could potentially affect these species in two ways. They may be caught incidentally in fisheries targeting groundfish. Thus management measures that change total fishing effort in groundfish fisheries could increase or decrease fishing mortality on incidentally caught species. Alternatively, those fisheries targeting non-groundfish species (described in Section 3.3.1.1) may be affected by management measures intended to reduce or eliminate incidental catches of overfished groundfish species in these fisheries.

3.2.2.1 California Halibut

California halibut (*Paralichthys californicus*) are a left-eyed flatfish of the family *Bothidae*. They range from northern Washington at approximately the Quileuete River to southern Baja California (Eschmeyer et al. 1983), but are most common south of Oregon. They are predominantly associated with sand substrates from nearshore areas just beyond the surf line to about 183 m.

California halibut feed on fishes and squids and can take their prey well off the bottom. They are an important sport and commercial species, especially in California where they are targeted using hook and line and trawl gear.

3.2.2.2 California Sheephead

California sheephead (*Semicossyphus pulcher*) are a large member of the wrasse family *Labridae*. They range from Monterey Bay south to Guadalupe Island in central Baja California and in the Gulf of California, but are uncommon north of Point Conception. They are associated with rocky bottom habitats, particularly in kelp beds to 55 m, but more commonly at depths of 3-30 m.

They can live to 50 years of age and a maximum length of 91 cm (16 kg). Like some other wrasse species, California sheephead change sex starting first as a female but changing to a male at about 30 cm in length.

3.2.2.3 Coastal Pelagic Species (CPS)

CPS are schooling fish, not associated with the ocean bottom, that migrate in coastal waters. These species include: northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific (chub) mackerel (*Scomber japonicus*), jack mackerel (*Trachurus symmetricus*), and market squid (*Decapoda* spp.). These species are managed under the Council's Coastal Pelagic Species Fishery Management Plan.

Sardines inhabit coastal subtropical and temperate waters and at times have been the most abundant fish species in the California current. During times of high abundance, Pacific sardine range from the tip of Baja California to southeastern Alaska. When abundance is low, Pacific sardine do not occur in large quantities north of Point Conception, California. Pacific mackerel in the northeastern Pacific range from Banderas Bay, Mexico to southeastern Alaska. They are common from Monterey Bay, California to Cabo San Lucas, Baja

California, and most abundant south of Point Conception, California. The central subpopulation of northern anchovy ranges from San Francisco, California to Punta Baja, Mexico. Jack mackerel are a pelagic schooling fish that range widely throughout the northeastern Pacific; however, much of their range lies outside the U.S. EEZ. Adult and juvenile market squid are distributed throughout the Alaska and California current systems, but are most abundant between Punta Eugenio, Baja California and Monterey Bay, Central California.

Recent (December 1999 and July 1999, respectively) stock assessments indicate that Pacific sardine and Pacific mackerel are increasing in relative abundance. Pacific sardine biomass in U.S. waters was estimated to be 1,581,346 mt in 1999; Pacific mackerel biomass (in U.S. waters) was estimated to be 239,286 mt. Pacific sardine landings for the directed fisheries off California and Baja California reached the highest level in recent history during 1999, with a combined total of 115,051 mt harvested. In 1998 70,799 mt of Pacific mackerel were landed, representing near-record levels for the combined directed fisheries off California and Baja California. Population dynamics for market squid are poorly understood and annual fluctuations in commercial catch vary from <10,000 mt to 90,000 mt. There are no estimates of MSY available for market squid. They are thought to have an annual mortality rate approaching 100%, which means that the adult population is almost entirely new recruits and successful spawning is crucial to future years' abundance.

3.2.2.4 Dungeness Crab

The Dungeness crab (*Cancer magister*) is distributed from the Aleutian Islands, Alaska, to Monterey Bay, California. They live in bays, inlets, around estuaries, and on the continental shelf . Dungeness crab are found to a depth of about 180 m. Although it is found at times on mud and gravel, this crab is most abundant on sand bottoms; frequently it occurs among eelgrass. The Dungeness crab, which are typically harvested using traps (crab pots), ring nets, by hand (scuba divers) or dip nets, are incidentally taken or harmed unintentionally by groundfish gears. Dungeness crab are managed by the states of Oregon and California, and by the State of Washington in cooperation with Washington Coast treaty tribes.

3.2.2.5 Highly Migratory Species (HMS)

Highly migratory species (HMS) include tunas, billfish, dorado, and sharks—species that range great distances during their lifetime, extending beyond national boundaries into international waters and among the EEZs of many nations in the Pacific. The Council is adopting an FMP to federally regulate the take of HMS within and outside the EEZ. The draft FMP/DEIS describes species proposed for active management in detail; these are five tuna species, five shark species, striped marlin, swordfish and dorado or dolpinfish. A much longer list of species, constituting all those that have been caught in HMS fisheries and not already under state or federal management, will be monitored but are not part of the management unit. EFH descriptions for the adult life history stage of management unit species (PFMC 2001, Chapter 4) are reproduced below:

<u>Common thresher shark</u> (*Alopias vulpinus*): Epipelagic, neritic and oceanic waters off beaches and open coast bays, in near surface waters from the U.S.-Mexico EEZ border north seasonally to Cape Flattery, WA from the 40 fm isobath westward to about 127°30'W long. north of the Mendocino Escarpment and from the 40 to 1900 fm isobath south of the Mendocino Escarpment. Known to feed primarily on northern anchovy, Pacific hake, Pacific mackerel and sardine; secondarily on a variety of other fishes, squid and pelagic red crab (warm water years).

<u>Pelagic thresher shark</u> (*A. pelagicus*): Epipelagic and predominantly oceanic waters along coastal California from the U.S. Mexico border as far north as 34°N latitude, from the 100 fm isobath about out to the Santa Rosa-Cortes Ridge, particularly between San Diego and Long Beach, California.(Line extends south from Ridge to a point on the EEZ boundary at 31°36'N and 118°45'W). Associates with sea surface temperatures of 21°C or warmer. Nothing known of diet; presumably feeds on small pelagic schooling fishes and squids, in near-surface waters from the U.S.-Mexico EEZ border north to off Pigeon Point, California.

<u>Bigeye thresher shark</u> (*A. superciliosus*): Coastal and oceanic waters epi-and mesopelagic zones from the U.S.-Mexico border north to 45°N latitude off Cascade Head, Oregon. In southern California south of 34°N

latitude from the 100 fm isobath out to the 2000 fm isobath. North of 34°N latitude from the 800 fm isobath out to the outer EEZ boundary. Little known of the diet in our region; presumably feeds on pelagic fishes and squids, including Pacific hake and king-of-the-salmon.

Shortfin mako shark (*Isurus oxyrinchus*): Most adults within the U.S. West Coast EEZ are males. Epipelagic oceanic waters from the U.S.-Mexico EEZ border north to 46° 30'N latitude extending from the 400 fm isobath out to the EEZ boundary south of Point Conception, from 1000 fm isobath out to the EEZ boundary and beyond north of Point Conception, and from the 1000 fm isobath out to the EEZ boundary and beyond, North of Point Conception, CA. Little is known of diet of large adults. Two adult shortfin mako over 250 cm TL were found to contain remains of a harbor seal, common dolphin, small sharks, and marlin (D. Holts, NMFS, SWFSC La Jolla, pers. comm. 10/16/2000). As with juveniles, presumably mackerel, sardine, bonito, anchovy, tunas, squid and swordfish may also be taken by adults, but existing published information on diet in our region is not broken down by mako size.

Blue shark (*Prionace glauca*): Epipelagic, oceanic waters from the U.S.-Mexico border north to the U.S.-Canada border from the 1000 fm isobath seaward to the outer boundary of the EEZ and beyond; extending inshore to the 200 fm isobath south of 37°N latitude off Santa Cruz, CA. Although diet information is lacking for fish of this specific size group, blue sharks in coastal waters off the U.S. West Coast reportedly feed on northern anchovy, Pacific hake, squid, spiny dogfish, herring, flatfishes, and opportunistically on surface-swarms of the euphausiid, *Thysanoessa spinifera*, and inshore spawning aggregations of market squid, *Loligo opalescens*.

Albacore tuna (*Thunnus alalunga*): Oceanic, epipelagic waters generally beyond the 100 fm isobath from the U.S.-Mexico EEZ border north to U.S.-Canada border, and westward to the outer edge of the EEZ boundary. Associated with SSTs between 14°C and 25°C in waters of the North Pacific Transition Zone in dissolved oxygen saturation levels greater than 60%. Reported to feed opportunistically, predominantly on fish (e.g., Pacific saury) and squid. Large fish tend to prey more on fish and less on squid.

Bigeye tuna (*Thunnus obesus*): Oceanic, epipelagic and mesopelagic waters beyond the 200 fm isobath out to the EEZ boundary from the U.S.-Mexico EEZ border north to Point Conception, CA, some years extending northward to Monterey Bay (37°N lat). Associated with SSTs between 13°C and 29°C with optimum between 17°C and 22°C. Habitat concentrated in the Southern California Bight primarily south of 34 °N latitude from the 100 fm isobath out to the 1000 fm isobath. Nothing is known of diet of adult bigeye in the U.S. West Coast EEZ.

Northern bluefin tuna (*Thunnus orientalis*): No regular habitat within the U.S. West Coast EEZ, although large fish are occasionally caught in the vicinity of the Channel Islands off Southern California and rarely off the central California coast. Adult prey items are squids and a variety of fishes including anchovies, herring, pompanos, mackerel, and other tunas.

Skipjack tuna (*Katsuwonus pelamis*): Oceanic, epipelagic waters beyond the 400 fm isobath out to the EEZ boundary from the U.S.-Mexico EEZ border northward to Point Conception, CA, and northward beyond the 1000 fm isobath north to about 40°N latitude. Associated with SSTs between 18°C and 20°C and dissolved oxygen level ≥ 3.5 ppm. Habitat concentrated, esp. in warm years, in the Southern California Bight primarily south of 33°N latitude. Off Baja California, Mexico and southern California, pelagic red crab and northern anchovy are important constituents of the diet. Euphausiids, Pacific saury and squid are also taken.

Yellowfin tuna (*Thunnus albacares*): Adult yellowfin tuna do not regularly occupy habitat within the U.S. West Coast EEZ.

Striped marlin (Tetraperus audax): Oceanic, epipelagic waters of the Southern California Bight, above the thermocline, from the 200 fm isobath from the U.S.-Mexico EEZ border to about 34°09'N latitude (Pt. Hueneme, CA), east of the Santa Rosa-Cortes Ridge (a line from South Point, Santa Rosa Island, southeast to the EEZ boundary at approx. 31°36'N and 118°45'W). Preferred water temperature bounded by 68° to 78°F (20-25°C). Food species off California include Pacific saury, northern anchovy, Pacific sardine, jack mackerel, squid and pelagic red crab.

Broadbill swordfish (*Xiphias gladius*): Oceanic, epipelagic and mesopelagic waters out to the EEZ boundary inshore to the 400 fm isobath in southern and central California from the U.S.-Mexico EEZ border north to 37°N latitude; beyond the 1000 fm isobath northward to 46° 40'N. Food species within the U.S. West Coast EEZ have not been documented for this size category. Off southern California, swordfish of unspecified size are reported to feed on Pacific hake, northern anchovy, squid, jack mackerel, and shortbelly rockfish; squids are also important prey off western Baja California, Mexico. Large swordfish are capable of foraging in deep water and may also feed on mesopelagic fishes.

Dorado, dolphinfish, or mahimahi (*Coryphaena hippurus*): Epipelagic (≤30 m deep) and predominantly oceanic waters offshore the 6 fm isobath along coastal California from the U.S. Mexico border generally as far north as Point Conception, CA (34°34'N) and within the U.S. West Coast EEZ primarily east of the Santa Rosa-Cortes Ridge. (Line extends from Point Conception south-southeast to a point on the EEZ boundary at 31°36'N and 118°45'W). Prefers sea surface temperatures 20°C and higher during warm water incursions. Nothing is known of the diet of adult dolphin within the U.S. EEZ, but in the Pacific, adult common dolphin are reportedly mainly piscivorous, with flying fish being the most important in volume and occurrence.

3.2.2.6 Ocean Whitefish

Ocean whitefish (*Caulolatilus princeps)* occurs as far north as Vancouver Island in British Columbia but is rare north of central California. A solitary species, it inhabits rocky bottoms and is also found on soft sand and mud bottoms. Whitefish dig into the substrate for food.

3.2.2.7 Pacific Pink Shrimp

Pacific pink shrimp (*Pandalus jordani*) are found from Unalaska in the Aleutian Islands to San Diego, California, at depths of 25 - 200 fathoms (46 - 366 m). Off the U.S. West Coast these shrimp are harvested with trawl gear from northern Washington to central California between 60 and 100 fathoms (110-180 m). The majority of the catch is taken off the coast of Oregon. Concentrations of pink shrimp are associated with well-defined areas of green mud and muddy-sand bottom. Shrimp trawl nets are usually constructed with net mesh sizes smaller than the net mesh sizes for legal groundfish trawl gear. Thus it is shrimp trawlers that commonly take groundfish in association with shrimp, rather than the reverse. Pacific shrimp fisheries are managed by the states of Washington, Oregon, and California.

3.2.2.8 Pacific Halibut

Pacific halibut (*Hippoglossus stenolepis*) belong to a family of flounders called Pleuronectidae. Pacific halibut can be found along the continental shelf in the North Pacific and Bering Sea. They have flat, diamond-shaped bodies and are able to migrate long distances. Most adult fish tend to remain on the same grounds year after year, making only a seasonal migrations from the more shallow feeding grounds in summer to deeper spawning grounds in winter. Halibut are usually found in deep water (40-200 m).

Pacific halibut are managed by the bilateral (U.S./Canada) International Pacific Halibut Commission (IPHC). The Pacific Halibut Catch Sharing Plan for waters off Washington, Oregon, and California (Area 2A) specifies IPHC management measures for Pacific halibut on the West Coast. Implementation of IPHC catch levels and regulations is the responsibility of the Council, the states of Washington, Oregon, and California, and the Pacific halibut treaty tribes.

3.2.2.9 Ridgeback Prawn

to be completed before public review

3.2.2.10 Sea Cucumber

to be completed before public review

3.2.2.11 Spot Prawn

Distribution and Life History: Spot prawn (*Pandalus platyceros*) are the largest of the pandalid shrimp and range from Baja California north to the Aleutian Islands and west to the Korean Strait. They inhabit rocky or hard bottoms including coral reefs, glass sponge reefs, and the edges of marine canyons. They have a patchy distribution which may result from active habitat selection and larval transport. Spot prawn are hermaphroditic, first maturing as males at about three years of age. They enter a transition phase after mating at about four years of age when they metamorphose into females.

Spot prawns are taken by both traps and trawls on the West Coast with the fishery taking predominantly older females. These fisheries are open access and managed by the West Coast states.

3.2.2.12 White Seabass

White seabass is primarily targeted with driftnet gear, since the setnet fishery for white seabass was prohibited in 1994. White seabass may also be caught with commercial hook-and-line gear in the early spring, when large seabass are available. Regulations covering white seabass have been in effect since 1931, and have included a minimum size limit, closed seasons, bag limits, and fishing gear restrictions. Such regulations are in effect today, with slight variations. An FMP for white seabass is presently being adopted and the need for additional regulations will be considered (Vojkovich and Crooke 2001).

3.2.2.13 Miscellaneous Species

Little information is available on non-groundfish species that are incidentally captured in the groundfish fishery. Other than those species mentioned above, documentation from the whiting fishery indicates that species such as American shad (*Alosa sapidissima*) and walleye pollock (*Theragra chalcogramma*) are taken incidentally. American shad, introduced in 1885, have flourished throughout the lower Columbia River, producing a record run of 2.2 million fish in 1988 (ODFW and WDF 1989). Preliminary data indicates that approximately 112 mt were taken as incidental catch in the at-sea sector of the Pacific whiting fishery in 2001, through October. American Shad was also taken in the shore-based whiting fishery. Walleye pollock are found in the waters of the Northeastern Pacific Ocean from the Sea of Japan, north to the Sea of Okhotsk, east in the Bering Sea and Gulf of Alaska, and south in the Northwestern Pacific Ocean along the Canadian and U.S. West Coast to Carmel, California. Preliminary data indicates that approximately 280 mt were taken as incidental catch in the at-sea sector of the Pacific Whiting fishery in 2001, through October. Reports of larger concentrations of walleye pollock off Washington in 2002 have led to trawlers targeting this species after the primary whiting fishery closed. Since this species is not managed under any Council FMP, there are no harvest levels, management measures, or observer requirement specified for this fishery.

3.2.3 Protected Species

Protected species fall under three overlapping categories, reflecting four mandates: the Endangered Species Act of 1973 (ESA), the Marine Mammal Protection Act of 1972 (MMPA), the Migratory Bird Treaty Act (MBTA) and E.O. 13186. These mandates, and the species thus protected, are described below.

3.2.3.1 ESA-listed Species

The ESA protects species in danger of extinction throughout all or a significant part of their range and mandates the conservation of the ecosystems on which they depend. "Species" is defined by the Act to mean a species, a subspecies, or—for vertebrates only—a distinct population. Under the ESA, a species is listed as "endangered" if it is in danger of extinction throughout a significant portion of its range and "threatened" if it is likely to become an endangered species within the foreseeable future throughout all, or a significant part, of its range. (As noted in Table 3.2.3-3, three marine mammal stocks are also listed under the Endangered Species Act.)

Salmon

Salmon caught in West Coast fisheries have life cycle ranges that include coastal streams and river systems from central California to Alaska and marine waters along the U.S. and Canada seaward into the north central Pacific Ocean, including Canadian territorial waters and the high seas. Some of the more critical portions of these ranges are the freshwater spawning grounds and migration routes. Chinook, or king salmon (*Oncorhynchus tshawytscha*), and coho, or silver salmon (*O. kisutch*), are the main species caught in Council-managed ocean salmon fisheries. In odd-numbered years, catches of pink salmon (*O. gorbuscha*) can also be significant, primarily off Washington and Oregon. Salmon are targeted in marine fisheries with commercial and recreational troll gear. No other gears are allowed to take and retain salmon in marine fisheries. Small amounts of rockfish and other groundfish are taken as incidental catch in salmon troll fisheries. Fisheries with a potential interaction with protected salmon species listed under the ESA (Table 3.2.3-1) require a consultation with NOAA Fisheries that must issue a Biological Opinion that the take is allowable given ESA conservation constraints.

Sea Turtles

Sea turtles are highly migratory; four of the six species found in U.S. waters have been sighted off the West Coast. Little is known about the interactions between sea turtles and West Coast fisheries. Directed fishing for sea turtles in West Coast groundfish fisheries is prohibited because of their ESA listings (Table 3.2.3-2); however, incidental take of sea turtles by longline or trawl gear may occur. The management and conservation of sea turtles is shared between NOAA Fisheries and FWS.

3.2.3.2 Marine Mammals

The waters off Washington, Oregon, and California support a wide variety of marine mammals. Approximately thirty species, including seals and sea lions, sea otters, whales, dolphins, and porpoise, occur within the EEZ. Many marine mammal species seasonally migrate through West Coast waters, while others are year round residents.

The Marine Mammal Protection Act (MMPA) and the ESA are the federal legislation that guide marine mammal species protection and conservation policy. Under the MMPA on the West Coast, NOAA Fisheries is responsible for the management of cetaceans and pinnipeds, while the U.S. Fish and Wildlife Service (FWS) manages sea otters. Stock assessment reports review new information every year for strategic stocks (those whose human-caused mortality and injury exceeds the potential biological removal (PBR)) and every three years for non-strategic stocks. Marine mammals, whose abundance falls below the optimum sustainable population (OSP), are listed as "depleted" according to the MMPA.

Fisheries that interact with species listed as depleted, threatened, or endangered (Table 3.2.3-3) may be subject to management restrictions under the MMPA and ESA. NOAA Fisheries publishes an annual list of fisheries in the *Federal Register* separating commercial fisheries into one of three categories based on the level of serious injury and mortality of marine mammals occurring incidentally in that fishery. The categorization of a fishery in the list of fisheries determines whether participants in that fishery are subject to certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. West Coast groundfish fisheries are in Category III indicating a remote likelihood of, or no known, serious injuries or mortalities to marine mammals.

3.2.3.3 Seabirds

Over sixty species of seabirds occur off the West Coast. These species include loons, grebes, albatross, fulmars, petrels, shearwaters, storm-petrels, pelicans, cormorants, frigate birds, phalaropes, skuas, jaegers, gulls, kittiwakes, skimmers, terns, guillemots, murrelets, auklets, and puffins. The migratory range of these species includes the entire West Coast EEZ. Fishing also occurs near the breeding colonies of many of these species.

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the Act, taking, killing or possessing migratory birds is unlawful. In addition to the MBTA, an Executive Order, Responsibilities of Federal Agencies to Protect Migratory Birds, (E.O. 13186) directs federal agencies to negotiate Memoranda of Understanding with the U.S. Fish and Wildlife Service that would obligate agencies to evaluate the impact on migratory birds as part of any NEPA process. NOAA is also preparing an National Plan of Action to Reduce the Incidental Take of Seabirds in Longline Fisheries. This document contains guidelines that are applicable to relevant groundfish fisheries and would require seabird incidental catch mitigation if a significant problem is found to exist. The FWS is the primary federal agency responsible for seabird conservation and management. Under the MSA, NMFS must ensure fishery management actions comply with other laws designed to protect seabirds. NMFS is also required to consult with FWS if fishery management plan actions may affect seabird species listed as endangered or threatened. Taken together, these laws and directives underscore the need to consider impacts to seabirds in decision making and consider ways to reduce potential impacts of the proposed action. Four bird species are also ESA-listed, as noted in Table 3.2.3-4.

3.3 Socioeconomic Environment

This section is subdivided into seven sub-sections, describing fishery sectors and fishing communities. Section 3.3.1 provides an overview of fisheries that catch groundfish as either a target species or incidentally; the markets for fishery products, including the recreational or "experiential" values; and other non-market values, including those social values that, for example, give coastal communities their unique character and play a central role in residents' lives. The subsequent sub-sections, 3.3.2 through 3.3.6, describe, respectively, commercial fishing and marketing, the recreational and tribal fishery sectors, and the characteristics of fishing communities substantially dependent on or engaged in groundfish fishing. Finally, sub-section 3.3.7 describes health and safety issues that could be affected by the proposed action.

3.3.1 Fishery Overview

3.3.1.1 West Coast Commercial Fisheries

Pacific Coast groundfish support or contribute to a wide range of commercial, recreational and tribal fisheries. These include fisheries that target groundfish, which for the most part are regulated under a license limitation program implemented by the Council in 1992, and other fisheries that, while targeting other species, may catch groundfish. This latter category is termed open access because it is not license limited. (There are some small-scale fishers targeting groundfish in the open access sector, as described below.) The Council allocates harvest specifications (OYs) between these two regulatory categories. In addition to these fisheries, Indian tribes in Washington, primarily by the Makah, Quileuete, and Quinault, harvest groundfish in the EEZ. There are set tribal allocations for sablefish and Pacific whiting, while the other groundfish species' allocations are determined by coordination with the tribes, states, and NOAA Fisheries through the Council process. Commercial tribal groundfish fisheries are described in this overview while sub-section 3.3.5 describes ceremonial and substance harvests. Finally, marine recreational fisheries are managed within 3 nm by the coastal states, while the Council and NOAA Fisheries manages the recreational fisheries outside 3 nm in the EEZ. This sector consists of both charter and private vessels. Charter vessels are larger vessels for hire that can typically fish farther offshore than most vessels in the private recreational fleet. Both nearshore and shelf opportunities are important for West Coast recreational groundfish fisheries. Recreational fisheries are detailed in sub-section 3.3.4. Tables 3.3.1.1-1a-d list historical landings for the target species fishery sectors described in this overview section. (Refer also to Tables 3.3.1.1-2 through 3.3.1.1-4 for additional information.)

There are two limited entry sectors: limited entry trawl and limited entry fixed gear. The limited entry trawl fishery consists of permitted vessels that use a variety of trawl net gears and configurations depending on the target groundfish species and the areas where fishing is conducted. Bottom trawl efforts target abundant flatfish, DTS, and some rockfish species. Midwater trawls target Pacific whiting, yellowtail and widow rockfish.

Unlike the limited entry sectors, the open access fishery has unrestricted participation and is comprised of vessels targeting or incidentally catching groundfish with a variety of gears, excluding groundfish trawl gear. While the open access groundfish fishery is under federal management and has not restricted participation, some state and federally managed fisheries that land groundfish in the open access fishery have implemented their own limited entry (restricted access) fisheries or enacted management provisions that have affected participation in groundfish fisheries. The implementation of a limited entry program for Pacific Coast groundfish in 1994 effectively froze participation in the limited entry fishery, but effort has continued to shift in and out of the open access fishery.

Limited Entry Trawl

The limited entry trawl sector is made up of about 231 permitted vessels. This is the only sector permitted to use trawl gear to target federally managed groundfish. These vessels use midwater gear to target Pacific whiting, and yellowtail and widow rockfish, or bottom gear for flatfish species (on the shelf and the slope) and DTS species (Dover sole-thornyheads-sablefish) in deep water. Some slope and shelf rockfish species have been important targets in the limited entry trawl fishery.

Limited Entry Fixed Gear

The limited entry fixed gear sector is made up of about 171 permitted vessels with either longline or trap (including pots) gear endorsements. Sablefish has long been an important target species in this sector; however, some shelf and slope rockfish species have also been important and valuable targets.

Directed Open Access- Groundfish

The directed open access fishery for groundfish primarily targets rockfish, sablefish, lingcod, cabezon and flatfish. A vessel is considered to target groundfish in the open access fishery during a fishing trip if it is fishing with any gear other than groundfish trawl and if over 50% of the revenue from landings in that trip were from groundfish species. Participation in the directed fishery has decreased from 1,357 vessels in 1994 to 1,032 in 1999 (PFMC 2001d). Reasons for this trend could include movement from the groundfish open access sector into other more profitable fisheries, or movement out of fishing all together.

The commercial open access groundfish fishery consists of vessels that do not necessarily depend on revenue from the fishery as a major source of income. Many vessels that predominately fish for other species inadvertently catch and land groundfish. Or, in times and areas when fisheries for other species are not profitable, some vessels will transition into the groundfish open access fishery for short periods. The commercial open access fishery for groundfish is split between vessels targeting groundfish (directed fishery) and vessels targeting other species (incidental fishery). The number of unique vessels targeting groundfish in the open access fishery between 1995-1998 coastwide was 2,723, while 2,024 unique vessels landed groundfish as incidental catch (1,231 of these vessels participated in both) (SSC's Economic Subcommittee 2000). In the directed open access fishery, fishers target groundfish in the "dead" and/or "live" fish fishery using a variety of gears. The terms dead and live fish fisheries refers to the state of the fish when they are landed. The dead fish fishery has historically been the most common way to land fish. More recently, the higher market value for live fish has increased landings of live groundfish. The other component of the open access fishery is the incidental catch of groundfish in fisheries targeting other species (e.g., shrimp, salmon, halibut). Combining both the directed and incidental fisheries, the commercial groundfish open access fishery is potentially very large and includes a variety of gear types.

The live fish category includes all groundfish species, other than sablefish, where the landed price was greater than $2.50 per pound. The dead fish fishery made up 80% of the directed open access landings by weight coastwide in 2001 (Table 3.3.1.1-5a-f). In the directed fishery, gears used to target dead groundfish include: vertical hook and line, rod/reel, pot, longline, troll/dingle bar, jig, sculpin trawl, setnet, and drifted (fly gear). Essentially, all of the groundfish species managed under the FMP are targeted by various gears in the directed open access dead fishery. Increasingly, the live fish trade is gaining landings, due to a growing market value for live fish. In 2001, the live fish directed open access fishery accounted for 20% of the coastwide directed open access landings by weight, compared to only 6% in 1996 (Table 3.3.1.1-6). Gear used to target live groundfish include: pot, stick, and rod/reel. While Washington has prohibited live fish landings since 1999, both Oregon and California have live fish fisheries targeting groundfish. Currently, Oregon and California are drafting nearshore fishery management plans that would transition some species of groundfish landed in the live fish fishery from federal to state management.

In the directed open access fishery, certain gears are used to target specific species. Hook-and-line gear, the most common gear type, is generally used to target sablefish, rockfish and lingcod, while pot gear generally targets sablefish and some thornyheads and rockfish. In southern and central California, setnet gear targets rockfish, including chilipepper, widow, bocaccio, yellowtail, and olive rockfish, and to a lesser extent vermillion rockfish.

Incidental Open Access

Many fisheries intercept groundfish while targeting other species, due to a combination of gear used and the co-occurrence of groundfish species. A vessel is considered to land fish incidentally in the open access fishery if landings include groundfish and the revenue from groundfish is less than the revenue from non-groundfish in the landing. Fisheries that catch and land groundfish incidentally include pink shrimp, spot prawn, ridgeback prawn, California and Pacific halibut, Dungeness crab, salmon, sea cucumber, coastal pelagic species, California sheephead, highly migratory species, and the gillnet complex. A review of these fisheries follows, including their management, gear, regions fished, participation, and known incidental catch of groundfish. Some of the gears in the incidental groundfish fishery include: non-groundfish trawl, pot, pole/line, longline, round haul, setnet, driftnet, purse seine, harpoon, and troll.

California Halibut: California halibut range from the Quileute River, Washington to Almejas Bay, Baja California; however, the commercial fishery is concentrated from Bodega Bay in northern California to San Diego in southern California, and across the international border into Mexico. California halibut, a state managed species, is targeted with hook-and-line, setnets and trawl gear, all of which intercept groundfish.

Trawling is permitted in federal waters (3-200 nm) using trawl nets with a minimum mesh size of 4.5 inches. Trawling is prohibited within state waters, except in the designated "California halibut trawl grounds," which encompass the area between Point Arguello and Point Mugu in waters greater than 1 nm from shore. Bottom trawls used in this area must have a minimum mesh size of 7.5 inches, and trawling is closed from March 15 to June 15 to protect spawning adults. Historically, setnets have been the gear of choice for commercial halibut fishermen because of the restrictions on bottom trawl gear in state waters. In southern California, setnets with 8.5-inch mesh and maximum length of 9,000 feet are the principal type of gear used. Today, setnet fishing is prohibited in Santa Monica Bay, shallow coastal waters north of Point Sal, and is subject to many other area, depth, and seasonal closures throughout the state. A Marine Resources Protection Zone (MRPZ) was established in 1990 extending three miles off the southern California mainland coast from Point Conception to the Mexican border and within one mile or 70 fathoms (whichever is less) around the Channel Islands. Setnets have been prohibited in the MRPZ since January 1, 1994. Commercial catches of halibut by hook-and-line gear have historically been insignificant when compared to the total pounds landed annually by the trawl and setnet fisheries. However, over the last decade, catches of California halibut by hook-and-line have ranged from 11-23% of the total pounds landed annually. A majority of those landings were made in the San Francisco Bay area by salmon fishermen mooching or trolling slowly over the ocean bottom (Kramer et al. 2001).

Dungeness Crab: The Dungeness crab fishery has both treaty and non-treaty sectors. The crab fishery is managed by the states of Washington, Oregon and California with inter-state coordination through the Pacific States Marine Fisheries Commission. The Dungeness crab fishery is managed on the basis of simple "3-S" principles: sex, season, and size. Only male crabs may be retained in the commercial fishery (thus protecting the reproductive potential of the populations), the fishery has open and closed seasons, and a minimum size limit is imposed on commercial landings of male crabs (Hankin and Warner 2001).

In Washington, the Dungeness crab fishery is managed under a limited entry system. There are currently 232 permits, with only 190 of those fished in 2001. Within this limited entry system there are two tiers of pot limits, 97 vessels have a limit of 300 pots per vessel and the rest have a limit of 500. The season for Dungeness crab in Washington runs from December 1 - September 15. Sometimes the December start of the season may be delayed depending on the shell condition (too soft) of the crabs.
Only hardshell male crabs with a carapace greater than 6.25 inches may be taken during the season.

In the Oregon Dungeness crab fishery, the season generally starts on December 1. In 1999, 306 vessels made landings.

According to Hankin and Warner (2001) in California's Living Marine Resources Report, the California commercial fishery for Dungeness crabs occurs in two areas: northern and central California (with the Mendocino-Sonoma county line being the division). About 100 vessels participate in the Central California fishing areas including Avila-Morro Bay, Monterey, and San Francisco-Bodega Bay. The Morro Bay and Monterey fisheries have been of minor importance and San Francisco has always been the center of this fishery. Dungeness fishing grounds off northern California are over twice the size of those in central California. They extend from Fort Bragg to the Oregon border with the prime area between Eureka and Crescent City. Since 1978, effort has been high, averaging 330 vessels per season. Vessels range in size from 22-foot dories to trawlers in excess of 100 feet. The central California season opens the second Tuesday of November and continues through June 30, whereas the northern California season opens December 1 and continues through July 15. The season is two to three weeks earlier in central California than in northern California, because crabs in central California molt and achieve adequate market condition earlier than in the north. In 1995, California implemented a limited entry program. Approximately 600 California residents and 70 non-residents had limited entry permits as of March 2000. Although California's limited entry program prevents further increases in the number of vessels participating in the crab fishery, it does not prevent increases in fishing effort. With declines in abundance and allowable landings of salmon and groundfish, many larger multipurpose vessels now devote greater attention to the Dungeness crab fishery and fish upwards of 1,000 traps. In the early season, these larger vessels fish continuously, day and night, even in heavy seas. Total annual landings are largely unaffected by such increases in trap-days of fishing effort, but increased fishing effort has produced substantial shifts in the distribution of catch over time. Prior to about 1980, crab landings were normally spread throughout the entire open season. In a typical recent season in northern California, more than 80% of total landings are made during the month of December (Hankin and Warner 2001).

Gillnet Complex: The gillnet complex is managed by the state of California and made up of California halibut, white seabass, white croaker, swordfish and sharks. These species are targeted with driftnet and setnet gear off California.

Within the California gillnet complex, the driftnet fishery targets white seabass, swordfish and thresher shark. The setnet fishery, within the California gillnet complex, targets California halibut, white croaker and angel shark. The setnet fishery for California halibut was described previously. White croaker, an abundant nearshore species, is predominately caught off central California in the setnet fishery, although they range from Vancouver Island, British Columbia to Magdalena Bay, Baja California (but are not abundant north of Point Reyes, California). The entrance of Southeast Asian refugees (mainly Vietnamese) into this fishery, in part caused a shift in fishing effort from southern to central California. Many of these refugees who settled in California's coastal areas were gillnet fishermen in their homelands and sought to earn their living here by that method of fishing. The underutilized white croaker resource (especially in central California) and moderate start-up costs required for gillnetting (small to medium size boats and moderate gear costs) offered many of them an opportunity to enter the commercial fishing business. Before 1980, the commercial catch of white croakers was primarily by round haul net (mainly lampara), although some were taken by trawl, gillnet, and hook-and-line. After 1980, most white croakers have been taken by gillnet and hook-and-line. Most of the commercial catch is sold in the fresh fish market, although a small amount is used for live bait" (Moore and Wild 2001). Currently, the only restriction on catches of white croaker off California is a small no-take zone off Palos Verdes.

In the early 1990's, California's set gillnet fishery was subject to increasingly restrictive state regulations addressing high marine bird and mammal bycatch mortality which forced the fleet into deeper water where shelf rockfish became their primary target. However, as open access rockfish limits became smaller, there was a shift from targeting shelf rockfish with setnets to the use of line gear in the more lucrative nearshore live-fish fishery. Thus, many fishermen that were historically setnet fishermen have changed their target strategy in response to increasing restrictions and market value.

Pink shrimp. Table 3.3.1.1-7 provides information effort by depth for the pink shrimp trawl fishery.

Pacific Halibut: The Pacific halibut fishery is managed by the International Pacific Halibut Commission (IPHC) with implementing regulations set by the federal governments of Canada and the United States (US) in their respective waters. A license from the IPHC is required to participate in the commercial Pacific halibut fishery. The commercial sector off the Pacific Coast, IPHC Area 2A, has both a treaty and non-treaty sector.

For the non-treaty commercial sector, harvest is divided between the directed halibut fishery and the incidental catch of halibut in the salmon troll fishery. Allocation between these two sectors is split with 85% going to the directed fishery and 15% being allocated to the incidental salmon troll fishery. When the Area 2A total allowable catch is above 900,000 lbs, as it has been in recent years, halibut may be retained in the limited entry primary sablefish fishery north of Point Chehalis, WA (46°53'18" N. lat.).

The International Pacific Halibut Commission (IPHC) report, "Incidental Catch and Mortality of Pacific Halibut, 1962-2000" contains estimates of the incidental catches of halibut in the coastal trawl fisheries (groundfish and shrimp trawls). Estimates of incidental catches of halibut in this report are based on new information from the Enhanced Data Collection Program (EDCP). The EDCP was an at-sea sampling program conducted from 1995 through 1998 by the Oregon Trawl Commission and Oregon Department of Fish and Wildlife in cooperation with the fishing industry. The IPHC estimates that the 2002 mortality level of legal-sized halibut incidentally taken in shrimp and groundfish trawl fisheries will be 254 mt (560,000 lb).

Under the Pacific Halibut Area 2A Catch Sharing Plan for waters off Washington, Oregon, and California (IPHC ,) incidental halibut retention is allowable in the limited entry, primary fixed gear sablefish fishery north of Point Chehalis, Washington, in years when the Area 2A Total Allowable Catch (TAC) is above 900,000 lb (408.2 mt). In 2001, the Area 2A TAC was above 900,000 lb (408.2 mt) for the first time and 47,946 lb (21.7 mt) of halibut were allocated to the fishery, with 26,945 lb (12.2 mt) harvested.

The directed commercial fishery in Area 2A is confined to south of Point Chehalis, Washington, Oregon, and California. Area 2A licenses, issued for the directed commercial fishery, have decreased from 428 in 1997 to 320 in 2001. For 2001, the directed commercial licenses also allow longline vessels to retain halibut caught incidentally north of Point Chehalis during the primary sablefish season. Area 2A licenses issued for the incidental salmon troll fishery increased from 275 in 1997 to 345 in 2001. In Area 2A in 2001, the incidental salmon troll fishery was allowed to retain 1 halibut per 5 chinook, plus 1 extra halibut, with a maximum of 35 incidental halibut landed.

Salmon Troll: Salmon are targeted with troll gear off all three West Coast states. The ocean commercial salmon fishery, both non-treaty and treaty, is under federal management with a suite of seasons and total allowable harvest. The Council manages commercial fisheries in the EEZ, while the states manage commercial fisheries in state waters (0-3 nm). Salmon are also targeted with gillnets and/or tangle nets in the mouths of rivers. Although the gillnet/tangle net fishery does not technically occur in Council-managed waters, it may have some impact on groundfish that migrate through that area during part of their life cycle.

The majority of chinook and coho were landed in California in 1999 with Washington and Oregon both having significantly fewer landings. Halibut are caught incidentally off Washington and Oregon, while groundfish are caught off all three states. To account for yellowtail rockfish landed incidentally while not promoting targeting on the species, a federal regulation was adopted in 2001 that allowed salmon trollers to land up to 1 pound of yellowtail per two pounds of salmon, not to exceed 300 pounds per month (north of Cape Mendocino). A similar regulation is in place for 2002.

The California salmon fisheries primarily harvest chinook or king salmon, which is the salmonid most often encountered by fishermen. Coho or silver salmon are observed in small numbers but are presently under a no-retention catch policy. Occasionally in odd-numbered years, pink salmon are landed. No fisheries exist for sockeye salmon and chum salmon due to their limited numbers in California waters. During the 1980s, California ocean salmon fisheries were increasingly regulated under quotas and area closures. In 1980, a moratorium was placed on the issuance of permits to new participants in the ocean commercial salmon fishery. This was done to increase profits of individual fishermen and to reduce overall fishery impacts on the resource. In 1983, a limited-entry program was implemented that capped the fishery at just over 4,600 commercial salmon vessels. A tribal treaty fishery for salmon exists off California in the Klamath River Basin where members fish with gillnets. They have a right to harvest 50 percent of the total available harvest of Klamath Basin salmon.

Spot Prawn: The Pacific Coast spot prawn fishery occurs primarily off California. (See Tables 3.3.1.1-8 and 3.3.1.1-9 for information on the depth distribution of effort.) Spot prawn are targeted with both trawl and pot gear. Like pink shrimp, spot prawn are managed by the state, with groundfish incidental catch addressed under "exempted trawl gear" in the open access groundfish fishery.

In California, trawling for spot prawn has occurred for nearly 70 years. Area and season closures for the trawl fleet were instituted in 1984 to protect spot prawns during their peak egg-bearing months of November-January. These closures, along with the development of other fisheries such as ridgeback prawn, sea cucumber and the increased demand for fresh fish, have caused spot prawn trawl landings to remain low. The trap fishery for spot prawn developed in 1985 in the Southern California Bight and was concentrated around the Channel Islands and coastal submarine canyons in water depths between 600 and 1,080 fathoms. Fishing with traps allowed vessels to access areas closed to trawling (0-3 nm). The advent of the trap fishery also meant the start of a live prawn fishery. Annual landings in the trap fishery grew from 8,800 pounds in 1985 to over 247,000 in 1991. During this period, trapping accounted for 75% of statewide landings; trawling accounted for the remaining 25%" (Larson 2001). In 1994, the trawl area and season closure was expanded to include the entire Southern California Bight. For the trap fishery, regulations were implemented that required a one inch by one inch trap mesh size, limiting traps per vessel to 500, and initiating an area and season closure for the same area and time period as the trawl fishery. From 1994 until 1998, statewide landings nearly doubled from 444,000 pounds to a historic high of 780,000 pounds (Larson 2001). In 1999, increasing participants and decreasing landings led to more regulations and the development of a limited entry program which is still in the process of being implemented. North of Point Conception, the trap fishery is closed from May-August. Thus, trappers in this area are allowed to catch spot prawn during their peak egg-bearing season, but are limited to 300 traps within state waters. Other regulations include a requirement for BRDs or 3-inch mesh codends on trawl nets and an observer program for the spot prawn fishery (Larson 2001).

The spot prawn trawler fleet consists of approximately 54 vessels operating from Bodega Bay to the U.S.-Mexico border. Most vessels operate out of Monterey, Morro Bay, Santa Barbara, and Ventura, although some Washington-based vessels participate in this fishery during the fall and winter. Standard gear is a single-rig shrimp trawl with roller gear, varying in size from 8 inch disks to 28 inch tires (Larson 2001). The spot prawn trap fleet operates from Monterey Bay to southern California. The northern trap fishery continues to produce prawns, although it has never reached the large volume of the southern California fishery. Monterey-area boats usually fish for salmon during the summer. Currently there are about 6 boats fishing the Monterey Bay area and they fish 10 months a year. The southern California trap fleet ranges between 30 and 40 boats depending on prawn availability. Normally, a fisherman will set 25 to 50 traps attached to a single groundline (string) with anchors and buoys at both ends. In both fishing areas, traps are set at depths of 600 to 1,000 feet along submarine canyons or along shelf breaks (Larson 2001).

The spot prawn fishery off Washington is a limited entry fishery managed under the state's Emerging Fisheries Act. There are currently 13 active permits. Three of these are for trawl gear and 10 are for pot/trap. Trawl permits are being phased out and converted to pot permits by January 2003. Groundfish cannot be legally landed in Washington's spot prawn fishery and groundfish bycatch is expected to be minimal, especially with the conversion to pot gear by 2003.

Ridgeback Prawn: According to Sunada et al. (2001), in California's Living Marine Resources Report, the ridgeback prawn fishery occurs exclusively in California. (Table 3.3.1.1-10 shows the depth distribution of effort in this fishery.) Ridgeback prawns occur from Monterey, California to Cedros Island, Baja California, at depths ranging from less than 145 feet to 525 feet, but the fishery is centered in the Santa Barbara Channel and off Santa Monica Bay. In 1999, 32 boats participated in the ridgeback prawn fishery. Traditionally, a number of boats fish year round for both ridgeback and spot prawns, targeting ridgeback prawns during the closed season for spot prawns and vice versa. Most boats typically use single-rig trawl gear. The ridgeback prawn fishery is managed by the state of California and, similar to spot prawn and pink shrimp, is considered an "exempted" trawl gear in the federal open access groundfish fishery, entitling the fishery to groundfish trip limits.

Following the 1981 decline in landings, a summer closure (June 1-September 30) was adopted by the California Fish and Game Commission to protect spawning female and juvenile ridgeback prawns. An incidental take of 50 pounds of prawns or 15% by weight is allowed during the closed period. During the season, a maximum of 1,000 pounds of other finfish may be landed with ridgeback prawns, of which federal regulations require that no more than 300 pounds per trip be groundfish. Any amount of sea cucumbers may be landed with ridgeback prawns as long as the vessel owner/operator possesses a sea cucumber permit. Other regulations include a prohibition of trawling within state waters, a minimum fishing depth of

25 fathoms fm, a minimum mesh size of 1.5 inches for single-walled codends or 3 inches for double-walled codends, and a logbook requirement. Ridgeback prawn trawl logs have been required since 1986.

Sea Cucumber: Along the West Coast, sea cucumbers are harvested by either diving or trawling. Only the trawl fishery for sea cucumbers lands an incidental catch of groundfish. Sea cucumbers are managed by the states. In Washington, the sea cucumber fishery only takes place inside Puget Sound and the Straight of Juan de Fuca. Most of the harvest is done by diving although the tribes can also trawl for sea cucumbers in these waters.

Two species of sea cucumbers are fished in California: the California sea cucumber, also known as the giant red sea cucumber, and the warty sea cucumber. The warty sea cucumber is fished almost exclusively by divers. The California sea cucumber is caught principally by trawling in southern California, but is targeted by divers in northern California. Sea cucumber fisheries have expanded worldwide and, on this coast, there is a dive fishery for warty sea cucumbers in Baja California, Mexico, and dive fisheries for California sea cucumbers in Washington, Oregon, Alaska, and the coast of British Columbia, Canada (Rogers-Bennett and Ono 2001).

According to Rogers-Bennett and Ono (2001) in California's Living Marine Resources Report, beginning with the 1992-1993 season, California required a special permit to fish commercially for sea cucumbers. After the implementation of a permit system, combined trawl and dive landings reached an all time high in 1996 of 839,400 pounds with an exvessel value of $582,370. Legislation enacted in 1997 imposed a new regulatory regime on the sea cucumber fishery including creating separate permits for each gear type and limiting the number of permits. The maximum number of permits allocated was based on the number of permits issued during the 1997-1998 permit year and the meeting of a minimum landing requirement. There are currently 113 sea cucumber dive permittees and 36 sea cucumber trawl permittees. Sea cucumber dive permits can be transferred only to other dive fishermen, while sea cucumber trawl permits can be transferred to either trawl or dive fishermen (Rogers-Bennett and Ono 2001). A shift in effort occurred between 1997 and 1999 after the implementation of the limited entry system when sea cucumbers landed by divers accounted for more than 80% of the combined dive and trawl landings. Many commercial sea urchin and/or abalone divers also hold sea cucumber permits and began targeting sea cucumbers more heavily than before beginning in 1997. At up to $20 per pound wholesale for processed sea cucumbers, there is a strong incentive to participate in this fishery.

<u>Other Non-groundfish Fisheries</u>

Coastal Pelagic Species (CPS): The Council began developing a northern anchovy fishery management plan (FMP) in January of 1977; regulations implementing this FMP were published in the *Federal Register* in September 1978. Subsequently, there have been nine amendments to the northern anchovy FMP (Amendment 8 changed the name of the plan to the Coastal Pelagic Species Fishery Management Plan) and Amendment 10 is in draft form.

The CPS FMP includes a management framework which is readily adaptable to changes in CPS stock abundance and other conditions in the fishery. This management flexibility is necessary, in part, because of the heavy influence of climactic and oceanic conditions on CPS biomass and range. Under the plan, Pacific mackerel and Pacific sardine are "actively managed species," that is, stock biomass is assessed periodically, and management is based on annual estimates of acceptable biological catch and harvest guidelines. Northern anchovy, jack mackerel, and market squid are "monitored species," these stocks do not require intensive harvest management and stock status is monitored through commercial catch data (PFMC 2001a).

The fisheries for CPS are concentrated in California, but CPS fishing also occurs in Washington and Oregon. The biomass of Pacific mackerel and Pacific sardine is estimated each year and a coastwide harvest guideline established. One third of the harvest guideline is allocated to Washington, Oregon, and northern California (north of 35° 40' N latitude) and two thirds is allocated to southern California (south of 35° 40' N latitude). An open access CPS fishery is in place north of 39° N latitude and a limited entry fishery is in place south of 39° N latitude.

CPS are largely landed with round haul gear (purse seines and lampara nets); vessels using round haul gear are responsible for 99% of total CPS landings and revenues per year.

In Washington, the sardine fishery is managed under the Emerging Commercial Fishery provisions as a trial commercial fishery. The target of the trial fishery is sardines; however, anchovy, mackerel, and squid are also landed. In 2000, a trial sardine fishery landed 4,791 mt. The fishery was limited to vessels using purse seine gear, it was prohibited inside of three miles and logbooks were required. Forty-five permits were issued and 11 permits holders participated in the fishery. Three vessels accounted for 88% of the landings; of these, two fished out of Ilwaco and one out of Westport (Robinson 2000).

In Oregon, the sardine fishery is managed under the Development Fishery Program. The number of permits ranged from 15 (in 1999 and 2000) to 20 (in 2001); permits are issued on an annual basis. The sardine fishery is open to seine and trawl gear and vessels are required to keep logbooks. In 1999, ten vessels made 31 landings for a total of 776 mt. Three vessels using seine gear made 99% of the landings, the remainder was landed as incidental catch in the whiting fishery or to be used for bait. Fourteen vessels landed 9,524 mt of sardines in 2000. Again, the majority of catch was landed with seine gear, while, sardines were incidentally taken by trawl gear (McCrae 2001). In 2001, over 12,798 mt was landed by 18 vessels targeting sardines with seine gear and 6 vessels landing incidental take in trawl gear (McCrae 2002).

California Department of Fish and Game (CDFG) conducts port sampling to estimate the species composition of mixed loads of sardine, Pacific (chub) mackerel, and jack mackerel (which would otherwise be reported as mixed mackerel). Commercial landings of CPS are monitored via information from landing receipts provided by processors in the form of fish tickets. The southern California round haul fleet is the most important sector of the CPS fishery in terms of landings. This fleet is primarily based in Los Angeles Harbor, along with fewer vessels in the Monterey and Ventura areas. It harvests Pacific bonito, market squid, tunas, as well as CPS. The fleet consists of about 40 active purse seiners averaging 20 m in length. Approximately one-third of the this fleet are steel-hull boats built during the last 20 years, the remainder are wooden-hulled vessels built from 1930 to 1949, during the boom of the Pacific sardine fleet.

The most important counties along the West Coast in the context of CPS revenues and landings are 1) Los Angeles/Orange (45% CPS landings 1993 - 1997 and 30% of revenues), Santa Barbara/Ventura (38% of landings and 53% of revenues), and Monterey (15% of landings and 14% of revenues).

The California setnet (gillnet and trammel net) fishers land small amounts of CPS, primarily for fresh fish markets.

Highly Migratory Species (HMS): Management of HMS is complex due to the multiple management jurisdictions, users, and gear types targeting these species. Adding to this complexity are oceanic regimes that play a major role in determining species availability and which species will be harvested off the U.S. West Coast in a given year. The states currently regulate the harvest of HMS but, as mentioned above, the Council is in the process of implementing an FMP for the prosecuted in West Coast EEZ or by vessels originating from West Coast ports fishing beyond the EEZ. There are five distinctive gear types used to harvest HMS commercially, with hook-and-line gear being the oldest and most common. Other gears used to target HMS are driftnet, pelagic longline, purse seine, and harpoon. While hook-and-line can be used to take any HMS species, traditionally it has been used to harvest tunas. The majority of albacore are taken by troll and jig-and-bait gear (92% in 1999), with a small portion of fish landed by gillnet, drift longline, and other gear. These gears vary in the incidence of groundfish interception depending on the area fished, time of year, as well as gear type.

Overall, nearly half of the total landings of albacore in millions of pounds coastwide were landed in California. Total commercial landings in 1999 for California, approximately 8.4 million pounds, were double the ten year mean and 60% over landings in 1998. The number of vessels landings albacore in California decreased from over 600 vessels in 1997 to 382 vessels in 1999. Landings of albacore in California were highest during August and September, which accounted for 81% of landings. Albacore also tended to be more available in the south in 1999 as shown by areas south of San Francisco landing 92% of California's albacore catch. For Oregon, a total of 305 commercial vessels landed albacore in 1999, an 18% decrease from 1998. Pounds of albacore landed were also down to 4.5 million pounds in 1999, a 57% decrease from 1998. The majority of landings were into Newport (46%) followed by Astoria (40%), Charleston (7%), and other Oregon ports (remaining 7%). In Washington, a total of 206 vessels landed albacore with troll gear in 1999, slightly below the numbers in 1998. However, total pounds landed were down significantly, 4.5 million pounds in 1999 from 14.6 million in 1998. The Washington port of Ilwaco received the majority of landings, 72% of the total, followed by Westport at 21% (PSMFC 1999).

Pelagic longline is used to target swordfish, shark and tunas. Washington and California prohibit pelagic longlining in the EEZ off their coast, but HMS species caught with longline gear can be landed in their ports. California requires vessels to file an offshore fishing declaration to land longline-caught fish in their ports. Oregon allows fishing with pelagic longline gear under a Developmental Fisheries Program permit (PFMC 2001c). Pelagic longliners are required to maintain a NOAA Fisheries logbook when fishing outside the US EEZ.

Drift gillnet gear is used to target swordfish, tunas and sharks off California and Oregon. Off California, vessels "generally fish off southern California in the summer and move north with the fish in the fall. Access is limited and the vessels are restricted by seasonal and area closures. ... The state has ... implemented regulations covering gear, area and seasonal closures to assure few marine mammals are taken. The drift gillnet fishery also operates under a December 2000 NOAA Fisheries biological opinion which closes central California from August 15 through October 31 to protect leatherback turtles, and southern California during August and January of El Niño years to protect loggerhead turtles" (Crooke 2001). The drift gillnet fishery is monitored through state logbooks, fish tickets, and an observer program (20% coverage). This fishery has been observed to intercept whiting, spiny dogfish and yellowtail rockfish. Off California, PacFIN data shows between 0 and 12 mt of groundfish were landed with HMS in the gillnet fishery (Table 3.3.1.1-11). The highest number of vessels participating in the HMS gillnet fishery that also landed groundfish was 38 out of 86 total HMS gillnet vessels in 1999 (Table 3.3.1.1-11).

Purse seine gear is used to target tuna off California and Oregon. Two distinct fleets exist; a small remnant high seas fleet that fishes for tuna in the eastern Pacific and 40 vessels that land tuna when it is locally available (Crooke 2001). The high-seas purse seine fleet fishes in an area regulated by the Inter-American Tropical Tuna Commission (IATTC) and is subject only to the state's licensing and landing taxes. The fleet fishing within the EEZ targets bluefin tuna during the summer but also takes yellowfin, skipjack, and occasionally albacore tuna (Crooke 2001). Purse seine vessels are required to maintain an IATTC logbook and are covered by an observer program. Yellowtail rockfish have been observed as incidental catch by purse seiners. Off California, PacFIN data reports a high of 35 HMS seine vessels in 1997 and 1998, with none of these vessels landing groundfish (Table 3.3.1.1-12). The only reported vessel landing groundfish was in 1992 and 1993 where one vessel landed groundfish with HMS each of those years (Table 3.3.1.1-12). Landings by weight of groundfish in 1992 and 1993 were less than 1% of the total HMS seine landings (3,804 and 3,145 mt, respectively) (Table NGF18).

Harpoon gear is used to target swordfish off California and Oregon. Southern California has a small harpoon fleet (< 50 vessels) pursuing swordfish during the summer months. This is in contrast to the more than 200 vessels fishing during the 1950s and 1960s. They generally operate within the Channel Islands but occasionally may venture as far north as Morro Bay (Crooke 2001). California monitors the harpoon fishery through state logbooks and fish tickets. Bycatch of groundfish in the harpoon fishery is assumed to be non-existent due to the selective nature of the gear.

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Commercial Tribal Fisheries

In 1994 the U.S. government formally recognized the four Washington Coastal Tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish, and concluded, in general terms, that they may take half of the harvestable surplus of groundfish available in the tribes' usual and accustomed (U and A) fishing areas (described at 60 CFR 660.324). West Coast treaty tribes have formal allocations for sablefish, black rockfish, and Pacific whiting. Members of the four coastal treaty tribes participate in commercial, ceremonial, and subsistence fisheries for groundfish off the Washington coast. Participants in the tribal commercial fisheries operate off Washington and use similar gear to non-tribal fishers. Groundfish caught in the tribal commercial fishery pass through the same markets as non-tribal commercial groundfish catch.

There are several groundfish species taken in tribal fisheries for which the tribes have no formal allocations. For some species on which the tribes have a modest harvest, no specific allocation has been determined. Rather than try to reserve specific allocations of these species, the tribes annually recommend trip limits for these species to the Council, who try to accommodate thesel fisheries. Tribal trip limits for groundfish species without tribal allocations are usually intended to constrain direct catch and incidental retention of overfished species in the tribal groundfish fisheries.

3.3.1.2 Distribution of Groundfish Harvest Among Sectors

Trawlers take the vast majority of the groundfish harvest by weight (96% to 98%) and 73% by value. Trawling is much more dominant north of Cape Mendocino (U.S./Vancouver, Columbia, and Eureka INPFC areas) than south of Cape Mendocino (Monterey and Conception areas). While hook-and-line vessels take only a few percent of the coastwide groundfish harvest by weight (1% to 3%), their harvest accounts for about 20% of the exvessel value. When whiting is excluded from the totals, hook-and-line landings are in the 10% to 12% range by weight and in the 25% to 27% range by value (percent of coastwide total groundfish excluding whiting).

Whiting landings are mostly caught by trawlers with the majority of the harvest occurring in the Columbia INPFC area and a large part of the harvest also occurring in the U.S. portion of the Vancouver INPFC area.

3.3.1.3 Distribution of Landed Catch and Bycatch of Overfished Species Among Sectors

This sub-section describes the catch of overfished species in the various fisheries described above, and the recreational and tribal sectors. Table 3.3.1.3-1 summarizes these total catch estimates. (Total catch comprises both landed catch and fish discarded at sea, or bycatch. In most cases bycatch cannot be directly measured; instead, logbook or observer data are used to estimate bycatch.) Table 3.3.1.3-2. depicts landed catch of overfished species (which does not include bycatch) by 2-month period from 1999 to 2001. Table 3.3.1.3-3 details these landings by coastal regions and key West Coast ports.

Limited Entry Trawl

Of the West Coast limited entry trawl fisheries, those targeting Pacific whiting have the best accountability of overfished species bycatch. The at-sea sectors (motherships and catcher-processors) have had a long-standing 100% observer program with direct estimation of bycatch (Table 3.3.1.3-4). Table 3.3.1.3-3 also depicts the estimated bycatch of overfished groundfish species in the shoreside whiting fishery. An EFP has been adopted annually by the Council and NOAA Fisheries that allows suspension of at-sea sorting requirements in the shoreside whiting fishery to enable port sampling of the entire catch.

Limited entry trawl landings of overfished shelf rockfish species in the non-whiting trawl fisheries were reduced dramatically by small footrope restrictions imposed in 2000 (Tables ~2 and ~3). However, with the absence of direct observations to determine discarded bycatch, other methods were needed to estimate the total catch of overfished groundfish species in the West Coast limited entry trawl fishery. Hastie (2001) developed a model, endorsed by the SSC and Council in November 2001 for use in 2002 management, that estimates the rate of five overfished groundfish species (bocaccio, canary rockfish, darkblotched rockfish, lingcod, and Pacific ocean perch) relative to the weight of key target groundfish species and complexes. The model stratified bycatch (or co-occurrence catch rates) by 2-month period, area north and south of Cape Mendocino, and gear type/target fishery (e.g., midwater yellowtail/widow, DTS, etc.) as determined from trawl logbooks, the Electronic Data Collection Program, and fish tickets. Trawl fishing opportunities in 2002 were dramatically affected by active management of overfished species OYs as estimated by the Hastie (2001) model as indexed by landings.

The GMT recommends the Hastie (2001) model, updated with new logbook and fish ticket data and elaborated with the inclusion of fishing depth and vessel length strata, be used to determine total catch implications of considered depth-based management measures as a risk-averse strategy for managing the 2003 limited entry trawl fishery.

Limited Entry Fixed Gear

Limited entry fixed gear fisheries have targeted shelf and slope rockfish as well as sablefish on the shelf and slope. With no corresponding bycatch model for this fishery, discard in the fishery is not well informed nor understood. Fixed gear fisheries have not shown a significant impact on overfished slope rockfish (darkblotched rockfish and Pacific ocean perch). Therefore, fixed gear opportunities targeting abundant slope rockfish and sablefish on the slope may not pose a risk for overfished groundfish species. Yelloweye rockfish landings in the last three years has been higher in this sector than in other groundfish sectors (Tables ~2 and ~3) which is a management concern given the low harvest levels considered for rebuilding this stock.

Directed Open Access

Incidental Open Access

Dungeness Crab: Groundfish bycatch in the pot fishery is minimal although occasionally black rockfish or lingcod may be pulled up in a pot. Groundfish are caught incidentally in Dungeness crab pots off Washington, Oregon and California, but can only be landed in Oregon and California ports. Coastwide, groundfish landed with Dungeness crabs have ranged between 5 mt in 1993 and 1998 to 17 mt in 1995. (Table 3.3.1.3-5 summarizes groundfish landings in this fishery.) Overall, the percentage of groundfish landed with Dungeness crab is less than 1% (Table ~5). For example, in 2001, 6 mt of groundfish were landed out of a total of 8,274 mt of Dungeness crab, or 0.07%. Similarly, out of the over 800 vessels that participate in the Dungeness crab fishery coastwide, generally less than 100 of those vessels also land groundfish.

Gillnet Complex: PacFIN data shows that groundfish landed in the California gillnet complex as a whole have ranged from less than one mt in 1991 and 1992 to 54 mt in 1999 (out of a total of 1,223 mt landed in the gillnet complex). (See Table 3.3.1.3-6 for a summary.) Participation in the gillnet complex fishery since 1993 has ranged between 99 vessels in 1993, to a high of 194 vessels in 1994, and was at 127 vessels in 2001. In 2001, 69 vessels also landed groundfish out of 127 total vessels in the gillnet complex fishery.

Pacific Halibut: Groundfish are caught in the Pacific halibut fishery coastwide. (See Table 3.3.1.3-7 for a summary.) Rockfish and sablefish are commonly intercepted, as they are found in similar habitat to Pacific halibut and are easily caught with longline gear. Landings of halibut are monitored by state fish tickets and through the mandatory logbooks required in the directed commercial halibut fishery. The amount of groundfish by weight landed coastwide between 1990 and 2001 with Pacific halibut has ranged from 6 mt in 1995 to 23 mt in 1997. In 1997, a high of 210 vessels participated in the Pacific halibut fishery coastwide, with participation concentrated off the Oregon coast north of Coos Bay. Of the coastwide participants in 1997, 168 of those vessels also landed groundfish in landings of Pacific halibut.

Pink Shrimp: Vessels targeting pink shrimp also land groundfish species, including rockfish, lingcod, sablefish, thornyheads, and flatfish. Between 1990 and 2001, incidental landings of groundfish in the pink shrimp fishery have not exceeded 10% of the total pink shrimp landings coastwide. (See Table 3.3.1.3-8 for information groundfish catches in this fishery). The highest percentage of landings was in 1993 at 8% (896 mt of groundfish) of the total landing with shrimp. The lowest incidental landings of groundfish were in 2000 and 2001, with groundfish only making up 2% (153 mt) and 1% (94 mt) of total pink shrimp landings, respectively. This recent reduction in incidental landings of groundfish in the pink shrimp fishery is due in part to fewer vessels in the fishery, described in the following paragraph, and also to gear modifications. Efforts are underway to reduce the incidence of groundfish bycatch, by requiring bycatch reduction devices (BRDs aka finfish excluders) and no-fishing buffer zones above the seafloor. In 2001, Washington and Oregon instituted mandatory BRDs in pink shrimp trawl nets, effective August 1, 2001, to reduce finfish take, including canary rockfish, an overfished species. Historically, about 71% of the canary rockfish landed annually by Pacific Coast shrimpers was landed in Oregon (ODFW 2002). For 2002, Washington and Oregon are not requiring BRDs unless implemented through temporary emergency rule if canary rockfish landings reach a certain level, similar to 2001. California requires BRDs for all vessels landing shrimp in California ports.

In Washington, 19 vessels participated in the pink shrimp fishery in 2001, 17 of those vessels also landed groundfish while participating in the shrimp fishery (Table ~8). Washington monitors landings from the pink shrimp fishery through state fish tickets. Prior to 1993, Washington monitored landings through a mandatory logbook program, as well as through fish tickets. In Oregon, only 84 vessels landed shrimp in 2001 (74 double-rig; 10 single-rig) compared to 108 in 2000, 121 in 1999 and 109 vessels in 1998 (ODFW 2002). Oregon shrimpers are required to have a state permit to land shrimp and have historically been required to make annual shrimp landings to keep their permits. In 2001, the state removed the participation requirement and the ex-vessel value for shrimp was low – these two factors likely kept the number of participating shrimp vessels down. Despite lower landings in recent years, Oregon generally has the largest volume by weight of landings. In 1999, Oregon landed more shrimp than California, Washington, British Columbia and Alaska combined. As part of Oregon's management of the fishery, enhanced logbooks record and monitor the fishery. In California, the pink shrimp fishery has been managed by the state since 1952. An average of 88 vessels participated per season from 1983 through 1999. A record-high of 155 boats shrimped during the 1994 fishery, the first year of a moratorium on new shrimp permits (Collier and Hannah 2001).

Bycatch rates of overfished species with and without finfish excluders: ODFW/Saelens to produce

Salmon Troll: The salmon troll fishery does have an incidental catch of Pacific halibut and groundfish, including yellowtail rockfish. (Table 3.3.1.3-9 summarizes groundfish landings for trips during which halibut was not caught while Table 3.3.1.3-10 summarizes those where halibut was caught.) The historical data show that trips where no halibut are landed have a higher range of groundfish landings (11-149 mt) in comparison to trips where halibut was landed (1-19 mt). However, looking at groundfish catch frequency, either by vessel or trips reveals that groundfish are caught more often by vessels or on trips catching halibut. Table 3.3.1.3-11 shows incidental catch of overfished rockfish species by the non-Indian salmon troll fisheries in 2000-2001.

Sea Cucumber: In southern California, between 0 and 15 mt of groundfish have been landed with sea cucumbers, presumably in the trawl fishery. (See Table 3.3.1.3-12 for a summary of participation and groundfish landings in this fishery.) Table 3.3.1.3-13 shows the distribution of effort by depth stratum.) As many as 55 vessels have participated in the sea cucumber fishery in 1991. The largest number of vessels landing groundfish with sea cucumbers was in 1994, with 20 vessels landing groundfish out of 32 vessels participating in the sea cucumber fishery (Table 3.3.1.3-12).

Recreational Fisheries

Tribal Fisheries

Estimated bycatch of groundfish in Makah trawl and troll fisheries are depicted in Table 3.3.13-14, while bycatch in tribal longline fisheries is found in Table 3.3.1.3-15.

Other Non-groundfish Fisheries

Coastal Pelagic Species (CPS): Because CPS are harvested in mostly pure schools relatively near the water's surface, where fish are easily identified, the incidental catch of groundfish is thought to be minimal. However, incidental catch increases when purse seines are set in shallow water, nearshore, such that the seine comes in contact with the bottom or a rocky outcropping.

In round haul gear, if larger fish are in the net, they can be released alive before pumping or brailing by lowering a section of the cork-line or by using a dip-net. The load is pumped out of the hold at the dock, where the catch is weighed and incidentally caught fish can be observed and sorted. Because pumping at sea is so common, any incidental catch of small fish would not be sorted at sea. Incidental harvest of non-prohibited larger fish are often taken home for personal use or processed.

The CPS fishery has not operated on a significant scale during recent times north of Monterey, CA; therefore, little is known about the incidental catch of groundfish that might occur in this area. However, the states of Washington and Oregon are gathering information about the effects of these northern fisheries.

Information from at-sea observations of the CDFG and conversations with CPS fishers suggest that incidental catch has not been and is not significant (Table 3.3.1.3-16). These data are likely representative of actual incidental catch, because fish are pumped from the sea into fish holds aboard the fishing vessel. Fishers do not sort catch at sea that pass through the pump; they land whatever is caught and pumped into the hold.

Between 1985 and the partial year of 1999, there were 5,306 CDFG port samples taken from the sardine and mackerel landings. From 1992 to 1999, incidental catch was reported on only 179 occasions, representing only a 3.4% occurrence in which incidental catch was noted.

Between 1990 and 2001, incidental landings of groundfish in the CPS/squid fishery were less than 1% of the total CPS/squid landings. The highest landings were in 1990, 1997, and 1998-2001 with 1 mt of groundfish landed each year (Table 3.3.1.3-17). Between 1990 and 2001, incidental landings of groundfish in the CPS/finfish fishery were also less than 1% of the total CPS/finfish landings. The highest landings were in 1992 with 1 mt of groundfish landed (Table 3.3.1.3-18).

Highly Migratory Species (HMS): Some of the species of groundfish that have been reported as incidental catch in HMS fisheries include Pacific whiting, rockfish, lingcod, sablefish, leopard shark, soupfin shark, and spiny dogfish. These species have been reported from observers only on the drift gillnet fishery for swordfish and shark and the large vessel purse seine fishery for tuna. Other HMS fisheries have not required observers to date and have not reported incidental groundfish catch. The proposed HMS FMP is set to only monitor three groundfish species (leopard shark, soupfin shark, and spiny dogfish).

3.3.1.4 Foodfish Markets

The World Market and Production

West Coast groundfish compete in a global market not only with similar species produced in other regions of the world but also with other fish species such as salmon and tuna. In addition, fish compete with other sources of protein in consumers' budgets. More than 4.7 million metric tons (MT) of fish and other seafood were landed in the U.S. in 2000, approximately the same amount landed in each of the prior two years.[1] West Coast groundfish contributed about 0.14, 0.13 and 0.12 million MT to this total in 1998, 1999 and 2000, respectively. Pacific Whiting, a relatively abundant but low value species, comprises about 2/3 of West Coast groundfish landings by weight but only around 10% of groundfish exvessel revenue.

Production of farm-raised fish has increased rapidly in recent years. In 2000, more than 0.4 million MT of cultured fishery products were produced in the U.S., and more than 45 million MT were raised worldwide. An example of the emerging importance of farmed species is demonstrated by salmon. While commercial

[1] Unless noted otherwise, the source for all citations in this section is:
U.S. Dept. of Commerce. Fisheries of the United States 2000, National Marine Fisheries Service, Silver Spring, MD (August 2001)

salmon harvest is still near the 1980-1997 annual average, world salmon supply has tripled since 1980 due to a ninefold increase in farmed salmon to 1.5 million MT in 2000.

An objective of groundfish management has been to spread harvest of the annual optimum yield over as much of the year as possible. Consequently harvest of West Coast groundfish occurs in every month, although it takes on increased importance during the summer months when Sablefish harvest has traditionally peaked (Table 3.3.1.4-1).

Groundfish has historically provided West Coast commercial fisheries participants with a relatively steady source of income over the year, supplementing the other more seasonal fisheries (Table 3.3.1.4-1). Although groundfish contributed only about 17% of total annual ex-vessel revenue during 2000, seasonally groundfish played a more significant role, providing 1/5 to 1/3 of ex-vessel revenue coastwide during April and also each of the three summer months. The peak contribution by the groundfish fishery in 2000 was sablefish during August (20% of ex-vessel revenue). Flatfish harvest supplied between 3% and 9% of monthly ex-vessel revenue throughout the year, and rockfish contributed an additional 2.5% to 6.8% to monthly ex-vessel revenue.

Trade

In 2000 the U.S. imported 1.8 million metric tons of edible fishery products (17% from Canada and 14% from Thailand), and exported about 1 million MT of edible fishery products, 1/3 of this to Japan. Japan is the world's largest importer of fish, and Japanese demand drives much of the trade patterns in the world markets (Wessells and Wilen, 1992). Altogether Japan imported more than $14 billion of fishery products from the rest of the world in 1999. The U.S. is the second largest importer of fishery products in 1999 at $9.4 billion. While the (current) dollar value of U.S. edible fishery product exports remained fairly flat from 1995 to 1999 at approximately $3 billion, the (current) dollar cost of imports increased by 1/3 over the same period to $9 billion. In 1999 the U.S. was the fourth largest exporter by value of fishery products after Thailand, Norway and China.

Imports

Most West Coast groundfish compete in the fresh and frozen fish product markets. In 2000 the U.S. imported 1.5 million MT of edible fresh and frozen fish products. 171 thousand MT (11%) consisted of flatfish and groundfish. An additional 283 thousand MT of canned and cured edible fishery products were also imported.Fresh and frozen shrimp was by far the largest edible fishery import item in 2000, both in terms of tonnage (343 thousand MT) and value ($3.7 billlion). Thailand supplied 1/2 of this tonnage, earning $1.5 billion. In terms of value, U.S. imports of non-edible fishery products are almost as important as edible products. In 2000, nearly $9 billion of non-edible fishery products were imported along with $10 billion in edible products.

Exports

In 2000 the U.S. exported 190 thousand MT of edible, fresh or frozen flatfish and groundfish products, about 22% of total edible fresh or frozen fishery exports by weight, or 19% by value. Surimi was the single largest component of total fresh and frozen imports by weight, accounting for another 150 thousand MT. However salmon was the most valuable export, generating $353 million on the 100 thousand MT of fresh and frozen product shipped, and another $146 million from exports of canned product. Asia was the largest export region, absorbing 61% of U.S. fishery exports by volume. Japan alone bought 34% of total fishery exports, and South Korea and China took 11% and 10%, respectively.

Domestic Demand

From 1910 through the early 1970s, annual per-capita fish consumption in the U.S. generally ran between 10 and 12 lbs. edible weight. Beginning in the early 1970s, per-capita consumption increased to 12 to 13 lbs. In the mid 1980s, it began shifting upward again to the 15 to 16 pound range where it has generally remained since 1985. In 2000 annual per-capita U.S. fish consumption was estimated to be 15.6 lbs. Internationally the U.S. ranks just above average in terms of per-capita fish consumption along with countries like United Kingdom, Italy, Russia and Canada, and not far below China, but less than half the level of Japan and South Korea.

Exvessel Prices

Table 3.3.1.4-2 shows recent annual ex-vessel prices for major commercial West Coast fishery species groups over the past five years. Through 2001, prices for most species groups were within their five year ranges, except for non-whiting groundfish and California Halibut, which were at five-year highs in 2001, and shrimp/prawns and shellfish, which were at five-year lows.

Exprocessor and Wholesale Prices

While producer prices for groundfish products have not fared quite as badly as for other frozen fish (including salmon), they still are significantly below recent highs. The trend may be flat or still lower in the future (Table 3.3.1.4-3). Increasing production of farmed salmon is probably at least partly responsible for a continuing slump in salmon commodity prices. Producer prices for meat products in general have been relatively weak, thereby helping to hold down prices received for competitive fish protein.

3.3.1.5 Recreational Fishing Experience Markets

Just as West Coast commercial groundfish is only one segment of a broader food market, the groundfish recreational fishery represents only one segment of a broader recreational market. Other types of marine recreational angler trips, fresh water angling, and other recreational activities are, to varying degrees, potential substitutes ocean groundfish fishing.

Demand for recreational trips and estimates of the economic impacts resulting from recreational fishing are related to numbers of anglers. Unfortunately reliable data is not available on the number of West Coast anglers targeting specific species.

However, data is available on the total number of saltwater anglers, and it is evident that the presence of opportunities to catch species other than directly targeted ones increases the the propensity of anglers to fish and the value of the overall recreational fishing experience. In the U.S., over 9 million anglers took part in 76 million marine recreational fishing trips in 2000. The Pacific coast accounted for about 22% of these participants and 12% of trips. Seventy percent of West coast trips were made off California, 19% off Washington and 11% from Oregon.

Table 3.3.1.4-4 shows the numbers of marine anglers by West Coast state in 2000. The table shows that although California's marine recreational fishery dominates the other West coast states both in terms of numbers of anglers and trips, Oregon attracts the largest share of non-resident anglers, probably chiefly due to the access it affords to the seasonal salmon fisheries at the mouth of the Columbia River.

Table 3.3.1.4-5 gives an indication of the relative importance of groundfish in West Coast states' recreational fisheries between 1996 and 2000. Although only a relatively minor share of West Coast recreational effort overall, in three of the four regions groundfish catch, either targeted or incidental, accompanied a significant share of both charter and private recreational trips. This effect was greatest in Oregon where groundfish catch was consistently associated with well over half the recreational trips each year. Only in Southern California did groundfish appear to be a relatively minor part of regional marine recreational effort.

3.3.1.6 Non-Market Values

3.3.1.7 Energy Requirements and Energy Conservation

3.3.1.8 Social and Cultural Importance of the Resource

3.3.2 Commercial Fishery

3.3.2.1 Fishery Participation

3.3.2.2 Vessel Type and Participation

3.3.2.3 Vessel Size and Harvest Depths

3.3.2.4 Seasonality of Participation and Harvest

3.3.2.5 Harvest Complex Value

3.3.2.6 Harvester Capitalization and the Permit System

3.3.2.7 Cost Schedules and Recent Profitability

3.3.2.8 Energy Conservation

3.3.2.9 Labor

3.3.3 Buyers and Processors

[Note: The text and tables in this section are reproduced from the 2002 Annual Specifications EA and will be updated for this EIS. *The boxed text in this sub-section describes processing capacity trends and processing costs. This information was provided to the Council by the West Coast Seafood Processors Association (WCSPA). Comment is sought from the industry and general public on the degree to which the economic survey data on processing capacity is representative of trends on the West Coast and the degree to which the reported processing costs and recovery rates appear reasonable and reflect costs experienced by others along the West Coast.*]

Several thousand entities have permits to buy fish on the West Coast. Of these 1,780 [2] purchased fish caught in the ocean area and landed on Washington, Oregon, or California state fish tickets in the year 2000 (excluding tribal catch) and 732 purchased groundfish (Table 3.3.3-1).[3]

Larger buyers tend to handle groundfish more than smaller buyers. Of the 546 buyers purchasing in excess of $20,000 of West Coast landings, 59% bought groundfish. These 546 buyers bought 99% of all Council managed groundfish (Table 3.3.3-2). Of the 1,234 buyers purchasing less than $20,000 from West Coast vessels, 33% bought groundfish.

The number of buyers handling groundfish from trawl vessels is substantially lower than all of those handling groundfish. Only 17% (125) of all groundfish buyers (732) handled fish from trawl vessels (Table 3.3.3-1). These 125 vessels comprise only 7% of all buyers (1,780). Buyers of trawl caught groundfish are important to nontrawl vessels as well, handling 60% (by value) of the groundfish caught by nontrawl vessels (Table 3.3.3-3).

The largest buyers tend to handle trawl vessels more than smaller buyers. Of the 38 largest buyers of groundfish (those with purchases in excess of $1 million), 73% (28) bought from trawl vessels (Table 3.3.3-1). Seventy-eight percent of all groundfish purchases from trawl vessels (Table 3.3.3-3) go to the 28 trawl

[2] For this analysis a "buyer" was defined as a unique combination of PacFIN port code and state buyer code on the fish ticket. For California, a single company may have several buying codes that vary only by the last two digits. The last two digits on these codes were truncated and would appear as separate buying units only if they appear on fish tickets for different ports.

[3] Unless otherwise noted, this section provides quantitative information on nontribal landings or fish caught in the ocean area and landed on West Coast WOC fish tickets.

buyers with total purchases of all species in excess of $1 million. These 28 buyers also handle 39% of the exvessel value of the nontrawl purchases.

Mid-size buyers tend to have greater importance for nontrawl vessels than for trawl vessels. Fifty percent of all nontrawl sales go to buyers with total purchases of between $20 thousand and $1 million, as compared to 22% for trawl vessels (Table 3.3.3-3).

Absent cost and exprocessor sale price data, very rough assumptions must be made to consider possible levels of dependence of processors on groundfish. As illustrated in a side bar on a following page, processor margins differ for different species and product forms. However, absent the needed data it is assumed here gross exvessel value of purchases is a rough indicator of relative levels of dependence. Large buyers of groundfish tend to have a lesser percentage of their overall purchases from groundfish than smaller buyers (Table 3.3.3-4). In Table 3.3.3-4 buyers are placed in categories by the proportion of their purchases that are groundfish purchases. The distribution of large buyers has a single mode (a single peak) in the 5% to 35% range. The distribution of smaller buyers tends to be bimodal with peaks in the 0% to 5% range and the 95% to 100% range. For smaller buyers this may indicate that groundfish are purchased as part of the incidental catch from fisheries targeted on other species (the buyers with 0% to 5% of their purchases from groundfish) or the buyers are specialty buyers or handling their own catch (the small buyers with 95% to 100% of their purchases from groundfish).

Groundfish buyers tend to have more of a year round presence in the fishery than nongroundfish buyers, particularly larger buyers. Eighty percent of the larger groundfish buyers (those with over $1 million in purchases) made purchases in every month in the year 2000 while only 31% of the nongroundfish buyers made purchases in every month (Table 3.3.3-5).

For the seventy five processors active at least nine months of the year, but not year round, the most common months to be inactive are November (22 buyers inactive), followed by February, January, March and December (with between 10 and 14 buyers inactive in each month) (Table 3.3.3-6).

Of the larger buyers handling groundfish, 60% of those making some fish purchases every month made purchases of groundfish in every month (Table 3.3.3-5 compared to Table 3.3.3-7).

In most port areas on the West Coast there are generally six or fewer buyers purchasing from limited entry vessels. In the north, the primary exception is Astoria, and in the south, the exceptions are San Francisco, Monterey, and San Luis Obispo (Table 3.3.3-9). In San Francisco and from San Luis Obispo south there tend to be more buyers of fixed gear rockfish and other groundfish than there are buyers of trawl-caught species.

Processor Capacity

In an effort to collect data for the 2002 fishery, port biologists were asked to report their observations on the number of fillet and cutting stations in the plants from which they sampled. A census of this measure of capacity and the ratio of this capacity to available product, over time, might provide an indicator of trends and economic health of the industry. The data collected in this initial effort is not sufficient for substantial use in this EA.

Area	Processing Capacity - 2001
Puget Sound	Four fillet lines (44 stations on two lines) and four cutting tables
Washington Coast (Westport and Ilwaco)	27 fillet stations (26 in storage)

Northern California (Crescent City to Fort Bragg)	130 fillet stations

Processing Costs

Information on processing costs is being collected by the Pacific States Marine Fisheries Commission Economic Fishery Information Network project. It is hoped some of this information will soon be available for economic analysis. In the mean time, the WCSPA has provided information on costs and exprocessor prices from members of their organization. Comment is sought on this information, as noted above.

The WCSPA notes when fish must be frozen, associated profits decline substantially. The association also notes the profitability of rockfish is greater ($0.38 to $0.73 per pound based on the ranges provided by WCSPA) than the profitability of Dover sole ($0.42 to $0.60 per pound). As an additional note and, given the information as provided, while the profitability of Dover sole appears to be somewhat less for rockfish, the degree of loss that occurs when Dover sole must be frozen (a loss of $0.18 to $0.43 per pound) appears to be less than the degree of loss when rockfish must be frozen (a loss of $0.19 to $0.54 per pound) .

WCSPA ECONOMIC SURVEY (partial data)

PROCESSING CAPACITY			
	1997	2000	% Difference
Total number filleting stations	259	224	-13.5%
Number filleting stations used	215	115	-46.5%

DRAFT

COST			
	1997	2000	% Difference
Average cost per pound for finished groundfish product	$1.55	$1.89	21.90%

LABOR FORCE			
	1997	2000	% Difference
Number of employees (skilled)	412	259	-37.1%
Number of employees (unskilled)	566	464	-18.0%

DATA SUPPLIED BY: Alioto-Lazio Fish Co.; Bandon Pacific Seafood; Bornstein Seafoods - Bellingham, Newport; Depoe Bay Fish Co.; Eureka Fisheries - Brookings, Crescent City, Fields Landing, Fort Bragg; Hallmark Fisheries; Olde Port Fisheries; Pacific Choice - Eureka; Qualy-Pak; Washington Crab Producers
West Coast Seafood Processors Association

COMPARISON OF COST VS. PRICES FOR SELECTED MAJOR GROUNDFISH SPECIES

In order to provide some economic data that would be useful for analysis of 2002 management options, we surveyed processing plants to determine their cost per pound of producing Dover sole and rockfish fillets and then determined the range of prices for which those fillets were sold. We chose Dover sole because it is the most common, most available, and most valuable (other than petrale sole at certain times of the year) of the flatfish species. We did not specify which species of rockfish we were collecting data on but instead asked the plants to give us the most common values.

The table below shows aggregated data from seven plants located in California and Oregon (we were unable to obtain data from Washington in time to provide the information). In 2000, these plants processed 55% of the non-whiting groundfish landed on the west coast (plant data from WCSPA records; total groundfish landings from PacFIN); thus we believe they can provide a representative sample.

We did not try to distinguish between trawl and fixed gear landings, but the prices and costs shown are from trawl-caught fish.

Because the values used in the table (price, recovery rate, etc.) vary among plants, we used an average. Prices for the two product types are expressed as a range, which was averaged over the ranges provided by the plants.

Discussion

As the data show, plants make more money on rockfish than on Dover sole and lose money (especially when fixed costs are included) on frozen product. This suggests that, to maximize economic benefits within the bounds of this fishery, there is a need for rockfish supplies year round to offset losses (or at best minimal profits) on Dover sole. It also suggests that management measures which result in product gluts at plants (and hence a requirement to freeze fillets) will result in economic losses.

DOVER SOLE

Avg Price	Avg % Recov	Avg Raw Cost	Avg Oth Cost	TOT	Avg Price Frzn	Avg Price Fresh
$.36	25	$1.44	$.72	$2.16	$1.73-$1.98	$2.58-$2.76

ROCKFISH

Avg Price	Avg % Recov	Avg Raw Cost	Avg Oth Cost	TOT	Avg Price Frzn	Avg Price Fresh
$.47	34	$1.38	$.59	$1.97	$1.43-$1.78	$2.35-$2.70

NOTE: "Other Cost" does *not* include fixed costs such as overhead, utilities, taxes, etc. It *does* include labor, packaging, and shipping. If fixed costs are included, the total cost would increase by an estimated $.36, based on fixed cost data obtained from some of the sources.

3.3.4 Recreational Fishery

Recreational fishing has been part of the culture and economy of West Coast fishing communities for more than 50 years. Along the northern coast, most recreational fishing targeted salmon, but the abundant rockfish often provided a bonus to anglers. Recreational fisheries have contributed substantially to fishing communities, bringing in outside dollars and contributing to tourism in general.

Recreational fishing in the open ocean appears to have been on a downward trend for a number of years. Part of this decline is likely the result of shorter salmon seasons and smaller bag (retention) limits. Some effort shift from salmon to groundfish likely occurred. However, because of good returns more chinook salmon were available to both commercial and recreational fisheries in 2002. Groundfish are both targeted and caught incidentally when other species, such as salmon, are targeted. The contribution of groundfish catches to the overall incentive to engage in a recreational fishing trip is uncertain; however, it seems likely that the frequency of groundfish catch on a trip adds to overall enjoyment and perceived value.

3.3.4.1 Allocation by Region or Gear Groups, Charter and Private Recreational

3.3.4.2 Catch and Imputed Value

3.3.4.3 Resource Seasonality and Use

Figures 3-4 through 3-7 show recreational rockfish and lingcod seasons in 1996 and 2000-2002.

3.3.4.4 Private Recreational

3.3.4.5 Charter Industry

3.3.5 Tribal Fisheries

[Discussion of ceremonial and subsistence use.]

3.3.6 Communities

Fishing communities, as defined in the Magnuson-Stevens Act, include not only the people who actually catch the fish, but also those who share a common dependency on directly related fisheries-dependent services and industries. In commercial fishing this may include boatyards, fish handlers, processors, and ice suppliers. Similarly, entities that depend on recreational fishing may include tackle shops, small marinas, lodging facilities catering to out-of-town anglers, and tourism bureaus advertising charter fishing opportunities. People employed in fishery management and enforcement make up another component of fishing communities.

Fishing communities of the West Coast depend on commercial and/or recreational fisheries for many species. Participants in these fisheries employ a variety of fishing gears and combinations of gears. Naturally, community patterns of fishery participation vary coastwide and seasonally based on species availability, the regulatory environment, and oceanographic and weather conditions. Each community is characterized by its unique mix of fishery operations, fishing areas and habitat types, seasonal patterns, and target species. While each community is unique, there are many similarities. For example, all face danger, safety issues, dwindling resources, and a multitude of state and federal regulations.

Individuals make up unique communities with differing cultural heritages and economic characteristics. Examples include a Vietnamese fishing community of San Francisco Bay and an Italian fishing community of southern California. Native American communities with an interest in the groundfish fisheries are also considered. In most areas, fishers with a variety of ethnic backgrounds come together to form the fishing communities within local areas, drawn together by their common interests in economic and physical survival in an uncertain and changing ocean and regulatory environment.

Demographic information on geographic communities at the county level has been compiled for a general baseline description of West Coast fishing communities. This information may be downloaded from the Council web site (www.pcouncil.org).

Preceding sections have provided numbers of commercial vessels, fish buyers, and charter vessels for various geographic regions. To the extent allowed by constraints on confidentiality (commercial) and data validity (recreational), information is also provided on the value of product landed and amount of recreational effort, respectively.

3.3.6.1 Geographic Distribution of Commercial Fishing Fleet and Revenue

3.3.6.2 Geographic Distribution of Groundfish Buyers

3.3.6.3 Geographic Distribution of Personal Income Impacts

Tables 3.3.6.3-1 and 3.3.6.3-2 display the current (2001) distribution of income impacts in major port areas along the west coast attributable to commercial harvesting and shoreside processing of Council-managed species groups. Table 3.3.6.3-1 shows the income impacts of shoreside harvesting and processing in thousands of current U.S. dollars. Table 3.3.6.3-2 displays these dollar impacts as the percentage of each port area's income impact that is derived from each species group.

From Table 3.3.6.3-1, the total income derived from commercial harvesting and shoreside processing of Council-managed species in 2001 was almost $536 million. California ports claimed $329 million, or 61% of this total. Oregon's share was $125 million (23%) and Washington's $82 million (16%).

Table 3.3.6.3-2 shows that of the total $536 million income attributable to commercial harvesting and shoreside processing of Council-managed species groups, about $111 million (21%) was due to groundfish-related activity. However the distribution of groundfish-related activity was very uneven, with Oregon being most heavily dependent (44% of fishery-related income), Washington next (29% of fishery-related income) and California least dependent on groundfish relative to fishery-related income at 10%.

3.3.6.4 Dependence on and Engagement in Fishing and Fishing-related Activities

Table 3.3.6.4-1 displays the most recent (2000) information on the components of total personal income in counties along the West Coast, Puget Sound and Lower Columbia river. The counties are then ranked relative to each other on the basis of several different average or per capita measures. Examining these rankings gives us a picture of the county economies.

For example, on the basis of per capita personal income, the urban Northern California counties are on top, with Marin county ranked number one, followed by San Mateo and San Francisco. San Mateo and San Francisco also rank 1 and 2 in terms of average annual wage, a measure of the strength of these economies as centers of high wage employment, with King county Washington at number 3. Marin, San Mateo and San Francisco counties are ranked 1, 2, 3 in terms of per capita non-labor income (dividends, interest and rent). Here again Marin county is number one. The status of Marin county as a top bedroom community for San Francisco-bound commuters is betrayed by its ranking as number 1 in terms of residence adjustment, a net measure of income brought home by resident commuters minus the income carried out by non-residents. The other two top spots in this category are held by Contra Costa California and Columbia county Oregon.

Transfer payments include welfare and Social Security benefits received from federal, state and local governments. As such it can be both a measure of how dependent an area is on public assistance or an indicator of how attractive an area is as a retirement destination. By this measure, Curry county Oregon is number one, followed by Pacific and Clallam counties in Washington. Looking at dividends, interest and rent, a measure of wealth, expands this picture. By this measure, Curry and Clallam counties rank relatively high (7 and 9, respectively), but Pacific county is well down the list at number 31, indicating that pacific county is probably the poorer of the three counties.

The three poorest counties in the region, measured by per capita income, are Del Norte California (43), and Pacific (42) and Klickitat (41) counties in Washington.

3.3.6.5 Demographics, Ethnic and Social Characteristics

3.3.6.6 Social Structure: Networks, Values, Identity

3.3.6.7 Impact on the Built Environment in Fishing Communities

3.3.7 Health and Safety

Weather-related vessel safety is discussed in Section 11.6 of the Groundfish FMP. Although this discussion is out of date, having been incorporated into the FMP in 1988 as part of Amendment 3, it does describe how management measures can affect vessel safety. At that time, for example, vessels were regulated by weekly landing limits. Some fishermen believed that this regime forced fishers to venture out during poor weather in order to attain their fall limit for the time period. Longer limit periods (such as the two month cumulative limit currently in place) allows more flexibility to plan trips around poor weather and still reach the allowed landing limit.

[Information on seasonal wind and sea conditions.]

3.4 Current Management Regime

3.4.1 The Management Cycle and Stock Assessment and Review (STAR) Process

Although Council operating procedures call for a three-meeting process to develop Council-recommended annual harvest specifications and management measures, Council decision making related to annual management now occurs over the course of two meetings, which in the past have been in September and November. Coordinating the availability of stock assessment information, decision making and federally required public comment on rule making has emerged as a major issue in recent years. Broadly speaking, NMFS or state management agencies conduct fishery-independent surveys on a periodic basis that is rarely more frequent than every other year. The results of these surveys are combined with information gathered from fisheries to conduct a stock assessment. Before 1995 a fairly informal process was used to vet stock assessments in advance of the use of results in decision making. In that year NMFS commissioned a review and recommended a more structured process. Since then a set of goals and objectives has guided Stock Assessment Review (STAR) Panels that peer review work done by Stock Assessment Teams (STAT) comprising state and federal fishery scientists. Based on these goals and objectives, a process has developed that specifies the required elements of stock assessments, features external anonymous reviewers, and sets a calendar for completing and reviewing stock assessments so they are available to the Council ahead of decision making. Overall, the process is intended to clearly distinguish scientific analysis from management decisions.

This process begins with trawl and/or hydroacoustic surveys. The resulting data are used in the stock assessments that analyze stock structure and estimate its size. The STAT/STAR process is laborious and time consuming, typically taking ten months to a year to complete. The length of time involved not only reflects the difficulty of the work but the rigorous review that ensues. Therefore, stock assessments are not usually conducted every year and the Council identifies candidate stocks for formal assessment at its June meeting. Stock assessments must be completed by May if they are to be used in that year's management cycle (which sets harvest levels and management measures for the next year).[4] The Groundfish Management Team (GMT) then identifies alternative harvest levels. (These will become part of the range of management alternatives in the environmental assessment of annual management measures.) As discussed in Section 3.2.1, the alternatives reflect the "acceptable biological catch"

[4] The whiting fishery usually begins in April and the Council has the option of choosing harvest levels in March of the same year, as was the case in 2002. Because this species has been declared overfished, harvest levels will be tied to a rebuilding plan until the stock is recovered. This necessitates decision making in the preceding year as with other stocks.

(ABC), a harvest level that is determined to be sustainable based on the scientific analysis in the stock assessment. The actual harvest level is expressed as an optimum yield (OY). The MSA defines OY as a yield that "will provide the greatest overall benefit to the Nation" and is less than MSY. More specifically, the Groundfish FMP describes the "40-10 default OY" policy that provides guidance for determining OY. When the stock size is less than that which can support MSY OY is reduced accordingly.[5] At this point scientists have finished their work by specifying biologically acceptable levels of fishing mortality. It is now up to the Council to make policy decisions—within the constraints imposed by scientists—that balance competing sectoral interests and risks (due to uncertainty inherent in resource assessments) against potential costs (resulting from either under- or over-harvest).

As mentioned above, the Council reviews management alternatives and chooses its preferred alternative over the course of two meetings. The first meeting allows the Council to review and evaluate the alternatives sent up by the GMT. It may choose a preferred alternative at this point or wait until the next meeting to make its decision. In the interim the alternatives (possibly with a preferred alternative identified) are made available for public review. Council staff develop the environmental analysis that guides Council decisions. After the second Council meeting they complete the environmental analysis and the resulting document is submitted to NMFS so that they may begin the rule making process. Regulations for the ensuing year must be implemented before January 1. In the past the Council's September and November meetings have been devoted to the process just described. However, a federal court ruled that NMFS was not allowing sufficient time for public comment during the rule making process. This necessitated emergency action to allow the 2002 season to begin on time (by continuing management measures from the previous year into the first two months of the new year). In response, the management cycle to develop 2003 management measures has been shifted to the 2002 June and September meetings. Even with this change NMFS may not have sufficient time to complete rule making by the end of the year. Because the process for developing annual management measures has become more complex and time consuming, and has detracted from the Council's ability to conduct other business (not the least developing and implementing rebuilding plans), a multi-year management cycle is being discussed. Various scenarios are being considered, but all would extend management measures for more than one year (most likely to two years) so that they don't have to be specified every year. This would allow the Council to focus on strategic measures in the "off year."

3.4.2 Capture of Fish in Research Fisheries

Table 3.4.2-1 shows capture of overfished groundfish in research fisheries in 2001.

3.4.3 Fishery Management and Enforcement

All of the management measure alternatives would restrict or prohibit fishing within certain depth ranges in order to minimize bycatch of overfished species. Depth restrictions have not been used on a large scale in Council-managed fisheries and the ability to monitor vessels' locations related to depth-based closed areas will be essential to effective management. Vessel monitoring systems (VMS) can provide this information to enforcement agencies through the use of a specialized transmitter on subject fishing vessels, which transmits position information via satellite. There are several issues related to the implementation of VMS in a fishery, including cost, vessels' ability to carry VMS, the specific features of different VMS systems and time needed to implement a monitoring system. The Enforcement Consultants (EC) working group, with representatives from USCG, NOAA Fisheries, WDFW, OSP and PFMC, evaluated three VMS systems ranging in price from $1,800 to $5,800 for each transmitting unit installed on a fishing vessel. The costs may be bourne entirely by the vessel owners, or could be wholly or partially subsidized. Both cost and vessel capability—for example, its size and electrical system—need to be considered in deciding what portion of the West Coast fishing fleet that targets or

[5] An ABC is established for every stock (a species or species group) where enough information is available. However, numerical OYs are not established for every stock, especially where harvest has been less than the ABC. Species and species groups with OYs include bocaccio, canary rockfish, chilipepper rockfish, cowcod, darkblotched rockfish, Dover sole, lingcod, longspine thornyhead, the minor rockfish complexes (northern and southern for nearshore, continental shelf, and continental slope species), Pacific cod, Pacific ocean perch (POP), Pacific whiting, sablefish, shortbelly rockfish, shortspine thornyhead, splitnose rockfish, widow rockfish, yelloweye rockfish and yellowtail rockfish.

catches groundfish incidentally would need to be equipped with VMS. The EC working group has recommended that VMS be installed on the limited entry trawl and fixed gear fleets, at least initially. They have also recommended using the INMARSAT-C system. These units cost $2,500 but have the ability, at additional cost, to support two-way communication. In order to do a PC computer must be installed on the vessel, raising the per-unit cost to an estimated $5,000 (an additional $2,000 for the computer and $500 for installation). With this capability, vessels can provide notice when transiting closed areas, changing from one fishery to another, and transmit catch data in real, or near-real time. (This last feature could be combined with electronic logbooks, if they were used.) There are over 400 limited entry licensed vessels, suggesting an initial up-front cost of over $2 million. In addition to the capital cost of the units, there is a transmission cost, which is $2 for the INMARSAT-C system.

3.4.4 Uncertainty and Risk in the Management Process

CHAPTER 3
TABLES

TABLE 3.2-1. Latitudinal and depth distributions of groundfish species (adults) managed under the Pacific Coast Groundfish Fishery Management Plan. 1/

Common name	Scientific name	Latitudinal Distribution Overall	Latitudinal Distribution Highest Density	Depth Distribution (fm) Overall	Depth Distribution (fm) Highest Density
		Flatfish Species			
Arrowtooth flounder	*Atheresthes stomias*	N. 34° N.lat.	N. 40° N.lat.	10-400	27-270
Butter sole	*Isopsetta isolepis*	N. 34° N.lat.	N. 34° N.lat.	0-200	0-100
Curlfin sole	*Pleuronichthys decurrens*	Coastwide	Coastwide	4-291	4-50
Dover sole	*Microstomus pacificus*	Coastwide	Coastwide	10-500	110-270
English sole	*Parophrys vetulus*	Coastwide	Coastwide	0-300	40-200
Flathead sole	*Hippoglossoides elassodon*	N. 38° N.lat.	N. 40° N.lat.	3-300	100-200
Pacific sanddab	*Citharichthys sordidus*	Coastwide	Coastwide	0-300	0-82
Petrale sole	*Eopsetta jordani*	Coastwide	Coastwide	10-250	160-250
Rex sole	*Glyptocephalus zachirus*	Coastwide	Coastwide	10-350	27-250
Rock sole	*Lepidopsetta bilineata*	Coastwide	N. 32°30' N.lat.	0-200	summer 10-44 winter 70-150
Sand sole	*Psettichthys melanostictus*	Coastwide	N. 33°50' N.lat.	0-100	0-44
Starry flounder	*Platichthys stellatus*	Coastwide	N. 34°20' N.lat.	0-150	0-82
		Rockfish Species			
Aurora rockfish	*Sebastes aurora*	Coastwide	Coastwide	100-420	82-270
Bank rockfish	*Sebastes rufus*	S. 39°30' N.lat.	S. 39°30' N.lat.	17-135	115-140
Black rockfish	*Sebastes melanops*	N. 34° N.lat.	N. 34° N.lat.	0-200	0-30
Black-and-yellow rockfish	*Sebastes chrysomelas*	S. 40° N.lat.	S. 40° N.lat.	0-20	0-10
Blackgill rockfish	*Sebastes melanostomus*	Coastwide	S. 40° N.lat.	48-420	125-300
Blue rockfish	*Sebastes mystinus*	Coastwide	Coastwide	0-300	13-21
Bocaccio 2/	*Sebastes paucispinis*	Coastwide	S. 40° N. lat., N. 48° N. lat.	15-180	54-82
Bronzespotted Rockfish	*Sebastes gilli*	S. 37° N.lat.	S. 37° N.lat.	41-205	110-160
Brown rockfish	*Sebastes auriculatus*	Coastwide	S. 40° N.lat.	0-70	0-50
Calico rockfish	*Sebastes dallii*	S. 38° N.lat.	S. 33° N.lat.	10-140	33-50
California scorpionfish	*Scorpaena gutatta*	S. 37° N.lat.	S. 34°27' N.lat.	0-100	0-100
Canary rockfish	*Sebastes pinniger*	Coastwide	Coastwide	50-150	50-100
Chameleon rockfish	*Sebastes phillipsi*	37°- 33° N.lat.	37°- 33° N.lat.	95-150	95-150
Chilipepper	*Sebastes goodei*	Coastwide	34°- 40° N.lat.	27-190	27-190
China rockfish	*Sebastes nebulosus*	N. 34° N.lat.	N. 35° N.lat.	0-70	2-50
Copper rockfish	*Sebastes caurinus*	Coastwide	S. 40° N.lat.	0-100	0-100
Cowcod	*Sebastes levis*	S. 40° N.lat.	S. 34°27' N.lat.	22-203	100-130
Darkblotched rockfish	*Sebastes crameri*	N. 33° N.lat.	N. 38° N.lat.	16-300	96-220
Dusky rockfish 3/	*Sebastes ciliatus*	N. 55° N.lat.	N. 55° N.lat.	0-150	0-150
Dwarf-Red rockfish 4/	*Sebastes rufinanus*	33° N.lat.	33° N.lat.	>100	>100
Flag rockfish	*Sebastes rubrivinctus*	S. 38° N.lat.	S. 37° N.lat.	17-100	shallow
Freckled rockfish	*Sebastes lentignosus*	S. 33° N.lat.	S. 33° N.lat.	22-92	22-92
Gopher rockfish	*Sebastes carnatus*	S. 40° N.lat.	S. 40° N.lat.	0-30	0-16
Grass rockfish	*Sebastes rastrelliger*	S. 44°40' N.lat.	S. 40° N.lat.	0-25	0-8
Greenblotched rockfish	*Sebastes rosenblatti*	S. 38° N.lat.	S. 38° N.lat.	33-217	115-130
Greenspotted rockfish	*Sebastes chlorostictus*	S. 47° N.lat.	S. 40° N.lat.	27-110	50-100
Greenstriped rockfish	*Sebastes elongatus*	Coastwide	Coastwide	33-220	27-136
Halfbanded rockfish	*Sebastes semicinctus*	S. 36°40' N.lat.	S. 36°40' N.lat.	32-220	32-220
Harlequin rockfish 5/	*Sebastes variegatus*	N. 40° N. lat.	N. 51° N. lat.	38-167	38-167
Honeycomb rockfish	*Sebastes umbrosus*	S. 36°40' N.lat.	S. 34°27' N.lat.	16-65	16-38
Kelp rockfish	*Sebastes atrovirens*	S. 39° N.lat.	S. 37° N.lat.	0-25	3-4
Longspine thornyhead	*Sebastolobus altivelis*	Coastwide	Coastwide	167->833	320-550
Mexican rockfish	*Sebastes macdonaldi*	S. 36°20' N.lat.	S. 36°20' N.lat.	50-140	50-140
Olive rockfish	*Sebastes serranoides*	S. 41°20' N.lat.	S. 40° N.lat.	0-80	0-16
Pacific ocean perch	*Sebastes alutus*	Coastwide	N. 42° N.lat.	30-350	110-220
Pink rockfish	*Sebastes eos*	S. 37° N.lat.	S. 35° N.lat.	40-200	40-200
Pinkrose rockfish	*Sebastes simulator*	S. 34° N.lat.	S. 34° N.lat.	54-160	108
Puget Sound rockfish	*Sebastes emphaeus*	N. 40° N.lat.	N. 40° N.lat.	6-200	6-200
Pygmy rockfish	*Sebastes wilsoni*	N. 32°30' N.lat.	N. 32°30' N.lat.	17-150	17-150
Quillback rockfish	*Sebastes maliger*	N. 36°20' N.lat.	N. 40° N.lat.	0-150	22-33
Redbanded rockfish	*Sebastes babcocki*	Coastwide	N. 37° N.lat.	50-260	82-245
Redstripe rockfish	*Sebastes proriger*	N. 37° N.lat.	N. 37° N.lat.	7-190	55-190
Rosethorn rockfish	*Sebastes helvomaculatus*	Coastwide	N. 38° N.lat.	65-300	55-190

TABLE 3.2-1. Latitudinal and depth distributions of groundfish species (adults) managed under the Pacific Coast Groundfish Fishery Management Plan. 1/

Common name	Scientific name	Latitudinal Distribution Overall	Latitudinal Distribution Highest Density	Depth Distribution (fm) Overall	Depth Distribution (fm) Highest Density
Rosy rockfish	*Sebastes rosaceus*	S. 42° N.lat.	S. 40° N.lat.	8-70	30-58
Rougheye rockfish	*Sebastes aleutianus*	Coastwide	N. 40° N. lat.	27-400	27-250
Semaphore rockfish	*Sebastes melanosema*	S. 34°27' N.lat.	S. 34°27' N.lat.	75-100	75-100
Sharpchin rockfish	*Sebastes zacentrus*	Coastwide	Coastwide	50-175	50-175
Shortbelly rockfish	*Sebastes jordani*	Coastwide	S. 46° N.lat.	50-175	50-155
Shortraker rockfish	*Sebastes borealis*	N. 39°30' N.lat.	N. 44° N.lat.	110-220	110-220
Shortspine thornyhead	*Sebastolobus alascanus*	Coastwide	Coastwide	14->833	55-550
Silvergray rockfish	*Sebastes brevispinis*	Coastwide	N. 40° N.lat.	17-200	55-160
Speckled rockfish	*Sebastes ovalis*	S. 38° N.lat.	S. 37° N.lat.	17-200	41-83
Splitnose rockfish	*Sebastes diploproa*	Coastwide	Coastwide	50-317	55-250
Squarespot rockfish	*Sebastes hopkinsi*	S. 38° N.lat.	S. 36° N.lat.	10-100	10-100
Starry rockfish	*Sebastes constellatus*	S. 38° N.lat.	S. 37° N.lat.	13-150	13-150
Stripetail rockfish	*Sebastes saxicola*	Coastwide	Coastwide	5-230	5-190
Swordspine rockfish	*Sebastes ensifer*	S. 38° N.lat.	S. 38° N.lat.	38-237	38-237
Tiger rockfish	*Sebastes nigrocinctus*	N. 35° N.lat.	N. 35° N.lat.	30-170	35-170
Treefish	*Sebastes serriceps*	S. 38° N.lat.	S. 34°27' N.lat.	0-25	3-16
Vermillion rockfish	*Sebastes miniatus*	Coastwide	Coastwide	0-150	4-130
Widow rockfish	*Sebastes entomelas*	Coastwide	N. 37° N.lat.	13-200	55-160
Yelloweye rockfish	*Sebastes ruberrimus*	Coastwide	N. 36° N.lat.	25-300	27-220
Yellowmouth rockfish	*Sebastes reedi*	N. 40° N.lat.	N. 40° N.lat.	77-200	150-200
Yellowtail rockfish	*Sebastes flavidus*	Coastwide	N. 37° N.lat.	27-300	27-160
Roundfish Species					
Cabezon	*Scorpaenichthys marmoratus*	Coastwide	Coastwide	0-42	0-27
Kelp greenling	*Hexagrammos decagrammus*	Coastwide	N. 40° N.lat.	0-25	0-10
Lingcod	*Ophiodon elongatus*	Coastwide	Coastwide	0-233	0-40
Pacific cod	*Gadus macrocephalus*	N. 34° N.lat.	N. 40° N.lat.	7-300	27-160
Pacific whiting	*Merluccius productus*	Coastwide	Coastwide	20-500	27-270
Sablefish	*Anoplopoma fimbria*	Coastwide	Coastwide	27->1,000	110-550
Shark and Skate Species					
Big skate	*Raja binoculata*	Coastwide	S. 46° N.lat.	2-110	27-110
California skate	*Raja inornata*	Coastwide	S. 39° N.lat.	0-367	0-10
Leopard shark	*Triakis semifasciata*	S. 46° N.lat.	S. 46° N.lat.	0-50	0-2
Longnose skate	*Raja rhina*	Coastwide	N. 46° N.lat.	30-410	30-340
Soupfin shark	*Galeorhinus zyopterus*	Coastwide	Coastwide	0-225	0-225
Spiny dogfish	*Squalus acanthias*	Coastwide	Coastwide	0->640	0-190
Other Species					
Finescale codling	*Antimora microlepis*	Coastwide	N. 38° N.lat.	190-1,588	190-470
Pacific rattail	*Coryphaenoides acrolepis*	Coastwide	N. 38° N.lat.	85-1,350	500-1,350
Ratfish	*Hydrolagus colliei*	Coastwide	Coastwide	0-499	55-82

1/ Data from Casillas et al. 1998, Eschmeyer et al. 1983, Hart 1973, Miller and Lea 1972, and NMFS survey data. Depth distributions refer to offshore distributions, not vertical distributions in the water column.
2/ Only the southern stock of bocaccio south of 40°10' N. lat. is listed as overfished.
3/ Dusky rockfish do not occur on the U.S. West Coast south of 49° N. lat. The species needs to be removed from the FMP.
4/ Dwarf-Red rockfish are a very rare species with only one occurrence listed in the literature (2 specimens from an underwater explosion off San Clemente Is., CA in 1970; Eschmeyer et al. 1983). The species is not in the FMP.
5/ Only 2 occurrences of harlequin rockfish south of 51° N. lat. (off Newport, OR and La Push, WA; Casillas et al. 1998).

TABLE 3.2.1-2. Current rebuilding parameter/target estimates specified for overfished west coast groundfish: shelf species.

Rebuilding Parameter/Target	Shelf rockfish & lingcod				
	Cowcod [1/]	Bocaccio [2/]	Canary	Yelloweye [3/]	Lingcod [4/]
T_0 (year declared overfished)	2000	1999	2000	2002	1999
T_{MIN} (minimum time to achieve B_{MSY}; F = 0)	2062	*2097*	2057	*15-208 years N CA* *15-104 years OR-WA*	2004 N 2005 S
Mean generation time	37 years	*12* years	19 years	*28 years N CA* *32 years OR-WA*	5 years N 4 years S
T_{MAX} (maximum time to achieve B_{MSY})	2099	*2109*	2076	*43-236 years N CA* *47-136 years OR-WA*	2009
P_{MAX} (P to achieve B_{MSY} by T_{MAX}) [5/]	55%	X%	X%	X%	60%
Most recent stock assessment	Butler et al. 1999	MacCall 2002	Methot and Piner 2002	Wallace 2001	Jagielo et al. 2000
Most recent rebuilding analysis	Butler and Barnes 2000	*MacCall and He 2002*	Methot and Piner 2002	*Wallace 2002*	Jagielo and Hastie 2001
B_0 (estimated unfished biomass)	3,367 mt	*19,849 B eggs in 2002*	31,550 mt	*602-860 s.o. N CA* *1,440-1,596 s.o. OR-WA*	22,882 mt N 20,971 mt S
$B_{CURRENT}$ (current estimated biomass)	238 mt in 1998	*720 B eggs in 2002*	2,524 mt in 2002	*72.4 s.o. N CA* *236.1 s.o. OR-WA* *in 2001*	3,527 mt N 3,220 mt S in 2000
$B_{CURRENT}$ % Unfished Biomass	7% in 1998	*3.6% in 2002*	8% in 2002	*8%-12% N CA* *15%-16% OR-WA* *in 2001*	17% N 15% S in 2000
MSST (minimum stock size threshold = 25% of B_0)	842 mt	*4,962 B eggs*	7,888 mt	*602-860 s.o. N CA* *1,440-1,596 s.o. OR-WA*	5,720 mt N 5,243 mt S
B_{MSY} (rebuilding biomass target = 40% of B_0)	1,350 mt	*7,940 B eggs*	12,620 mt	*241-344 s.o. N CA* *576-638 s.o. OR-WA*	9,153 mt N 8,389 mt S
MFMT (maximum fishing mortality threshold = F_{MSY})	$F_{50\%}$	$F_{50\%}$	$F_{73\%}$	$F_{50\%}$: *F = 0.042 in N CA* *F = 0.034 in OR-WA*	$F_{45\%}$: F = 0.12 N F = 0.14 S
Harvest control rule [5/]	F = 0.0136	*F = 0.0X*	*F = 0.0X*	*F = 0.0X*	F = 0.053 N F = 0.061 S
T_{TARGET} [5/]	2095	2XXX	20XX	2XXX	2009

[1/] Cowcod were assessed in the Conception area. All parameters/targets are for the Conception area, although cowcod retention is prohibited throughout its range.
[2/] Bocaccio were assessed by MacCall (2002) in the Conception and Monterey INPFC areas combined. Biomass estimates are spawning output in billions of eggs. A revised rebuilding analysis is in development but will be available for Council consideration in September 2002. All parameters still considered preliminary.
[3/] Yelloweye rockfish were assessed as two stocks: northern California (N CA; Monterey INPFC area north to the California/Oregon border) and Oregon (OR; waters off Oregon) (Wallace 2001). Biomass estimates are in spawning output units (s.o.) calculated as the weighted age × the net maturity function. A new stock assessment and rebuilding analysis that may supersede these data are in development but will be available for Council consideration in September 2002. All parameters still considered preliminary.
[4/] West coast lingcod were assessed as two stocks north (Columbia and U.S. Vancouver INPFC areas) and south (Eureka, Monterey, and Conception INPFC areas).
[5/] Under Council interim rebuilding strategies except bocaccio, canary rockfish, and yelloweye rockfish.

TABLE 3.2.1-3. Current rebuilding parameter/target estimates specified for overfished west coast groundfish: slope and midwater species.

Rebuilding Parameter/Target	Slope rockfish		Midwater species	
	Darkblotched	POP	Widow	Pacific whiting [1/]
T_0 (year declared overfished)	2000	1999	2001	2002
T_{MIN} (minimum time to achieve B_{MSY} @ F = 0)	2014	2011	2023	2004
Mean generation time	33 years	30 years	16 years	8 years
T_{MAX} (maximum time to achieve B_{MSY})	2047	2041	2039	2012
P_{MAX} (P to achieve B_{MSY} by T_{MAX}) [2/]	70%	70%	60%	*X*%
Most recent stock assessment	Rogers et al. 2000	Ianelli et al. 2000	Williams et al. 2000	Helser et al. 2002
Most recent rebuilding analysis	Methot and Rogers 2001	Punt and Ianelli 2001	Punt and MacCall 2002	*Helser 2002*
B_0 (estimated unfished biomass)	29,044 mt	60,212 units of spawning output	34,900 mt in 2000	5.25 M mt
$B_{CURRENT}$ (current estimated biomass)	4,067 mt in 2002	13,066 units of spawning output in 1998	8,223 mt in 2000	1.26 M mt in 2002
% Unfished Biomass	14% in 2002	21.7% in 1998	23.6% in 2000	20% in 2001; 24% in 2002
MSST (minimum stock size threshold = 25% of B_0)	7,261 mt	15,053 units of spawning output	8,725 mt	1.31 M mt
B_{MSY} (rebuilding biomass target = 40% of B_0)	11,618 mt	24,084 units of spawning output	13,960 mt	2.1 M mt
MFMT (maximum fishing mortality threshold = F_{MSY})	$F_{50\%}$	$F_{50\%}$	$F_{50\%}$	$F_{40\%}$
Harvest control rule [2/]	F = 0.029	F = 0.0*X*	F = 0.0*X*	*F = 0.0X*
T_{TARGET} [2/]	2034	2027	2039	20*XX*

[1/] The Pacific whiting stock was assessed in 2002. Biomass estimates are in millions of mt of age 3+ fish. Highlighted and italicized data from a rebuilding analysis (Helser 2002) that was not endorsed by the SSC or Council. These data considered preliminary and subject to change.
[2/] Under Council interim rebuilding strategies except Pacific whiting.

TABLE 3.2.3-1. Protected salmon species on the West Coast with their protected species designations.

Species and Stock	Scientific Name
Salmon species listed as endangered under the ESA	
Chinook salmon- Sacramento River Winter; Upper Columbia Spring	*Oncorhynchus tshawytscha*
Sockeye salmon- Snake River	*Oncorhynchus nerka*
Steelhead- Southern California; Upper Columbia	*Oncorhynchus mykiss*
Salmon species listed as threatened under the ESA	
Coho salmon- Central California, Southern Oregon, and Northern California Coasts	*Oncorhynchus kisutch*
Chinook salmon- Snake River Fall, Spring, and Summer; Puget Sound; Lower Columbia; Upper Willamette; Central Valley Spring; California Coastal	*Oncorhynchus tshawytscha*
Chum salmon- Hood Canal Summer; Columbia River	*Oncorhynchus keta*
Sockeye salmon- Ozette Lake	*Oncorhynchus nerka*
Steelhead- South-Central California, Central California Coast, Snake River Basin, Lower Columbia, California Central Valley, Upper Willamette, Middle Columbia, Northern California	*Oncorhynchus mykiss*

TABLE 3.2.3-2. Protected sea turtles on the West Coast with their protected species designations.

Species	Scientific Name
Sea turtles listed as endangered under the ESA	
Green turtle	*Chelonia mydas*
Leatherback turtle	*Dermochelys coriacea*
Olive ridely turtle	*Lepidochelys olivacea*

TABLE 3.2.3-3. Protected marine mammals on the West Coast with their protected species designations.

Species and Stock	Scientific Name
Marine mammals listed as threatened under the ESA	
Steller sea lion- eastern stock	*Eumetopias jubatus*
Guadalupe fur seal	*Arctocephalus townsendi*
Southern sea otter- California stock	*Enhydra lutris*
Marine mammals listed as depleted under the MMPA	
Sperm whale- West Coast stock	*Physeter macrocephalus*
Humpback whale- West Coast and Mexico stock	*Megaptera novaeangliae*
Blue whale- eastern north Pacific stock	*Balaenoptera musculus*
Fin whale- West Coast stock	*Balaenoptera physalus*

TABLE 3.2.3-4. Protected seabirds on the West Coast with their protected species designations.

Species	Scientific Name
Seabirds listed as endangered under the ESA	
Short-tail albatross	*Phoebastria (=Diomedea) albatrus*
California brown pelican	*Pelecanus occidentalis*
California least tern	*Sterna antillarum browni*
Seabirds listed as threatened under the ESA	
Marbled murrelet	*Brachyramphs marmoratus*

TABLE 3.3.1.1-1a. Overview of domestic shoreside landings and at-sea deliveries (mt) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) north of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

TABLE 3.3.1.1-b. Overview of domestic shoreside landings and at-sea deliveries (mt) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) south of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

TABLE 3.3.1.1-1c. Overview of domestic shoreside landings and at-sea deliveries (mt) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) coastwide, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)) (Page 1 of 2).

TABLE 3.3.1.1-2a. Overview of domestic shoreside landings and at-sea deliveries (exvessel revenue, thousands of inflation adjusted dollars) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) north of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

TABLE 3.3.1.1-2b. Overview of domestic shoreside landings and at-sea deliveries (exvessel revenue, thousands of inflation adjusted dollars) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) south of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

TABLE 3.3.1.1-2c. Overview of domestic shoreside landings and at-sea deliveries (exvessel revenue, thousands of inflation adjusted dollars) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles), coastwide 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)) (Page of 2)

TABLE 3.3.1.1-3a. Overview of number of vessels making domestic shoreside landings and at-sea deliveries from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) north of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

TABLE 3.3.1.1-3b. Overview of number of vessels making domestic shoreside landings and at-sea deliveries from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) south of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

TABLE 3.3.1.1-3c. Overview of number of vessels making domestic shoreside landings and at-sea deliveries from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) coastwide, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)) (Page 1 of 2).

TABLE 3.3.1.1-4a. Overview of number of buyers receiving domestic shoreside landings and at-sea deliveries from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) north of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

TABLE 3.3.1.1-4b. Overview of number of buyers receiving domestic shoreside landings and at-sea deliveries from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) south of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

TABLE 3.3.1.1-4c. Overview of number of buyers receiving domestic shoreside landings and at-sea deliveries from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles), 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)) (Page of 2).

Table 3.3.1.1-5a.--Directed open-access tonnage, revenue, and numbers of vessels and trips where the specified groundfish species were present, all gears and areas, 1990-2001.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Sablefish												
Mts	525	1,183	1,521	1,000	253	625	608	460	154	269	433	393
$1,000s	798	2,513	2,898	1,651	552	1,825	1,789	1,674	395	758	1,450	1,237
# of ves	194	234	401	217	166	241	301	333	190	172	188	220
# of trips	1,359	1,684	3,653	1,450	1,188	4,694	5,496	3,966	1,336	2,239	2,679	2,456
Lingcod												
Mts	616	401	374	388	368	278	244	279	87	71	36	55
$1,000s	616	440	417	446	468	384	373	445	190	198	113	179
# of ves	1,196	1,052	1,080	901	844	774	760	788	557	553	376	439
# of trips	8,161	7,065	8,271	7,505	7,586	6,572	6,835	7,350	3,439	4,157	1,845	3,310
Cabezon												
Mts	9	5	14	18	39	89	112	123	168	134	128	91
$1,000s	7	10	52	122	272	652	814	796	1,150	1,028	1,179	822
# of ves	147	187	252	232	263	338	434	450	408	431	465	377
# of trips	594	678	1,837	1,795	2,034	3,614	5,285	5,283	5,403	5,731	6,057	3,982
K. greenling												
Mts	1	2	2	0	1	1	2	7	5	11	21	10
$1,000s	3	3	2	2	7	4	14	43	38	95	200	104
# of ves	17	34	82	71	82	84	130	162	187	215	267	205
# of trips	39	101	224	266	493	256	480	1,182	1,383	1,844	2,860	1,458
Other roundfish												
Mts	3	2	3	4	1	1	0	1	0	0	0	0
$1,000s	2	2	3	3	0	1	0	1	0	0	0	0
# of ves	36	33	58	44	22	13	13	20	11	9	6	17
# of trips	72	66	167	184	62	48	35	39	34	34	12	55
Dover sole												
Mts	45	12	77	0	0	2	1	0	7	0	1	1
$1,000s	25	8	43	0	1	1	0	0	6	0	1	1
# of ves	20	23	48	22	14	53	52	44	28	28	27	33
# of trips	144	84	153	95	72	344	186	119	85	88	120	84
Other flatfish												
Mts	283	65	80	31	16	16	8	8	5	6	7	8
$1,000s	244	123	98	73	41	33	24	25	17	30	38	45
# of ves	249	252	256	171	167	133	109	117	70	87	88	83
# of trips	870	887	858	588	575	442	333	315	223	312	377	455
Thornyheads												
Mts	53	31	74	23	47	118	37	14	2	17	41	21
$1,000s	51	37	88	35	118	290	79	37	5	86	250	80
# of ves	55	91	162	76	39	100	110	47	17	24	34	24
# of trips	240	434	1,039	412	475	1,556	1,206	230	44	390	478	250
Widow												
Mts	133	144	120	76	115	87	36	66	158	41	14	13
$1,000s	106	111	92	62	114	88	41	73	167	65	.33	24
# of ves	79	112	118	112	140	90	100	127	150	105	62	34
# of trips	312	374	355	350	420	289	262	426	719	447	199	85

Table 3.3.1.1-5b.--Directed open-access tonnage, revenue, and numbers of vessels and trips where the specifie groundfish species were present, all gears and areas, 1990-2001 (cont.).

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Yellowtail												
Mts	69	121	237	149	218	134	94	189	284	62	6	3
$1,000s	66	107	213	131	225	158	114	237	343	84	15	6
# of ves	210	202	274	264	348	285	270	371	357	282	217	146
# of trips	753	767	1,262	1,205	1,724	1,589	1,362	2,147	2,160	1,356	599	424
Chilipepper												
Mts	3	283	777	466	458	382	264	397	265	101	47	27
$1,000s	3	243	642	454	476	426	297	438	288	151	103	55
# of ves	11	135	141	112	154	109	92	102	77	80	63	36
# of trips	19	392	574	514	705	591	431	485	510	425	252	174
Canary												
Mts	17	10	20	9	40	93	127	205	155	46	2	2
$1,000s	28	15	28	15	76	170	237	396	280	99	5	5
# of ves	76	92	101	72	132	277	259	342	280	181	130	120
# of trips	414	434	574	268	761	1,905	2,044	2,877	1,807	1,436	495	562
Bocaccio												
Mts	0	267	852	612	389	389	159	62	60	22	4	6
$1,000s	0	234	739	549	390	421	179	82	76	35	10	13
# of ves	2	243	372	302	261	192	165	139	125	119	75	66
# of trips	2	918	1,903	1,516	1,298	997	689	665	717	466	225	229
Other live rock												
Mts	36	38	44	64	146	165	199	175	193	199	160	185
$1,000s	304	281	320	491	884	1,121	1,304	1,125	1,274	1,558	1,639	1,800
# of ves	51	127	200	214	374	369	445	491	417	489	527	456
# of trips	317	1,146	1,598	2,156	4,849	5,117	6,899	6,589	6,558	7,446	7,435	7,151
Other dead rock												
Mts	4,567	3,573	3,427	2,834	1,701	1,291	1,090	937	841	340	171	235
$1,000s	5,218	4,647	4,661	4,073	2,683	2,229	1,945	1,693	1,414	703	374	456
# of ves	1,909	1,720	1,716	1,404	1,172	1,062	987	980	824	745	621	572
# of trips	16,473	16,141	18,144	15,409	12,844	11,127	9,970	9,948	7,801	6,996	4,881	5,404
Dog fish												
Mts	45	140	72	239	163	1	29	82	2	9	22	0
$1,000s	14	42	19	91	60	1	10	30	1	3	11	0
# of ves	27	30	17	15	11	3	8	4	5	16	16	6
# of trips	47	81	27	39	24	4	40	11	7	50	33	6
Other groundfish												
Mts	28	27	25	24	31	62	278	119	42	56	80	46
$1,000s	57	49	45	43	39	48	114	73	39	45	49	39
# of ves	131	143	145	118	96	121	116	106	82	74	73	63
# of trips	577	523	521	449	395	495	921	497	347	355	346	308

Table 3.3.1.1-5c.--Directed open-access tonnage, revenue, and numbers of vessels and trips where lingcod was present, by gear, for all areas, 1990-2000.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Longline												
Mts	34	47	42	36	36	71	66	83	22	14	6	10
$1,000s	39	46	46	45	48	104	101	132	42	41	22	34
# of ves	51	143	184	107	152	252	332	305	164	144	93	120
# of trips	142	695	780	612	898	2,010	2,632	2,395	978	996	355	605
Other line												
Mts	322	183	190	175	203	131	147	155	49	52	26	42
$1,000s	351	235	238	229	286	191	222	261	108	140	84	137
# of ves	986	884	892	781	733	600	533	591	438	456	294	356
# of trips	6,689	5,566	6,663	6,276	6,017	3,878	3,597	4,457	2,194	2,931	1,370	2,556
Troll												
Mts	75	26	29	24	33	18	12	13	1	2	0	1
$1,000s	69	34	36	31	40	24	22	18	2	4	1	3
# of ves	154	59	71	90	73	46	56	43	26	27	17	21
# of trips	318	107	151	225	188	95	92	76	35	30	22	26
Pot												
Mts	1	0	0	0	1	3	7	5	11	3	1	1
$1,000s	1	0	0	0	3	6	14	10	30	11	3	5
# of ves	12	4	10	12	17	52	45	55	30	32	22	36
# of trips	32	6	13	16	108	279	380	333	154	153	87	106
Net												
Mts	159	133	103	147	92	54	12	22	5	1	3	1
$1,000s	132	112	85	133	89	58	13	24	8	2	3	1
# of ves	77	68	68	42	42	36	27	18	14	12	5	7
# of trips	599	458	338	298	307	233	119	88	70	36	6	12
Misc.												
Mts	26	12	11	5	2	2	1	0	0	0	0	0
$1,000s	25	12	11	6	2	2	1	0	0	1	0	0
# of ves	207	136	164	68	43	37	13	1	6	11	2	2
# of trips	381	233	326	78	68	77	15	1	8	11	5	5

Table 3.3.1.1-5d.--Directed open-access tonnage, revenue, and numbers of vessels and trips where widow rockfish was present, by gear, for all areas, 1990-200.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Longline												
Mts	1	5	21	9	7	4	7	7	21	4	0	5
$1,000s	1	5	16	7	7	4	8	10	22	7	1	10
# of ves	4	21	30	18	29	25	38	37	34	20	6	9
# of trips	4	25	63	41	43	41	83	76	109	68	8	18
Other line												
Mts	13	31	52	28	46	12	11	20	51	24	8	1
$1,000s	11	23	41	22	47	12	14	22	54	37	22	2
# of ves	48	65	80	84	89	51	56	85	118	84	51	24
# of trips	95	169	216	217	234	111	123	259	460	327	171	51
Troll												
Mts	1			0	9	11	2	13	32	4	0	0
$1,000s	1			0	11	12	3	14	32	9	1	0
# of ves	2			2	17	10	9	11	18	12	3	2
# of trips	3			2	35	24	14	39	63	22	5	2
Pot												
Mts				0	0		0	0	0	0	0	
$1,000s				0	0		0	0	0	1	0	
# of ves				1	1		1	1	1	1	2	
# of trips				1	1		1	1	1	1	2	
Net												
Mts	112	102	44	37	52	61	16	26	54	9	5	7
$1,000s	89	80	33	32	49	61	17	27	59	11	9	13
# of ves	25	29	22	17	17	19	10	9	9	6	5	5
# of trips	195	169	68	84	94	113	41	51	82	29	11	14
Misc.												
Mts	6	5	3	2	1				0		0	
$1,000s	4	3	3	2	1				0		0	
# of ves	12	8	8	4	6				4		1	
# of trips	15	11	8	5	13				4		2	

Table 3.3.1.1-5e.--Directed open-access tonnage, revenue, and numbers of vessels and trips where canary rockfish was present, by gear, for all areas, 1990-200.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Longline												
Mts	2	2	10	4	15	28	38	70	45	13	0	0
$1,000s	4	3	14	5	29	52	73	143	79	26	0	1
# of ves	10	16	29	13	30	74	93	123	75	25	10	18
# of trips	19	39	87	36	143	447	659	1,026	580	127	19	36
Other line												
Mts	13	8	10	5	23	62	88	133	106	32	2	1
$1,000s	21	12	14	9	45	113	163	249	194	70	5	4
# of ves	67	82	85	60	114	227	203	269	226	162	111	100
# of trips	338	381	474	224	591	1,391	1,352	1,811	1,175	1,291	457	510
Troll												
Mts	1			0	0	1	0	2	3	0	0	0
$1,000s	2			0	0	1	0	3	5	0	0	1
# of ves	3			3	8	17	16	22	22	10	13	8
# of trips	6			3	9	36	23	27	36	10	17	14
Pot												
Mts			0		0	1	0	0	0	0		
$1,000s			0		0	1	0	0	0	0		
# of ves			2		4	5	4	6	1	1		
# of trips			2		4	5	5	7	2	1		
Net												
Mts					0	1	0	0	1	1		0
$1,000s					0	2	0	1	1	2		0
# of ves					3	10	1	3	5	2		2
# of trips					4	13	1	5	10	5		2
Misc.												
Mts	1	0	0	0	1	0	0	0	0	0	0	
$1,000s	2	0	0	0	1	0	0	0	0	0	0	
# of ves	26	13	9	5	8	8	3	1	4	2	2	
# of trips	51	14	11	5	10	13	4	1	4	2	2	

Table 3.3.1.1-5f.--Directed open-access tonnage, revenue, and numbers of vessels and trips where bocaccio rockfish was present, by gear, for all areas, 1990-200.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Longline												
Mts	0	19	42	21	25	27	34	11	9	3	0	0
$1,000s	0	17	40	21	22	29	36	16	12	5	1	1
# of ves	1	55	67	31	40	55	54	45	36	24	11	9
# of trips	1	141	176	68	118	177	205	167	177	61	17	16
Other line												
Mts	0	45	253	215	119	77	42	21	19	10	3	5
$1,000s	0	47	227	187	119	88	52	29	25	17	8	11
# of ves	1	170	287	255	201	136	114	92	89	101	61	50
# of trips	1	448	1,191	1,027	723	428	316	358	359	317	191	194
Troll												
Mts		1		1	10	7	5	4	2	2	0	0
$1,000s		1		1	11	8	5	5	3	3	1	0
# of ves		1		5	23	13	17	14	14	9	7	5
# of trips		1		9	51	32	26	27	34	21	8	8
Pot												
Mts			2	1	0	1	0	0	0			
$1,000s			2	2	0	1	0	0	0			
# of ves			4	5	4	1	4	1	1			
# of trips			4	5	4	1	4	1	1			
Net												
Mts		193	517	363	228	278	78	26	29	7	1	1
$1,000s		161	436	327	230	296	86	33	36	10	1	1
# of ves		47	60	38	39	30	16	14	12	9	6	6
# of trips		297	428	374	367	354	135	112	145	66	9	11
Misc.												
Mts		9	38	11	7	0	1		0	0		
$1,000s		8	35	11	7	0	1		0	0		
# of ves		24	79	27	19	5	3		1	1		
# of trips		31	104	33	35	5	3		1	1		

Table 3.3.1.1-6. Annual landings (mt) of "other" rockfish species for hook-and-line and pot gearby price interval and PacFIN disposition code ("live" or "other"), 1994-2001. (Page 1of 2)

	Upper end of interval	1994 Live	Other	1995 Live	Other	1996 Live	Other	1997 Live	Other	1998 Live	Other	1999 Live	Other	2000 Live	Other	2001 Live	Other
		Metric tons of "other" rockfish landings															
HKL																	
	$ 1.00	9.8	1,861.7	8.9	1,535.7	8.7	1,344.3	11.7	1,105.3	15.5	964.2	8.8	521.5	4.0	234.7	2.7	294.0
	$ 1.25	2.4	146.9	0.5	102.4	1.0	124.6	2.5	76.3	3.5	96.4	1.7	63.4	3.7	31.0	19.2	23.5
	$ 1.50	14.3	111.8	11.6	142.0	9.2	143.9	9.5	183.9	13.0	106.3	3.5	65.2	12.6	26.8	15.8	23.4
	$ 1.75	5.7	45.4	0.3	46.9	1.1	53.1	1.8	56.5	2.5	28.4	3.1	41.0	1.1	9.8	12.1	8.0
	$ 2.00	23.5	15.2	19.9	20.3	25.4	35.2	26.7	40.0	20.6	37.3	11.2	21.3	5.1	18.8	5.4	16.2
	$ 2.25	6.9	2.0	3.9	1.1	10.9	2.1	8.7	5.3	23.0	14.8	2.8	4.8	1.5	8.5	1.5	9.7
	$ 2.50	21.1	3.5	36.7	4.4	33.4	2.3	29.8	2.1	24.0	3.4	21.1	7.2	6.9	4.0	7.0	3.9
	$ 2.75	5.0	0.3	3.5	1.0	15.7	0.5	7.8	0.2	8.2	0.2	5.1	1.9	1.0	0.7	4.2	1.3
	$ 3.00	14.3	4.2	16.7	5.9	34.2	3.9	16.6	1.3	8.9	2.7	12.4	3.8	5.1	4.7	4.8	5.0
	$ 3.25	0.2	0.0	0.6	0.0	1.8	0.1	7.0	0.5	11.4	1.0	21.2	1.1	0.7	0.2	0.7	0.2
	$ 3.50	2.9	0.9	6.0	0.3	9.3	0.1	10.1	0.3	7.0	0.4	18.8	2.6	2.9	1.6	4.7	3.1
	$ 3.75	1.0	0.2	0.0	0.1	0.7		2.6	0.1	1.9	0.0	4.4	0.3	3.2	0.5	0.7	3.7
	$ 4.00	5.5	0.5	0.2	0.3	2.1	0.1	3.7	0.4	9.1	0.4	29.1	1.5	16.0	4.1	13.8	1.0
	$ 4.25	2.4	1.6	0.2	0.0	3.2	0.0	5.6	0.3	7.2	0.6	2.3	0.0	5.9	0.2	19.3	0.3
	$ 4.50	12.0	0.8	15.6	0.3	3.8	0.1	5.6	0.4	7.6	0.4	13.4	2.2	6.9	0.9	9.7	0.1
	$ 4.75	3.1	1.1	0.1	0.0	0.7	0.0	0.4	0.1	1.4	0.2	1.8	0.1	4.8	0.0	2.9	0.1
	$ 5.00	6.9	0.3	14.4	0.8	19.0	0.4	5.0	0.2	14.1	0.5	16.3	1.2	20.9	0.9	11.2	0.9
	> $ 5.00	2.4	0.2	12.8	0.2	10.5		16.5		14.7	0.1	18.4	0.4	63.5	4.3	71.9	2.5
Gear total																	
	Mts	139.3	2,196.6	152.1	1,861.7	190.8	1,710.7	171.5	1,473.2	193.6	1,257.4	195.4	739.3	165.9	351.7	207.7	396.8
	$1,000s	822.6	3,469.0	1,023.8	3,125.5	1,241.3	2,974.1	1,092.7	2,669.6	1,253.0	2,223.0	1,515.8	1,521.9	1,626.2	880.4	1,901.4	918.6
	Avg. price	$2.68	$0.72	$3.05	$0.76	$2.95	$0.79	$2.89	$0.82	$2.94	$0.80	$3.52	$0.93	$4.45	$ 1.14	$ 4.15	$ 1.05

Table 3.3.1.1-6. Annual landings (mt) of "other" rockfish species for hook-and-line and pot gearby price interval and PacFIN disposition code ("live" or "other"), 1994-2001. (Page 2of 2)

	Upper end of interval	1994 Live	1994 Other	1995 Live	1995 Other	1996 Live	1996 Other	1997 Live	1997 Other	1998 Live	1998 Other	1999 Live	1999 Other	2000 Live	2000 Other	2001 Live	2001 Other
		Metric tons of "other" rockfish landings															
POT																	
	$ 1.00	1.3	10.4	0.9	10.3	1.2	9.5	1.3	11.7	0.4	8.4	0.1	5.9	0.3	6.9	0.1	4.0
	$ 1.25	0.2	1.1	0.7	1.3	0.1	0.7	0.2	0.5	0.4	1.7	0.0	0.2	0.0	0.1	0.1	0.3
	$ 1.50	0.9	0.4	1.2	0.5	0.1	0.4	0.6	0.5	0.5	0.5	0.1	0.2	0.0	0.2	0.0	0.0
	$ 1.75	0.0	0.0		0.3	0.2	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	$ 2.00	4.6	0.8	1.7	0.7	1.2	0.2	0.8	0.2	2.7	1.0	0.2	0.0	0.3	0.1	0.2	0.8
	$ 2.25	0.2		0.1		0.7	0.0	0.1	0.0	1.6	0.1	0.1		0.1			0.0
	$ 2.50	0.5	0.0	4.2	1.0	3.3	1.0	3.0	0.5	2.0	0.1	0.4	0.2	0.2	0.3	0.1	0.0
	$ 2.75	0.0	0.0	0.5		0.8	0.0	0.9		1.5	0.2	0.2		0.0	0.0	0.2	0.0
	$ 3.00	0.3	0.0	0.2	0.1	1.9	0.0	1.6	0.2	1.8	0.2	0.5	0.2	0.4	0.1	0.2	0.0
	$ 3.25	0.1	0.0	0.0		0.0		0.0		0.4		0.9	0.0	0.0			0.0
	$ 3.50	0.2	0.0	0.3	0.4	0.1	0.0	0.6		0.9	0.0	2.7	0.1	0.0		0.2	0.1
	$ 3.75	0.0		0.3		0.1		0.1		0.0		1.1		0.9	0.0	0.1	0.0
	$ 4.00	0.2	0.0	0.0	0.0	0.1	0.0	0.5	0.0	5.3	0.2	0.9	0.0	0.9	0.0	1.0	0.0
	$ 4.25	0.2	0.0			0.1		0.1		0.0		0.2		1.6	0.0	1.5	0.0
	$ 4.50	0.4	0.0	1.7	0.2	0.9		0.5		1.0		6.0	0.0	0.4	0.0	0.4	0.0
	$ 4.75	0.1				0.0				0.2		0.2		1.4		1.4	0.0
	$ 5.00	0.0		1.0	0.3	0.4	0.0	0.5	0.0	2.1	0.1	0.9	0.0	1.4	0.0	0.3	0.0
	> $ 5.00	0.0		1.4		1.8	0.0	1.4		3.0		3.2	0.0	5.7	0.3	3.1	0.2
Gear total																	
	Mts	9.4	12.8	14.2	15.2	12.9	12.0	12.1	14.0	23.8	12.5	17.8	7.0	13.6	8.0	8.9	5.6
	$1,000s	44.5	21.5	93.3	37.9	86.4	23.0	78.7	24.1	183.0	27.6	166.2	14.3	146.9	16.7	99.7	14.1
	Avg. price	$ 2.15	$0.76	$2.99	$ 1.13	$3.04	$0.87	$2.95	$0.78	$3.48	$ 1.00	$4.23	$0.93	$4.90	$0.95	$5.06	$ 1.13

TABLE 3.3.1.1-7. Summary of pink shrimp Log CPUE for south of Cape Mendocino

	Number of boats	Pounds	Hours	Avg.CPUE
Depth <=20 Fathoms				
1996	0	0	0.0	0.0
1997	0	0	0.0	0.0
1998	0	0	0.0	0.0
1999	0	0	0.0	0.0
2000	0	0	0.0	0.0
Depth between 20 - 150 Fathoms				
1996	10	527,410	1317.8	434.4
1997	15	408,769	827.1	464.6
1998	13	204,693	466.3	322.9
1999	6	89,740	262.9	223.9
2000	2	5,325	44.9	234.7
Depth <=50 Fathoms				
1996	0	0	0.0	0.0
1997	2	3,235	13.0	194.1
1998	0	0	0.0	0.0
1999	0	0	0.0	0.0
2000	0	0	0.0	0.0
Depth between 50 - 150 Fathoms				
1996	10	527,410	1317.8	434.4
1997	15	405,534	814.1	465.2
1998	13	204,693	466.3	322.9
1999	6	89,740	262.9	223.9
2000	2	5,325	44.9	234.7
Depth > 150 Fathoms				
1996	1	0	1.50	0.00
1997	2	3,900	7.22	571.85
1998	1	1,715	8.78	202.33
1999	0	0	0.00	0.00
2000	0	0	0.00	0.00

TABLE 3.3.1.1-8. Summary of Spot Prawn Trawl Log CPUE

	Number of boats	Pounds	Hours	Avg. CPUE
Depth <=20 Fathoms				
1996	0	0	0.0	0.0
1997	0	0	0.0	0.0
1998	0	0	0.0	0.0
1999	2	160	7.1	19.2
2000	0	0	0.0	0.0
Depth <=50 Fathoms				
1996	1	0	1.0	0.0
1997	1	0	5.5	0.0
1998	0	0	0.0	0.0
1999	4	225	12.1	11.1
2000	2	15	1.8	8.6
Depth between 20 – 150 Fathoms				
1996	18	213,468	4953.0	44.1
1997	29	278,113	6021.2	44.1
1998	28	275,377	6611.9	35.8
1999	26	221,878	7542.5	37.9
2000	18	100,447	3355.6	31.4
Depth between 50 – 150 Fathoms				
1996	18	213,468	4952.0	49.2
1997	29	278,113	6015.7	44.1
1998	28	275,377	6611.9	35.8
1999	26	221,813	7537.5	37.9
2000	18	100,432	3353.8	31.4
Depth > 150 Fathoms				
1996	14	12,689	234.3	38.4
1997	26	102,278	1793.2	48.0
1998	21	181,914	3797.3	46.9
1999	21	87,947	2582.5	32.7
2000	10	17,904	556.8	33.5

Notes: No bycatch data is available from the logbooks, because bycatch is generally not recorded on the logs. See the spot prawn bycatch report by Paul Reilly (sent under a separate cover) for information on bycatch in spot prawn trawls.
The use of excluders is not recorded on the logs. All tows in the CDFG bycatch study were with nets that had some type of excluder, either a fisheye or a double-walled codend. Beginning on July 14, 2000, all spot prawn trawl were required to have excluders in California.

TABLE 3.3.1.1-9. Spot Prawn Trap Log CPUE
(effort is totaled in Trap-Days – number of traps fished*number of days soaked)

	Number of boats	Pounds	Trap-Days	Avg.CPUE
Depth between 50 and 150 Fathoms				
1996	22	83,845	309,762	0.265
1997	26	122,184	377,167	0.397
1998	29	180,730	647,690	0.359
1999	33	165,500	941,967	0.237
2000	32	134,251	791,121	0.525
Depth > 150 Fathoms				
1996	6	5,560	27,554	8.038
1997	4	5,793	32,627	0.267
1998	13	13,331	76,256	0.343
1999	8	23,104	122,231	0.285
2000	9	10,898	71,454	0.207

NOTES:

1. No bycatch data is available from either logbooks or landing receipts. The law provides that any species other than shrimp and prawn taken incidentally with prawn or shrimp traps must be immediately released.
2. Prawn and shrimp traps are prohibited in waters less than 50 fm south of Point Conception. During the time period covered in this analysis (1996-2000), only one boat recorded sets in waters less than 50 fm. Therefore, the depth strata were adjusted: four strata were deleted (≤ 20 fm, > 20 - ≤ 150 fm, ≤ 10 fm, and > 10 - ≤ 150 fm) and one strata was added (> 50 - ≤ 150 fm).
3. South of Point Arguello the take of spot prawns in traps is prohibited from November 1 through January 31, and north of Point Arguello the take of spot prawns in traps is prohibited from May 1 through July 31. See the spot prawn bycatch report by Paul Reilly (sent under a separate cover) for information on bycatch in spot prawn traps; this report covers 262 observed trap strings.

TABLE 3.3.1.1-10. Summary of Ridgeback Prawn Log CPUE

	Number of Boats	Pounds	Hours	Avg.CPUE
Depth <=20 Fathoms				
1996	4	886	16.5	55.7
1997	0	0	0.0	0.0
1998	0	0	0.0	0.0
1999	1	2,050	10.7	194.5
2000	1	1,700	5.0	340.0
Depth between 20 - 150 Fathoms				
1996	224	405,092	4,666.6	99.8
1997	19	281,755	3,867.5	73.0
1998	19	333,741	3,274.3	115.8
1999	26	1,247,104	5,837.7	225.1
2000	34	1,296,475	8,057.2	168.1
Depth <=50 Fathoms				
1996	20	139,127	1,603.7	107.4
1997	9	8,112	339.4	25.2
1998	7	1,333	43.6	47.5
1999	16	52,610	279.3	205.2
2000	28	212,888	1,724.0	123.8
Depth between 50 - 150 Fathoms				
1996	24	266,851	3,079.4	99.3
1997	18	273,643	3,528.1	77.1
1998	19	332,408	3,230.7	117.3
1999	26	1,196,544	5,569.1	226.3
2000	34	1,085,287	6,338.2	176.3
Depth > 150 Fathoms				
1996	1	0	2.0	0.0
1997	2	41	6.7	6.3
1998	3	10	19.3	0.3
1999	1	260	2.0	130.0
2000	2	553	19.4	158.3

Information on bycatch and whether or not an excluder was used is not recorded in logbooks.

Table 3.3.1.1-11. Annual coastwide and area participation in the Highly Migratory Species gillnet fishery by open-access vessels, with associated groundfish on the same landing day, 1990-2001.

Area/Landings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
CA: N of C. Mendocino											
Metric tons											
HMS gillnet		1	11	28	1	5	5	14	4	12	1
Groundfish		0	0	0	0	0	0	0	0	0	0
% of HMS gillnet		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels											
HMS gillnet		1	13	15	2	9	8	13	6	5	2
with GF		0	0	0	0	0	0	0	0	0	0
% of HMS gillnet		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of trips											
HMS gillnet		3	17	27	3	16	13	25	11	14	4
with GF		0	0	0	0	0	0	0	0	0	0
% of HMS gillnet		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CA: C. Mendocino - Pt Conception											
Metric tons											
HMS gillnet	1	2	14	40	58	93	89	67	62	25	73
Groundfish	0	0	0	0	0	0	0	0	0	0	0
% of HMS gillnet	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels											
HMS gillnet	6	12	31	43	52	54	54	45	34	26	20
with GF	0	0	0	0	1	1	3	2	0	0	3
% of HMS gillnet	0%	0%	0%	0%	2%	2%	6%	4%	0%	0%	15%
# of trips											
HMS gillnet	6	15	51	82	148	160	204	149	101	68	52
with GF	0	0	0	0	1	1	3	2	0	0	4
% of HMS gillnet	0%	0%	0%	0%	1%	1%	1%	1%	0%	0%	8%
CA: S of Pt Conception											
Metric tons											
HMS gillnet	0	0	3	11	79	24	55	110	73	75	75
Groundfish	0	0	0	1	0	1	4	10	12	6	3
% of HMS gillnet	0%	0%	8%	13%	0%	4%	6%	9%	16%	8%	4%
# of vessels											
HMS gillnet	3	3	24	56	71	75	74	101	88	78	64
with GF	0	0	4	6	8	17	24	32	30	38	16
% of HMS gillnet	0%	0%	17%	11%	11%	23%	32%	32%	34%	49%	25%
# of trips											
HMS gillnet	3	4	37	115	219	251	412	769	499	548	223
with GF	0	0	7	6	13	38	110	228	129	116	47
% of HMS gillnet	0%	0%	19%	5%	6%	15%	27%	30%	26%	21%	21%
Coastwide											
Metric tons											
HMS gillnet	1	3	27	79	138	122	150	192	141	113	149
Groundfish	0	0	0	1	0	1	4	10	12	6	3
% of HMS gillnet	0%	0%	1%	2%	0%	1%	3%	5%	8%	5%	2%
# of vessels											
HMS gillnet	9	14	53	84	95	104	103	110	105	86	71
with GF	0	0	4	6	9	18	27	34	31	38	19
% of HMS gillnet	0%	0%	8%	7%	9%	17%	26%	31%	30%	44%	27%
# of trips											
HMS gillnet	9	22	105	224	371	430	631	953	615	630	279
with GF	0	0	7	6	14	39	113	230	130	116	51
% of HMS gillnet	0%	0%	7%	3%	4%	9%	18%	24%	21%	18%	18%

Table 3.3.1.1-12. Annual coastwide and area participation in the Highly Migratory Species seine fishery by open-access vessels, with associated groundfish on the same landing day, 1990-2001.

Area/Landings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CA: C. Mendocino - Pt Conception												
Metric tons												
HMS seine			0					0		98		110
Groundfish			0					0		0		0
% of HMS seine			0%					0%		0%		0%
# of vessels												
HMS seine			1					1		3		4
with GF			0					0		0		0
% of HMS seine			0%					0%		0%		0%
# of trips												
HMS seine			1					1		10		13
with GF			0					0		0		0
% of HMS seine			0%					0%		0%		0%
CA: S of Pt Concpetion												
Metric tons												
HMS seine	9,977	5,938	3,804	3,145	5,713	9,014	12,448	12,742	11,085	5,175	2,167	776
Groundfish	0	0	0	0	0	0	0	0	0	0	0	0
% of HMS seine	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
HMS seine	30	17	27	26	25	21	23	33	35	12	18	13
with GF	0	0	1	1	0	0	0	0	0	0	0	0
% of HMS seine	0%	0%	4%	4%	0%	0%	0%	0%	0%	0%	0%	0%
# of trips												
HMS seine	151	70	119	95	129	150	192	148	127	38	52	40
with GF	0	0	1	1	0	0	0	0	0	0	0	0
% of HMS seine	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Coastwide												
Metric tons												
HMS seine	9,977	5,938	3,804	3,145	5,713	9,014	12,448	12,742	11,085	5,273	2,167	885
Groundfish	0	0	0	0	0	0	0	0	0	0	0	0
% of HMS seine	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
HMS seine	30	17	28	26	26	21	23	35	35	14	18	15
with GF	0	0	1	1	0	0	0	0	0	0	0	0
% of HMS seine	0%	0%	4%	4%	0%	0%	0%	0%	0%	0%	0%	0%
# of trips												
HMS seine	151	70	120	95	130	150	192	150	127	48	52	53
with GF	0	0	1	1	0	0	0	0	0	0	0	0
% of HMS seine	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%

TABLE 3.3.1-1. Estimates and indicators of mortality (mt) of overfished West Coast groundfish species by fishery in 2001 (Page 1 of 2) (TO BE COMPLETED).

Fishery	Bocaccio	Canary	Cowcod	Dark-blotched	Lingcod	POP	Whiting	Widow	Yelloweye	Total Catch of Target Spp	Rev or Effort
North of 40°10' North Latitude											
Limited Entry Groundfish											
Trawl											
Fixed Gear											
Open Access											
Groundfish directed											
Pacific Halibut	0.00		0.00								
Salmon troll	0.00	0.79	0.00	NR	NR	NR	NR	0.11	0.10		
Pink shrimp											
Other Non-groundfish											
Dungeness crab											
CPS- wetfish											
CPS- squid											
HMS											
Recreational											
Salmon (WA only)											
Tribal											
Midwater Trawl	0.00	0.62	0.00	0.05	TR	0.00	NR	5.24	0.00		
Bottom Trawl	0.00	0.00	0.00	0.00	0.35	0.00	NR	0.00	0.00		
Troll	0.00	0.28	0.00	0.00	0.35	0.00	NR	0.01	0.02		

T... 3.3.1-1. Estimates and indicators of mortality (mt) of overfished Coast groundfish species by fishery in 2001 (Page 2 of 2) (TO BE COMPLETED).

Fishery	Bocaccio	Canary	Cowcod	Dark-blotched	Lingcod	POP	Whiting	Widow	Yelloweye	Total Catch of Target Spp	Rev or Effort
South of 40°10' North Latitude											
Limited Entry											
Trawl											
Fixed Gear											
Open Access											
Groundfish Directed	6.00	2.00	?	?	55.00	?	?	13.00	?		
CA Halibut											
CA Gillnet	estimates coming in from Bob Leos for 2000?										
CA Sheepshead											
Spot Prawn (trawl)[1]	4.58	TR	1.07	0.68	14.86	NR	214.68	2.27	0.03		
Spot Prawn (trap)[1/]	0.26	NR	0.17	TR	11.30	NR	NR	TR	TR		
Ridgeback prawn											
Sea Cucumber	0.00	0.00	0.00	0.00	NR	NR	NR	NR	NR		
Pink shrimp											
Salmon troll	0.01	0.05	NR	NR	0.25	NR	NR	0.01	0.01		
Other Non-groundfish											
Dungeness crab											
CPS- wetfish											
CPS- squid[2]	TR(?)	NR	NR	NR	NR	NR	NR	NR	NR		
HMS											
Recreational - 2001	109.00	33.40	NR	NR	141.20	NR	NR	NR	4.60		
to date for 2002											

TR- Trace amount (<0.01 mt)
NR- Not reported in available data sources.
1/ Reilly and Geibel, 2002. Values for California only. Fishery will be prohibited in Oregon and Washington.
2/ Bycatch amounts by species unavailable, but bocaccio occured in 0.1% of all port samples and other rockfish in another 0.1% of all port samples (and squid fisheries usually land their whole catch). In 2001, out of 84,000 mt total landings 1 mt was groundfish. This suggests that total bocaccio was caught in trace amounts.

TABLE 3.3.1.3-2 Coastwide annual and bi-monthly commercial landings of overfished species by fleet, 1999-2001.

Species/Fleet	1999	2000	2001	1999						2000						2001					
	All	All	All	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Bocaccio																					
LE Trawl	30.3	16.1	13.9	5.5	5.1	5.8	6.3	5.6	2.0	0.8	2.3	3.3	2.7	3.8	3.2	2.0	2.2	3.1	3.8	2.7	0.0
LE Fixed-gear	5.0	2.4	2.4	0.5	1.0	1.0	0.7	1.6	0.1	0.0	0.1	0.8	0.6	0.6	0.3	0.3	0.1	0.4	1.2	0.5	
LE Shrimp-trawl	0.3	0.1	0.0	0.3	0.0			0.0		0.0	0.1		0.0	0.0					0.0		
OA Non-shrimp	22.8	5.9	6.4	3.7	5.1	3.4	4.7	4.0	1.9	0.8	0.1	1.4	0.8	1.3	1.6	1.6	0.3	0.5	2.0	2.0	
OA Shrimp-trawl	0.2	0.0	0.1	0.0	0.0	0.1	0.1	0.0			0.0	0.0			0.0		0.0	0.1			
Total	58.5	24.6	22.8	10.0	11.2	10.2	11.8	11.4	4.0	1.6	2.6	5.4	4.1	5.8	5.2	3.9	2.7	4.1	6.9	5.2	0.0
Canary																					
LE Trawl	494.6	33.4	25.6	25.5	67.8	179.0	153.0	66.9	2.4	0.2	2.1	10.3	10.3	8.9	1.6	0.9	1.8	8.2	11.1	3.5	0.1
LE Fixed-gear	55.4	5.9	5.1	2.0	8.0	24.2	15.4	5.8	0.0	0.2	0.5	2.2	1.3	1.2	0.4	0.6	0.7	1.5	1.3	1.0	
LE Shrimp-trawl	14.2	4.3	0.7		0.9	5.3	4.8	3.3			0.0	0.9	2.7	0.7		0.0	0.0	0.5	0.2	0.0	
OA Non-shrimp	56.6	5.0	2.8	0.4	11.1	19.8	19.0	5.8	0.4	0.3	0.4	1.8	1.2	1.0	0.3	0.2	0.5	1.1	0.7	0.3	
OA Shrimp-trawl	21.3	7.2	2.0		1.2	9.2	7.0	4.0	0.0		0.0	1.6	3.9	1.6			0.1	0.8	1.0	0.0	
Total	642.2	55.8	36.2	28.0	88.9	237.5	199.2	85.8	2.8	0.6	3.0	16.9	19.5	13.5	2.3	1.7	3.1	12.2	14.3	4.8	0.1
Cowcod																					
LE Trawl	3.8	1.4	0.8	0.5	1.2	0.1	0.8	1.2	0.0	0.1	0.2	0.1	0.3	0.3	0.3	0.4	0.2	0.0	0.1	0.1	0.1
LE Fixed-gear	0.3	0.5		0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0						
LE Shrimp-trawl		0.0									0.0	0.0	0.0	0.0							
OA Non-shrimp	2.2	0.4	0.0	0.4	0.8	0.3	0.4	0.0	0.2	0.0	0.0	0.1	0.1	0.1	0.1			0.0			
OA Shrimp-trawl	0.2	0.1		0.0	0.0	0.0	0.1	0.0			0.0	0.0	0.0								
Total	6.5	2.4	0.8	1.0	2.1	0.5	1.4	1.2	0.2	0.2	0.3	0.2	0.8	0.6	0.4	0.4	0.2	0.0	0.1	0.1	0.1
Darkblotched																					
LE Trawl	280.2	216.5	141.0	34.1	56.8	96.1	64.1	26.8	2.3	28.7	25.3	52.5	42.7	41.7	25.7	22.2	24.9	33.8	31.5	26.4	2.4
LE Fixed-gear		1.7	1.8							0.0	0.7	0.3	0.4	0.3	0.0	0.0	0.1	0.0	0.6	1.0	
LE Shrimp-trawl	2.0		0.0		0.0	0.0	1.5	0.4										0.0	0.0		
OA Non-shrimp	0.1	0.5	0.2		0.0		0.0	0.1		0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.0	0.0		0.1
OA Shrimp-trawl	2.0	0.0	0.0		0.0	0.3	1.3	0.4				0.0						0.0	0.0	0.0	
Total	284.3	218.8	143.1	34.1	56.8	96.5	67.0	27.6	2.3	28.7	26.2	52.9	43.3	42.0	25.8	22.2	25.1	33.8	32.1	27.4	2.4
Lingcod																					
LE Trawl	204.3	61.8	58.5	12.1	30.9	59.2	59.8	32.4	9.9	0.0	0.1	18.3	24.8	18.1	0.5	0.2	0.0	21.1	18.8	18.3	0.1
LE Fixed-gear	33.1	17.2	18.8	2.1	4.4	7.3	12.2	6.6	0.5			4.8	6.4	5.8	0.1		0.0	5.1	7.8	5.8	0.1
LE Shrimp-trawl	14.9	6.4	1.6		1.0	5.8	5.9	2.2				3.6	2.5	0.3				0.9	0.4	0.2	
OA Non-shrimp	84.7	49.0	63.5	0.6	11.7	25.3	34.0	12.7	0.4	0.1	1.1	26.9	20.2	0.6	0.1	0.0	0.0	19.3	25.0	19.0	0.1
OA Shrimp-trawl	17.5	9.1	5.5		0.5	6.1	7.2	3.8				4.8	4.4				0.0	3.2	2.2	0.0	
Total	354.5	143.5	147.8	14.9	48.5	103.6	119.1	57.7	10.8	0.1	1.2	58.3	58.4	24.8	0.7	0.2	0.1	49.6	54.2	43.5	0.2
Pacific Ocean Perch																					
LE Trawl	481.4	139.7	187.5	28.3	75.9	122.6	138.6	88.0	28.0	6.9	6.5	38.8	40.1	35.5	11.9	24.3	22.7	45.5	54.5	40.6	
LE Fixed-gear	0.1	0.7	0.0			0.1						0.5	0.1	0.0				0.0	0.0	0.0	0.0
LE Shrimp-trawl	0.0	0.2	0.0			0.0	0.0	0.0				0.2	0.0	0.0				0.0			
OA Non-shrimp	0.2	0.0	0.0		0.0	0.1	0.0	0.1			0.0		0.0	0.0					0.0		0.0
OA Shrimp-trawl	0.1	0.1	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0			0.0	0.0			
Total	481.8	140.6	187.6	28.3	75.9	122.8	138.6	88.2	28.0	6.9	6.6	39.5	40.3	35.5	11.9	24.3	22.7	45.5	54.5	40.6	0.0
Widow																					
LE Trawl	3,836.3	3,761.8	1,750.4	882.0	843.6	309.0	345.6	694.7	761.5	374.0	487.1	404.6	601.1	1,069.0	826.1	387.9	456.1	189.6	53.6	15.5	647.7
LE Fixed-gear	16.1	5.3	0.5	1.7	1.9	2.4	3.9	5.7	0.4	0.1	0.7	1.8	0.9	1.5	0.3	0.1	0.1	0.0	0.1	0.2	
LE Shrimp-trawl	5.2	1.0	0.5		0.7	1.6	2.3	0.5			0.0	0.2	0.5	0.2			0.0	0.4	0.0	0.0	
OA Non-shrimp	41.4	17.7	13.0	4.5	4.9	2.8	8.4	14.9	5.8	2.0	0.1	1.6	2.7	6.4	4.9	5.1	1.2	1.9	3.1	1.6	0.1
OA Shrimp-trawl	4.6	1.7	0.6		0.5	1.6	1.5	0.9	0.0		0.1	0.7	0.7	0.2			0.2	0.3	0.0		
Total	3,903.5	3,787.5	1,765.0	888.2	851.6	317.6	361.6	716.7	767.7	376.2	487.9	408.9	605.9	1,077.4	831.3	393.2	457.7	192.2	56.8	17.3	647.8
Yelloweye																					
LE Trawl	20.5	1.0	2.2	0.4	1.6	4.3	9.7	4.5	0.0	0.0	0.0	0.2	0.5	0.2	0.0	0.0	0.1	0.5	1.2	0.5	
LE Fixed-gear	47.7	5.0	6.9	0.5	2.5	5.1	34.5	5.1		0.0	0.4	1.3	1.5	1.6	0.1	0.7	1.0	2.0	1.7	1.4	
OA Non-shrimp	15.4	2.9	2.9	0.1	0.6	1.8	10.1	2.6	0.1	0.2	0.1	0.6	1.1	0.6	0.2	0.2	0.5	0.7	1.1	0.5	0.0
Total	83.5	8.9	12.0	1.0	4.7	11.3	54.3	12.2	[illegible]	0.3	0.6	2.1	3.1	2.5	0.4	0.9	1.6	3.2	4.0	[illegible]	0.0

TABLE 3.3.1.3-3. Annual and bi-monthly commercial landings of overfished species by area and fleet, 1999-2001.

Species/Fleet	1999 All	2000 All	2001 All	1999 1	1999 2	1999 3	1999 4	1999 5	1999 6	2000 1	2000 2	2000 3	2000 4	2000 5	2000 6	2001 1	2001 2	2001 3	2001 4	2001 5	2001 6
Bocaccio																					
CA: Ft. Bragg-Avila																					
LE Trawl	30.3	16.1	13.9	5.5	5.1	5.8	6.3	5.6	2.0	0.8	2.3	3.3	2.7	3.8	3.2	2.0	2.2	3.1	3.8	2.7	0.0
LE Fixed-gear	3.6	1.6	1.5	0.3	0.8	0.5	0.6	1.4	0.1	0.0	0.0	0.5	0.5	0.5	0.1	0.3			0.9	0.4	
LE Shrimp-trawl	0.1	0.1	0.0	0.1	0.0			0.0		0.0	0.1		0.0	0.0					0.0		
OA Non-shrimp	19.4	4.9	4.2	2.8	3.9	2.6	4.6	3.7	1.8	0.7	0.0	1.1	0.7	1.2	1.1	1.6	0.0	0.0	1.6	1.0	
OA Shrimp-trawl	0.2	0.0		0.0	0.0	0.1	0.1	0.0				0.0									
Total	53.6	22.8	19.7	8.6	9.8	8.9	11.6	10.8	3.9	1.6	2.4	4.9	3.9	5.6	4.4	3.9	2.2	3.1	6.3	4.1	0.0
CA: S. of Avila																					
LE Fixed-gear	1.3	0.8	0.8	0.3	0.2	0.5	0.1	0.3	0.0		0.1	0.3	0.1	0.1	0.2	0.0	0.1	0.4	0.3	0.1	
LE Shrimp-trawl	0.1			0.1																	
OA Non-shrimp	3.4	1.0	2.2	0.9	1.2	0.8	0.1	0.3	0.1	0.0	0.1	0.2	0.1	0.1	0.5		0.3	0.5	0.3	1.0	
OA Shrimp-trawl	0.0	0.0	0.1	0.0	0.0			0.0			0.0	0.0			0.0		0.0	0.1			
Total	4.9	1.9	3.1	1.3	1.4	1.3	0.2	0.6	0.1	0.0	0.1	0.5	0.2	0.2	0.8	0.0	0.5	0.9	0.7	1.1	
Canary																					
Washington																					
LE Trawl	116.2	6.5	6.1	1.3	6.6	49.0	42.3	16.8	0.2		0.3	1.4	2.0	2.2	0.5	0.3	0.3	1.4	3.1	1.1	
LE Fixed-gear	3.0	1.6	1.2		0.0	0.6	1.4	1.0		0.1	0.2	0.9	0.3	0.1	0.1	0.0	0.1	0.6	0.5	0.1	
LE Shrimp-trawl	0.4	0.4			0.0	0.2	0.2	0.1				0.2	0.1	0.2							
OA Non-shrimp	2.6	0.9	0.3	0.0	0.5	1.6	0.3	0.2			0.0	0.6	0.1	0.1	0.0		0.0	0.3	0.0	0.0	
OA Shrimp-trawl	0.8	0.9	0.3		0.1	0.2	0.4	0.2				0.1	0.2	0.6			0.0	0.2	0.1		
Total	123.1	10.2	7.9	1.3	7.2	51.7	44.5	18.2	0.2	0.1	0.5	3.1	2.7	3.2	0.6	0.3	0.4	2.4	3.6	1.2	
OR: N. of Yachats																					
LE Trawl	218.5	14.2	8.1	6.7	48.9	75.5	55.3	32.0	0.1	0.0	0.2	6.5	3.5	3.5	0.4	0.2	0.6	2.8	3.5	1.0	0.0
LE Fixed-gear	13.2	0.7	0.3		2.0	7.5	3.0	0.7		0.0	0.0	0.4	0.1	0.1			0.0	0.0	0.0	0.2	
LE Shrimp-trawl	5.1	2.1	0.3		0.0	2.2	2.0	0.8				0.6	1.2	0.3			0.0	0.2	0.1		
OA Non-shrimp	18.4	0.9	0.4	0.0	6.7	10.3	1.1	0.3	0.0	0.0	0.1	0.5	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.0	
OA Shrimp-trawl	17.8	4.8	1.5		0.4	8.5	5.8	3.0	0.0		0.0	1.4	2.5	0.8			0.1	0.6	0.7	0.0	
Total	272.9	22.6	10.5	6.7	58.0	104.1	67.2	36.8	0.1	0.0	0.3	9.5	7.6	4.9	0.4	0.3	0.7	3.8	4.5	1.2	0.0
OR: S. of Yachats																					
LE Trawl	73.9	2.2	3.3	5.5	4.3	38.0	16.5	9.2	0.3	0.0	0.2	0.7	0.4	0.7	0.2	0.1	0.3	1.2	1.2	0.4	
LE Fixed-gear	35.6	3.1	3.5	2.0	5.0	15.2	11.0	2.4	0.0	0.1	0.3	0.7	0.8	0.9	0.2	0.6	0.5	0.9	0.9	0.7	
LE Shrimp-trawl	7.0	1.7	0.3		0.3	2.5	1.9	2.3				0.1	1.5	0.1				0.3	0.0		
OA Non-shrimp	32.9	1.7	1.6	0.2	3.7	7.6	16.2	5.0	0.3	0.0	0.2	0.6	0.5	0.3	0.0	0.1	0.4	0.7	0.3	0.1	
OA Shrimp-trawl	2.1	1.2	0.1		0.6	0.4	0.6	0.6				0.1	0.9	0.2			0.0	0.0	0.0	0.0	
Total	151.6	9.9	8.8	7.7	13.9	63.8	46.1	19.5	0.6	0.1	0.7	2.2	4.1	2.3	0.4	0.8	1.2	3.1	2.5	1.2	
CA: N. of Ft. Bragg																					
LE Trawl	58.3	8.1	5.6	4.8	3.3	9.8	33.6	6.0	0.8	0.0	0.8	1.0	3.9	2.1	0.3	0.1	0.5	2.0	2.4	0.7	
LE Fixed-gear	0.0	0.1	0.1			0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0			
LE Shrimp-trawl	1.4	0.0	0.1		0.2	0.4	0.6	0.1				0.0	0.0	0.0		0.0		0.0	0.0	0.0	
OA Non-shrimp	0.5	0.4	0.2		0.0		0.5	0.0		0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.0	
OA Shrimp-trawl	0.5	0.4	0.2		0.1	0.1	0.2	0.2				0.0	0.3						0.2		
Total	60.8	9.0	6.2	4.8	3.6	10.3	34.9	6.4	0.8	0.0	0.8	1.1	4.4	2.3	0.4	0.1	0.6	2.1	2.6	0.7	
CA: Ft. Bragg-Avila																					
LE Trawl	27.7	2.4	2.4	7.3	4.7	6.7	5.2	2.9	0.9	0.1	0.5	0.6	0.5	0.5	0.2	0.2	0.2	0.8	0.8	0.4	0.0
LE Fixed-gear	3.6	0.5			1.0	0.8	0.1	1.7		0.0	0.0	0.1	0.1	0.1	0.1						
LE Shrimp-trawl	0.4	0.0			0.4		0.0	0.0			0.0										
OA Non-shrimp	2.1	1.1	0.4	0.2	0.2	0.2	1.0	0.4	0.2	0.3	0.0	0.2	0.2	0.3	0.2	0.1			0.2	0.1	
OA Shrimp-trawl	0.1	0.0					0.1					0.0		0.0							
Total	33.8	4.1	2.8	7.5	6.2	7.7	6.3	4.9	1.1	0.4	0.6	0.9	0.9	0.9	0.5	0.2	0.2	0.8	1.0	0.5	0.0
Cowcod																					
CA: Ft. Bragg-Avila																					
LE Trawl	3.8	1.4	0.8	0.5	1.2	0.1	0.8	1.2	0.0	0.1	0.2	0.1	0.3	0.3	0.3	0.4	0.2	0.0	0.1	0.1	0.1
LE Fixed-gear	0.0	0.5					0.0			0.0	0.0	0.0	0.3	0.1	0.0						
LE Shrimp-trawl		0.0									0.0	0.0	0.0	0.0							

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TABLE 3.3.1.3-3. Annual and bi-monthly commercial landings of overfished species by area and fleet, 1999-2001.

Species/Fleet	1999	2000	2001	1999						2000						2001					
	All	All	All	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
OA Non-shrimp	0.4	0.2	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1			0.0			
OA Shrimp-trawl	0.1	0.1		0.0	0.0	0.0	0.1	0.0			0.0	0.0	0.0								
Total	4.3	2.1	0.8	0.5	1.2	0.3	1.0	1.2	0.1	0.2	0.3	0.2	0.7	0.5	0.4	0.4	0.2	0.0	0.1	0.1	0.1
CA: S. of Avila																					
LE Fixed-gear	0.3	0.0		0.1	0.0	0.1	0.1	0.0	0.0		0.0	0.0	0.0	0.0							
OA Non-shrimp	1.8	0.3		0.4	0.8	0.2	0.3	0.0	0.2		0.0	0.1	0.1	0.1	0.0						
OA Shrimp-trawl	0.1						0.1														
Total	2.2	0.3		0.4	0.9	0.2	0.5	0.1	0.2		0.0	0.1	0.1	0.1	0.0						
Darkblotched																					
Washington																					
LE Trawl	10.3	8.6	8.2	1.5	2.6	2.9	2.2	1.0	0.1	0.5	0.7	1.0	3.1	1.8	1.5	0.8	1.2	1.2	1.6	3.3	
LE Fixed-gear			0.0																0.0	0.0	
OA Non-shrimp	0.0	0.0	0.0					0.0					0.0						0.0		
Total	10.3	8.7	8.2	1.5	2.6	2.9	2.2	1.1	0.1	0.5	0.7	1.0	3.2	1.8	1.5	0.8	1.2	1.2	1.6	3.3	
OR: N. of Yachats																					
LE Trawl	68.5	57.1	32.7	1.0	10.0	22.7	28.3	6.3	0.3	6.4	6.7	13.0	9.9	13.5	7.5	5.9	3.9	7.6	8.7	6.7	
LE Fixed-gear		0.1	0.0										0.1	0.0						0.0	
LE Shrimp-trawl	0.2					0.0		0.1													
OA Non-shrimp	0.0						0.0														
OA Shrimp-trawl	1.1		0.0			0.3	0.5	0.3										0.0	0.0	0.0	
Total	69.8	57.2	32.7	1.0	10.0	23.1	28.8	6.6	0.3	6.4	6.7	13.0	9.9	13.6	7.5	5.9	3.9	7.6	8.7	6.7	
OR: S. of Yachats																					
LE Trawl	120.7	53.6	31.0	28.2	27.1	40.9	14.8	8.3	1.4	13.0	7.5	15.8	4.5	8.3	4.5	6.1	6.0	7.0	7.8	3.9	0.1
LE Fixed-gear		0.0	0.2										0.0	0.0		0.0		0.0		0.2	
LE Shrimp-trawl	1.8		0.0		0.0	0.0	1.5	0.3										0.0			
OA Non-shrimp	0.0	0.0	0.1		0.0									0.0			0.1	0.0			
OA Shrimp-trawl	0.9	0.0	0.0		0.0	0.0	0.8	0.1				0.0						0.0			
Total	123.4	53.7	31.3	28.2	27.2	40.9	17.1	8.7	1.4	13.0	7.5	15.8	4.5	8.4	4.5	6.1	6.1	7.1	7.8	4.1	0.1
CA: N. of Ft. Bragg																					
LE Trawl	75.8	59.9	24.9	2.3	17.0	27.4	18.5	10.1	0.4	5.3	6.6	18.6	19.8	8.4	1.0	3.3	6.0	11.2	3.0	1.5	0.0
LE Fixed-gear		0.0	0.1								0.0						0.1	0.0	0.0	0.0	
LE Shrimp-trawl			0.0																0.0		
OA Non-shrimp	0.1	0.2	0.0				0.0	0.0		0.0			0.2						0.0		
OA Shrimp-trawl			0.0															0.0			
Total	75.8	60.1	25.1	2.3	17.0	27.4	18.5	10.1	0.4	5.3	6.7	18.6	20.0	8.4	1.0	3.3	6.1	11.2	3.0	1.5	0.0
CA: Ft. Bragg-Avila																					
LE Trawl	4.9	37.3	44.2	1.1	0.1	2.2	0.3	1.1	0.1	3.5	3.7	4.1	5.3	9.5	11.2	6.1	7.8	6.7	10.4	11.0	2.2
LE Fixed-gear		1.6	1.4							0.0	0.7	0.3	0.3	0.3	0.0				0.6	0.8	
OA Non-shrimp	0.0	0.3	0.1					0.0		0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0		0.0		0.1
Total	5.0	39.2	45.7	1.1	0.1	2.2	0.3	1.1	0.1	3.5	4.5	4.4	5.7	9.9	11.2	6.1	7.8	6.7	11.0	11.8	2.3
Lingcod																					
Washington																					
LE Trawl	21.9	9.1	8.9	1.0	2.7	7.5	8.3	1.6	0.9			3.2	3.2	2.7				3.2	3.1	2.6	
LE Fixed-gear	8.2	4.5	6.1		0.1	2.1	4.8	1.2				1.5	2.1	0.8	0.1			1.6	3.1	1.4	
LE Shrimp-trawl	0.5	0.5	0.0			0.3	0.2	0.0				0.4	0.1					0.0	0.0		
OA Non-shrimp	9.2	10.0	5.0		2.9	3.5	2.0	0.8			1.1	5.9	2.6	0.4	0.0			2.5	1.7	0.8	
OA Shrimp-trawl	1.8	1.8	1.0		0.1	0.3	1.1	0.4				0.9	0.9					0.6	0.5		
Total	41.7	25.9	21.2	1.0	5.8	13.7	16.3	4.1	0.9		1.1	11.8	9.0	3.9	0.1			7.9	8.4	4.8	
OR: N. of Yachats																					
LE Trawl	64.3	16.9	13.4	2.9	14.1	18.9	17.5	9.8	1.1		0.1	3.6	9.5	3.6	0.1	0.0		4.8	5.0	3.6	
LE Fixed-gear	1.6	1.7	3.3		0.0	0.2	1.0	0.5				0.6	1.0	0.1				0.3	1.6	1.4	
LE Shrimp-trawl	3.6	3.9	0.8		0.0	1.7	1.3	0.6				2.1	1.5	0.3				0.5	0.3	0.1	
OA Non-shrimp	9.1	8.0	8.0		1.4	3.2	3.7	0.8				5.6	2.5	0.0				3.9	3.1	1.0	0.0
OA Shrimp-trawl	11.5	6.1	3.9		0.2	4.2	4.6	2.5				3.2	2.9				0.0	2.3	1.6	0.0	
[illegible]	90.1	36.7	29.5	2.9	15.7	28.2	28.0	[illegible]	1.1		0.1	15.2	17.3	3.9	0.1	0.0	0.0	11.8	11.4	[illegible]	0.0
[illegible] Yachats																					

TA 3.1.3-3. Annual and bi-monthly commercial landings of overfish cies by area and fleet, 1999-2001.

Species/Fleet	1999 All	2000 All	2001 All	1999 1	1999 2	1999 3	1999 4	1999 5	1999 6	2000 1	2000 2	2000 3	2000 4	2000 5	2000 6	2001 1	2001 2	2001 3	2001 4	2001 5	2001 6
LE Trawl	32.7	8.0	9.2	1.9	4.1	10.5	8.3	5.9	1.9			3.5	1.8	2.5	0.2			3.4	2.6	3.2	
LE Fixed-gear	13.4	6.1	5.8	1.5	3.2	3.3	3.9	1.3	0.1			1.5	1.8	2.7	0.0			2.3	1.7	1.8	
LE Shrimp-trawl	9.8	1.6	0.3		0.9	3.6	3.9	1.4				0.9	0.7					0.0	0.2	0.1	
OA Non-shrimp	24.9	10.9	21.5		3.3	6.7	12.1	2.8	0.0			6.5	4.4	0.0	0.0			10.0	6.0	5.5	
OA Shrimp-trawl	3.0	1.0	0.5		0.2	1.2	1.1	0.6				0.6	0.4					0.3	0.2	0.0	
Total	83.8	27.6	37.3	3.4	11.7	25.3	29.3	12.0	2.1			13.0	9.1	5.3	0.2			16.0	10.6	10.6	
CA: N. of Ft. Bragg																					
LE Trawl	42.2	17.0	16.9	1.6	4.3	13.8	14.0	6.8	1.8			5.1	6.3	5.4	0.1			6.3	5.0	5.6	
LE Fixed-gear	4.4	2.3	1.8	0.0	0.3	1.3	1.3	1.5				0.8	0.6	0.9			0.0	0.8	0.8	0.2	
LE Shrimp-trawl	0.9	0.0	0.3		0.1	0.1	0.6	0.1				0.0		0.0				0.3		0.0	
OA Non-shrimp	10.8	6.9	9.7	0.0	0.5	2.6	5.4	2.3		0.1		3.4	3.4					2.8	3.7	3.2	
OA Shrimp-trawl	0.9	0.2	0.0		0.0	0.4	0.2	0.3				0.1	0.1							0.0	
Total	59.2	26.4	28.6	1.6	5.2	18.1	21.5	11.0	1.8	0.1		9.4	10.5	6.4	0.1		0.0	10.2	9.5	8.9	
CA: Ft. Bragg-Avila																					
LE Trawl	43.3	10.8	10.0	4.8	5.7	8.6	11.7	8.3	4.2	0.0	0.0	2.9	4.0	3.9	0.1	0.2	0.0	3.3	3.0	3.4	0.1
LE Fixed-gear	5.5	2.6	1.8	0.6	0.7	0.4	1.2	2.2	0.3			0.5	0.8	1.3	0.0				0.7	1.0	0.1
LE Shrimp-trawl	0.1	0.3	0.1			0.0	0.0					0.1	0.2					0.1		0.0	
OA Non-shrimp	30.8	13.1	19.3	0.6	3.6	9.4	10.8	5.9	0.4	0.0	0.0	5.5	7.4	0.1	0.1	0.0	0.0	0.2	10.5	8.5	0.0
OA Shrimp-trawl	0.3	0.0	0.0			0.0	0.3					0.0	0.0							0.0	
Total	79.9	26.8	31.2	6.0	10.0	18.4	24.1	16.3	4.9	0.0	0.0	8.9	12.4	5.2	0.2	0.2	0.1	3.6	14.2	13.0	0.2
Pacific Ocean Perch																					
Washington																					
LE Trawl	144.8	34.9	50.6	9.1	17.4	40.5	33.5	33.6	10.7	1.3	1.9	11.3	10.7	7.6	2.2	6.4	5.2	10.0	16.2	12.7	
LE Fixed-gear		0.5	0.0									0.5						0.0		0.0	
LE Shrimp-trawl		0.0										0.0									
OA Non-shrimp	0.1	0.0	0.0					0.1					0.0						0.0		
OA Shrimp-trawl	0.0	0.0	0.0				0.0					0.0	0.0				0.0				
Total	144.9	35.5	50.6	9.1	17.4	40.5	33.6	33.7	10.7	1.3	1.9	11.8	10.7	7.6	2.2	6.4	5.2	10.0	16.2	12.7	
OR: N. of Yachats																					
LE Trawl	303.9	95.7	129.8	15.7	48.7	73.1	98.5	52.6	15.1	4.7	3.9	24.0	27.6	26.5	8.9	16.0	15.2	34.1	37.2	27.4	
LE Fixed-gear		0.0	0.0										0.0						0.0	0.0	
LE Shrimp-trawl	0.0	0.0	0.0			0.0	0.0	0.0				0.0	0.0	0.0				0.0			
OA Non-shrimp	0.0						0.0														
OA Shrimp-trawl	0.1	0.1	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0				0.0			
Total	304.0	95.8	129.9	15.7	48.8	73.2	98.5	52.7	15.1	4.7	3.9	24.1	27.7	26.5	8.9	16.0	15.2	34.1	37.2	27.4	
OR: S. of Yachats																					
LE Trawl	21.1	6.0	6.5	3.1	4.2	4.9	5.0	1.7	2.3	0.8	0.2	2.8	0.5	0.8	0.9	1.8	2.1	1.1	1.0	0.4	
LE Fixed-gear	0.1	0.0	0.0			0.1							0.0	0.0							0.0
LE Shrimp-trawl		0.1										0.1									
OA Non-shrimp	0.1	0.0			0.0	0.1					0.0			0.0							
OA Shrimp-trawl		0.0										0.0									
Total	21.3	6.1	6.5	3.1	4.2	5.1	5.0	1.7	2.3	0.8	0.2	2.9	0.5	0.8	0.9	1.8	2.1	1.1	1.0	0.4	0.0
CA: N. of Ft. Bragg																					
LE Trawl	10.6	3.1	0.3	0.4	4.6	4.0	1.5	0.1		0.1	0.5	0.7	1.2	0.6			0.0	0.2	0.1	0.0	
OA Non-shrimp			0.0																0.0		
Total	10.6	3.1	0.4	0.4	4.6	4.0	1.5	0.1		0.1	0.5	0.7	1.2	0.6			0.0	0.2	0.1	0.0	
CA: Ft. Bragg-Avila																					
LE Trawl	1.0		0.3		1.0											0.1	0.2	0.0			
LE Fixed-gear		0.1											0.1								
OA Non-shrimp			0.0																		0.0
Total	1.0	0.1	0.3		1.0								0.1			0.1	0.2	0.0			0.0
Widow																					
Washington																					
LE Trawl	513.4	373.0	289.8	146.0	137.9	29.2	43.1	93.9	63.3	30.6	26.6	13.7	36.6	143.0	122.4	67.7	75.6	17.5	16.5	9.1	103.4
LE Fixed-gear	0.0		0.0				0.0	0.0											0.0		
LE Shrimp-trawl		0.0	0.0										0.0							0.0	

TABLE 3.3.1.3-3. Annual and bi-monthly commercial landings of overfished species by area and fleet, 1999-2001.

Species/Fleet	1999	2000	2001	1999						2000						2001					
	All	All	All	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
OA Non-shrimp	0.5	0.9	0.0			0.0	0.0	0.2	0.3		0.0	0.4	0.4	0.1				0.0	0.0		
OA Shrimp-trawl	0.0		0.1					0.0									0.1	0.1			
Total	514.0	373.9	289.9	146.0	137.9	29.2	43.2	94.1	63.6	30.6	26.6	14.1	37.1	143.1	122.4	67.7	75.6	17.6	16.5	9.2	103.4
OR: N. of Yachats																					
LE Trawl	2,156.7	2,008.0	846.5	452.6	387.2	137.3	193.9	432.6	553.2	244.9	215.5	230.0	340.1	533.8	443.8	210.2	212.9	85.1	29.1	1.1	308.2
LE Fixed-gear	0.1	0.0	0.0		0.0	0.0	0.1	0.0				0.0	0.0						0.0	0.0	
LE Shrimp-trawl	0.4	0.3	0.1			0.1	0.1	0.2				0.1	0.1	0.2			0.0	0.0	0.0		
OA Non-shrimp	1.4	0.3	0.0		1.2	0.0	0.0	0.2				0.0	0.2	0.0			0.0				
OA Shrimp-trawl	2.3	1.0	0.4		0.4	0.5	0.6	0.8			0.0	0.6	0.3	0.1			0.2	0.2	0.0		
Total	2,161.0	2,009.6	847.1	452.6	388.7	137.9	194.8	433.8	553.2	244.9	215.5	230.7	340.8	534.0	443.8	210.2	213.0	85.3	29.2	1.1	308.2
OR: S. of Yachats																					
LE Trawl	583.8	698.1	296.1	146.0	171.8	78.1	47.7	82.5	57.7	43.5	121.7	87.3	108.5	172.7	164.4	55.0	88.3	28.8	3.4	0.5	120.1
LE Fixed-gear	9.0	1.0	0.3	1.1	0.7	2.1	3.3	1.9		0.1	0.7	0.2		0.0	0.0	0.1	0.1	0.0	0.0	0.0	
LE Shrimp-trawl	1.9	0.5	0.1		0.3	0.7	0.6	0.3				0.1	0.3	0.1				0.1			
OA Non-shrimp	4.2	1.2	0.5		1.4	0.9	1.2	0.7			0.1	0.5	0.0	0.6	0.0	0.2	0.2	0.0	0.0	0.0	
OA Shrimp-trawl	0.9	0.4	0.0		0.1	0.1	0.5	0.1				0.0	0.2	0.2			0.0	0.0	0.0		
Total	599.8	701.1	296.9	147.1	174.3	81.8	53.4	85.5	57.7	43.6	122.4	88.1	109.0	173.6	164.4	55.3	88.5	29.0	3.4	0.5	120.1
CA: N. of Ft. Bragg																					
LE Trawl	221.5	413.3	255.9	57.2	53.3	42.4	34.0	20.5	14.1	13.6	64.8	26.8	81.5	165.4	61.3	38.3	77.9	44.7	1.7	0.4	92.8
LE Fixed-gear	0.7	2.7		0.1		0.1	0.5	0.1				1.3	0.1	1.2	0.0						
LE Shrimp-trawl	2.8	0.1	0.3		0.4	0.9	1.5	0.0				0.0	0.1					0.3			
OA Non-shrimp	2.0	2.4	1.1	0.0	0.2	0.2	0.7	0.9	0.0	0.0	0.0	0.2	1.0	1.2	0.1	0.0	0.1	0.9	0.1	0.1	0.0
OA Shrimp-trawl	1.4	0.2	0.0		0.0	1.0	0.3	0.0				0.1	0.1					0.0			
Total	228.4	418.7	257.3	57.3	53.9	44.6	37.0	21.6	14.2	13.7	64.8	28.4	82.8	167.7	61.3	38.3	78.0	45.9	1.8	0.5	92.8
CA: Ft. Bragg-Avila																					
LE Trawl	360.8	269.5	62.2	80.2	93.5	22.1	26.8	65.1	73.1	41.4	58.6	46.6	34.5	54.1	34.3	16.8	1.5	13.5	2.8	4.4	23.1
LE Fixed-gear	6.2	1.7	0.2	0.6	1.2	0.3	0.1	3.7	0.4	0.0		0.3	0.7	0.3	0.3	0.0			0.1	0.2	
LE Shrimp-trawl	0.0	0.0			0.0			0.0			0.0			0.0							
OA Non-shrimp	33.2	12.8	11.4	4.5	2.1	1.7	6.5	13.0	5.5	2.0		0.5	1.0	4.5	4.8	4.9	1.0	0.9	3.0	1.5	0.1
OA Shrimp-trawl	0.0	0.1					0.0		0.0		0.0	0.0	0.1								
Total	400.3	284.1	73.8	85.3	96.8	24.0	33.3	81.8	79.0	43.4	58.7	47.5	36.3	58.9	39.4	21.7	2.5	14.4	5.9	6.0	23.2
Yelloweye																					
Washington																					
LE Trawl	9.9	0.2	0.8	0.3	0.3	0.9	4.7	3.8			0.0	0.1	0.0	0.0			0.0	0.0	0.5	0.3	
OA Non-shrimp	0.0	0.0						0.0					0.0								
Total	9.9	0.2	0.8	0.3	0.3	0.9	4.7	3.8			0.0	0.1	0.0	0.0			0.0	0.0	0.5	0.3	
OR: N. of Yachats																					
LE Trawl	1.2		0.2	0.0	0.2	0.4	0.4	0.2	0.0								0.0	0.0	0.1	0.0	
LE Fixed-gear	17.2				0.3	0.9	14.2	1.8													
OA Non-shrimp	1.1				0.3	0.5	0.1	0.1	0.0												
Total	19.5		0.2	0.0	0.8	1.8	14.7	2.1	0.0								0.0	0.0	0.1	0.0	
OR: S. of Yachats																					
LE Trawl	1.5	0.1	0.4	0.0	0.2	1.1	0.1	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.1	0.2	0.1	0.1	
LE Fixed-gear	26.4	3.3	5.2	0.2	1.9	3.8	19.3	1.2			0.3	0.9	1.2	0.9		0.6	0.7	1.4	1.2	1.3	
OA Non-shrimp	9.0	0.9	1.1		0.1	0.6	6.7	1.5	0.0		0.0	0.2	0.4	0.2		0.1	0.2	0.2	0.3	0.2	
Total	36.9	4.3	6.6	0.2	2.3	5.6	26.0	2.8	0.1		0.4	1.2	1.7	1.1	0.0	0.8	0.9	1.7	1.7	1.6	
CA: N. of Ft. Bragg																					
LE Trawl	6.7	0.7	0.8	0.0	0.0	1.7	4.5	0.5			0.0	0.0	0.4	0.2	0.0	0.0		0.3	0.4	0.1	
LE Fixed-gear	1.7	1.0	1.5		0.2	0.4	0.6	0.6		0.0	0.1	0.3	0.1	0.5		0.1	0.3	0.6	0.5	0.1	
OA Non-shrimp	3.7	1.3	1.7		0.0	0.5	2.3	0.8	0.0	0.1	0.1	0.3	0.5	0.3	0.1	0.0	0.3	0.5	0.6	0.2	
Total	12.1	3.0	4.0	0.0	0.2	2.6	7.4	1.9	0.0	0.1	0.1	0.7	1.0	1.0	0.1	0.1	0.6	1.4	1.5	0.3	
CA: Ft. Bragg-Avila																					
LE Trawl	1.2	0.1	0.1	0.0	0.9	0.2	0.1	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
LE Fixed-gear	2.3	0.6	0.2	0.4	0.1	0.0	0.4	1.5		0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.1		0.0	0.0	
[illegible]Non-shrimp	1.6	0.7	0.2	0.1	0.2	0.2	1.0	[illegible]	0.0	0.2	0.0	0.1	0.2	0.1	0.1	0.0			0.1	[illegible]	0.0
[illegible]	5.1	1.4	0.4	0.5	1.1	0.4	1.5	[illegible]	[illegible]	0.2	0.0	0.1	0.3	0.5	0.3	0.1	0.1	0.0	0.2		0.0

Table 3.3.1.3-4. At-sea whiting observer estimates of bycatch.

TABLE 3.3.1.3-5. Annual coastwide and area participation in the Dungeness Crab fishery by open-access vessels with associated groundfish on the same landing day, 1990-2001.

Area/Landings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
WA												
Metric tons												
Dngns Crab	4,087	1,824	5,402	6,323	6,000	6,540	9,072	3,579	2,960	5,379	4,219	4,578
Groundfish	0	1	1	0	0	0	0	0	0	0	0	0
% of Dngns Crab	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
Dngns Crab	307	220	239	272	278	233	229	205	181	179	186	190
Groundfish	3	7	8	3	2	1	2	2	1	0	2	2
% of Dngns Crab	1%	3%	3%	1%	1%	0%	1%	1%	1%	0%	1%	1%
# of trips												
Dngns Crab	8,101	5,127	7,017	7,300	7,318	7,405	7,394	5,539	4,575	5,294	5,362	6,319
Groundfish	6	14	12	3	4	3	2	4	1	0	4	3
% of Dngns Crab	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
OR: N of Coos Bay												
Metric tons												
Dngns Crab	1,477	964	2,002	2,009	2,031	2,422	3,555	1,430	1,262	2,073	1,848	2,099
Groundfish	1	3	1	1	1	1	0	0	0	0	1	1
% of Dngns Crab	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
Dngns Crab	167	167	180	157	208	210	180	169	151	158	154	169
Groundfish	24	28	20	12	15	17	9	10	12	5	12	7
% of Dngns Crab	14%	17%	11%	8%	7%	8%	5%	6%	8%	3%	8%	4%
# of trips												
Dngns Crab	3,486	2,800	3,780	3,318	3,277	3,624	3,939	3,344	2,649	3,113	3,134	3,023
Groundfish	97	131	78	17	29	29	16	23	21	16	27	19
% of Dngns Crab	3%	5%	2%	1%	1%	1%	0%	1%	1%	1%	1%	1%
OR: Coos Bay south												
Metric tons												
Dngns Crab	1,132	516	1,483	1,142	1,089	1,082	1,739	748	755	893	917	491
Groundfish	1	1	2	0	2	4	3	2	2	2	2	3
% of Dngns Crab	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
# of vessels												
Dngns Crab	220	194	205	190	159	157	134	121	124	132	123	121
Groundfish	17	16	13	9	9	18	18	23	20	20	31	21
% of Dngns Crab	8%	8%	6%	5%	6%	11%	13%	19%	16%	15%	25%	17%
# of trips												
Dngns Crab	4,243	3,500	4,400	3,650	3,337	3,478	3,501	2,739	2,100	2,564	2,956	2,062
Groundfish	27	18	25	10	35	66	53	70	69	56	126	79
% of Dngns Crab	1%	1%	1%	0%	1%	2%	2%	3%	3%	2%	4%	4%
CA: N of Cp Mendo												
Metric tons												
Dngns Crab	3,104	1,093	2,436	3,529	3,204	1,852	3,357	1,987	2,259	2,296	1,599	554
Groundfish	0	1	1	2	2	1	1	2	1	1	2	1
% of Dngns Crab	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
Dngns Crab	285	323	337	371	359	276	287	231	250	252	212	171
Groundfish	13	21	24	18	12	14	15	13	19	14	20	16
% of Dngns Crab	5%	7%	7%	5%	3%	5%	5%	6%	8%	6%	9%	9%
# of trips												
Dngns Crab	5,029	3,473	5,628	5,688	5,367	3,543	6,354	4,089	3,625	3,623	3,064	2,070
Groundfish	37	47	40	32	19	32	24	29	32	19	52	42
% of Dngns Crab	1%	1%	1%	1%	0%	1%	0%	1%	1%	1%	2%	2%
CA: Cp Mendo - Pt Con												
Metric tons												
Dngns Crab	468	456	348	244	1,005	1,213	733	1,172	1,085	478	501	552
Groundfish	4	3	5	2	2	11	2	2	1	2	1	1
% of Dngns Crab	1%	1%	1%	1%	0%	1%	0%	0%	0%	0%	0%	0%
# of vessels												
Dngns Crab	284	357	338	211	286	261	230	243	244	208	197	195
Groundfish	43	41	51	24	27	18	22	39	20	18	14	17
% of Dngns Crab	15%	11%	15%	11%	9%	7%	10%	16%	8%	9%	7%	9%
# of trips												
Dngns Crab	2,629	3,187	2,772	1,557	2,767	3,658	2,400	3,260	3,376	2,136	2,076	2,114
Groundfish	201	115	178	86	61	61	36	76	36	64	39	24
% of Dngns Crab	8%	4%	6%	6%	2%	2%	2%	2%	1%	3%	2%	1%
CA: S of Pt Con												
Metric tons												
Dngns Crab	2	6	4	10	5	1	1	0	1	0	0	0
Groundfish	0	0	0	0	0	0	0	0	0	0	0	0
% of Dngns Crab	0%	0%	0%	2%	0%	1%	35%	43%	9%	100%	0%	600%
# of vessels												
Dngns Crab	15	15	14	11	12	12	7	3	9	2	1	2
Groundfish	2	3	2	3	0	1	3	1	2	1	0	2
% of Dngns Crab	13%	20%	14%	27%	0%	8%	43%	33%	22%	50%	0%	100%

TABLE 3.3.1.3-5. Annual coastwide and area participation in the Dungeness Crab fishery by open-access vessels with associated groundfish on the same landing day, 1990-2001.

Area/Landings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
# of trips												
Dngns Crab	29	50	64	94	22	13	18	9	11	2	1	2
Groundfish	2	3	2	5	0	1	8	3	2	1	0	2
% of Dngns Crab	7%	6%	3%	5%	0%	8%	44%	33%	18%	50%	0%	100%
Coastwide												
Metric tons												
Dngns Crab	10,269	4,859	11,676	13,258	13,333	13,110	18,457	8,917	8,322	11,118	9,085	8,274
Groundfish	7	9	10	5	7	17	6	6	5	6	6	6
% of Dngns Crab	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
Dngns Crab	1,173	1,176	1,194	1,075	1,150	1,043	965	898	879	857	804	800
Groundfish	102	114	117	69	65	69	69	88	74	58	76	65
% of Dngns Crab	9%	10%	10%	6%	6%	7%	7%	10%	8%	7%	9%	8%
# of trips												
Dngns Crab	23,517	18,137	23,661	21,607	22,088	21,721	23,606	18,980	16,336	16,732	16,593	15,590
Groundfish	370	328	335	153	148	192	139	205	161	156	248	169
% of Dngns Crab	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

Table 3.3.1.3-6.--Annual coastwide and area participation in the Gillnet Complex fishery by open-access vessels, with associated groundfish on the same landing day, 1990-2001.

Area/Species	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CA: N of C. Mendocino												
Metric tons												
Gillnet complex			32	63	124	17	25	39	116	19	29	62
Groundfish			0	0	0	0	0	0	0	0	0	0
% of Gillnet complex			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
Gillnet complex			2	21	31	5	9	10	16	7	6	1
with GF			0	0	0	0	0	0	0	0	0	0
% of Gillnet complex			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of trips												
Gillnet complex			5	34	71	12	17	18	37	15	15	4
with GF			0	0	0	0	0	0	0	0	0	0
% of Gillnet complex			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CA: C. Mendocino - P. Conception												
Metric tons												
Gillnet complex		59	45	101	252	449	457	477	435	225	256	110
Groundfish		0	0	2	5	6	3	6	7	5	6	7
% of Gillnet complex		0%	0%	2%	2%	1%	1%	1%	2%	2%	2%	7%
# of vessels												
Gillnet complex		11	16	39	69	71	73	70	68	50	48	35
with GF		1	0	4	14	15	14	20	20	15	19	17
% of Gillnet complex		9%	0%	10%	20%	21%	19%	29%	29%	30%	40%	49%
# of trips												
Gillnet complex		13	27	83	367	432	459	735	575	706	486	523
with GF		1	0	15	138	139	132	260	180	248	167	160
% of Gillnet complex		8%	0%	18%	38%	32%	29%	35%	31%	35%	34%	31%
CA: S of P. Conception												
Metric tons												
Gillnet complex		13	15	120	796	673	789	901	884	927	930	787
Groundfish		0	0	1	20	20	21	25	29	49	34	27
% of Gillnet complex		0%	0%	1%	3%	3%	3%	3%	3%	5%	4%	3%
# of vessels												
Gillnet complex		7	11	71	161	140	128	130	135	126	124	110
with GF		0	1	13	61	52	51	53	54	55	65	54
% of Gillnet complex		0%	9%	18%	38%	37%	40%	41%	40%	44%	52%	49%
# of trips												
Gillnet complex		13	22	155	2,177	2,613	3,059	3,632	2,994	3,880	4,053	3,358
with GF		0	1	20	533	777	775	1,176	1,078	1,421	1,408	1,210
% of Gillnet complex		0%	5%	13%	24%	30%	25%	32%	36%	37%	35%	36%
Coastwide												
Metric tons												
Gillnet complex	0	73	92	285	1,172	1,145	1,284	1,424	1,462	1,223	1,261	959
Groundfish	0	0	0	2	25	26	24	31	36	54	40	35
% of Gillnet complex	0%	0%	0%	1%	2%	2%	2%	2%	2%	4%	3%	4%
# of vessels												
Gillnet complex	1	16	26	99	194	167	165	168	164	159	149	127
with GF	1	1	1	17	73	66	65	72	73	70	81	69
% of Gillnet complex	100%	6%	4%	17%	38%	40%	39%	43%	45%	44%	54%	54%
# of trips												
Gillnet complex	1	26	54	272	2,615	3,063	3,543	4,391	3,622	4,620	4,564	3,885
with GF	1	1	1	35	671	916	907	1,436	1,258	1,670	1,575	1,370
% of Gillnet complex	100%	4%	2%	13%	26%	30%	26%	33%	35%	36%	35%	35%

TABLE 3.3.1.3-7. Annual coastwide and area participation in the Pacific Halibut fishery by open-access vessels with associated groundfish on the same landing day, 1990-2001.

Area/Landings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
WA												
Metric tons												
P Halibut	22	21	37	67	32	0	7	5	4	9	9	15
Groundfish	14	6	6	5	7	0	0	5	1	7	4	4
% of P Halibut	63%	27%	16%	7%	23%	0%	7%	89%	16%	79%	48%	26%
# of vessels												
P Halibut	68	70	84	128	94	1	11	30	13	30	36	34
Groundfish	56	56	61	51	61	1	5	24	6	19	28	19
% of P Halibut	82%	80%	73%	40%	65%	100%	45%	80%	46%	63%	78%	56%
# of trips												
P Halibut	133	70	124	130	185	3	16	82	21	72	94	101
Groundfish	107	56	87	52	96	1	6	66	9	48	64	59
% of P Halibut	80%	80%	70%	40%	52%	33%	38%	80%	43%	67%	68%	58%
OR: N of Coos Bay												
Metric tons												
P Halibut	6	21	18	23	14	23	27	34	36	33	37	53
Groundfish	1	2	1	4	2	4	8	12	7	4	5	4
% of P Halibut	26%	11%	8%	16%	14%	19%	28%	36%	20%	12%	13%	7%
# of vessels												
P Halibut	27	42	30	48	55	62	79	120	122	83	94	128
Groundfish	15	26	20	40	35	41	59	95	80	66	75	72
% of P Halibut	56%	62%	67%	83%	64%	66%	75%	79%	66%	80%	80%	56%
# of trips												
P Halibut	44	43	38	48	80	154	207	316	338	153	223	332
Groundfish	24	27	23	40	47	76	135	232	184	90	140	137
% of P Halibut	55%	63%	61%	83%	59%	49%	65%	73%	54%	59%	63%	41%
OR: Coos Bay south												
Metric tons												
P Halibut	2	5	8	6	2	11	9	16	9	8	5	9
Groundfish	1	0	1	1	1	1	2	6	3	1	2	3
% of P Halibut	37%	5%	14%	13%	24%	11%	26%	36%	36%	16%	35%	31%
# of vessels												
P Halibut	17	13	17	17	11	20	32	63	38	25	36	34
Groundfish	15	7	9	10	5	13	21	51	29	18	30	23
% of P Halibut	88%	54%	53%	59%	45%	65%	66%	81%	76%	72%	83%	68%
# of trips												
P Halibut	17	13	21	17	13	39	52	108	88	36	65	45
Groundfish	15	7	11	10	7	22	36	87	63	24	49	30
% of P Halibut	88%	54%	52%	59%	54%	56%	69%	81%	72%	67%	75%	67%
Coastwide												
Metric tons												
P Halibut	30	48	64	97	48	35	43	56	50	50	51	77
Groundfish	16	9	9	9	10	6	11	23	11	12	11	10
% of P Halibut	54%	19%	14%	10%	21%	18%	24%	41%	23%	25%	21%	14%
# of vessels												
P Halibut	112	127	131	195	158	81	119	210	168	139	156	189
Groundfish	86	91	91	103	101	55	83	168	110	102	124	113
% of P Halibut	77%	72%	69%	53%	64%	68%	70%	80%	65%	73%	79%	60%
# of trips												
P Halibut	194	130	186	197	279	203	276	510	451	268	382	480
Groundfish	146	92	124	104	151	106	178	388	257	166	253	227
% of P Halibut	75%	71%	67%	53%	54%	52%	64%	76%	57%	62%	66%	47%

Table 3.3.1.3-8. Annual coastwide and area participation in the pink shrimp fishery by open-access vessels, with associated groundfish on the same landing day, 1990-2001.

Area/Landings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
WA												
Metric tons												
Shrimp	3,738	2,882	3,501	4,314	2,251	3,122	2,224	2,209	737	1,006	1,438	2,703
Groundfish	242	237	239	465	316	300	293	74	58	39	41	23
% of shrimp	6%	8%	7%	11%	14%	10%	13%	3%	8%	4%	3%	1%
# of vessels												
Shrimp	48	55	45	49	43	58	33	25	22	16	17	19
with GF	45	53	36	48	40	57	30	23	19	15	15	17
% of shrimp	94%	96%	80%	98%	93%	98%	91%	92%	86%	94%	88%	89%
# of trips												
Shrimp	601	528	369	528	444	580	428	307	196	155	155	252
with GF	476	448	288	469	399	548	353	213	149	129	121	133
% of shrimp	79%	85%	78%	89%	90%	94%	82%	69%	76%	83%	78%	53%
OR: N of Coos Bay												
Metric tons												
Shrimp	5,235	3,669	6,403	4,542	2,101	2,404	2,711	3,621	1,538	4,473	5,311	6,532
Groundfish	240	247	258	405	164	167	285	104	110	142	94	62
% of shrimp	5%	7%	4%	9%	8%	7%	11%	3%	7%	3%	2%	1%
# of vessels												
Shrimp	51	50	52	47	44	47	37	42	41	43	34	34
with GF	49	49	50	45	42	45	36	38	40	41	32	30
% of shrimp	96%	98%	96%	96%	95%	96%	97%	90%	98%	95%	94%	88%
# of trips												
Shrimp	770	714	666	499	465	533	551	443	357	579	528	505
with GF	712	681	566	468	422	500	534	413	347	553	480	367
% of shrimp	92%	95%	85%	94%	91%	94%	97%	93%	97%	96%	91%	73%
OR: S of Coos Bay												
Metric tons												
Shrimp	1,112	927	3,556	1,292	2,543	1,130	1,857	1,964	228	1,155	1,001	1,780
Groundfish	8	10	22	18	40	15	42	18	7	26	15	8
% of shrimp	1%	1%	1%	1%	2%	1%	2%	1%	3%	2%	2%	0%
# of vessels												
Shrimp	22	24	33	22	60	35	42	27	18	30	15	14
with GF	12	17	19	13	48	30	35	22	16	26	14	13
% of shrimp	55%	71%	58%	59%	80%	86%	83%	81%	89%	87%	93%	93%
# of trips												
Shrimp	160	161	363	172	471	290	346	253	107	206	139	160
with GF	74	91	138	101	289	191	211	168	69	172	109	63
% of shrimp	46%	57%	38%	59%	61%	66%	61%	66%	64%	83%	78%	39%
CA: N of C. Mendocino												
Metric tons												
Shrimp	847	2,060	3,388	1,693	2,420	1,268	2,056	2,807	348	738	548	890
Groundfish	2	8	4	7	20	30	17	17	9	11	3	0
% of shrimp	0%	0%	0%	0%	1%	2%	1%	1%	3%	1%	1%	0%
# of vessels												
Shrimp	15	32	28	28	54	42	41	38	29	20	18	16
with GF	10	25	11	21	43	32	32	34	18	18	13	6
% of shrimp	67%	78%	39%	75%	80%	76%	78%	89%	62%	90%	72%	38%
# of trips												
Shrimp	255	478	440	359	552	522	520	413	150	151	90	84
with GF	38	109	52	62	165	245	190	182	74	86	32	7
% of shrimp	15%	23%	12%	17%	30%	47%	37%	44%	49%	57%	36%	8%

Table 3.3.1.3-8 (cont.). **Annual coastwide and area participation in the pink shrimp fishery by open-access vessels, with associated groundfish on the same landing day, 1990-2001.**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CA: C. Mendocino - Pt Conception												
Metric tons												
Shrimp		0	1	0	167	387	75	103	24	53	30	25
Groundfish		0	0	1	1	7	0	1	0	1	0	0
% of shrimp		0%	11%	740%	1%	2%	0%	1%	2%	2%	0%	0%
# of vessels												
Shrimp		3	5	2	10	25	8	7	4	5	1	1
with GF		0	3	2	8	18	3	6	2	4	0	0
% of shrimp		0%	60%	100%	80%	72%	38%	86%	50%	80%	0%	0%
# of trips												
Shrimp		3	8	8	26	84	24	17	10	7	1	2
with GF		0	3	8	14	35	7	9	3	6	0	0
% of shrimp		0%	38%	100%	54%	42%	29%	53%	30%	86%	0%	0%
CA: S of Pt Conception												
Metric tons												
Shrimp	2	1	0		0	29	12	5	1	0	1	1
Groundfish	1	0	0		0	0	0	0	0	0	0	0
% of shrimp	30%	0%	69%		0%	1%	0%	0%	10%	51%	28%	20%
# of vessels												
Shrimp	5	3	3		2	4	3	1	5	3	3	7
with GF	2	0	2		0	1	0	1	1	1	3	2
% of shrimp	40%	0%	67%		0%	25%	0%	100%	20%	33%	100%	29%
# of trips												
Shrimp	29	3	10		3	9	6	22	14	11	12	15
with GF	22	0	5		0	3	0	1	4	5	9	8
% of shrimp	76%	0%	50%		0%	33%	0%	5%	29%	45%	75%	53%
Coastwide												
Metric tons												
Shrimp	10,935	9,538	16,850	11,841	9,482	8,340	8,936	10,708	2,876	7,426	8,328	11,930
Groundfish	494	502	524	896	540	520	637	213	185	218	153	94
% of shrimp	5%	5%	3%	8%	6%	6%	7%	2%	6%	3%	2%	1%
# of vessels												
Shrimp	90	95	104	95	127	127	110	102	94	80	69	69
with GF	80	84	86	87	113	116	94	94	80	74	65	53
% of shrimp	89%	88%	83%	92%	89%	91%	85%	92%	85%	93%	94%	77%
# of trips												
Shrimp	1,815	1,887	1,856	1,566	1,961	2,018	1,875	1,455	834	1,109	925	1,018
with GF	1,322	1,329	1,052	1,108	1,289	1,522	1,295	986	646	951	751	578
% of shrimp	73%	70%	57%	71%	66%	75%	69%	68%	77%	86%	81%	57%

Note: For years prior to implementation of limited entry in 1994, this table includes only vessels whose landings were not used to qualify for a limited-entry permit.

Table 3.3.1.3-9. Annual coastwide and area participation in the Salmon Troll fishery (without halibut) by open-access vessels, with associated groundfish on the same landing day, 1990-2001.

Area/Landings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
WA												
Metric tons												
Salmon	433	374	291	207	4	115	42	22	33	83	43	120
Groundfish	35	28	56	33	0	0	0	1	1	2	1	0
% of Salmon	8%	7%	19%	16%	0%	0%	0%	6%	2%	2%	1%	0%
# of vessels												
Salmon	875	794	593	456	1	92	89	42	20	49	38	55
with GF	278	217	231	200	0	5	14	25	9	29	8	15
% of salmon	32%	27%	39%	44%	0%	5%	16%	60%	45%	59%	21%	27%
# of trips												
Salmon	3,886	2,997	2,689	1,989	1	444	348	127	36	273	89	323
with GF	751	636	819	696	0	7	23	57	13	82	14	36
% of salmon	19%	21%	30%	35%	0%	2%	7%	45%	36%	30%	16%	11%
OR: N of Coos Bay												
Metric tons												
Salmon	482	674	477	287	101	683	610	457	415	100	369	881
Groundfish	17	19	35	85	19	11	30	24	22	4	3	5
% of Salmon	3%	3%	7%	30%	19%	2%	5%	5%	5%	4%	1%	1%
# of vessels												
Salmon	739	720	506	417	231	293	275	265	230	174	220	256
with GF	362	281	289	257	97	150	166	166	135	80	93	112
% of salmon	49%	39%	57%	62%	42%	51%	60%	63%	59%	46%	42%	44%
# of trips												
Salmon	7,541	5,851	4,785	3,903	1,332	2,858	2,738	2,154	2,050	1,149	1,854	2,911
with GF	1,434	934	1,262	1,475	362	593	854	857	607	197	265	341
% of salmon	19%	16%	26%	38%	27%	21%	31%	40%	30%	17%	14%	12%
OR: S of Coos Bay												
Metric tons												
Salmon	913	397	134	104	45	254	273	206	165	228	368	422
Groundfish	43	6	3	31	7	3	13	11	10	9	4	4
% of Salmon	5%	2%	2%	30%	16%	1%	5%	5%	6%	4%	1%	1%
# of vessels												
Salmon	919	566	197	242	149	209	202	189	144	184	195	222
with GF	458	148	45	129	61	76	97	95	86	100	83	74
% of salmon	50%	26%	23%	53%	41%	36%	48%	50%	60%	54%	43%	0
# of trips												
Salmon	11,774	4,652	1,124	1,772	946	1,735	1,843	1,478	1,065	1,523	2,080	2,543
with GF	2,255	384	81	543	202	195	346	387	320	336	331	291
% of salmon	19%	8%	7%	31%	21%	11%	19%	26%	30%	22%	16%	11%
CA: N of C. Mendocino												
Metric tons												
Salmon					4	18	68	9	15	16	31	52
Groundfish					0	0	0	0	0	0	0	0
% of Salmon					1%	0%	1%	0%	1%	1%	1%	0%
# of vessels												
Salmon					24	36	69	32	32	47	55	62
with GF					5	5	16	1	5	6	6	5
% of salmon					21%	14%	23%	3%	16%	13%	11%	8%
# of trips												
Salmon					44	86	591	114	199	235	191	365
with GF					5	5	27	1	5	8	6	8
% of salmon					11%	6%	5%	1%	3%	3%	3%	2%

Table 3.3.1.3-10.--Annual coastwide and area participation in the Salmon Troll fishery (without halibut) by open-access vessels, with associated groundfish on the same landing day, 1990-2001 (cont.).

Area/Landings	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CA: C. Mendocino - P. Conception												
Metric tons												
Salmon	0	0		2	1,492	3,087	1,914	2,633	882	1,833	2,354	1,104
Groundfish	0	0		0	9	6	8	4	4	4	4	2
% of Salmon		0%		1%	1%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
Salmon	1	3		42	977	1,101	892	773	604	618	716	636
with GF	0	1		3	245	249	186	159	144	126	123	49
% of salmon	0%	33%		7%	25%	23%	21%	21%	24%	20%	17%	8%
# of trips												
Salmon	1	4		51	13,013	15,593	10,368	10,159	7,159	8,143	9,267	5,890
with GF	0	1		3	597	591	460	343	293	293	234	83
% of salmon	0%	25%		6%	5%	4%	4%	3%	4%	4%	3%	1%
CA: S of P. Conception												
Metric tons												
Salmon				0	1	100	20	6	18	1	1	2
Groundfish				0	0	0	0	0	0	0	0	0
% of Salmon				0%	0%	0%	0%	0%	1%	1%	0%	0%
# of vessels												
Salmon				1	15	70	22	19	26	6	4	7
with GF				0	0	8	3	2	3	2	0	0
% of salmon				0%	0%	11%	14%	11%	12%	33%	0%	0%
# of trips												
Salmon				1	17	413	97	70	154	16	4	10
with GF				0	0	12	5	2	7	2	0	0
Coastwide												
Metric tons												
Salmon	1,828	1,445	901	600	1,647	4,256	2,927	3,333	1,528	2,261	3,166	2,580
Groundfish	94	53	94	149	35	21	52	40	35	19	12	11
% of Salmon	5%	4%	10%	25%	2%	0%	2%	1%	2%	1%	0%	0%
# of vessels												
Salmon	2,254	1,865	1,153	1,047	1,318	1,627	1,428	1,227	995	969	1,099	1,078
with GF	987	574	504	520	393	460	456	430	364	312	293	240
% of salmon	44%	31%	44%	50%	30%	28%	32%	35%	37%	32%	27%	22%
# of trips												
Salmon	23,202	13,504	8,598	7,716	15,353	21,129	15,985	14,102	10,663	11,339	13,485	12,042
with GF	4,440	1,955	2,162	2,717	1,166	1,403	1,715	1,647	1,245	918	850	759
% of salmon	19%	14%	25%	35%	8%	7%	11%	12%	12%	8%	6%	6%

Table 3.3.1.3-10. Annual coastwide and area participation in the Salmon Troll fishery (with halibut) by open-access vessels, with associated groundfish on the same landing day, 1990-2001.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
WA												
Metric tons												
Salmon			0			1	20	9	27	45	43	
Groundfish			0			0	4	1	6	3	3	
% of Salmon			129%			0%	21%	6%	24%	7%	6%	
# of vessels												
Salmon			3			1	23	6	18	23	20	
with GF			3			0	18	4	14	20	13	
% of salmon			100%			0%	78%	67%	78%	87%	65%	
# of trips												
Salmon			3			1	68	10	51	75	78	
with GF			3			0	55	7	42	52	51	
% of salmon			100%			0%	81%	70%	82%	69%	65%	
OR: N of Coos Bay												
Metric tons												
Salmon	0	0	1	0	39	69	95	100	15	27	101	
Groundfish	0	0	0	0	2	6	11	6	2	3	2	
% of Salmon	27%	48%	4%	121%	5%	9%	11%	6%	12%	10%	2%	
# of vessels												
Salmon	9	7	6	10	26	48	82	85	47	56	81	
with GF	4	5	4	10	21	39	74	62	36	43	49	
% of salmon	44%	71%	67%	100%	81%	81%	90%	73%	77%	77%	60%	
# of trips												
Salmon	10	7	7	10	66	146	268	258	88	151	237	
with GF	4	5	4	10	41	111	211	158	49	95	105	
% of salmon	40%	71%	57%	100%	62%	76%	79%	61%	56%	63%	44%	
OR: South of Coos Bay												
Metric tons												
Salmon	1			0	1	9	20	26	4	9	5	
Groundfish	0			0	0	1	4	3	0	1	0	
% of Salmon	43%			375%	12%	16%	21%	12%	6%	15%	6%	
# of vessels												
Salmon	10			2	6	10	28	24	12	28	21	
with GF	10			2	4	7	25	22	10	25	13	
% of salmon	100%			100%	67%	70%	89%	92%	83%	89%	62%	
# of trips												
Salmon	10			2	6	23	72	72	16	53	27	
with GF	10			2	4	19	61	56	11	42	16	
% of salmon	100%			100%	67%	83%	85%	78%	69%	79%	59%	
Coastwide												
Metric tons												
Salmon	1	0	1	0	39	79	134	134	46	81	149	
Groundfish	0	0	0	0	2	8	19	10	8	7	4	
% of Salmon	41%	48%	12%	153%	6%	10%	14%	7%	18%	8%	3%	
# of vessels												
Salmon	19	7	9	12	30	56	128	110	74	98	116	
with GF	14	5	7	12	24	44	113	84	57	79	74	
% of salmon	74%	71%	78%	100%	80%	79%	88%	76%	77%	81%	64%	
# of trips												
Salmon	20	7	10	12	72	170	409	340	155	279	342	
with GF	14	5	7	12	45	130	328	221	102	189	172	
% of salmon	70%	71%	70%	100%	63%	76%	80%	65%	66%	68%	50%	

Table 3.3.1.3-11. Incidental overfished groundfish landings (lbs.) in non-Indian commercial salmon troll fisheries by salmon management area for 2000 and 2001.

Salmon troll landings are defined as those for which salmon representes at least 50% by weight of the total ticketed landing. N/A indicates that individual species estimates were not made. Data from PacFIN.

Port Area/Year		Species					
	Lingcod	Bocaccio	Canary	Darkblotched	Widow	Yelloweye[a]	All Groundfish[b]
Neah Bay-La Push							
2000	N/A	N/A	469	N/A	65	205	5,788
2001	N/A	N/A	175	N/A	40	101	5,900
Westport-Astoria							
2000	N/A	N/A	119	N/A	15	-	2,399
2001	N/A	N/A	97	N/A	-	-	835
Central Oregon							
2000	N/A	N/A	2,332	N/A	102	132	18,250
2001	N/A	N/A	1,264	N/A	136	99	18,274
Oregon KMZ							
2000	N/A	N/A	167	N/A	9	4	1,693
2001	N/A	N/A	185	N/A	70	9	1,867
California KMZ							
2000	-	N/A	-	-	-	-	249
2001	40	N/A	-	-	-	-	64
Fort Bragg							
2000	50	12	91	-	-	N/A	711
2001	121	9	61	-	22	N/A	470
San Francisco							
2000	455	106	115	-	6	N/A	2,971
2001	439	2	51	-	-	N/A	807
Monterey-Conception							
2000	183	311	65	-	-	N/A	2,308
2001	-	16	8	-	-	N/A	166
Total							
2000	688	429	3,357	-	197	341	34,369
2001	600	27	1,841	-	268	209	28,382
Total (MT)							
2000	0.31	0.20	1.53	0.00	0.09	0.16	15.62
2001	0.27	0.01	0.84	0.00	0.12	0.10	12.90

Table 3.3.1.3-12.--Annual coastwide and area participation in the Sea Cucumber fishery by open-access vessels, with associated groundfish on the same landing day, 1990-2001.

Area/Species	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CA: S of P. Conception												
Metric tons												
Sea cuke	42	177	181	262	220	183	170	31	60	57	29	102
Groundfish	0	6	7	9	15	9	14	0	2	1	0	1
% of sea cuke			4%			5%	8%	0%	3%	2%	2%	
# of vessels												
Sea cuke	16	55	22	22	32	27	27	10	16	14	17	13
with GF	1	16	14	15	20	19	15	4	8	5	5	8
% of sea cuke			64%			70%	56%	40%	50%	36%	29%	
# of trips												
Sea cuke	52	488	565	651	659	453	396	108	277	196	167	328
with GF	1	153	202	168	226	172	185	5	41	24	16	29
% of sea cuke			36%			38%	47%	5%	15%	12%	10%	
Coastwide												
Metric tons												
Sea cuke	42	177	181	262	220	183	170	31	60	57	29	102
Groundfish	0	6	7	9	15	9	14	0	2	1	0	1
% of sea cuke			4%			5%	8%	0%	3%	2%	2%	
# of vessels												
Sea cuke	16	55	22	22	32	27	27	10	16	14	17	13
with GF	1	16	14	15	20	19	15	4	8	5	5	8
% of sea cuke			64%			70%	56%	40%	50%	36%	29%	
# of trips												
Sea cuke	52	488	565	651	659	453	396	108	277	196	167	328
with GF	1	153	202	168	226	172	185	5	41	24	16	29
% of sea cuke			36%			38%	47%	5%	15%	12%	10%	

TABLE 3.3.1.3-13. Expanded logbook data from the sea cucumber trawl fishery, by depth strata, 1996-2000 (includes overfished species bycatch) (Page 21 of 2).

Depth strata	Number of boats					Pounds targeted spp landed				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
<=20 fm	5	1	1	3	0	1,504	810	2,061	2,129	0
<=50 fm	15	7	16	12	9	120,001	60,630	134,149	104,345	57,495
>20 - <=150 fm	16	9	21	13	12	221,305	60,004	162,507	148,066	59,585
>50 - <=150 fm	13	2	14	10	7	102,808	184	30,419	45,850	2,090
>150 fm	0	0	2	1	0	0	0	2,745	235	0
0 or no depths	5	0	2	5	1	317	0	562	1,899	0

	Total hours					Fleet average CPUE for targeted spp				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
<=20 fm	37.6	4.7	34.6	11	0	33.7	173.5	43.3	19.2	0
<=50 fm	1054.1	369.5	1557.2	1026	426	112.8	180.8	109.2	102.7	134.1
>20 - <=150 fm	1875.6	395.7	2137.4	1857.9	582.8	113.7	141.8	108.4	95.1	100.5
>50 - <=150 fm	859.2	30.8	614.8	824.9	156.8	91.8	5	53.1	40.5	41.7
>150 fm	0	0	78.4	17.8	0	0	0	33.1	13.2	0

	Pounds bycatch of bocaccio					Pounds bycatch of canary rockfish				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
<=20 fm	0	0	0	0	0	0	0	0	0	0
<=50 fm	0	0	0	0	0	0	0	0	0	0
>20 - <=150 fm	10	0	0	20	0	0	0	0	0	0
>50 - <=150 fm	10	0	0	20	0	0	0	0	0	0
>150 fm	0	0	0	0	0	0	0	0	0	0

	Pounds bycatch of cowcod					Pounds bycatch of yelloweye rockfish				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
<=20 fm	0	0	0	0	0	0	0	0	0	0
<=50 fm	0	0	0	0	0	0	0	0	0	0
>20 - <=150 fm	0	0	0	0	0	0	0	0	0	0
>50 - <=150 fm	0	0	0	0	0	0	0	0	0	0
>150 fm	0	0	0	0	0	0	0	0	0	0

	Pounds bycatch of lingcod					Pounds bycatch of unspecified rockfish				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
<=20 fm	0	0	0	0	0	30	0	0	0	0
<=50 fm	52	0	0	0	0	2341	0	168	325	16
>20 - <=150 fm	82	0	0	0	0	3824	0	207	390	16
>50 - <=150 fm	30	0	0	0	0	1513	0	39	65	0
>150 fm	0	0	0	0	0	0	0	0	0	0

TABLE 3.3.1.3-13. Expanded logbook data from the sea cucumber trawl fishery, by depth strata, 1996-2000 (includes overfished species bycatch) (Page 22 of 2).

	Pounds bycatch of Ca. halibut					Bycatch rate (lbs bocaccio/lbs target spp)				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
<=20 fm	502	74	93	0	0	0	0	0	0	0
<=50 fm	3461	1081	4518	195	262	0	0	0	0	0
>20 - <=150 fm	3783	1007	5458	368	262	tr	0	0	tr	0
>50 - <=150 fm	824	0	1033	173	0	tr	0	0	tr	0
>150 fm	0	0	367	0	0		0	0	0	0
0 or no depths			33							

	Bycatch rate (lbs canary/lbs target spp)				
	1996	1997	1998	1999	2000
<=20 fm	0	0	0	0	0
<=50 fm	0	0	0	0	0
>20 - <=150 fm	0	0	0	0	0
>50 - <=150 fm	0	0	0	0	0
>150 fm	0	0	0	0	0

	Bycatch rate (lbs cowcod/lbs target spp)				
	1996	1997	1998	1999	2000
<=20 fm	0	0	0	0	0
<=50 fm	0	0	0	0	0
>20 - <=150 fm	0	0	0	0	0
>50 - <=150 fm	0	0	0	0	0
>150 fm	0	0	0	0	0

Table 3.3.1.3-14. Bycatch of groundfish species in Makah midwater and bottom trawl fisheries, 2000-2002.
Note: No data available for bycatch by target species for bottom trawl. Primary species are Pacific cod andflatfish

Midwater Trawl					
2000		2001		2002	
Species	lbs.	Species	lbs.	Species	lbs.
blackcod	0	blackcod	0	blackcod	0
lingcod	0	lingcod	6	lingcod	365
canary rockfish	306	canary rockfish	1,366	canary rockfish	1,906
yelloweye rockfish	0	yelloweye rockfish	0	yelloweye rockfish	53
widow rockfish	2,036	widow rockfish	11,549	widow rockfish	13,452
yellowtail rockfish	67,872	yellowtail rockfish	190,494	yellowtail rockfish	214,098
POP	0	POP	0	POP	0
darkblotched rockfish	0	darkblotched rockfish	102	darkblotched rockfish	2,984
shortspine thornyhead	0	shortspine thornyhead	0	shortspine thornyhead	0

Bottom Trawl					
2000		2001		2002	
Species	lbs.	Species	lbs.	Species	lbs.
blackcod	0	blackcod	53	blackcod	0
lingcod	7	lingcod	508	lingcod	1,999
canary rockfish	24	canary rockfish	0	canary rockfish	2,514
yelloweye rockfish	0	yelloweye rockfish	0	yelloweye rockfish	53
widow rockfish	0	widow rockfish	0	widow rockfish	16,079
yellowtail rockfish	563	yellowtail rockfish	505	yellowtail rockfish	260,791
POP	0	POP	0	POP	0
darkblotched rockfish	0	darkblotched rockfish	0	darkblotched rockfish	2,984
shortspine thornyhead	0	shortspine thornyhead	0	shortspine thornyhead	0

Troll					
2000		2001		2002	
Species	lbs.	Species	lbs.	Species	lbs.
blackcod	0	blackcod	0	blackcod	0
lingcod	1,958	lingcod	773	lingcod	1,711
canary rockfish	381	canary rockfish	607	canary rockfish	913
yelloweye rockfish	988	yelloweye rockfish	43	yelloweye rockfish	83
widow rockfish	0	widow rockfish	32	widow rockfish	0
yellowtail rockfish	8,948	yellowtail rockfish	7,060	yellowtail rockfish	6,650
POP	0	POP	0	POP	0
darkblotched rockfish	0	darkblotched rockfish	0	darkblotched rockfish	0
shortspine thornyhead	0	shortspine thornyhead	0	shortspine thornyhead	0

T. 3.3.1.3-15. Bycatch of groundfish species in tribal longline fisher 2000, 2001, and 2002.

Target Fishery		Bycatch		Target Fishery		Bycatch		Target Fishery		Bycatch	
Quinault [1/]											
2000	lbs	bycatch species		2001	lbs	bycatch species	lbs	2002	lbs	bycatch species	lbs
Halibut	85252	0 [2/]		Halibut	85,644	rock	49	Halibut	10,4191	canary	4
Sablefish	309762	0 [2/]		Sablefish	288,511	rougheye	7,964			yelloweye	10
						blackgill	2,444			yellowtail	4
						shortraker	3,710			shelf	19
						SST	542	Sablefish	114,269	slope	4,121
										SST	570
Quileute											
2000	lbs	bycatch species		2001	lbs	bycatch species	lbs	2002	lbs	bycatch species	lbs
Halibut	42666	black	30	Halibut	45034	black	0	Halibut	67,290	black	0
		lingcod	144			lingcod	1,599			lingcod	1005
		canary	74			canary	25			canary	107
		yelloweye	2,365			yelloweye	4,224			yelloweye	3,278
		yellowtail	63			yellowtail	19			yellowtail	42
		widow	0			widow	0			widow	0
		POP	0			POP	0			POP	0
		darckblotched	0			darckblotched	0			darckblotched	0
		SST	0			SST	0			SST	0
Sablefish	164016	black	0	Sablefish	143,591	black	0	Sablefish	92,438	black	0
		lingcod	0			lingcod	0			lingcod	0
		canary	0			canary	0			canary	0
		yelloweye	0			yelloweye	0			yelloweye	0
		yellowtail	0			yellowtail	0			yellowtail	0
		widow	0			widow	0			widow	0
		POP	0			POP	0			POP	0
		darkblotched	0			darkblotched	0			darkblotched	0
		SST	624			SST	482			SST	80
Makah											
2000	lbs	bycatch species		2001	lbs	bycatch species	lbs	2002	lbs	bycatch species	lbs
Halibut	151268	black	0	Halibut	270365	black	0	Halibut	294618	black	0
		lingcod	2,289			lingcod	4,092			lingcod	6,212
		canary	19,547			canary	2,330			canary	815
		yelloweye	523			yelloweye	2,075			yelloweye	1,668
		yellowtail	0			yellowtail	382			yellowtail	30
		widow	3			widow	19			widow	0
		POP	0			POP	0			POP	0
		darckblotched	0			darckblotched	0			darckblotched	0
		SST	0			SST	0			SST	0
Sablefish	490,229	black	0	Sablefish	464,723	black	0	Sablefish	227,740	black	0

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TABLE 3.3.1.3-15. Bycatch of groundfish species in tribal longline fisheries in 2000, 2001, and 2002.

Target Fishery	Bycatch		Target Fishery	Bycatch		Target Fishery	Bycatch	
	lingcod	0		lingcod	0		lingcod	0
	canary	0		canary	0		canary	0
	yelloweye	0		yelloweye	0		yelloweye	0
	yellowtail	0		yellowtail	0		yellowtail	0
	widow	0		widow	0		widow	0
	POP	0		POP	0		POP	0
	darkblotched	0		darkblotched	0		darkblotched	0
	SST	7,662		SST	10,081		SST	???

1/ No black rockfish, lingcod, POP, widow, or darkblotched caught for these fisheries/years for Quinault.
2/ Data unavailable.

Table 3.3.1.3-16. Incidental catch in CPS fisheries

TABLE 3.3.1.3-17. Annual coastwide and area participation in the Coastal Pelagic Squid fishery by open-access vessel with associated groundfish on the same landing day, 1990-2001.

Area/Species	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CA: C. Mendocino - P. Conception												
Metric tons												
CPS/squid	6,785	6,039	6,512	6,742	12,874	2,024	4,333	8,218		284	6,959	7,813
Groundfish	0	0	0	0	0	0	0	0		0	0	0
% of CPL/squid	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%	0%
# of vessels												
CPS/squid	31	32	42	33	35	34	32	28		12	21	17
Groundfish	1	1	6	1	1	1	1	0		0	1	0
% of CPL/squid	3%	3%	14%	3%	3%	3%	3%	0%		0%	5%	0%
# of trips												
CPS/squid	700	602	786	780	1,237	243	417	660		28	525	458
Groundfish	1	1	7	3	1	1	1	0		0	1	0
% of CPL/squid	0%	0%	1%	0%	0%	0%	0%	0%		0%	0%	0%
CA: S of P. Conception												
Metric tons												
CPS/squid	19,914	28,810	4,493	30,858	34,717	61,325	69,811	59,194	2,879	89,574		76,425
Groundfish	1	0	0	0	0	0	0	0	0	1	1	1
% of CPL/squid	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
CPS/squid	65	54	32	57	69	92	125	107	72	138	136	107
Groundfish	6	1	1	1	1	3	4	3	5	8	13	7
% of CPL/squid	9%	2%	3%	2%	1%	3%	3%	3%	7%	6%	10%	7%
# of trips												
CPS/squid	727	992	172	1,130	1,317	2,422	2,706	1,987	415	4,185	3,800	2,587
Groundfish	25	18	10	6	3	8	14	28	34	62	63	27
% of CPL/squid	3%	2%	6%	1%	0%	0%	1%	1%	8%	1%	2%	1%
Coastwide												
Metric tons												
CPS/squid	26,700	34,849	11,005	37,600	47,613	63,350	74,144	67,415	2,879	89,858		84,237
Groundfish	1	0	0	0	0	0	0	1	0	1	1	1
% of CPL/squid	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
CPS/squid	87	77	67	81	89	111	138	126	72	142	144	115
Groundfish	7	2	7	2	3	5	5	7	5	8	14	7
% of CPL/squid	8%	3%	10%	2%	3%	5%	4%	6%	7%	6%	10%	6%
# of trips												
CPS/squid	1,427	1,594	960	1,910	2,558	2,668	3,123	2,656	415	4,213	4,325	3,045
Groundfish	26	19	17	9	5	10	15	37	34	62	64	27
% of CPL/squid	2%	1%	2%	0%	0%	0%	0%	1%	8%	1%	1%	1%

Table 3.3.1.3-18. Annual coastwide and area participation in the Coastal Pelagic/finfish fishery by open-access vessels, with associated groundfish on the same landing day, 1990-2001.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CA: C Mendocino to - P. Conception												
Metric tons												
CPL/finfish	172	150	173	64	3	44	43	46	8	0	0	14
Groundfish	0	0	1	0	0	0	0	0	0	0	0	0
% of CPL/finfish	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
CPL/finfish	13	30	18	17	14	18	11	15	13	8	3	2
with GF	0	1	2	4	0	1	0	1	0	2	0	0
% of CPL/finfish	0%	3%	11%	24%	0%	6%	0%	7%	0%	25%	0%	0%
# of trips												
CPL/finfish	31	61	68	27	16	30	23	19	30	20	3	2
with GF	0	1	6	4	0	1	0	1	0	2	0	0
% of CPL/finfish	0%	2%	9%	15%	0%	3%	0%	5%	0%	10%	0%	0%
CA: N of Cp M												
Metric tons												
CPL/finfish	42	88	84	52	85	75	86	68	22	17	4	66
Groundfish	0	0	0	0	0	0	0	0	0	0	0	0
% of CPL/finfish	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%
# of vessels												
CPL/finfish	4	7	6	7	6	5	5	13	4	4	4	6
with GF	0	0	0	0	0	0	0	0	0	0	1	0
% of CPL/finfish	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%
# of trips												
CPL/finfish	30	28	32	41	37	58	46	37	12	24	5	37
with GF	0	0	0	0	0	0	0	0	0	0	1	0
% of CPL/finfish	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%
CA: C. Mendocino - P. Conception												
Metric tons												
CPL/finfish	7,327	7,212	6,164	4,193	2,879	4,586	5,429	9,238	2,015	2,254	2,919	2,551
Groundfish	0	0	0	0	0	0	0	0	0	0	0	0
% of CPL/finfish	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
CPL/finfish	256	258	225	193	144	164	177	190	128	125	120	107
with GF	1	3	0	0	0	2	1	0	0	1	0	1
% of CPL/finfish	0%	1%	0%	0%	0%	1%	1%	0%	0%	1%	0%	1%
# of trips												
CPL/finfish	1,790	2,200	1,502	910	851	964	1,489	2,081	519	656	1,079	658
with GF	1	6	0	0	0	2	1	0	0	1	0	1
% of CPL/finfish	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CA: South of P. Conception												
Metric tons												
CPL/finfish	46	8	61	24	78	14	21	72	7	58	42	2
Groundfish	0	0	0	0	0	0	0	0	0	0	0	0
% of CPL/finfish	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
CPL/finfish	5	2	10	6	7	3	3	5	3	4	3	2
with GF	1	0	1	1	0	1	0	0	0	0	0	0
% of CPL/finfish	20%	0%	10%	17%	0%	33%	0%	0%	0%	0%	0%	0%
# of trips												
CPL/finfish	48	2	56	44	10	3	4	9	4	5	4	2
with GF	1	0	24	31	0	1	0	0	0	0	0	0
% of CPL/finfish	2%	0%	43%	70%	0%	33%	0%	0%	0%	0%	0%	0%

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Coastwide												
Metric tons												
CPL/finfish	7,588	7,461	6,481	4,333	3,046	4,719	5,582	9,424	2,054	2,330	2,966	2,637
Groundfish	0	0	1	0	0	0	0	0	0	0	0	0
% of CPL/finfish	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
# of vessels												
CPL/finfish	279	299	259	223	173	190	197	224	149	142	131	120
with GF	2	4	3	5	1	4	1	1	0	3	1	1
% of CPL/finfish	1%	1%	1%	2%	1%	2%	1%	0%	0%	2%	1%	1%
# of trips												
CPL/finfish	1,901	2,296	1,658	1,023	919	1,057	1,571	2,151	574	709	1,092	706
with GF	2	7	30	35	1	4	1	1	0	3	1	1
% of CPL/finfish	0%	0%	2%	3%	0%	0%	0%	0%	0%	0%	0%	0%

Table 3.3.1.4-1. Percent of monthly exvessel value of all 2000 West Coast commercial fishery landings by month

Species Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Sablefish	0.8	1.3	3.6	6.0	3.7	3.4	6.3	20.3	5.7	4.4	4.3	2.2	5.8
Whiting	0.0	0.0	0.0	0.2	1.9	3.5	7.6	6.7	4.4	0.0	0.0	0.0	2.3
Flatfish	8.9	5.5	5.4	7.1	4.1	3.2	3.2	2.7	2.7	3.0	3.2	3.0	4.2
Rockfish	2.5	3.3	5.6	6.5	5.6	4.7	5.6	3.3	5.9	5.0	6.8	3.2	4.6
Other GF	0.2	0.7	0.3	0.7	1.1	1.4	1.3	0.8	0.8	0.5	0.4	0.3	0.7
Shrimp/Prawns	1.6	2.7	3.8	6.8	7.1	16.2	14.3	8.2	8.3	5.0	1.6	1.3	6.2
Crab/Lobster	51.0	41.6	29.6	19.6	15.9	13.0	7.2	4.3	8.3	18.3	18.4	50.3	23.5
Salmon	0.2	0.3	0.2	0.7	17.1	13.7	10.0	13.6	13.3	8.2	2.0	0.4	6.9
HMS	1.2	6.5	2.6	4.7	1.1	1.4	7.3	16.3	19.8	19.6	8.6	6.7	8.9
CPS	13.5	13.3	11.3	10.6	8.1	6.1	7.8	4.9	6.5	11.6	25.0	15.4	11.0
Other	20.2	24.9	37.5	37.2	34.3	33.4	29.3	18.9	24.2	24.4	29.7	17.3	25.9
GF Total	12.3	10.9	14.9	20.4	16.5	16.1	24.0	33.8	19.5	12.8	14.7	8.7	17.5
Non GF Total	87.7	89.1	85.1	79.6	83.5	83.9	76.0	66.2	80.5	87.2	85.3	91.3	82.5
Region Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: PacFin

Table 3.3.1.4-2. Ex-vessel price per round weight pound ($)

Species	1997	1998	1999	2000	2001
All Groundfish	0.16	0.11	0.12	0.14	0.14
Non-whiting Groundfish	0.59	0.51	0.54	0.66	0.68
Whiting	0.05	0.04	0.04	0.04	0.04
Pacific Halibut	2.01	1.62	1.98	2.46	2.02
CA Halibut	2.48	2.33	2.47	2.84	2.91
CPS	0.13	0.06	0.11	0.09	0.08
HMS	0.70	0.61	0.84	1.02	0.96
Salmon	1.24	1.40	1.62	1.71	1.43
Shrimp/Prawn	0.55	1.10	0.64	0.57	0.41
Crab	1.86	1.76	1.92	2.11	2.03
Lobster	7.44	6.38	7.41	6.68	6.41
Shellfish	2.96	2.61	2.56	2.45	2.34
Red Urchin	0.87	0.97	0.94	0.70	0.8

Source: PacFin

Table 3.3.1.4-3. Producer Price Indices: Groundfish vs. Substitutes

Year	Groundfish, fillets and steaks	Groundfish (cod, cusk, haddock, hake, perch, pollock, whiting)	Other frozen fish (salmon, flounder, halibut, etc.)	Meat products
1992	166.5	127.5	96.4	110.0
1993	161.3	122.9	94.2	113.6
1994	157.0	121.4	97.0	110.7
1995	164.8	126.1	95.3	109.3
1996	164.0	126.5	92.6	114.6
1997	177.8	131.2	96.6	116.1
1998	190.1	137.4	98.8	109.2
1999	216.7	153.0	99.3	108.9
2000	205.1	153.4	101.9	115.0
2001	190.5	145.5	94.9	120.3
2002p	192.0	143.5	87.8	115.5

Source: U.S. Department of Labor, Bureau of Labor Statistics website (http://146.142.4.24/cgi-bin/srgate)

Table 3.3.1.4-4. Number or marine anglers in West Coast states, 2000.

	Number of Marine Anglers (Thousands)			
State	Total	Resident	Non-Resident	Percent Non-Resident
Washington	497	450	47	9%
Oregon	365	285	80	22%
California	1,705	1,485	220	13%

Table 3.3.1.4-5 Trends in ocean recreational fishing effort in thousands of angler trips.

Area	Charter 1996	Charter 1997	Charter 1998	Charter 1999	Charter 2000	Private 1996	Private 1997	Private 1998	Private 1999	Private 2000
Total Angler Trips										
Washington	51	50	44	49	49	52	55	37	52	52
Oregon	54	65	57	60	87	57	87	213	173	330
Northern California	90	139	158	162	206	253	312	528	549	523
Southern California	982	812	674	609	876	1,099	1,073	1,167	879	1,314
Total	1,177	1,066	933	880	1,218	1,461	1,527	1,945	1,653	2,219
Groundfish Target and Incidental										
Washington	24	19	23	21	25	24	21	54	25	30
Oregon	43	47	47	44	69	33	57	119	88	153
Northern California	63	59	58	95	101	110	113	160	188	120
Southern California	59	23	33	45	57	35	11	15	30	28
Total	189	248	161	205	252	202	202	348	331	331

Source: RecFin

TABLE 3.3.3-1. Number of buyers and groundfish buyers[a/] on the West Coast in the year 2000 (excluding at-sea whiting deliveries). (Page 1 of 1)

Buyers' Total Expenditures on West Coast Harvest (Groundfish and Nongroundfish)	All Buyers	Nongroundfish Buyers	Groundfish Buyers	Groundfish Buyers as % of Category	Trawl-Caught Groundfish Buyers	Nontrawl-Only Groundfish Buyers
>$2 Million	21	2	19	90%	17	2
$1-$2 Million	33	14	19	58%	11	8
$300 Thousand - $1 Million	98	36	62	63%	33	29
$100-$300 Thousand	121	49	72	60%	23	49
$20-$100 Thousand	273	123	150	55%	19	131
$5 Thousand-$20 Thousand	372	224	148	40%	11	137
<$5 Thousand	862	600	262	30%	11	251
Total	1,780	1,048	732	41%	125	607

a/ Data for West Coast ocean area landings made to West Coast ports.

TABLE 3.3.3-2. Value of purchases ($1,000) by West Coast buyers (groundfish and nongroundfish) in the year 2000. (Page 1 of 1)

	All Buyers	Groundfish Buyers					
		All Species (All West Coast Purchases by All Groundfish Buyers)			Groundfish (All West Coast Purchases)		
	Total Purchases	Total Purchases	As % of All West Coast Purchases	Cumulative Percent of All West Coast Purchases	Groundfish Purchases	Percent of Total Groundfish	Cumulative Percent of Total Groundfish
>$2 Million	95,742	90,762	38%	38%	28,680	53%	53%
$1-$2 Million	45,343	25,851	11%	49%	8,585	16%	68%
$300 Thousand-$1 Million	56,115	36,527	15%	65%	11,278	21%	89%
$100-$300 Thousand	21,427	12,543	5%	70%	3,269	6%	95%
$20-$100 Thousand	12,881	7,297	3%	73%	2,023	4%	99%
$5 Thousand-$ 20 Thousand	3,989	1,519	1%	74%	501	1%	100%
<$5 Thousand	1,278	426	0%	74%	218	0%	100%
Total	236,775	174,926			54,554		

TABLE 3.3.3-3. Groundfish buyers' expenditures on all species and groundfish ($1,000) in the year 2000 (excludes at-sea whiting). (Page 1 of 1)

	Buying Groundfish from Limited Entry Trawl Vessels						Buying Groundfish from Nontrawl Only				All Buyers
			Trawl Expenditure		Nontrawl Expenditures						
	Number	Total Expenditures (All Species)		As a % of Grand Total Trawl Expenditures		As a % of Grand Total Nontrawl Expenditures	Number	Total Expenditures	Nontrawl Expenditures	As a % of Grand Total Nontrawl Expenditures	Grand Total Nontrawl Expenditures
>$2 Million	17	80,726	22,904	60%	5,773	35%	2	10,036	3	0%	5,776
$1-2 Million	11	15,874	6,898	18%	699	4%	8	9,976	988	6%	1,686
$300 Thousand-$1 Million	33	20,226	6,419	17%	2,957	18%	29	16,301	1,902	12%	4,859
$100-$300 Thousand	23	3,765	1,515	4%	235	1%	49	8,778	1,519	9%	1,754
$20-$100 Thousand	19	990	234	1%	249	2%	131	6,307	1,540	9%	1,789
$5 Thousand-$20 Thousand	11	132	80	0%	16	0%	137	1,386	405	2%	421
<$5 Thousand	11	24	20	0%	0	0%	251	402	197	1%	197
	125	121,739	38,071	100%	9,929	60%	607	53,187	6,554	40%	**16,483**

:LE 3.3.3-4. Number of buyers[a/] by amounts of purchases, and pr ions of purchases that are groundfish, from trawl vessels, from n vl -.ssels in the year 2000 (excludes at-sea whiting deliveries). (Page 1

Buyers Total Expenditures on West Coast Harvest (Groundfish and Nongroundfish)	Number of: All Buyers	Number of: Groundfish Buyers	Groundfish: None	Groundfish: <5%	Groundfish: 5%-35%	Groundfish: 35%-65%	Groundfish: 65%-95%	Groundfish: >95%	Groundfish Caught with LE Trawl Gear: None	LE Trawl: <5%	LE Trawl: 5%-35%	LE Trawl: 35%-65%	LE Trawl: 65%-95%	LE Trawl: >95%	Groundfish Caught With Other Gear: None	Other Gear: <5%	Other Gear: 5%-35%	Other Gear: 35%-65%	Other Gear: 65%-95%	Other Gear: >95%
			Percent of Puchases That Are:																	
Number of Buyers (All)																				
>$2 Million	21	19	2	4	8	5	2	0	Same as below						2	9	10	0	0	0
$1-$2 Million	33	19	14	4	9	3	3	0							15	12	5	1	0	0
$300 Thousand-$1 Million	98	62	36	26	15	6	10	5							44	34	12	3	3	2
$100-$300 Thousand	121	72	49	37	12	10	6	7							56	41	12	6	3	3
$33-$100 Thousand	183	100	83	56	19	5	5	15							86	56	19	4	4	14
$5-$33 Thousand	462	198	264	80	43	16	21	38							274	81	43	16	18	30
<$5 Thousand	862	262	600	50	42	29	24	117							610	51	42	26	24	109
Total	1,780	732	1,048	257	148	74	71	182							1,087	284	143	56	52	158
Buyers Buying from Trawl Vessels																				
>$2 Million	17	17	0	2	8	5	2	0	-	3	10	4	0	0	0	7	10	0	0	0
$1-$2 Million	11	11	0	0	6	2	3	0	-	1	5	2	3	0	1	8	2	0	0	0
$300 Thousand-$1 Million	33	33	0	6	9	5	10	3	-	11	9	5	7	1	8	14	6	2	3	0
$100-$300 Thousand	23	23	0	6	4	5	4	4	-	10	2	4	3	4	7	10	4	1	1	0
$33-$100 Thousand	13	13	0	2	4	2	3	2	-	6	5	0	1	1	3	2	4	1	2	1
$5-$33 Thousand	17	17	0	1	4	1	3	8	-	2	4	1	4	6	10	2	4	1	0	0
<$5 Thousand	11	11	0	0	0	3	0	8	-	0	0	3	0	8	10	1	0	0	0	0
Buyers NOT Buying from Trawl Vessels																				
>$2 Million	4	2	2	2	0	0	0	0	4	-	-	-	-	-	Same as to far left					
$1-$2 Million	22	8	14	4	3	1	0	0	22	-	-	-	-	-						
$300 Thousand-$1 Million	65	29	36	20	6	1	0	2	65	-	-	-	-	-						
$100-$300 Thousand	98	49	49	31	8	5	2	3	98	-	-	-	-	-						
$33-$100 Thousand	170	87	83	54	15	3	2	13	170	-	-	-	-	-						
$5-$33 Thousand	445	181	264	79	39	15	18	30	445	-	-	-	-	-						
<$5 Thousand	851	251	600	50	42	26	24	109	851	-	-	-	-	-						

a/ Each unique combination of buyer license and PacFIN port is counted as a separate buyer. In some cases, a particular buyer may have a presence in a port (be buying through a port), but have no facilities at that port.

TABLE 3.3.3-5. Number buyers[a/] (groundfish and nongroundfish) by number of months of buying and exvessel value of purchases in the year 2000 (excluding at-sea whiting deliveries). (Page 1 of 1)

	Number of Months During Which Purchases Were Made												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
Number of Buyers NOT Buying Groundfish													
>$2 Million	0	0	0	0	0	0	0	0	0	0	0	2	2
$1-$2 Million	0	0	0	0	0	0	1	0	1	3	6	3	14
$300 Thousand-$1 Million	0	0	3	3	2	3	3	4	3	3	5	7	36
$100-$300 Thousand	1	4	6	4	3	4	2	4	7	4	4	6	49
$20-$100 Thousand	15	23	21	10	11	14	3	2	7	8	4	5	123
$5 Thousand-$20 Thousand	54	45	36	25	19	11	5	7	7	5	4	6	224
<$5 Thousand	388	113	59	16	9	7	2	2	0	1	1	2	600
Total	458	185	125	58	44	39	16	19	25	24	24	31	1,048
Groundfish Buyers that Buy from Groundfish Limited Entry Trawl Vessels													
>$2 Million	0	0	0	0	0	0	0	0	0	0	1	16	17
$1-$2 Million	0	0	0	0	0	0	0	0	0	1	2	8	11
$300 Thousand-$1 Million	0	0	0	2	0	3	1	4	1	0	7	15	33
$100-$300 Thousand	0	0	1	6	2	1	0	5	0	1	5	2	23
$20-$100 Thousand	0	4	4	2	0	1	0	1	0	1	2	4	19
$5 Thousand-$20 Thousand	2	3	0	1	1	2	0	0	0	0	0	2	11
<$5 Thousand	7	2	2	0	0	0	0	0	0	0	0	0	11
Total	9	9	7	11	3	7	1	10	1	3	17	47	125
Groundfish Buyers that Do Not Buy from Groundfish Limited Entry Trawl Vessels													
>$2 Million	0	0	0	0	0	0	0	0	0	0	0	2	2
$1-$2 Million	0	0	0	0	0	0	0	0	0	2	2	4	8
$300 Thousand-$1 Million	0	2	0	0	2	0	3	1	2	1	5	13	29
$100-$300 Thousand	0	0	0	0	1	3	4	0	6	5	7	23	49
$20-$100 Thousand	3	6	10	7	9	18	12	9	10	7	12	28	131
$5 Thousand-$20 Thousand	8	21	22	14	13	11	15	12	6	4	8	3	137
<$5 Thousand	118	54	28	17	10	8	8	6	0	1	1	0	251
Total	129	83	60	38	35	40	42	28	24	20	35	73	607
Grand Total	596	277	192	107	82	86	59	57	50	47	76	151	1,780

a/ Each unique combination of buyer license and PacFIN port is counted as a separate buyer. In some cases, a particular buyer may have a presence in a port (be buying through a port), but have no facilities at that port.

TABLE 3.3.3-6. Number of groundfish buyers[a/] by seasonality of activity and amounts of purchases (exvessel value) for the year 2000 (excludes at-sea deliveries). (Page 1 of 1)

	Groundfish Buyers Total Expenditures on West Coast Landings							
Month During Which Any Species Was Purchased (Groundfish and Nongroundfish)	>$2 Million	$1-$2 Milllion	$300 Thousand - $1 Milllion	$100-$300 Thousand	$33-$100 Thousand	$5-$33 Thousand	<$5 Thousand	Totals
				Number of Processors				
Year Round	**18**	**12**	**28**	**25**	**32**	**5**	**0**	**120**
11 Month	**1**	**4**	**12**	**12**	**14**	**8**	**1**	**52**
10 Month	**-**	**3**	**1**	**6**	**8**	**4**	**1**	**23**
9 Month	-	-	**3**	**6**	**10**	**6**	**0**	**25**
7-8 Month	-	-	**9**	**9**	**22**	**27**	**14**	**81**
4-6 Month	-	-	**7**	**13**	**37**	**42**	**35**	**134**
1-3 Month	-	-	**2**	**1**	**27**	**56**	**211**	**297**
	19	**19**	**62**	**72**	**150**	**148**	**262**	**732**
Percent processing 10 or more months a year	100%	100%	66%	60%	36%	11%	1%	27%
			Number of 11 Month Buyers by Month Not Buying					
January			1	2	2			5
February				3	2	3		8
March		1		1	2			4
April			3	1				4
May								0
June						1		1
July				1	1			2
August						1		1
September			2		1	1		4
October		1			1	2		4
November	1	2	6	1	4			14
December				3	1		1	5
			Number of 10 Month Buyers by Months Not Buying					
January-February				1	1			2
January,March					2	1		3
January, November					1			1
January, July							1	1
January, October						1		1
February-March		1			1			2
February, December		1						1
February, September						1		1
March-April					1			1
March, May					1			1
August-September				1				1
October-November		1	1	1	1			4
November-December				3		1		4
			Number of 10 and 11 Month Buyers Not Buying in Each Month					
January			1	3	6	2	1	13
February		2		4	4	4		14
March		2		1	7	2		12
April			3	1	1			5
May					1			1
June						1		1
July				1	1		1	3
August				1		1		2
September			2	1	1	2		6
October		2	1	1	2	3		9
November	1	3	7	5	6	1		22
December		1		6	1	1	1	10

a/ Each unique combination of buyer license and PacFIN port is counted as a separate buyer. In some cases, a particular buyer may have a presence in a port (be buying through a port), but have no facilities at that port.

TABLE 3.3.2-7. Number groundfish buyers[a/] by number of months of buying groundfish and exvessel value of purchases of all species in the year 2000 (excluding at-sea whiting deliveries). (Page 1 of 1)

	Number of Months During Which **Groundfish** Purchases Were Made												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
	Number of Buyers												
>$2 Million	0	0	1	2	0	2	0	0	1	0	2	11	19
$1-$2 Million	0	1	2	0	0	0	1	3	2	0	3	7	19
$300 Thousand-$1 Million	5	3	4	5	7	4	6	5	2	1	4	16	62
$100-$300 Thousand	8	8	5	11	4	2	3	5	4	4	10	8	72
$20-$100 Thousand	24	15	4	3	8	8	8	7	1	5	7	10	100
$5 Thousand-$20 Thousand	62	42	23	15	12	16	7	8	5	5	1	2	198
<$5 Thousand	175	46	22	7	8	0	2	1	1	0	0	0	262
Total	274	115	61	43	39	32	27	29	16	15	27	54	732
	Groundfish Buyers that Buy from Groundfish Limited Entry Trawl Vessels												
>$2 Million	0	0	1	1	0	1	0	0	1	0	2	11	17
$1-$2 Million	0	0	0	0	0	0	1	1	2	0	1	6	11
$300 Thousand-$1 Million	0	0	2	3	2	4	3	4	1	0	3	11	33
$100-$300 Thousand	1	1	4	6	2	0	0	1	3	0	4	1	23
$20-$100 Thousand	1	4	0	0	0	1	1	0	1	0	2	3	13
$5 Thousand-$20 Thousand	3	6	3	2	1	0	0	0	0	0	0	2	17
<$5 Thousand	7	3	1	0	0	0	0	0	0	0	0	0	11
Total	12	14	11	12	5	6	5	6	8	0	12	34	125
	Groundfish Buyers that Do Not Buy from Groundfish Limited Entry Trawl Vessels												
>$2 Million	0	0	0	1	0	1	0	0	0	0	0	0	2
$1-$2 Million	0	1	2	0	0	0	0	2	0	0	2	1	8
$300 Thousand-$1 Million	5	3	2	2	5	0	3	1	1	1	1	5	29
$100-$300 Thousand	7	7	1	5	2	2	3	4	1	4	6	7	49
$20-$100 Thousand	23	11	4	3	8	7	7	7	0	5	5	7	87
$5 Thousand-$20 Thousand	59	36	20	13	11	16	7	8	5	5	1	0	181
<$5 Thousand	168	43	21	7	8	0	2	1	1	0	0	0	251
Total	262	101	50	31	34	26	22	23	8	15	15	20	607

a/ Each unique combination of buyer license and PacFIN port is counted as a separate buyer. In some cases, a particular buyer may have a presence in a port (be buying through a port), but have not facilities at that port.

TABLE 3.3.3-8. By port, number of buyers by species group (fo ...ndfish purchases, separation is made between groundfish limite entry trawl, groundfish limited entry fixed gear, and open access ...eliveries of groundfish).[a/] (Page 1 of 3)

	Categories of Groundfish Deliveries												Categories of Nongroundfish Deliveries						
	Limited Entry									Open Access			All Vessels						
	Trawl						Fixed Gear						All Gears						
	Sablefish	Whiting	Flatfish	Dover/Thornyheads	Rockfish	Other Groundfish	Sablefish	Rockfish	Other Groundfish	Sablefish	Rockfish	Other Groundfish	Halibut	Shrimp/Prawns	Crab/Lobster	Salmon	HMS	CPS	Other Species
Blaine	1	1	1	1	1	2			1						4		1		1
Bellingham	1		1	1	1	2	2	1	2	1	1	1		1	7		1		2
Anacortes															3		1		
La Conner							1	1											
Everett															1				
Seattle							1	1	1					1	7		5		
Tacoma																	1		
Olympia															1				
Shelton															1				
Centralia	1		1	1	1	1								1	1				1
Port Townsend					1		1	1	1					1	1	1	1		1
Port Angeles	1		1	1	1	1	1	1	1	1	1	2	2		1	2	1		1
Neah Bay	4		4	4	4	4	1			2	2	3	2			1			4
La Push							1	1	1	1	1	1			1	1	1		1
Quillayute															1		3		
Copalis							1		1				1	1	1				
Aberdeen							1	1	1	1	2	2	1		2	3	3	1	
Westport (WA)	3	1	2	2	5	4	4	2	3	6	6	9	6	12	17	11	11	2	4
Tokeland							1	1		3	2	2	1	5	10		1		6
Ilwaco	2	1	2	2	2	2	2	2	1	2	2	2	6	2	7	4	6	2	3
Pacific County															2		1		
Astoria	5	3	7	6	7	6	6	4	3	5	6	6	9	7	7	16	11	6	5
Gearhart-Seaside																4	1		2
Cannon Beach																2			
Nehalem Bay														2	1				2
Garibaldi (Tillamook)	3		3	3	3	3				4	11	12	8	5	10	15	6		13
Netarts														2					
Pacific City											3	4		5	4	2	2		2
Depoe Bay										2	4	3	2		5	5	1		4
Newport	6	3	6	5	6	6	8	6	9	5	22	20	21	8	22	37	31	4	11
Waldport														7	7				
Florence			1		1		2	1	1	1	3	2	3	3	8	7	7		1
Winchester							1	2	2		2	3	6	2	10	11	11	1	2
Charleston (Coos Bay)	3	2	5	4	4	6	4	5	3	5	13	13	12	5	8	25	22	2	12
Bandon											4	3	3		1	11	3		
Port Orford							3	4	4	2	6	5	3	1	6	7	2		5

TABLE 3.3.3-8. By port, number of buyers by species group (for groundfish purchases, separation is made between groundfish limited entry trawl, groundfish limited entry fixed gear, and open access deliveries of groundfish).[a/] (Page 2 of 3)

	Categories of Groundfish Deliveries												Categories of Nongroundfish Deliveries						
	Limited Entry									Open Access			All Vessels						
	Trawl						Fixed Gear						All Gears						
	Sablefish	Whiting	Flatfish	Dover/Thornyheads	Rockfish	Other Groundfish	Sablefish	Rockfish	Other Groundfish	Sablefish	Rockfish	Other Groundfish	Halibut	Shrimp/Prawns	Crab/Lobster	Salmon	HMS	CPS	Other Species
Gold Beach								2	1		9	8	1	1	3	1			7
Brookings	5	1	6	5	5	5	1	3	3	3	13	10	1	6	13	12	8		12
Crescent City	4	1	4	4	6	5	4	6	5	5	16	12	2	11	22	3	10	1	9
Requa																			1
Trinidad											4	4			10	2			
Eureka Area	3	1	4	3	3	2	5	8	7	7	11	11	2	2	19	7	8	1	8
Fields Landing	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	2	1	1
Orick	1		1	1						2	8	7	1	1	8	5	1		3
Fort Bragg	5		5	3	5	6	3	3	2	3	12	9	2	6	14	13	7		14
Albion								2	1		4	5			1	2			10
Point Arena	1				1	1				1	4	6		1	4	6	2		7
Elk	1		1	1	1	1				3				2	5	2			5
Bay	6		6	6	5	5	3	7	4	2	21	20	6	3	15	34	7	2	13
Cloverdale											5	5	4	6	5	7	2		7
Yountville			1		1						6	4	3	6	4	4	1	1	14
Tomales Bay											1	2	3			1			1
Point Reyes													1		1	2			1
Sausilito											1	1	2		1	7	1		2
Oakland											4	2				3	1		4
Alameda											3	2	2		3	3	1		2
Berkeley								5	5	1	10	8	4		4	13	4		11
Richmond							1	1			3	2	3	3	1	5			1
San Francisco	7		8	8	8	8	4	19	13	9	28	25	20	4	16	19	10	2	38
Princeton	7	1	7	6	7	7	2	7	4	7	28	18	18	3	33	54	11	8	15
Gilroy											6	6	3			1			3
Santa Cruz	6		7	4	6	5	3	3	1	5	14	11	10		13	28	10	5	11
Moss Landing	7		9	7	9	7	7	9	6	6	13	13	13	5	6	41	13	6	11
Monterey	2	3	3	2	3	3	1	2	2	3	19	19	5	10	5	8	9	7	13
San Simeon											5	4	1			2			3
Morro Bay	4		7	3	7	5	4	12	4	5	17	17	9	11	8	19	30	1	26
Avila	3		3	2	3	1	3	3	1		10	10	4	5	8	8	8	1	8

TABLE 3.3.3-8. By port, number of buyers by species group (for groundfish purchases, separation is made between groundfish limited entry trawl, groundfish limited entry fixed gear, and open access deliveries of groundfish).[a/] (Page 3 of 3)

	Categories of Groundfish Deliveries												Categories of Nongroundfish Deliveries						
	Limited Entry									Open Access			All Vessels						
	Trawl						Fixed Gear						All Gears						
	Sablefish	Whiting	Flatfish	Dover/Thornyheads	Rockfish	Other Groundfish	Sablefish	Rockfish	Other Groundfish	Sablefish	Rockfish	Other Groundfish	Halibut	Shrimp/Prawns	Crab/Lobster	Salmon	HMS	CPS	Other Species
Santa Barbara			4		3	3		1	2	1	20	29	27	34	35	2	6	16	58
Santa Cruz Island										1	2	1			2				3
Port Hueneme							1	1			5	5	2	3			1	12	9
Oxnard							3	9	9	5	14	26	24	15	23		15	11	50
Ventura	1		1	1			2	2	1	3	15	24	21	18	24	1	16	11	36
Terminal Island							5	5	3	6	10	16	15	12	12		16	10	48
San Pedro							2	3	1		2	13	13	6	21		24	16	35
Willmington							1	1	1				1				3	1	3
Catalina Island							3	5	2	4	10	9	10	7	26	1	11	12	26
Long Beach							1	1	1	1	4	5	3	4	3		5	3	18
Newport Beach							2	2	2	1	2	4	4	2	9		7	3	11
Dana Point							3	3	1			3		6	17		10		16
North Shore										7	11	15	10	9	25		19	4	30
San Diego										5	13	13	12	6	26		25	7	30
Oceanside							2	2	1	2	3	7	11	4	14		11	2	13
Inside California											2	1		3	7		2		5
Total Buying "Locations"	94	19	112	87	111	102	108	162	119	140	480	506	360	287	626	482	451	162	735

a/ With respect to groundfish, all groundfish purchses from a vessel with a limited entry trawl permit were counted as trawl limited entry trawl purchases (including purchases from vessels with permits endorsed for both trawl and fixed gear). A buyer that purchases sablefish from both trawl and fixed gear groundfish limited entry vessels will show up at least twice in the same row.

TABLE 3.4.2-1. Estimated catch of West Coast rockfish species north of Point Conception in 2001 research fisheries. Catch estimates used to analyze 2003 groundfish management measures.

Species	2001 Research Fishery Catch Estimate (mt)
Bocaccio	0.25
Canary rockfish	1.6
Darkblotched rockfish	1.9
Widow rockfish	0.3
Pacific ocean perch	2.3
Yelloweye rockfish	0.09
"Other" rockfish	17

TABLE 3.3.6.3-1. Local income impacts associated with commercial fishery landings by major port area for 2001 ($1,000). (p. 1 of 2)

	WASHINGTON						OREGON				
Species Group	Puget Sound	NW Olympic Peninsula	Central WA Coast	South WA Coast	Unsp. WA	WA Total	Astoria-Tillamook	Newport	Coos Bay	Brookings	OR Total
Whiting (shoreside)	0	0	6,567	724	0	7,291	7,923	12,557	1,248	0	21,728
Sablefish	2,582	3,658	1,112	216	1,174	8,741	4,300	3,695	3,187	1,233	12,414
Shortspine Thornyhead	84	31	35	6	0	156	302	233	245	105	885
Longspine Thornyhead	23	0	24	3	0	51	763	448	680	276	2,166
Other Thornyheads	0	0	0	0	0	0	0	0	0	0	0
Slope Rockfish	94	46	31	9	8	188	368	95	75	25	563
Dover Sole	631	119	241	86	0	1,077	2,790	854	1,646	435	5,724
Rex Sole	19	13	7	6	0	44	190	65	209	41	505
Petrale Sole	914	104	123	33	0	1,174	1,065	859	841	86	2,851
Arrowtooth Flounder	1,239	57	83	17	0	1,396	642	161	108	3	914
Other Slope Groundfish	0	0	0	0	0	0	9	13	56	13	91
Widow Rockfish	264	63	97	102	0	526	922	592	248	268	2,030
Chilipepper Rockfish	0	0	0	0	0	0	186	0	1	0	187
Yellowtail Rockfish	602	506	179	84	0	1,371	1,219	405	55	63	1,742
Other Shelf Rockfish	101	52	9	3	5	170	70	54	43	79	245
English Sole, Flathead Sole	145	68	21	11	0	245	242	106	229	36	613
Sandabs	1	2	1	0	0	4	47	7	90	4	149
Other Shelf Groundfish	1,128	202	17	4	0	1,352	132	54	42	111	338
Nearshore Rockfish	0	1	0	0	0	1	61	16	18	589	684
Other Flatfish	28	9	0	1	0	38	90	7	52	5	154
Other Groundfish	0	0	0	0	0	0	47	1	21	280	349
Groundfish Total	7,854	4,930	8,547	1,305	1,187	23,824	21,367	20,219	9,093	3,653	54,333
Shrimp and Prawns	0	0	2,500	1,377	0	3,877	7,024	4,126	5,219	554	16,924
Salmon	156	1,380	420	94	38	2,089	770	4,310	2,251	460	7,790
Coastal Pelagics	0	0	59	0	0	59	0	0	0	0	0
HMS	1,277	54	3,857	10,026	4	15,217	3,475	7,089	3,505	241	14,310
Crab and Lobster	4,220	737	19,663	9,260	1,632	35,511	13,900	7,965	5,080	2,405	29,350
Other Species (PFMC-managed)	104	974	43	196	276	1,594	310	1,089	187	511	2,097
Total	13,611	8,075	35,089	22,258	3,137	82,170	46,847	44,798	25,335	7,824	124,804

a/ Values omitted to preserve confidentiality. Totals include the value.

TABLE 3.3.6.3-1. Local income impacts associated with commercial fishery landings by major port area for 2001 ($1,000). (p. 2 of 2)

Species Group	CALIFORNIA: Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	San Luis Obispo	Santa Barbara	Los Angeles	San Diego	Unsp. CA	CA Total	W-O-C Total
Whiting (shoreside)	1,225	181	0	0	0	0	a/	0	0	0	1,407	30,425
Sablefish	1,294	1,835	2,125	929	1,443	138	143	396	360	0	8,664	29,819
Shortspine Thornyhead	155	264	237	111	280	85	91	152	170	0	1,545	2,586
Longspine Thornyhead	600	636	572	92	445	109	215	65	13	0	2,747	4,963
Other Thornyheads	24	54	4	10	45	0	189	85	26	0	437	437
Slope Rockfish	22	31	204	148	116	76	65	62	5	1	730	1,481
Dover Sole	610	1,279	1,223	444	756	225	a/	1	0	0	4,539	11,340
Rex Sole	126	169	118	40	35	27	a/	0	0	0	516	1,065
Petrale Sole	159	866	123	725	237	271	a/	1	0	0	2,408	6,433
Arrowtooth Flounder	6	4	0	0	0	0	a/	0	0	0	11	2,320
Other Slope Groundfish	13	54	34	4	112	2	0	0	0	0	219	310
Widow Rockfish	118	303	48	93	9	5	0	4	0	0	580	3,136
Chilipepper Rockfish	3	5	179	360	138	9	0	3	1	0	698	885
Yellowtail Rockfish	40	32	0	18	1	0	0	0	0	0	92	3,204
Other Shelf Rockfish	61	68	40	184	89	95	56	37	9	0	638	1,054
English Sole, Flathead Sole	147	272	75	214	83	55	a/	0	0	0	853	1,710
Sandabs	73	186	2	1,370	85	6	a/	83	0	0	1,810	1,963
Other Shelf Groundfish	83	44	37	88	28	53	47	49	44	0	473	2,163
Nearshore Rockfish	570	272	138	317	404	658	284	74	49	1	2,767	3,452
Other Flatfish	104	66	0	248	31	12	22	25	0	0	509	701
Other Groundfish	65	24	143	48	157	395	164	21	18	0	1,035	1,385
Groundfish Total	5,499	6,645	5,303	5,441	4,495	2,222	1,313	1,059	697	3	32,677	110,833
Shrimp and Prawns	1,395	1,074	171	898	812	1,396	2,968	1,326	775	0	10,815	31,616
Salmon	64	344	1,432	6,804	1,526	133	9	3	0	3	10,318	20,197
Coastal Pelagics	0	0	0	30	23,869	85	50,235	95,162	27	0	169,406	169,466
HMS	874	1,719	269	1,237	2,727	4,422	797	23,189	4,913	0	40,148	69,675
Crab and Lobster	4,923	2,373	1,180	9,849	147	397	5,728	3,714	4,031	393	32,735	97,596
Other Species (PFMC-managed)	19	37	5,570	2,384	228	369	10,114	11,658	2,298	15	32,692	36,382
Total	12,774	12,191	13,925	26,644	33,804	9,024	71,164	136,110	12,741	413	328,791	535,765

a/ Values omitted to preserve confidentiality. Totals include the value.

TABLE 3.3.6.3-2. Local income impacts associated with commercial fishery landings by major port area for 2001 (% of Total). (p. 1 of 2)

	WASHINGTON						OREGON				
Species Group	Puget Sound	NW Olympic Peninsula	Central WA Coast	South WA Coast	Unsp. WA	WA Total	Astoria-Tillamook	Newport	Coos Bay	Brookings	OR Total
Whiting (shoreside)	0.0		18.7	3.3		8.9	16.9	28.0	4.9		17.4
Sablefish	19.0	45.3	3.2	1.0	37.4	10.6	9.2	8.2	12.6	15.8	9.9
Shortspine Thornyhead	0.6	0.4	0.1	0.0	0.0	0.2	0.6	0.5	1.0	1.3	0.7
Longspine Thornyhead	0.2	0.0	0.1	0.0		0.1	1.6	1.0	2.7	3.5	1.7
Other Thornyheads											
Slope Rockfish	0.7	0.6	0.1	0.0	0.3	0.2	0.8	0.2	0.3	0.3	0.5
Dover Sole	4.6	1.5	0.7	0.4	0.0	1.3	6.0	1.9	6.5	5.6	4.6
Rex Sole	0.1	0.2	0.0	0.0		0.1	0.4	0.1	0.8	0.5	0.4
Petrale Sole	6.7	1.3	0.4	0.1		1.4	2.3	1.9	3.3	1.1	2.3
Arrowtooth Flounder	9.1	0.7	0.2	0.1		1.7	1.4	0.4	0.4	0.0	0.7
Other Slope Groundfish							0.0	0.0	0.2	0.2	0.1
Widow Rockfish	1.9	0.8	0.3	0.5		0.6	2.0	1.3	1.0	3.4	1.6
Chilipepper Rockfish							0.4		0.0	0.0	0.1
Yellowtail Rockfish	4.4	6.3	0.5	0.4		1.7	2.6	0.9	0.2	0.8	1.4
Other Shelf Rockfish	0.7	0.7	0.0	0.0	0.2	0.2	0.2	0.1	0.2	1.0	0.2
English Sole, Flathead Sole	1.1	0.8	0.1	0.0		0.3	0.5	0.2	0.9	0.5	0.5
Sandabs	0.0	0.0	0.0	0.0		0.0	0.1	0.0	0.4	0.1	0.1
Other Shelf Groundfish	8.3	2.5	0.0	0.0	0.0	1.6	0.3	0.1	0.2	1.4	0.3
Nearshore Rockfish		0.0				0.0	0.1	0.0	0.1	7.5	0.5
Other Flatfish	0.2	0.1	0.0	0.0		0.0	0.2	0.0	0.2	0.1	0.1
Other Groundfish							0.1	0.0	0.1	3.6	0.3
Groundfish Total	57.7	61.1	24.4	5.9	37.8	29.0	45.6	45.1	35.9	46.7	43.5
Shrimp and Prawns			7.1	6.2		4.7	15.0	9.2	20.6	7.1	13.6
Salmon	1.1	17.1	1.2	0.4	1.2	2.5	1.6	9.6	8.9	5.9	6.2
Coastal Pelagics			0.2			0.1					
HMS	9.4	0.7	11.0	45.0	0.1	18.5	7.4	15.8	13.8	3.1	11.5
Crab and Lobster	31.0	9.1	56.0	41.6	52.0	43.2	29.7	17.8	20.1	30.7	23.5
Other Species (PFMC-managed)	0.8	12.1	0.1	0.9	8.8	1.9	0.7	2.4	0.7	6.5	1.7
Total	100	100	100	100	100	100	100	100	100	100	100

a/ Values omitted to preserve confidentiality. Totals include the value.

TABLE 3.3.6.3-2. Local income impacts associated with commercial fishery landings by major port area for 2001 (% of Total). (p. 2 of 2)

Species Group	CALIFORNIA Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	San Luis Obispo	Santa Barbara	Los Angeles	San Diego	Unsp. CA	CA Total	W-O-C Total
Whiting (shoreside)	9.6	1.5					a/	0.0			0.4	5.7
Sablefish	10.1	15.1	15.3	3.5	4.3	1.5	0.2	0.3	2.8	0.0	2.6	5.6
Shortspine Thornyhead	1.2	2.2	1.7	0.4	0.8	0.9	0.1	0.1	1.3	0.0	0.5	0.5
Longspine Thornyhead	4.7	5.2	4.1	0.3	1.3	1.2	0.3	0.0	0.1		0.8	0.9
Other Thornyheads	0.2	0.4	0.0	0.0	0.1	0.0	0.3	0.1	0.2		0.1	0.1
Slope Rockfish	0.2	0.3	1.5	0.6	0.3	0.8	0.1	0.0	0.0	0.3	0.2	0.3
Dover Sole	4.8	10.5	8.8	1.7	2.2	2.5	a/	0.0			1.4	2.1
Rex Sole	1.0	1.4	0.8	0.1	0.1	0.3	a/	0.0			0.2	0.2
Petrale Sole	1.2	7.1	0.9	2.7	0.7	3.0	a/	0.0	0.0		0.7	1.2
Arrowtooth Flounder	0.1	0.0	0.0				a/				0.0	0.4
Other Slope Groundfish	0.1	0.4	0.2	0.0	0.3	0.0		0.0			0.1	0.1
Widow Rockfish	0.9	2.5	0.3	0.3	0.0	0.1	0.0	0.0	0.0		0.2	0.6
Chilipepper Rockfish	0.0	0.0	1.3	1.3	0.4	0.1	0.0	0.0	0.0		0.2	0.2
Yellowtail Rockfish	0.3	0.3	0.0	0.1	0.0	0.0					0.0	0.6
Other Shelf Rockfish	0.5	0.6	0.3	0.7	0.3	1.0	0.1	0.0	0.1	0.0	0.2	0.2
English Sole, Flathead Sole	1.2	2.2	0.5	0.8	0.2	0.6	a/	0.0			0.3	0.3
Sandabs	0.6	1.5	0.0	5.1	0.3	0.1	a/	0.1	0.0		0.6	0.4
Other Shelf Groundfish	0.7	0.4	0.3	0.3	0.1	0.6	0.1	0.0	0.3		0.1	0.4
Nearshore Rockfish	4.5	2.2	1.0	1.2	1.2	7.3	0.4	0.1	0.4	0.4	0.8	0.6
Other Flatfish	0.8	0.5	0.0	0.9	0.1	0.1	0.0	0.0	0.0		0.2	0.1
Other Groundfish	0.5	0.2	1.0	0.2	0.5	4.4	0.2	0.0	0.1		0.3	0.3
Groundfish Total	43.1	54.5	38.1	20.4	13.3	24.6	1.8	0.8	5.5	0.7	9.9	20.7
Shrimp and Prawns	10.9	8.8	1.2	3.4	2.4	15.5	4.2	1.0	6.1		3.3	5.9
Salmon	0.5	2.8	10.3	25.5	4.5	1.5	0.0	0.0		0.6	3.1	3.8
Coastal Pelagics		0.0	0.0	0.1	70.6	0.9	70.6	69.9	0.2		51.5	31.6
HMS	6.8	14.1	1.9	4.6	8.1	49.0	1.1	17.0	38.6		12.2	13.0
Crab and Lobster	38.5	19.5	8.5	37.0	0.4	4.4	8.0	2.7	31.6	95.0	10.0	18.2
Other Species (PFMC-managed)	0.1	0.3	40.0	8.9	0.7	4.1	14.2	8.6	18.0	3.7	9.9	6.8
Total	100	100	100	100	100	100	100	100	100	100	100	100

a/ Values omitted to preserve confidentiality. Totals include the value.

Table 3.3.6.4-1. Coastal Counties Economic Profile: 2000 (p. 1 of 2)

State	County	Population	Personal Income ($,000)	per capita Personal Income ($)	Rank	Wages & Salaries ($,000)	Wage & Salary Employment	Average Annual Wage	Rank
Washington	1 Whatcom	167,553	3,876,078	$23,133	34	1,980,237	73,263	$27,029	28
	2 Skagit	103,421	2,731,740	$26,414	23	1,293,308	46,317	$27,923	24
	3 Snohomish	609,009	17,292,237	$28,394	18	8,160,501	232,422	$35,111	13
	4 King	1,737,290	79,109,294	$45,536	4	59,063,777	1,243,700	$47,490	3
	5 Pierce	703,631	18,003,889	$25,587	25	8,632,755	281,215	$30,698	20
	6 Thurston	208,355	5,513,010	$26,460	22	2,878,743	90,584	$31,780	19
	7 Clallam	64,702	1,573,934	$24,326	28	561,902	22,482	$24,993	31
	8 Jefferson	26,091	706,938	$27,095	20	203,195	8,771	$23,167	40
	9 Grays Harbor	67,158	1,471,312	$21,908	39	700,300	25,580	$27,377	27
	10 Pacific	20,915	440,091	$21,042	42	147,850	6,721	$21,998	42
	11 Wahkiakum	3,836	83,642	$21,804	40	22,832	915	$24,953	32
	12 Cowlitz	93,014	2,181,520	$23,454	32	1,262,697	41,326	$30,555	21
	13 Clark	347,285	10,100,784	$29,085	17	4,007,609	123,360	$32,487	16
	14 Skaminia	9,903	226,002	$22,822	35	58,725	2,226	$26,381	30
	15 Klickitat	19,245	411,075	$21,360	41	176,766	6,421	$27,529	26
Oregon	16 Clatsop	35,579	871,360	$24,491	27	411,871	16,677	$24,697	36
	17 Tillamook	24,218	539,318	$22,269	36	206,378	8,714	$23,683	38
	18 Lincoln	44,303	1,069,940	$24,151	29	424,878	18,293	$23,226	39
	19 Coos	62,660	1,393,735	$22,243	37	564,444	22,801	$24,755	34
	20 Curry	21,101	495,703	$23,492	31	152,689	6,944	$21,989	43
	21 Columbia	43,685	1,136,971	$26,027	24	311,099	11,080	$28,078	23
	22 Multnomah	660,767	21,746,116	$32,910	11	17,586,060	483,031	$36,408	10
	23 Hood River	20,473	451,562	$22,056	38	241,300	10,642	$22,674	41
	24 Wasco	23,826	574,677	$24,120	30	266,997	10,003	$26,692	29
California	25 Del Norte	27,475	490,584	$17,856	43	202,748	8,200	$24,725	35
	26 Humboldt	126,350	2,936,028	$23,237	33	1,325,550	53,166	$24,932	33
	27 Mendocino	86,374	2,146,557	$24,852	26	864,139	35,671	$24,225	37
	28 Sonoma	460,268	16,046,410	$34,863	9	7,239,542	205,975	$35,148	11
	29 Marin	247,506	15,003,372	$60,618	1	5,131,728	121,562	$42,215	5
	30 Napa	124,711	4,729,986	$37,928	7	2,112,419	64,747	$32,626	15
	31 Solano	397,261	10,866,704	$27,354	19	7,239,542	205,975	$35,148	11
	32 Contra Costa	953,395	39,194,448	$41,110	5	15,233,818	363,033	$41,963	6
	33 Alameda	1,449,158	55,972,377	$38,624	6	33,371,613	749,643	$44,517	4
	34 San Francisco	776,343	42,910,077	$55,272	3	37,804,060	656,765	$57,561	2
	35 San Mateo	707,867	41,512,033	$58,644	2	27,082,902	406,886	$66,561	1
	36 Santa Cruz	255,813	9,610,039	$37,567	8	3,863,847	110,918	$34,835	14
	37 Monterey	403,092	11,969,747	$29,695	15	5,406,010	181,310	$29,816	22
	38 San Luis Obispo	247,629	6,669,227	$26,932	21	2,846,132	102,752	$27,699	25
	39 Santa Barbara	399,753	13,085,333	$32,734	12	6,275,585	195,707	$32,066	17
	40 Ventura	757,097	24,165,838	$31,919	14	6,317,325	197,434	$31,997	18
	41 Los Angeles	9,546,597	281,834,553	$29,522	16	173,853,105	4,427,699	$39,265	7
	42 Orange	2,856,493	99,583,001	$34,862	10	58,530,357	1,507,603	$38,823	8
	43 San Diego	2,824,809	91,850,033	$32,515	13	51,201,945	1,397,285	$36,644	9
	TOTAL	27,766,011	942,577,275	$33,947		555,219,280	13,785,819	$40,275	

Source: U.S. Department of Commerce / Bureau of Economic Analysis / Regional Economic Information System (REIS)

Table 3.3.6.4-1. Coastal Counties Economic Profile: 2000 (p. 2 of 2)

State	County	Dividends, Interest & Rent ($,000)	D.I.&.R. per capita	Rank	Transfer Payments ($,000)	Transfer Payments per capita	Rank	net Residence Adjustment ($,000)	Res. Adj. per capita	Rank
Washington	1 Whatcom	857,041	$5,115	32	603,138	$3,600	25	46,004	$275	25
	2 Skagit	624,761	$6,041	19	442,403	$4,278	15	51,767	$501	21
	3 Snohomish	2,512,936	$4,126	39	1,835,344	$3,014	39	3,683,489	$6,048	8
	4 King	13,608,030	$7,833	8	5,841,253	$3,362	30	-6,918,248	-$3,982	41
	5 Pierce	2,964,336	$4,213	37	2,562,889	$3,642	23	2,202,014	$3,130	13
	6 Thurston	994,386	$4,773	35	784,273	$3,764	22	371,558	$1,783	16
	7 Clallam	497,610	$7,691	9	348,544	$5,387	3	7,744	$120	31
	8 Jefferson	235,817	$9,038	5	134,576	$5,158	6	74,435	$2,853	14
	9 Grays Harbor	272,156	$4,052	40	346,474	$5,159	5	13,284	$198	27
	10 Pacific	108,981	$5,211	31	118,944	$5,687	2	14,384	$688	18
	11 Wahkiakum	21,476	$5,599	25	18,288	$4,767	9	14,119	$3,681	12
	12 Cowlitz	385,221	$4,142	38	421,895	$4,536	14	-38,680	-$416	37
	13 Clark	1,757,873	$5,062	33	1,149,774	$3,311	32	2,382,881	$6,861	7
	14 Skaminia	37,677	$3,805	42	32,423	$3,274	33	84,594	$8,542	4
	15 Klickitat	100,901	$5,243	29	89,329	$4,642	12	-621	-$32	33
Oregon	16 Clatsop	200,311	$5,630	24	144,296	$4,056	18	4,402	$124	30
	17 Tillamook	144,925	$5,984	20	114,026	$4,708	11	3,240	$134	29
	18 Lincoln	285,927	$6,454	15	224,397	$5,065	7	-2,199	-$50	34
	19 Coos	338,592	$5,404	28	323,489	$5,163	4	17,733	$283	24
	20 Curry	166,976	$7,913	7	120,806	$5,725	1	9,271	$439	22
	21 Columbia	190,919	$4,370	36	157,698	$3,610	24	395,241	$9,048	3
	22 Multnomah	4,399,832	$6,659	14	2,494,899	$3,776	21	-5,436,581	-$8,228	42
	23 Hood River	112,104	$5,476	26	64,812	$3,166	36	-18,957	-$926	39
	24 Wasco	129,539	$5,437	27	101,764	$4,271	16	16,737	$702	17
California	25 Del Norte	88,373	$3,216	43	131,533	$4,787	8	-16,753	-$610	38
	26 Humboldt	611,074	$4,836	34	580,766	$4,596	13	-41,011	-$325	35
	27 Mendocino	505,595	$5,854	22	408,116	$4,725	10	18,266	$211	26
	28 Sonoma	3,389,134	$7,363	11	1,557,072	$3,383	29	1,833,287	$3,983	10
	29 Marin	3,993,712	$16,136	1	802,924	$3,244	35	3,338,923	$13,490	1
	30 Napa	1,031,205	$8,269	6	486,290	$3,899	19	467,688	$3,750	11
	31 Solano	1,518,564	$3,823	41	1,196,848	$3,013	40	3,020,738	$7,604	6
	32 Contra Costa	7,234,185	$7,588	10	3,265,328	$3,425	28	9,187,760	$9,637	2
	33 Alameda	8,631,651	$5,956	21	5,185,235	$3,578	26	3,373,599	$2,328	15
	34 San Francisco	7,905,352	$10,183	3	3,305,682	$4,258	17	-12,970,485	-$16,707	43
	35 San Mateo	8,185,364	$11,563	2	2,067,317	$2,920	42	77,797	$110	32
	36 Santa Cruz	1,762,579	$6,890	13	771,078	$3,014	38	2,072,654	$8,102	5
	37 Monterey	2,531,670	$6,281	18	1,240,610	$3,078	37	176,972	$439	23
	38 San Luis Obispo	1,706,386	$6,891	12	857,967	$3,465	27	152,359	$615	20
	39 Santa Barbara	3,769,862	$9,430	4	1,302,184	$3,257	34	-142,351	-$356	36
	40 Ventura	4,404,399	$5,817	23	2,229,153	$2,944	41	3,142,234	$4,150	9
	41 Los Angeles	49,972,023	$5,235	30	36,161,091	$3,788	20	-17,786,142	-$1,863	40
	42 Orange	18,428,193	$6,451	16	7,939,765	$2,780	43	1,826,853	$640	19
	43 San Diego	17,802,799	$6,302	17	9,492,893	$3,361	31	443,184	$157	28
	TOTAL	174,420,447	$6,282		97,457,586	$3,510		-4,846,817	-$175	

Source: U.S. Department of Commerce / Bureau of Economic [illegible]is / Regional Economic Information System (REIS)

CHAPTER 3
FIGURES

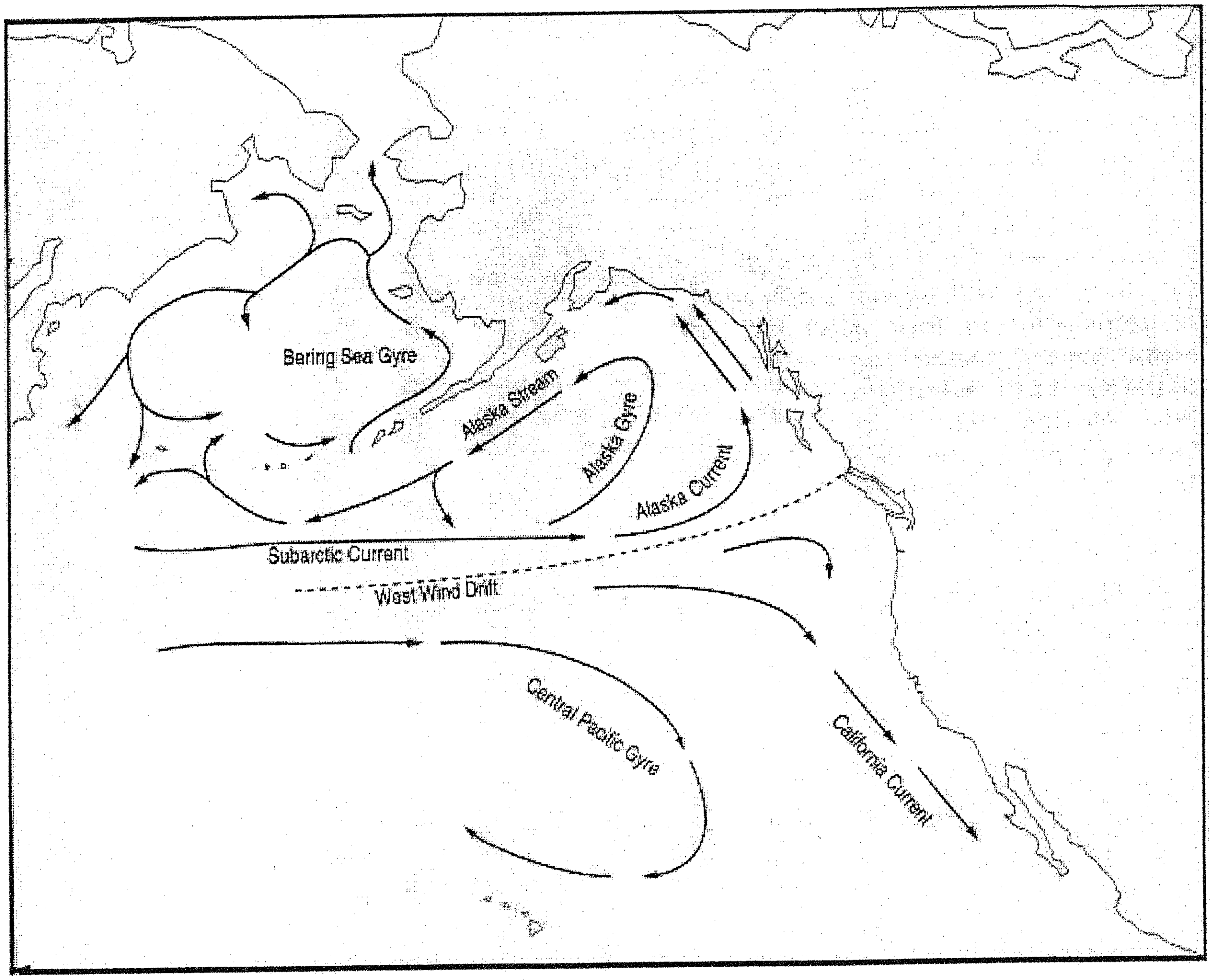

Figure 3-1. Surface current systems of the northeast Pacific Ocean.

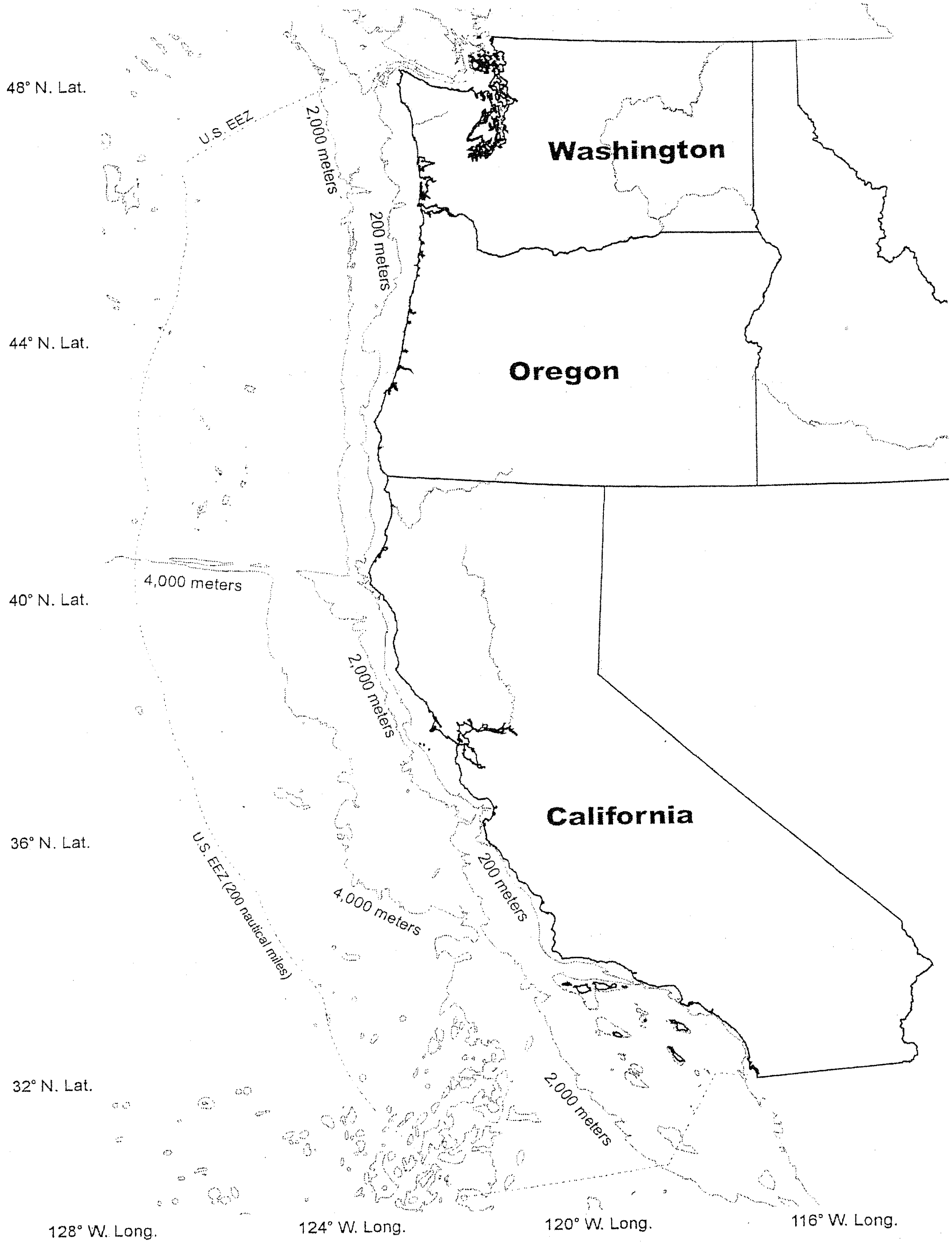

Figure 3-2. Bathymetry of the U.S. West Coast.

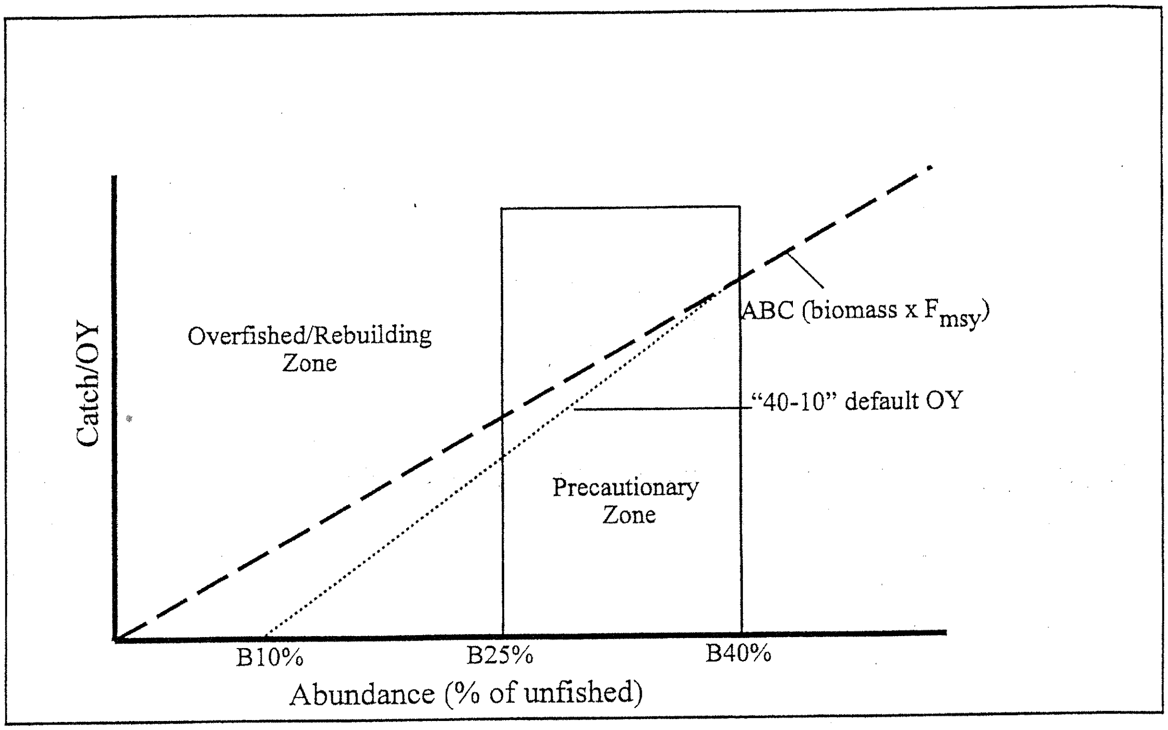

Figure 3-3. Illustration of default OY compared to ABC; the "40-10" rule.

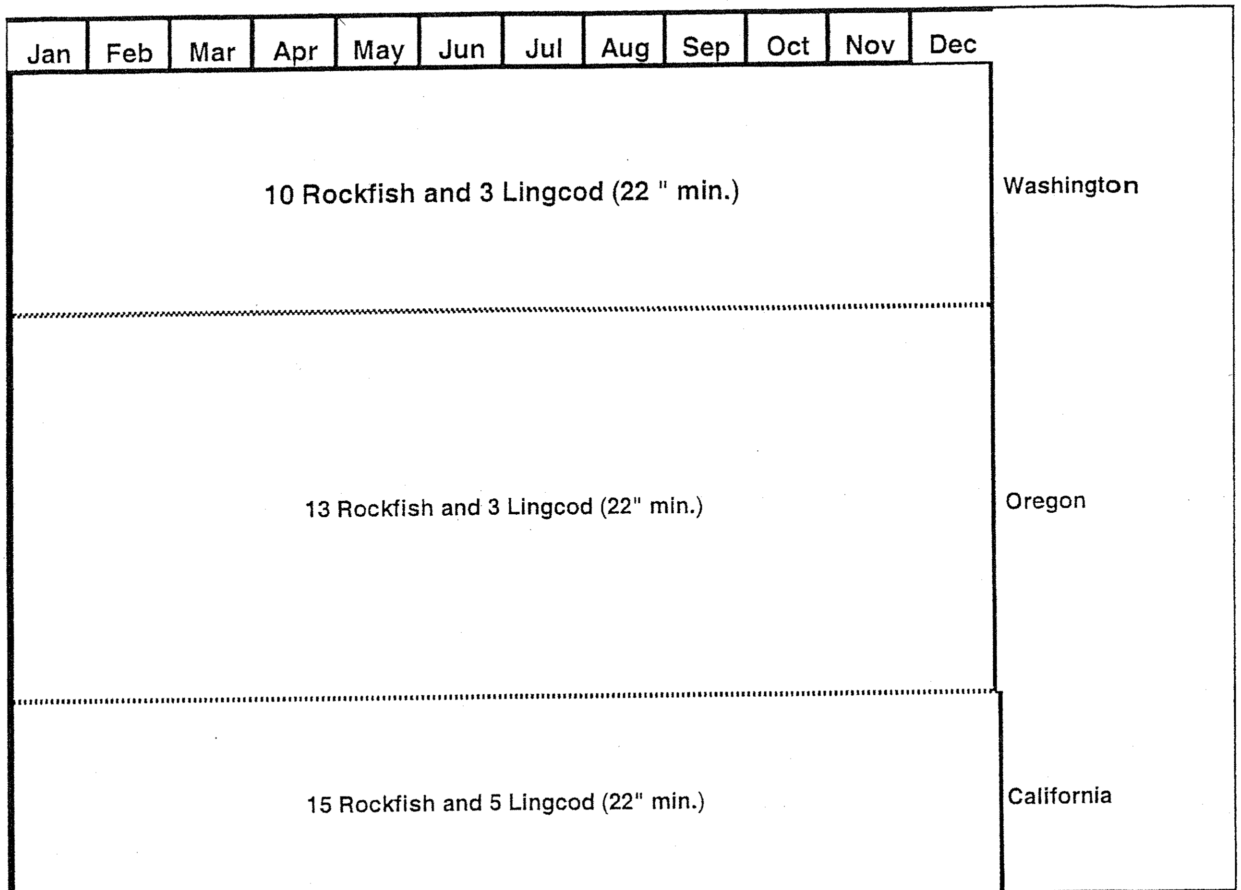

Figure 3-4. Recreational rockfish and lingcod seasons, 1996

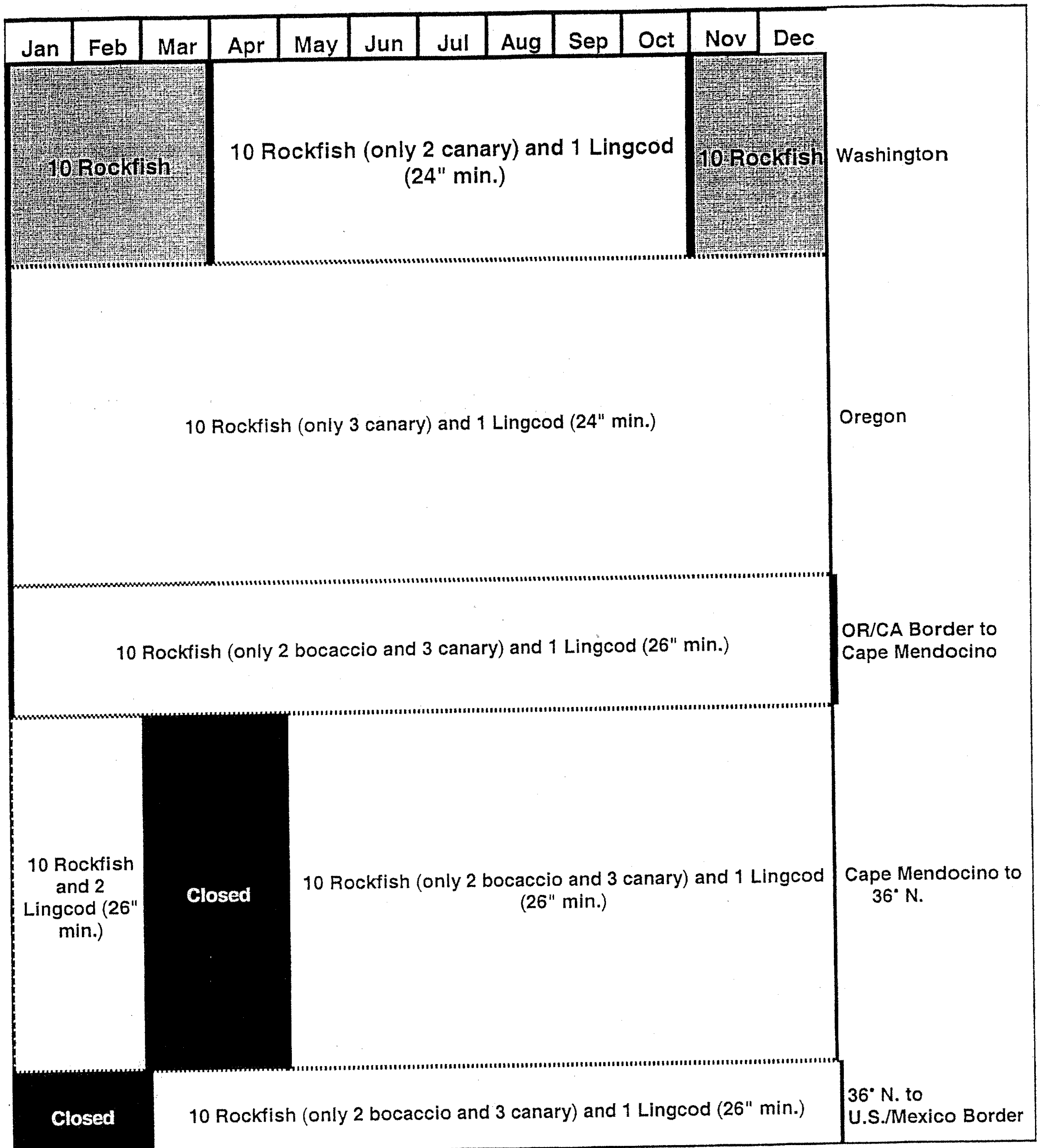

Figure 3-5. Recreational rockfish and lingcod seasons, 2000.

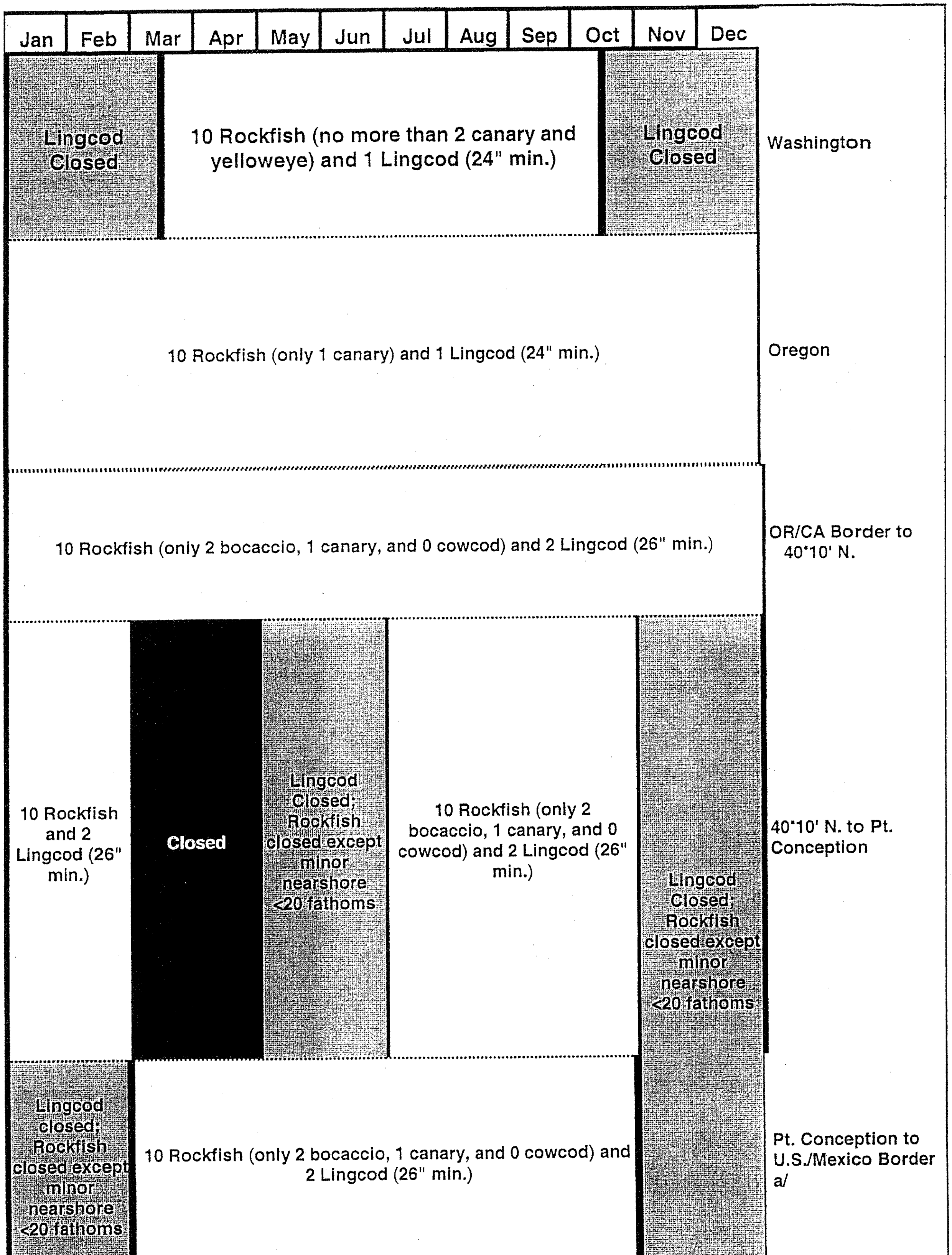

Figure 3-6. Recreational rockfish and lingcod seasons, 2001.

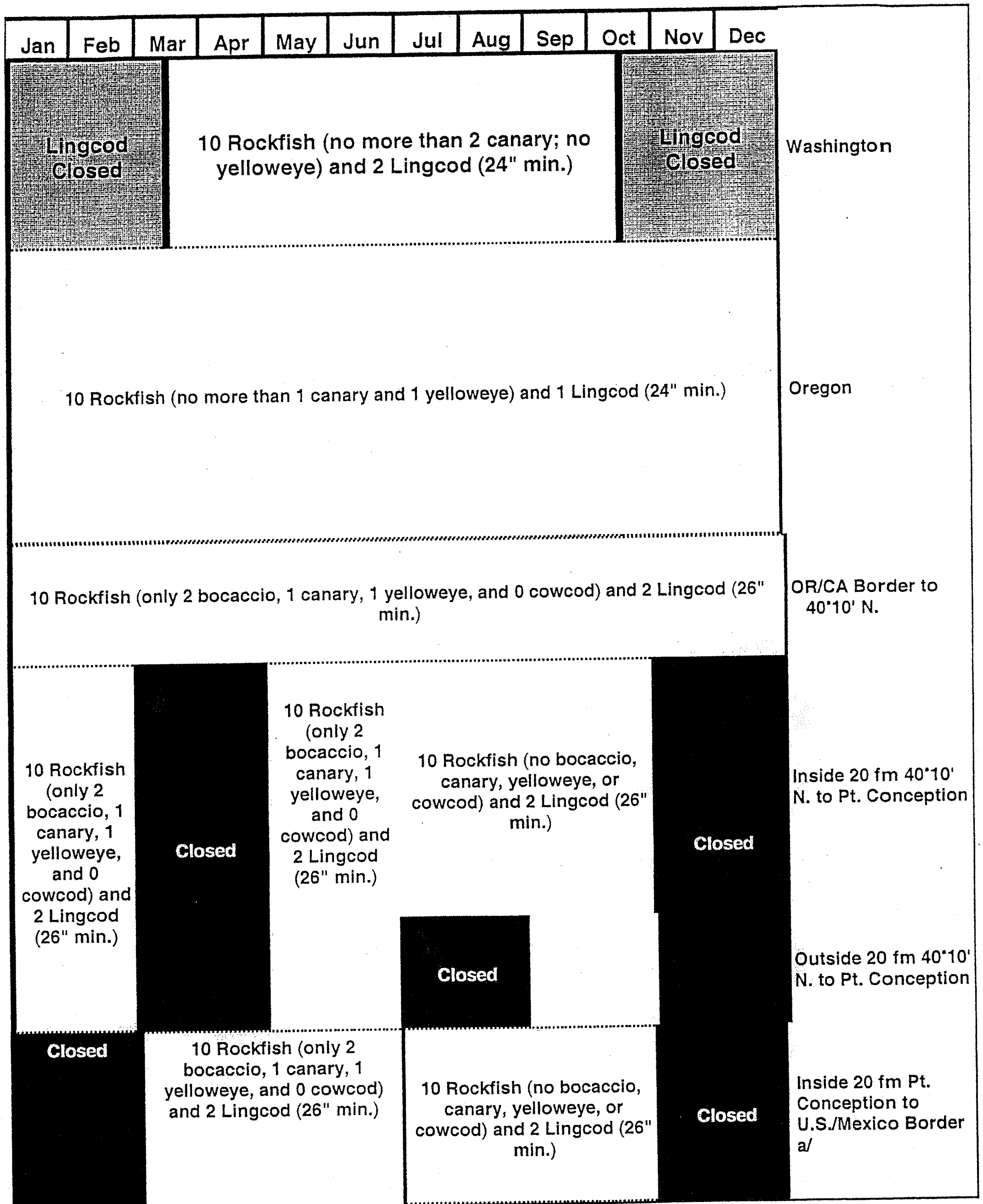

Figure 3-7. Recreational rockfish and lingcod seasons, 2002.

4.0 IMPACTS OF THE ALTERNATIVES

Chapter 4 is organized to parallel the previous chapter, with sections on habitat and ecosystem, affected species and stocks, socioeconomic impacts, and effects on the management system. The description of the affected environment in the previous chapter described baseline conditions—the state of the environment before the proposed action is implemented—and provides the information needed to evaluate the impacts of the alternatives presented in this chapter. NEPA requires seven types of effects to be evaluated: direct and indirect, cumulative, short and long term, and irreversible and irretrievable effects. Direct and indirect effects are described in Sections 4.1 through 4.4. Cumulative effects are summarized in Section 4.7 while Section 4.8 reviews irreversible and irretrievable impacts.

4.1 Impacts to Ecosystem, Habitat, and Biodiversity

Section 11.10.3.1 of the Groundfish FMP describes adverse impacts of fishing gear to EFH, including ecosystem effects, in general terms. Direct effects to ecosystems and habitats are largely indirect. Ecosystem effects are, almost by definition, indirect. Overfishing has reduced some fish stocks to levels that are a small fraction of estimated virgin biomass and may affect trophic relationships: these species are less available both as prey and predators. Direct effects to habitat result from the deployment of fishing gear that damages benthic habitat. Habitat modification can also have indirect ecological effects because different species may be better adapted to the altered habitat, displacing other species. Bottom trawl footrope restrictions implemented by the Council make it difficult for fishers to access rock piles and other areas of complex topography (due to the risk of gear damage). This helps protect important, complex habitat and creates defacto refugia for species preferring that habitat type. Biodiversity impacts are directly and indirectly related to overfishing. Overfished species may become locally extinct in a part of their former range and there is some risk of actual species extinction. It is unlikely that such extinctions would be a direct result of overfishing, in the sense that all organisms were removed by fishing. However, the population could be reduced to such a low level that unfavorable environmental conditions or biological and behavioral constraints (inhibiting successful reproduction for example) could subsequently result in localized or species extinction. Given the current state of knowledge and available data, It is not possible to quantitatively evaluate the ecosystem, habitat, and biodiversity effects of the alternatives. Instead, the alternatives are evaluated qualitatively below.

[Evaluation of the effects of the alternatives.]

4.2 Impacts to the Biological Environment - Managed Species

Fishing mortality directly affects stocks by removing some proportion of the population on a periodic basis. The framework that has been developed by fishery biologists and managers, based on the MSY concept, accounts for all sources of mortality, albeit often imperfectly due to limits on our knowledge. Population modeling is dynamic because reproduction, growth, and survival must all be considered. In this sense, a comprehensive assessment of the direct, indirect and cumulative effects of the proposed action on a given species' stock size is "built into" the models used to estimate how many fish can be harvested sustainably. National Standard Guidelines and the Groundfish FMP provide a framework for evaluating harvest specification alternatives (OY/ABC levels) and the management measures intended to achieve a given harvest level. Harvest levels that are not in accord with this framework—because they allow overfishing or fishing at a rate that prevents stocks from rebuilding to or maintaining MSY biomass—may be considered to have a significant impact on managed stocks. Harvest level specification alternatives represent a range of values that may fall within this framework; variation is due to various sources of uncertainty, representing different levels of risk. (Risk and uncertainty associated with alternatives are evaluated in Section 4.5.) Different harvest levels is only the first consideration in evaluating impacts. Management measure alternatives (including those for recreational, tribal, and non-groundfish fisheries) ultimately determine the number of fish that will be harvested. These alternatives must be evaluated in terms of their likelihood of achieving a given harvest level. They may result in a harvest that is above a sustainable rate as determined by the management framework, and therefore would have significant biological impacts, or result in harvests below a given OY level, resulting in socioeconomic impacts because of foregone income and fishing opportunities. (Harvests above OY are unlikely because management measures can be changed throughout the year in order to slow harvest rates. However, harvests below OY for a given species have occurred past years because of the difficulty in managing multi-species fisheries.) These socioeconomic impacts are discussed in Section 4.3.

4.2.1 Groundfish Resources

4.2.1.1 Overfished Stocks

Harvest levels for overfished groundfish species considered and analyzed in this EIS for 2003 West Coast fisheries comport with rebuilding constraints specified in the MSA, FMP, NSGs, and other legal mandates. Among these mandates are consideration of rebuilding strategies that have at least a 50% probability of rebuilding (achieving a spawning abundance of $B_{40\%}$ in West Coast groundfish management) within the maximum allowable time (T_{MAX}). The NSGs specify that rebuilding must occur within ten years even if all sources of fishing-related mortality need to be eliminated (F=0). If rebuilding is estimated to take longer than ten years at F=0, then the maximum allowable rebuilding time specified in the NSGs is the minimum possible rebuilding time (T_{MIN} = rebuilding at F=0) plus one mean generation time. One mean generation time is the average length of time it takes for a spawning female to replace herself in the population and is an index of relative productivity. All of these rebuilding specifications are determined in rebuilding analyses that are generated from peer reviewed stock assessments and a rebuilding program developed by Punt (2002). The standards, procedures, methodological approaches, and other terms of reference for conducting stock assessments and rebuilding analyses are formally reviewed, endorsed, and recommended by the Council's SSC. These documents, once formally endorsed by the SSC and adopted by the Council, are considered the best available science for rebuilding overfished groundfish species and prescribing harvest levels and management measures for the West Coast groundfish fishery.

<u>Bocaccio</u>

The original *High ABCs/OYs* alternative for bocaccio specified by the Council at its June 2002 meeting was as per a modeled result consistent with any new rebuilding analysis for bocaccio as recommended by the SSC. Specifically, the SSC Guidelines for Rebuilding Analyses recommended a non-overlapping time series of historical recruits and spawner estimates for bocaccio (and any other groundfish stock where recruitment is assumed to be primarily influenced by spawner density-dependence) be used to estimate virgin spawning biomass (B_0) and predict future recruitment. Under the SSC advice, an earlier recruitment time series should be used to calculate B_0 because early recruitment is assumed to best reflect pre-fishery levels. Additionally, according to the SSC's recommendation for conducting rebuilding analyses, a more recent and non-overlapping time series of recruits per spawner (R/S) should be used to predict future recruitment since the effect of the current low spawning biomass would be more heavily weighted. This modeled result was subsequently estimated to be 0 mt for 2003.

The high bocaccio OY of 5.8 mt may therefore be unsupportable. This OY was based on the first draft bocaccio rebuilding analysis conducted by MacCall and He (2002) that was adopted by the Council at its June 2002 meeting. The SSC-endorsed groundfish rebuilding program (Punt 2002) used to conduct the 2002 bocaccio rebuilding analysis was subsequently modified to extend the rebuilding time horizon to allow rebuilding realizations for yelloweye rockfish. Since this modification, bocaccio rebuilding trajectories that allow some harvest in 2003 and are estimated to have at least a 50% probability of timely rebuilding cannot be replicated. Also, if the aforementioned SSC advice to segregate the R/S time series to estimate B_0 and future recruitment of bocaccio is considered the best available science, no harvest or fishing mortality rate greater than zero is supported under any circumstance other than a mixed stock exception. Subsequent re-analysis of bocaccio rebuilding since the June 2002 meeting did not fully conform to the SSC guidelines in that future recruitment was predicted using the full time series of R/S, which would theoretically predict a higher productivity. The rationale was there is no temporal or biomass trend in the R/S time series. Furthermore, if the high 1963 R/S value is not used in the time series to predict future recruitment, bocaccio abundance does not tend to increase even at F = 0. The estimated 2003 bocaccio OY in this revised rebuilding analysis is 0 mt (MacCall pers. comm.). It is unclear, given our current understanding of bocaccio productivity, what actions other than eliminating fishing-related mortality would mitigate bocaccio rebuilding. The issue of the "high" range of alternative bocaccio harvests in 2003 between 0 and 5.8 mt is a practically moot point anyway. The current ability of management systems to estimate or manage for a total fishing-related mortality within this range may be inadequate to differentiate between these considered harvest limits.

Estimated natural mortality (M) for bocaccio is also uncertain. MacCall (2002) assumed M = 0.2 which was assumed in the previous assessment done by MacCall et al. (1999). Past bocaccio assessments assumed a range of natural mortality rates from M = 0.15 to 0.25 (Bence and Hightower 1990, Bence and Rogers 1992, Ralston et al. 1996, and MacCall et al. 1999). Ralston et al. (1996) estimated a fixed natural mortality rate of M = 0.15 by profiling natural mortality under the estimated stock size and likelihood fit of the baseline model. The likelihood surface across the range of M = 0.15 to 0.2 was relatively flat. The assumed natural mortality rate, in this case, was M = 0.15 in light of evidence of increased longevity for the species. MacCall (2002) did a sensitivity analysis of assumed natural mortality rates across the range of M = 0.15 to 0.25. The analysis indicated a similar current biomass relative to B_0 across the range (4.0% at M = 0.15, 4.3% at M = 0.20, and 5.2% at M = 0.25). Use of M = 0.15 yields an average R/S that implies sustainability at a higher fishing rate while M = 0.25 yields a sustainable fishing rate lower than the current proxy of $F_{50\%}$. Assuming M = 0.15, rebuilding times would be shorter (67 years at F = 0) and the estimated 2003 OY would be approximately 4.4 mt (MacCall pers. comm.). The STAR Panel and SSC agreed with the use of M = 0.2 in the new assessment and rebuilding analysis.

A mixed stock exception for bocaccio can only be considered if it doesn't risk driving the stock to eventual extinction or to be listed as threatened or endangered in accordance with the Endangered Species Act. *[Bocaccio risk of extinction analysis]*

There have been widespread anecdotal reports of a larger abundance of juvenile bocaccio than inferred by MacCall (2002). There are two considerations: the strengths of the 1999 and 2002 year classes. Lacking any other evidence, we assumed these are equal in strength. A reasonable range of possibilities goes from the low end, where the strength of the 1999 year class estimated in the 2002 assessment is correct (the 1X case), to the high end, where the 1999 year class is twice as large as was estimated (the 2X case). In the 2X case, the 1999 year class is still a little smaller than the1992 year class. The 1X case examines the consequences of the 2002 assessment results being as is, and assuming the 2002 year class is the same size as the 1999 year class. The result is an OY of 0.4 tons, and a maximum probability of rebuilding by T_{MAX} of 50.2%. T_{MIN} is 94 yr. The 2X case assumes the 1999 year class is twice as large as was estimated and the 2002 year class is equally large. The result is an OY of 19 tons, and a maximum probability of rebuilding by T_{MAX} of 56.4%. T_{MIN} is 81 yr.

Canary Rockfish

Cowcod

The range of considered alternative harvest levels consistent with the need to rebuild cowcod is unchanged from the harvest specified for 2002 since there is no new scientific data available relevant to the current status of cowcod. It is uncertain whether the Status Quo strategy of prohibiting bottom fishing activities in two Cowcod Conservation Areas in the Southern California Bight estimated to be the most important habitats for cowcod and no retention regulations coastwide are adequately precautionary. The actual bycatch of cowcod in current fisheries is also uncertain since major sectors of the fishery (i.e., the private boat recreational fishery) have not been directly observed. However, despite these uncertainties, it is anticipated that efforts to minimize bocaccio fishing-related mortality south of Cape Mendocino will provide maximum protection for cowcod which have a similar latitudinal and depth distribution and reside in similar habitats as bocaccio. A new stock assessment and rebuilding analysis for cowcod should be considered for 2003 since this is the most outdated of the needed periodic assessments for overfished West Coast groundfish stocks.

Darkblotched Rockfish

The range of alternative harvest levels considered for darkblotched rockfish in 2003 are consistent with estimated probabilities of timely rebuilding (rebuilding within T_{MAX}, the maximum rebuilding period, at a greater than 50% probability). Darkblotched harvest alternatives under *Low ABCs/OYs* are 100, 130 and 172 mt. These correspond to darkblotched rebuilding trajectories with probabilities of timely rebuilding greater than or equal to 80%. The 172 mt alternative is the 2003 total catch OY on the rebuilding trajectory with an 80% probability of rebuilding within T_{MAX} (Methot and Rogers 2001). This is also the harvest level consistent with T_{MID}, the rebuilding period halfway between T_{MIN} and T_{MAX}. The 130 mt alternative has an X% probability of rebuilding within T_{MAX} and equals the darkblotched harvest specification for 2001. Prior to the rebuilding analysis developed by Methot and Rogers (2001), the best available science indicated that darkblotched could be rebuilt within ten years. This was the corresponding 2001 harvest level with an estimated 50% probability of timely rebuilding. Methot and Rogers (2001) updated the darkblotched rebuilding analysis according to the SSC recommendation in June 2001 that "the analysis should be based on an assessment update that included the 2000 NOAA Fisheries slope trawl survey data and recruitments during the more recent era should be the basis for the rebuilding rate". This result indicated darkblotched could not be rebuilt within ten years. In this circumstance, according to the NSGs, the Council and NOAA Fisheries would have the ability to extend rebuilding to as long as T_{MAX} to lessen the socioeconomic impacts of reduced harvest. The 100 mt harvest level has an X% probability of rebuilding within T_{MAX} and represents the most risk-averse rebuilding strategy of those considered for darkblotched.

The *Medium ABCs/OYs* alternative for darkblotched is 184 mt and represents the 2003 harvest associated with a rebuilding trajectory that has a 70% probability of successful rebuilding within T_{MAX}. This is the projected level of harvest for 2003 consistent with the interim rebuilding strategy for darkblotched adopted by the Council last year. The *High ABCs/OYs* alternative for 2003 management is 205 mt which represents the 50% probability rebuilding trajectory. This is the highest harvest allowed for darkblotched under rebuilding given our current understanding of the stock's status.

Controlling total fishing-related mortality for darkblotched necessitates constraining the total catch (including bycatch) in limited entry trawl fisheries on the West Coast. The Council recommended consideration of depth-based constraints in the limited entry trawl fishery for 2003 at its June 2002 meeting. Table 3.2.1.1-X depicts the bycatch rates estimated for target trawl fishing opportunities by area (north and south of the Cape Mendocino management line) by 2 month period and depth zone as estimated by logbooks. These rates correspond to the percentage by weight of darkblotched relative to weight of target species' catch. The proposed use of this model dictates the amount of opportunity that might be available for the trawl fleet to target healthy groundfish species such as deepwater flatfish, sablefish, and thornyheads within the 150-250 fm depth zone where darkblotched are most densely distributed. The range of alternative harvest levels defines the degree of bycatch that would be acceptable to effectively harvest target groundfish species that also frequent this depth zone. The target species most likely to frequent the 150-250 fm depth zone are Dover sole, petrale sole in the fall and winter, sablefish, and shortspine thornyhead. Longspine thornyhead, arrowtooth flounder, and minor slope rockfish are also frequently caught in these areas. The most risk-averse strategy and the one most likely to be effective at controlling harvest at the lower end of the range of considered harvest levels (*Low ABCs/OYs* alternative) is to limit trawl opportunities inside the 150 fm line and outside the 250 fm line. Sablefish and many of the target flatfish species are accessible inside 150 fm; however, such opportunities could risk a bycatch of overfished shelf rockfish species such as bocaccio south of Cape Mendocino, yelloweye north of Point Conception, and canary coastwide. Mandating small footropes less than eight inches diameter and prohibiting chafing gear on trawls has been shown to dramatically reduce the take of these species since it effectively keeps trawls out of the rocky reef habitats these species reside. Under the *Low ABCs/OYs* alternative for these shelf rockfish, any trawling inside 150 fm, even with small footropes, may risk too high a bycatch of canary and yelloweye in the north. Such opportunities probably cannot be considered south of Cape Mendocino where any bocaccio bycatch is too much under rebuilding.

Potential fishing opportunities in deeper waters outside 250 fm exist for the DTS (Dover sole, thornyheads, and sablefish) species. Higher landing limits may be a reasonable incentive to fish in these areas where overfished groundfish species are not found. These opportunities may not be available for the entire limited entry fleet because only the larger trawlers (predominantly greater than 50' in length) are likely able to safely carry the extra wire and gear necessary to fish in the deep. Longer transit times to open fishing areas also poses higher safety risks (see section 4.3.7). As in all depth-based restrictions, compliance would be best accomplished with the use of a VMS system. Safety concerns could be somewhat mitigated by the distress alarm functions in some VMS systems (see section 4.4.1).

The latitudinal management line for darkblotched and the minor slope rockfish species has been the Cape Mendocino management line at 40°10' N. lat. In the first four months of 2002 significantly higher than normal landings of darkblotched rockfish occurred south of Cape Mendocino. At first it was thought the higher limits set for southern minor slope rockfish may have influenced illegal landings of catches made in the north in southern ports. However, scrutiny of fish landing tickets, trawl logbooks, and NOAA Fisheries survey data by the GMT suggest that it is likely these catches came from the northern Monterey INPFC area south of Cape Mendocino. Trawl representatives on the GAP confirmed a high interception of darkblotched occurred just south of the Cape Mendocino line by trawlers who landed in Ft. Bragg this year. The bycatch implications of darkblotched catch south of Cape Mendocino threaten continued trawl opportunities in 2002 due to unexpected early attainment of the 2002 darkblotched OY. Since these were ancillary impacts to those modeled and contemplated at the beginning of 2002 in the Hastie (2001) bycatch model where it was assumed all darkblotched would be encountered north of Cape Mendocino, they were even more onerous to the trawl fishery. To avoid such impacts in 2003, the GMT has recommended, and the Council has adopted for consideration, moving the slope rockfish management line further south to Point Reyes at 38° N. lat. Trawl landing limits for slope species north of this line would be significantly decreased relative to southern limits to reduce fishing-related mortality of darkblotched.

Lingcod

Pacific Ocean Perch

Pacific Whiting

Widow Rockfish

Yelloweye Rockfish

Yelloweye rockfish have been caught in recent years much more frequently as a target species due to their high value and quality fillets. Incidental catches are considered less likely due to their propensity to live in very high relief rocky habitats. Yelloweye catch has therefore come mostly from directed line fisheries like limited entry and open access longline fisheries as well as recreational fisheries targeting shelf rockfish, specifically yelloweye in many instances, and Pacific halibut. While these fisheries may be the dominant sectors catching yelloweye, there are groundfish and non-groundfish fisheries with an incidental catch of yelloweye. In 2002 the Council and NOAA Fisheries prohibited yelloweye retention (except for a 300 lb 2-month cumulative landing limit in the limited entry trawl fishery to determine unavoidable bycatch) to remove incentives for directed harvest. However, under *Low ABCs/OYs* and *Medium ABCs/OYs*, all fisheries with a potential incidental yelloweye impact need to be considered. Under *High ABCs/OYs* many of these fisheries with only a negligible impact may be held harmless or require only minor restructuring. Those fisheries with a historical directed take of yelloweye may still be too risky under any circumstance under considered rebuilding harvest levels. The non-retention regulations adopted for 2002 management may be adequate protection for yelloweye under *High ABCs/OYs* depending on the bycatch implications. Small footrope regulations for any limited entry trawl opportunities on the shelf should be risk-averse in this circumstance

WDFW Proposed Recreational Halibut "Open" Areas: In the past, the yelloweye rockfish catch in the coastal recreational fishery off Washington has been significant (approximately 15 mt in 2001). The majority of the yelloweye rockfish is caught in the recreational halibut fishery, which opens on May 1 off the coast. Information from fishers suggests that the yelloweye rockfish catch is not incidental to the halibut, but, rather, fishers target known yelloweye areas after they have caught their halibut.

In an effort to reduce the yelloweye harvest, the Pacific Fishery Management Council and the Washington Department of Fish and Wildlife (WDFW) approved regulations that prohibited the retention of yelloweye rockfish in the Washington coastal recreational fishery in 2002. Through July 2002, based on portside angler interviews, the estimated catch of yelloweye rockfish in the recreational fishery is 2 mt. Again, the majority of the yelloweye catch occurred in the May/June halibut fishery.

Based on the 2001 stock assessment, the draft rebuilding analysis for yelloweye rockfish indicated that an appropriate OY would be between 2.1 and 3.9 mt for 2003; however, because a subsequent assessment is scheduled to be completed this summer, the Council also approved the status quo OY (13.5 mt) to be considered. In order to meet the lower end of the OY range for yelloweye, while providing access to halibut areas, WDFW proposed measures for its recreational and commercial groundfish fisheries that would significantly reduce the yelloweye harvest. The proposed measures include opening halibut "hotspots" only for the recreational halibut fishery. These "hotspots" would be relatively small areas (1-2 square miles) that are known to have halibut, but which have little to no yelloweye rockfish.

WDFW held three public meetings to solicit input from charter boat operators and private anglers who have participated in the coastal halibut and groundfish fisheries on the location of these halibut "hotspots." Local recreational fishing interests provided latitude/longitude coordinates to WDFW staff. For the North Coast (Neah Bay/La Push) area, there are five "hotspots" being proposed; the South Coast (Westport) is proposing four "hotspots" and the Columbia River area has one larger "hotspot" that encompasses their primary halibut areas (Table 4.2.2.1-1).

4.2.1.2 "Precautionary Zone" Stocks

<u>Dover Sole</u>

<u>Sablefish</u>

Shortspine Thornyhead

3.2.1.3 Stocks at or Above Target Levels

Arrowtooth Flounder

Bank Rockfish

Black Rockfish

Blackgill Rockfish

Chilipepper Rockfish

English Sole

Longspine Thornyhead

Pacific Cod

Petrale Sole

Shortbelly Rockfish

Splitnose Rockfish

Yellowtail Rockfish

Other Groundfish Stocks

4.2.2 Non-groundfish Stocks

4.2.2.1 Salmon

Groundfish catch data were collected in a study of troll gear encounter rates for coho and chinook salmon (Lawson 1990). In this study spreads were spaced at 4 fm intervals with the bottom spread placed 2 fm above the cannonball. Gear was fished close to the bottom in a minimum of 45 fm of water to accommodate 10 spreads. Groundfish catch rates were low, with an average of 0.9 rockfish and 0.7 flatfish per boat-day. Most groundfish were caught on the lowest two spreads. Coho salmon were caught higher on the gear than chinook (Figure 4.1). In general, raising the gear off the bottom should reduce the catch of groundfish and chinook while increasing the catch of coho, however Lawson's (1990) gear study was not designed to measure this effect. More specific analysis of the data require making some assumptions. The most important assumption being that fish do not respond to the gear by moving up and down in the water column. For coho and chinook there is evidence that this assumption may not be true, coho tending to move down to the top spread, and chinook tending to move up to the bottom spread. No information exists about similar behavior in groundfish, however, if groundfish tended to move up to the bottom spread, raising the bottom spread would reduce catch rates less than might otherwise be anticipated. A second assumption is that salmon trollers are positioning their gear near the bottom. This was true during the Lawson (1990) study, but in some years (e.g. 2002) the distribution of salmon in the water column is such that midwater fishing may be more effective. In this case, groundfish encounters should be minimal, and the proposed regulations would have no effect. Assuming no movement of fish up and down the gear and fishing near the bottom, moving the bottom spread up to 4 fm from the cannonball would be equivalent to eliminating the bottom spread in Lawson

(1990). With 4 spreads (the current configuration in Oregon south of Cape Falcon), this would reduce the total groundfish catch rate by 74%, the Pacific halibut catch rate by 92%, and the chinook catch by 26%. The coho catch rate would increase by 22% (Table 4.2.2.1-1). For groundfish species of interest, catch rate reductions would be: 95% for canary rockfish, 0% for yelloweye rockfish (only 2 were caught), and 89% for lingcod (Figure 4.2.2.1-2). Requiring a distance of 6 fm between the lower spread and the cannonball would have similar, although slightly greater effects on catch rates for groundfish, and similar but somewhat greater effects on chinook and coho catch rate, based on the assumptions stated above. The central and southern Oregon commercial troll fisheries are currently modeled with lower coho encounter rates when a four spread restriction is in place based on the results of the Lawson (1990) study and corresponding gear profiles of the fleet. By moving the gear up in the water column and increasing the coho encounter rate, opportunity to harvest healthy chinook stocks would be constrained to provide a similar level of protection (e.g. allowable exploitation rate) to depressed natural coho stocks.

Alternatives that require a minimum distance of 4-6 fm between the cannonball and the lower most spread only outside depths of 50 fm are likely to have similar effects on rockfish interception since the primary adult distribution for canary, yelloweye and bocaccio rockfish is in waters deeper than 50 fm (PFMC, GF EFH appendix). The distribution of adult lingcod extends into water deeper than 50 fm so some reduction in interception is likely, however they also occur in shallower water. In deeper water, the effect on coho encounter rates of moving the gear up from the cannonball would be partially mitigated since the gear would be fished deeper to target chinook, and in very deep water where the cannonball is not close to the bottom, the gear could be lowered to locate the lower spread at the desired depth. This would, however, increase the groundfish encounter rate to a level similar to status quo. In areas less than 50 fm, salmon fisheries are generally conducted very close to shore, in less than 10 fm over sandy bottom, where rockfish are rare. The most effective technique involves fishing very near the bottom. Raising the lower spread would essentially eliminate salmon fishing in this area, where almost no groundfish are encountered. Groundfish caught in this depth stratum (<10 fm) could be released with minimal mortality from decompression.

Alternatives that prohibit fishing outside 25 fm in Washington Marine Catch Areas 3 and 4 would eliminate almost all of the productive commercial salmon fishing waters in those areas, and the fleet would be displaced to other area or other fisheries. Approximately 48% yelloweye rockfish catch (0.05 mt), 15% of the widow rockfish catch (0.02 mt), and 10% of the canary rockfish catch (0.08 mt) in salmon troll fisheries coast wide occurred in those areas in 2001(Table 4.2.2.1-1). In the areas north of Cape Falcon, 100% of the yelloweye and widow rockfish, and 64% of the canary rockfish landings occurred in those areas. Approximately 31% (97,000 lbs) of the non-Indian commercial chinook landings from north of Cape Falcon occurred in those areas in 2001, and the recent 5-year average is 38%PFMC 2001; Review of 2001 Ocean Salmon Fisheries Tables IV-7 and IV-8).

The Pacific halibut catch in the salmon troll fishery is considered incidental in the Council's 2002 Pacific Halibut Catch Sharing Plan for Area 2A, however there is some targeting of halibut in the troll fishery intended to achieve the halibut allocation. Alternatives that prohibit retention of Pacific halibut, canary and yelloweye rockfish will likely reduce intentional targeting of halibut and the associated bycatch of groundfish, but to what degree halibut and groundfish interception would be reduced is unknown. In 2001, the Area 2A non-Indian commercial salmon troll fishery was allocated 34,046 lbs of Pacific halibut.

Alternatives that require mandatory retention of legal size groundfish would provide information on groundfish encounter rates in the commercial salmon fishery subsequent to new management measures, which would allow comparison with past landings (Table 4.2.2.1-1) and encounter rates and assessment of the effectiveness of the new measures. Currently, some groundfish is discarded due to economics (poor price, ice limitations on board, etc.). Mandatory retention would allow sampling of a greater portion of the catch, and reduce wastage. Release of sublegal groundfish would preserve juvenile lingcod, which can be released with minimal mortality, and keep consistent regulations between recreational and commercial fisheries.

4.2.2.2 California Halibut

4.2.2.3 California Sheephead

4.2.2.4 Coastal Pelagic Species (CPS)

CPS are taken incidentally in the groundfish fishery. Incidental take is well documented in the at-sea and shore-based whiting fishery. Table 4.2.2.4-1 shows incidental take of mackerels and sardine in the at-sea whiting fishery from 1996 through 2000. Preliminary data for 2001 indicates that approximately 80 mt of squid was incidentally taken in the at-sea whiting fishery through October. There is little information on the incidental take of CPS by the other segments of the fishery; however, given that CPS are not associated with the ocean bottom, the interaction is expected to be minimal.

There is some documented bycatch of groundfish in CPS fisheries. Bocaccio bycatch in market squid fishery? Light boats vs. diurnal purse seine? Canary and yelloweye bycatch?

4.2.2.5 Dungeness Crab

Dungeness crab, which are typically harvested using traps (crab pots), ring nets, by hand (scuba divers) or dip nets, are incidentally taken or harmed unintentionally by groundfish gears. Very little bycatch of rockfish and other overfished West Coast groundfish species has been noted in pot and trap fisheries, including those targeting Dungeness crab. It is not anticipated that this fishery would need to be constrained or modified to rebuild any of the overfished West Coast groundfish species of concern.

4.2.2.6 Highly Migratory Species (HMS)

4.2.2.7 Ocean Whitefish

4.2.2.8 Pacific Pink Shrimp

4.2.2.9 Pacific Halibut

The proposed actions to rebuild canary and yelloweye rockfish north of the Cape Mendocino management line at 40°10' N. lat. are anticipated to severely limit fishing effort on the continental shelf inside of the 150 fm line. Opportunities to harvest Pacific halibut may depend on determining areas inside 150 fm where canary and yelloweye are not encountered. The Council and the WDFW proposed this general strategy at the June 2002 Council meeting. Such areas may be inferred from IPHC halibut survey data (Table 4.2.2.9-1), WDFW observations of their recreational charter halibut fishery (Table 4.2.2.9-2), port sampling data, NOAA Fisheries shelf trawl surveys, trawl logbooks, and fish tickets. The WDFW is anticipated to identify 1 nm^2 (or larger) halibut hotspot areas north of Point Chehalis, WA where Pacific halibut can be harvested without a bycatch of overfished shelf rockfish. This risk-averse strategy will be particularly effective insofar as the data used to inform the decision of open fishing areas accurately depicts areas where these rockfish do not reside. The strong habitat affiliations and apparent lack of significant movements by canary and yelloweye rockfish may reduce the uncertainty of these data. Observations of 2003 Pacific halibut fisheries, such as the 2002 WDFW effort to place observers on recreational charters, will be important to verify that these fishing opportunities effectively avoid these rockfish species. Pacific halibut fishing opportunities on the shelf will also depend on the effectiveness of enforcing compliance with area restrictions (see section 4.4).

One likely outcome of the proposed action(s) is a decrease in the harvest of Pacific halibut in Catch Area 2A. It is unknown how this may affect any allocation of Pacific halibut in Area 2A in 2003. The IPHC will meet in January 2003 to decide 2003 Pacific halibut management and allocations.

4.2.2.10 Ridgeback Prawn

4.2.2.11 Sea Cucumber

4.2.2.12 Spot Prawn

4.2.2.13 Miscellaneous Species

4.2.3 Protected Species

4.3 Impacts to the Socioeconomic Environment

4.3.1 Fishery Overall

The distribution, low spawning biomass, and particularly low productivity of bocaccio will pose the most significant constraint to fisheries south of Cape Mendocino inside 150 fm in 2003. It is anticipated that all shelf fisheries with a demonstrated bycatch of bocaccio will need to be closed or restructured in 2003 to effectively avoid all interactions. The range of harvest levels considered and analyzed in this initial draft EIS provide no opportunity for an allowable harvest of bocaccio. The standard of a zero fishing mortality on bocaccio allows no interaction with the species. The anticipated socioeconomic impacts to California fisheries and coastal communities will be severe in 2003.

Fisheries and coastal communities north of Cape Mendocino to the U.S./Canada border will be similarly affected by constraints imposed to rebuild canary and yelloweye rockfish. As in the south, fisheries inside 150 fm will be most constrained by the actions considered and analyzed in this inital draft EIS. Fisheries with a demonstrated bycatch of these species will need to be closed or restructured in 2003 to rebuild these species.

Groundfish trawl opportunities will need to be further constrained in 2003 by actions considered and analyzed herein to rebuild darkblotched rockfish. Seasonal and depth restrictions are anticipated to be the most effectively precautionary strategies for avoiding darkblotched and minimizing adverse socioeconomic impacts. These considerations are anticipated to potentially affect groundfish trawl fisheries north of 38° N. lat. near Point Reyes, CA within the 150-250 fm depth zone.

4.3.1 Fishery Overall

4.3.2 Commercial Fishery

4.3.3 Buyers and Processors

4.3.4 Recreational Fishery

Figures 4.3.4-1 through 4.3.4-3 show Washington, Oregon, and California management measure options compared to seasonal effort (angler trips) during the years 1996, and 2000-2002.

4.3.5 Tribal Fisheries

4.3.6 Communities

4.3.7 Health and Safety

4.3.2 Commercial Fishery

4.3.3 Buyers and Processors

4.3.4 Recreational Fishery

4.3.5 Tribal Fisheries

4.3.6 Communities

4.3.7 Health and Safety

4.4 Impacts to the Management Regime

4.4.1 Enforcement Impacts

4.4.2 State-Managed Fishery Impacts

[Likely Impacts on Other Management Measures and Other Fisheries]

4.4.2.1 Nearshore Fishery Impacts South of Cape Mendocino

The preferred depth range of bocaccio, canary and yelloweye rockfish is deeper than 20 fm. Since the allowable catch of these species has been severely restricted for 2003 in order to rebuild the stocks, a depth limit of 20 fm or less for 2003 rockfish fishing has been proposed. Despite their preference for deeper water, these overfished species will nevertheless be encountered at a reduced rate by persons targeting nearshore species in waters less than 20 fm. Consequently, retention of the overfished species will probably be prohibited to eliminate any incentive for targeting, and to provide an opportunity for the incidental take to be released alive. The potential impact of nearshore fishing on these species may be estimated by: 1) examining catch by depth from the recent recreational fishery; 2) estimating potential effort shift based on the recent performance of the recreational rockfish fishery when only 0-20 fm fishing was allowed; and 3) applying hooking mortality estimates to the bycatch of overfished species that will be inadvertently caught and released in the 0-20 fm fishery.

The 2001 fishery provides a "base case" for making 2003 projections. Data on depth of capture is available for the recreational fishery from MRFSS field samples. During 2001, the total catch for each of the three overfished species may be estimated for 0-10 fm, 10-20 fm and >20 fm, based on the depth distribution of sample weight for each species. The results indicate that fishing beyond 20 fm accounted for 81 percent of the bocaccio, 67 percent of the canary, and 74 percent of the yelloweye rockfish caught during 2001 (Table 4.4.2.1-1).

Restricting the rockfish fishery to less than 20 fm will affect the behavior of rockfish anglers. Some will choose to forgo rockfish fishing because the most desirable species are found in the deeper waters. Others will move from the closed deeper waters to the shallow waters that remain open. The net effect is very difficult to analyze or predict, but the performance of the fishery during recent periods when only nearshore fishing was allowed may provide some insight. The areas/periods when this was in effect are: Central area (Cape Mendocino-Pt. Conception) during May-June, 2001 and May-June 2002; Southern area (south of Pt. Conception) during Jan-Feb 2001 and Nov-Dec 2001. The expected change in nearshore fishing effort for 2003 may be bounded by the upper quartile (36 percent increase) and the lower quartile (3 percent increase) from the observed effort during those periods.

Estimates of hooking mortality for rockfish caught in shallow water may be obtained from Albin and Karpov (1995). One aspect of their study was to determine sources of mortality for a rockfish tag and recapture project that was conducted along the northern California coast during the 1990s. Most of the specimens were captured in waters ranging from 50-150 feet deep. Overall mortality for rockfish in the study was 35.5 percent. The direct cause of mortality for most dead fish (23.0 percent) could not be determined. Mortality attributed to barotrauma (5.8 percent) was slightly greater than for hook injuries (5.1 percent). A minor source of mortality was due to injuries from inserting tags (1.6 percent). Of the directly attributed mortality (not counting the tag injuries), about one half was due to barotrauma, and the rest was due to hook injuries.

Based on the Albin and Karpov (1995) mortality results, it is possible to develop a range of plausible mortality impacts for rockfish released during the nearshore fishery. For the 0-10 fm depth zone, only hook injuries would apply; barotrauma is not an issue. The range of mortality for hook injuries is 5.1-15.9 percent. The low value was directly attributed to hook injuries from the study, and the high end of the range is obtained by assuming that hook injuries account for nearly one half of all mortality, including those cases where the direct cause of mortality could not be directly determined.

For the 10-20 fm depth zone, both hook injuries and barotrauma are a factor. In a closely related study by the same authors, about 24.0 percent of all nearshore fish required to be punctured to relieve pressure from expanded swim bladders. For this depth zone, a reasonable range of mortality is 33.9-50.0 percent. The low end of the range is the overall mortality rate observed in the study, minus the tag injuries. The high end is estimated by assuming that the observed mortality will occur (33.9 percent), and also assuming that those fish in need of puncture will not receive the treatment because recreational fishermen are not trained or equipped to perform the procedure. Hence, the maximum mortality from barotrauma is greater than for the study findings, resulting in an upper bound of 50.0 percent for overall 10-20 fm mortality.

Estimates of "high impact" and "low impact" release mortality are provided in Table 4.4.2.1-1. The range for bocaccio was 8.7-3.7 mt. It is clear that additional adjustments may be necessary to the results presented in Table 4.4.2.1-1 if the season length or bag limits (or other significant restrictions) for 2003 are changed from the base year (2001).

As mentioned above, attributable causes of mortality for rockfish caught within 10-20 fm are about equally divided between barotrauma (roughly 53 percent) and hook-related injuries (roughly 47 percent). If barbless circle hooks were required, a major cause of catch-release mortality could be greatly reduced. Since the current estimates for recreational bocaccio mortality in the 2003 nearshore fishery are about 8.7-3.7 mt (assuming the same season structure as 2001), barbless circle hooks might be one option to further reduce the bocaccio impacts. If a 33-50 percent reduction in release mortality could be achieved by minimizing hook injuries, the bocaccio mortality might be reduced to roughly 2-6 mt. This could help keep the recreational impacts within the allotment for next year.

4.5 Impacts of Uncertainty and Risk

4.6 Precedent For Future Significant Actions

4.7 Cumulative Impacts

4.8 Irreversible and Irretrievable Commitment of Resources

4.9 Mitigation Measures Not Already Included in the Alternatives

CHAPTER 4
TABLES

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TABLE 4.2.2.1-1. **Draft latitude/longitude coordinates for proposed recreational halibut "open" areas for 2003.**

Columbia River	South Coast	North Coast
46.20.00 124.39.00 W. Long	47.18.50 N. lat. 124.52.50 W. Long	48.15.00 125.32.50 W. Long.
46.20.00 124.36.00 W. Long	47.18.50 N. lat. 124.50.50 W. Long	48.15.00 125.33.50 W. Long.
46.18.50 124.39.00 W. Long	47.17.00 N. lat. 124.52.50 W. Long	48.16.00 125.32.50 W. Long.
46.18.50 124.36.00 W. Long	47.17.00 N. lat. 124.50.50 W. Long	48.16.00 125.33.50 W. Long.
	47.30.00 N. lat. 124.53.50 W. Long	48.16.50 125.19.50 W. Long.
	47.30.00 N. lat. 124.52.00 W. Long	48.16.50 125.22.00 W. Long.
	47.29.00 N. lat. 124.53.50 W. Long	48.17.50 125.19.50 W. Long.
	47.29.00 N. lat. 124.52.00 W. Long	48.17.50 125.22.00 W. Long.
	47.02.00 N. lat. 124.58.40 W. Long	48.18.00 125.05.50 W. Long.
	47.02.00 N. lat. 124.56.40 W. Long	48.18.00 125.07.00 W. Long.
	47.01.00 N. lat. 124.58.40 W. Long	48.19.00 125.05.50 W. Long.
	47.01.00 N. lat. 124.56.40 W. Long	48.19.00 125.07.00 W. Long.
	47.00.50 N. lat. 124.56.50 W. Long	48.12.50 125.04.00 W. Long.
	47.00.50 N. lat. 124.55.00 W. Long	48.12.50 125.05.00 W. Long.
	46.59.50 N. lat. 124.56.50 W. Long	48.13.50 125.04.00 W. Long.
	46.59.50 N. lat. 124.55.00 W. Long	48.13.50 125.05.00 W. Long.
		47.58.00 125.14.00 W. Long.
		47.58.00 125.17.00 W. Long.
		47.59.00 125.14.00 W. Long.
		47.59.00 125.17.00 W. Long.

Table 4.2.2.1-1. Effects of proposed regulation of a minimum distance of four fathoms between lower spread and cannonball for non-Indian commercial salmon troll fishery.

Data are catch per day by spread location of fish encountered in a study of troll gear encounter rates for coho and chinook salmon off central Oregon (Lawson 1990). Gear configurations included 4, 7, and 10 spreads. The bottom spread was located 2 fm above the cannonball and subsequent spreads were located at 2 fm intervals.

	Distance Above Cannonball (fathoms)											Effect of Regulation - Catch Rate Change [1]
Species	20	18	16	14	12	10	8	6	4	2	Total	
Coho	2.042	2.000	2.417	3.417	2.854	2.667	2.917	1.819	1.458	1.042	22.633	22.5%
Chinook Shakers		0.042	0.167	0.271	0.354	0.375	0.681	0.931	1.125	1.417	5.363	-25.1%
Chinook		0.042	0.042	0.125	0.250	0.542	1.042	1.847	1.944	2.431	8.265	-26.0%
Rockfish												
Black							0.014	0.028	0.069	0.069	0.180	-38.3%
Blue									0.028	0.000	0.028	0.0%
Brown						0.021			0.028	0.042	0.091	-30.0%
Canary									0.014	0.264	0.278	-95.0%
Chilipepper										0.014	0.014	-100.0%
Pacific Ocean Perch							0.014				0.014	0.0%
Yelloweye								0.014	0.014		0.028	-80.0%
Yellowtail			0.042					0.014	0.042	0.153	0.251	0.0%
Unspecified									0.014	0.056	0.070	-73.2%
Lingcod								0.014	0.097	0.903	1.014	-89.1%
Other Groundfish[2]				0.021	0.042	0.042	0.007	0.097	0.222	0.570	1.064	-55.1%
Pacific Halibut									0.042	0.472	0.514	-91.8%

TABLE 4.2.4-1. Incidental catch levels of Coastal Pelagic Species [1/] in the at-sea whiting fishery during 1996- 2000 (metric tons). [2/]

Species	1996	1997	1998	1999	2000
Pacific mackerel	244.34	54.15	458.78	1.47	15.52
Jack mackerel	60.19	13.18	229.14	53.84	52.98
Pacific sardine	0.37	0.31	1.94	0.18	0.06

[1/] The Coastal Pelagic Species Fishery Management Plan did not become effective until 1999.
[2/] Source: NORPAC observer data.

Table 4.2.2.9-1. IPHC halibut survey data

Table 4.2.2.9-2. WDFW observations of their recreational charter halibut fishery

TABLE 4.3.5-1. Expected catch of important groundfish species under the proposed tribal fishery management option. [1/]

Species	Longline		Trawl		Troll		Total- All Gears	
	lbs	mt	lbs	mt	lbs	mt	lbs	mt
black	0	0	<50	<0.02	0	0	<0	<0.02
lingcod	6,000-7,500	2.7-3.40	2,000	0.91	2,000	0.91	10,000-11,500	4.54-5.22
canary	1,000-1,500	0.45-0.68	2,500	1.13	1,000	0.45	4,500-5,000	2.04-2.27
yelloweye	?	?	50	0.02	100	0.05	≥150	≥0.07
yellowtail	200	0.09	250,000-500,000	113.40-226-80	10,000	4.54	260,200-510,200	118.03-231.43
widow	0	0	30,000-50,000	13.61-22.68	?	?	≥30,000-50,000	≥13.61-22.68
POP	0	0	0	0	0	0	0	0
darkblotched	0	0	0	0	0	0	0	0
thornyheads	4,500-6,000	2.04-2.72	0	0	0	0	4,500-6,000	2.04-2.72

[1/] Numbers not presented as a range represent an upper bound based on landing trends for the past several years.

TABLE 4.4.2.1-1. Estimated 2003 recreational fishing mortality for overfished shelf rockfish species taken incidentally in the nearshore fishery south of Cape Mendocino.

HIGH IMPACT SCENARIO

Distribution of estimated 2001 landings (mt) by depth.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.5	8.8	87.8	109.0
canary	4.8	6.1	22.5	33.4
yelloweye	0.3	0.9	3.4	4.6

Distribution of estimated 2003 catch (mt) by depth. Effort shift = 1.36.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	17.0	11.9	0.0	28.9
canary	6.5	8.3	0.0	14.8
yelloweye	0.4	1.3	0.0	1.7

Distribution of estimated 2003 fishing mortality (mt) by depth. Hooking Mortality (0-59 ft) = 0.159; Hooking Mortality (60-119 ft) = 0.500.

Species	All Modes <60ft	60-119 ft	120+ ft	*Total*
bocaccio	2.7	6.0	0.0	*8.7*
canary	1.0	4.1	0.0	*5.2*
yelloweye	0.1	0.6	0.0	*0.7*

LOW IMPACT SCENARIO

Distribution of estimated 2001 landings (mt) by depth

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.5	8.8	87.8	109.0
canary	4.8	6.1	22.5	33.4
yelloweye	0.3	0.9	3.4	4.6

Distribution of estimated 2003 catch (mt) by depth. Effort shift = 1.03.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.9	9.0	0.0	21.9
canary	4.9	6.3	0.0	11.2
yelloweye	0.3	1.0	0.0	1.3

Distribution of estimated 2003 fishing mortality (mt) by depth. Hooking Mortality (0-59 ft) = 0.051; Hooking Mortality (60-119 ft) = 0.339.

Species	**All Modes <60ft**	**60-119 ft**	**120+ ft**	***Total***
bocaccio	0.7	3.1	0.0	*3.7*
canary	0.2	2.1	0.0	*2.4*
yelloweye	0.0	0.3	0.0	*0.3*

CHAPTER 4
FIGURES

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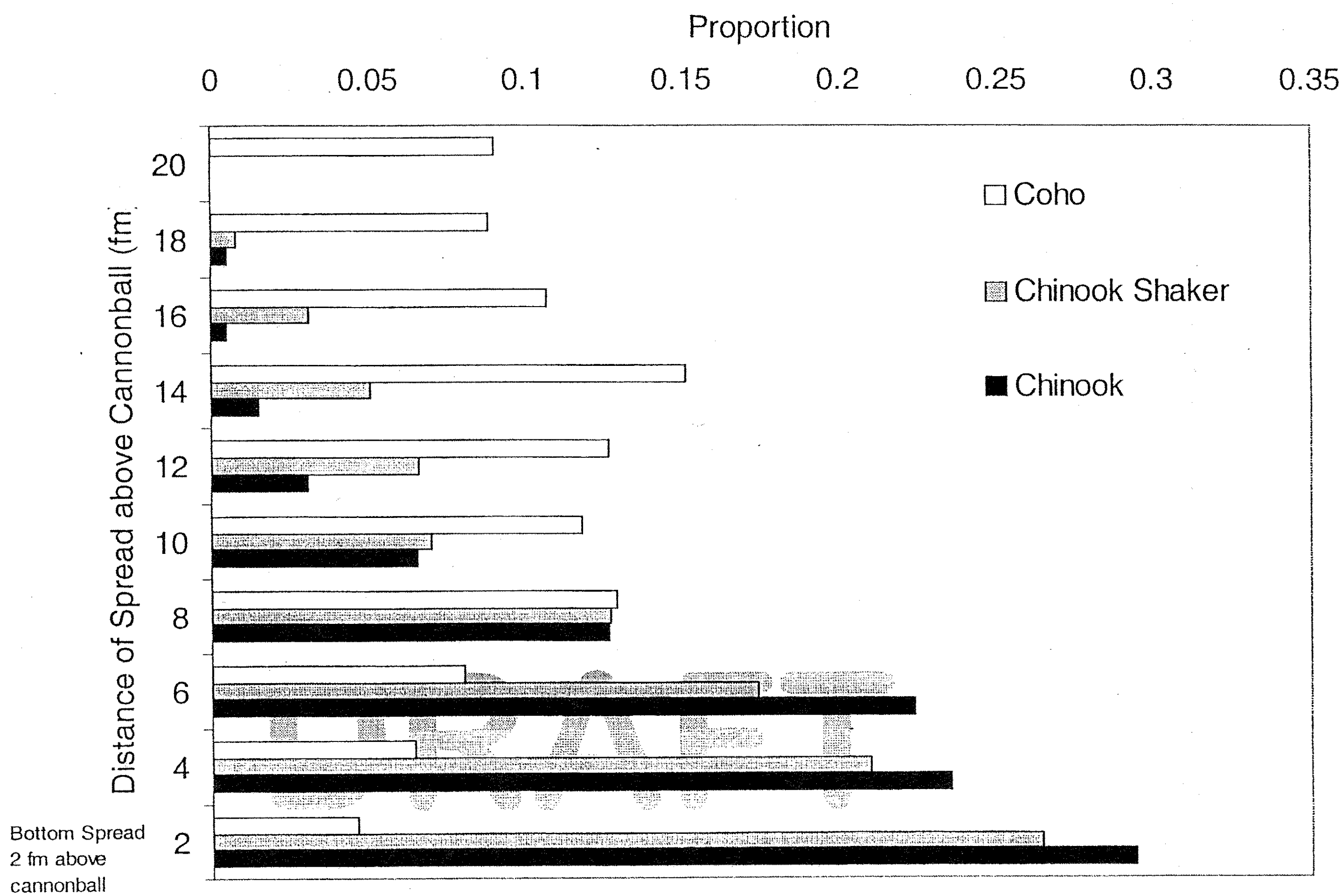


Figure 4.2.2.1-1. Proportion of salmon catch/day by spread location for troll salmon gear off central Oregon (Lawson 1990).

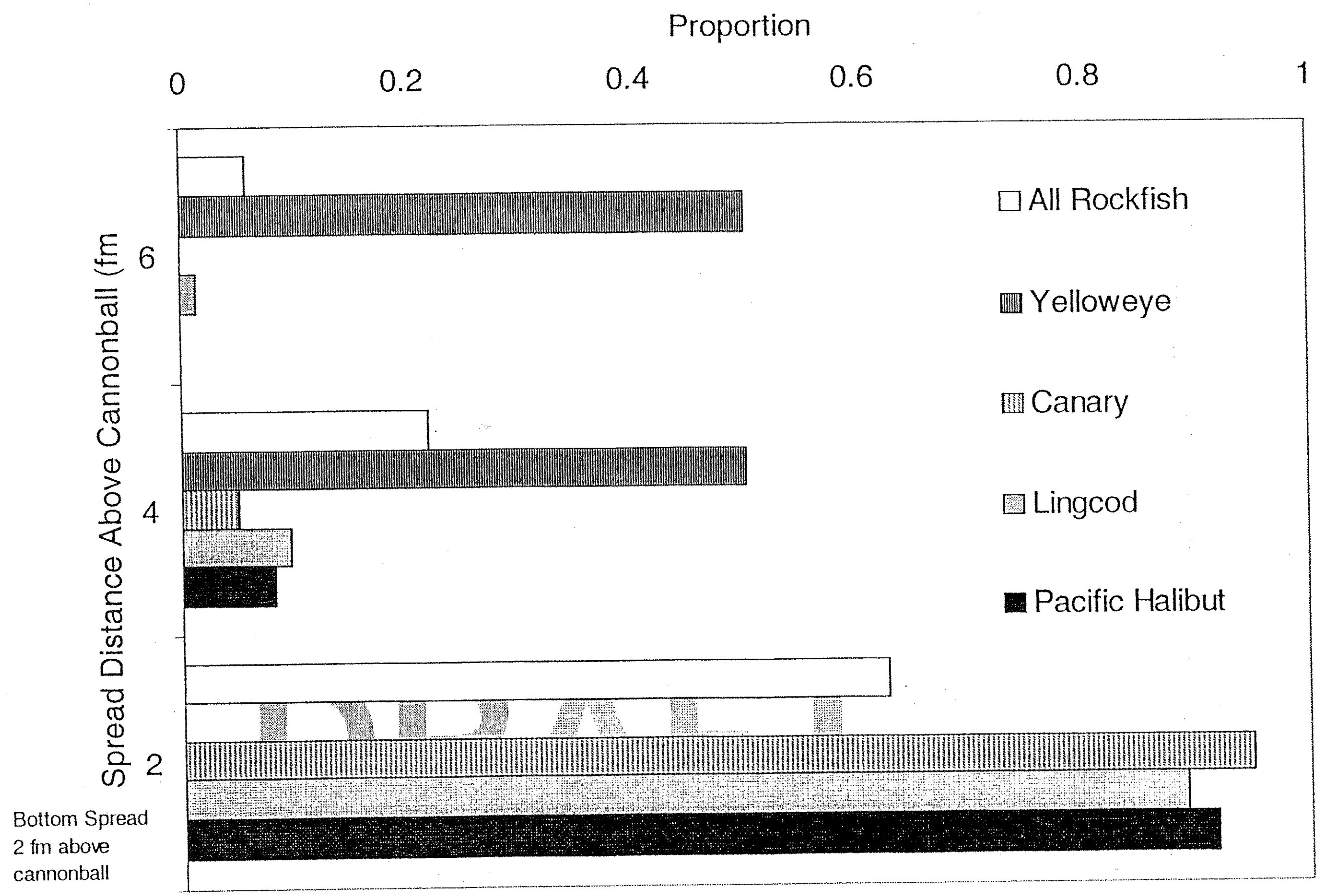
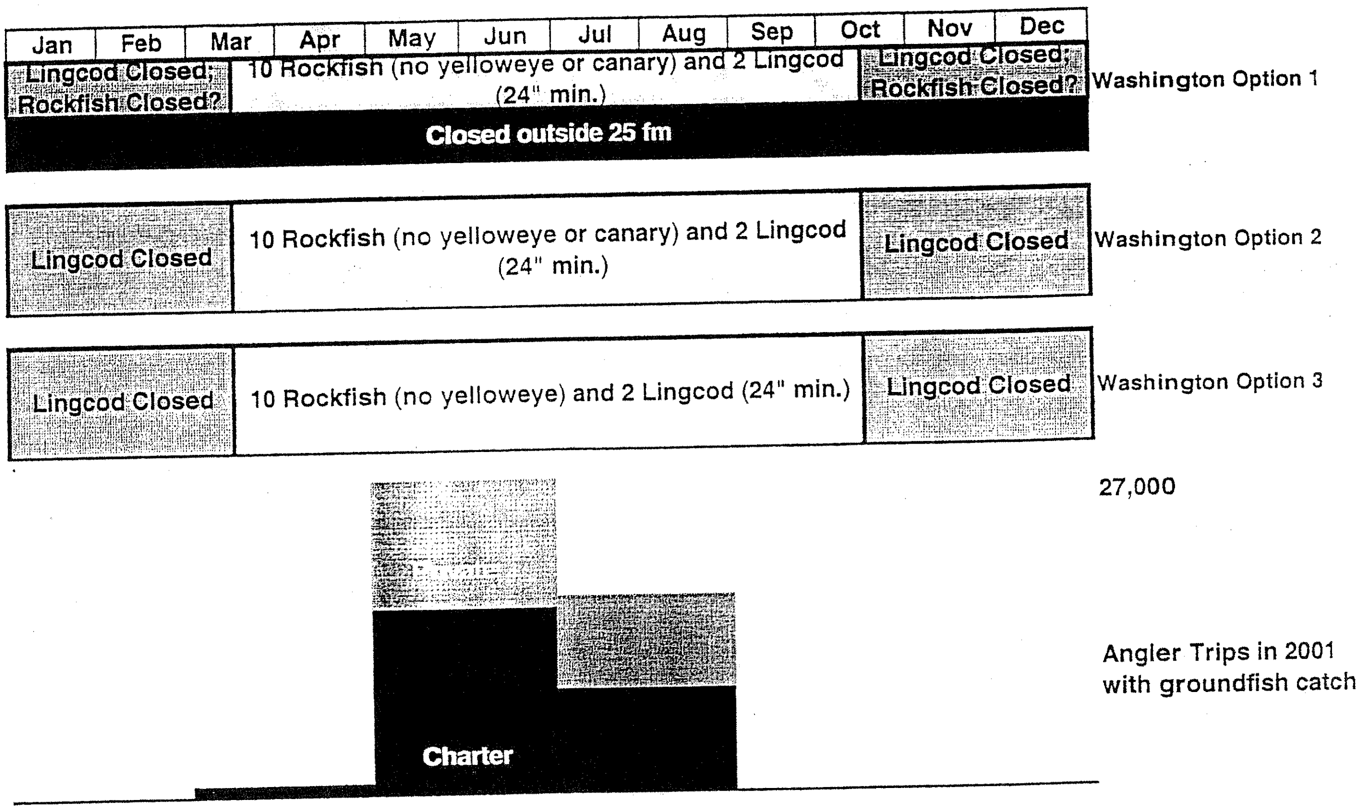


Figure 4.2.2.1-2. Proportion of selected groundfish and Pacific halibut catch/day by spread location for troll salmon gear off central Oregon (Lawson 1990).

Figure 4.3.4-1. Recreational rockfish and lingcod season options for 2003 in Washington, and 2001 effort patterns for Washington.



4.3.4-2. Recreational rockfish and lingcod season options for 2003 in Oregon and California nor of Cape Mendocino, and 2001 effort patterns for Oregon.

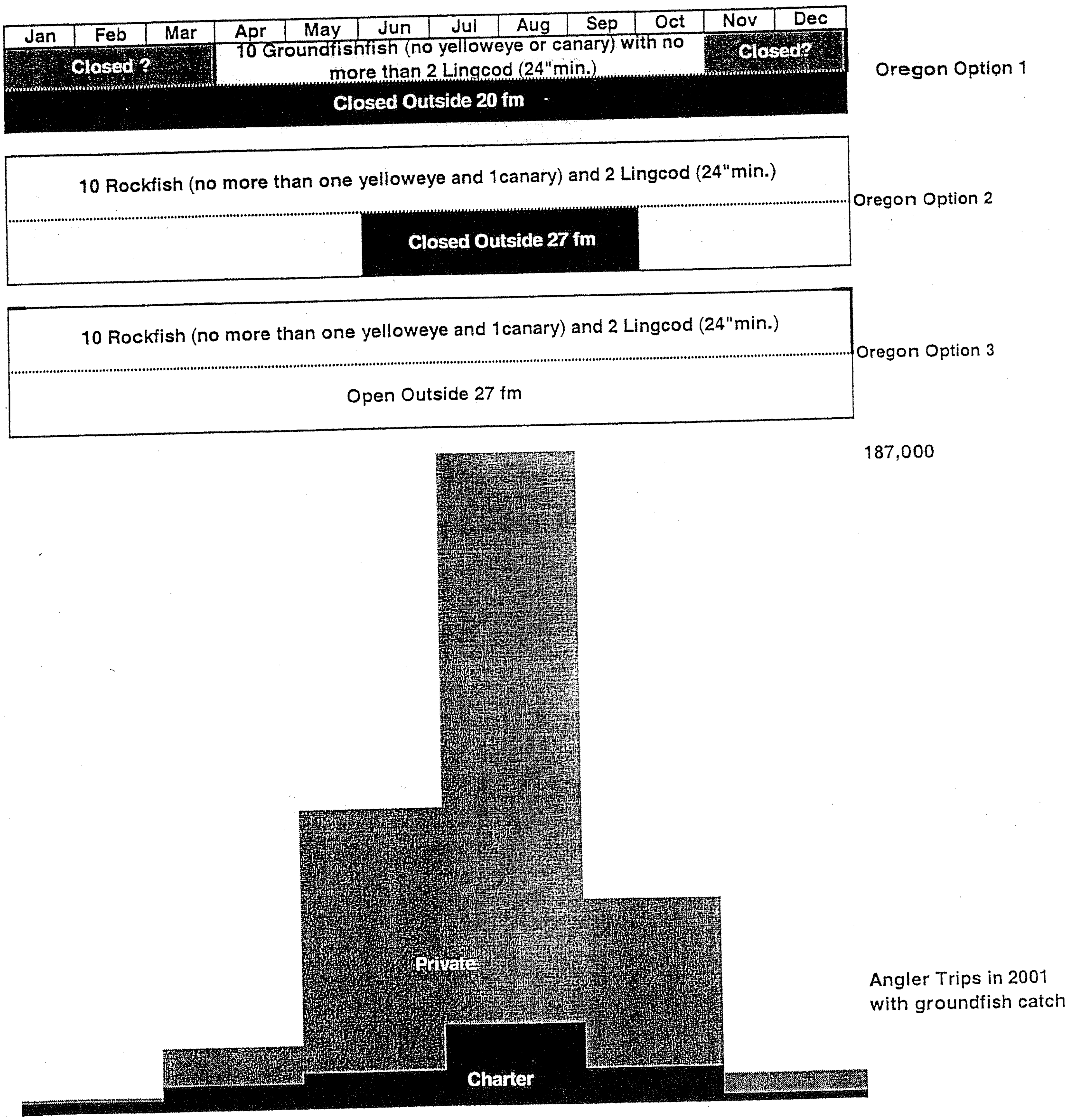
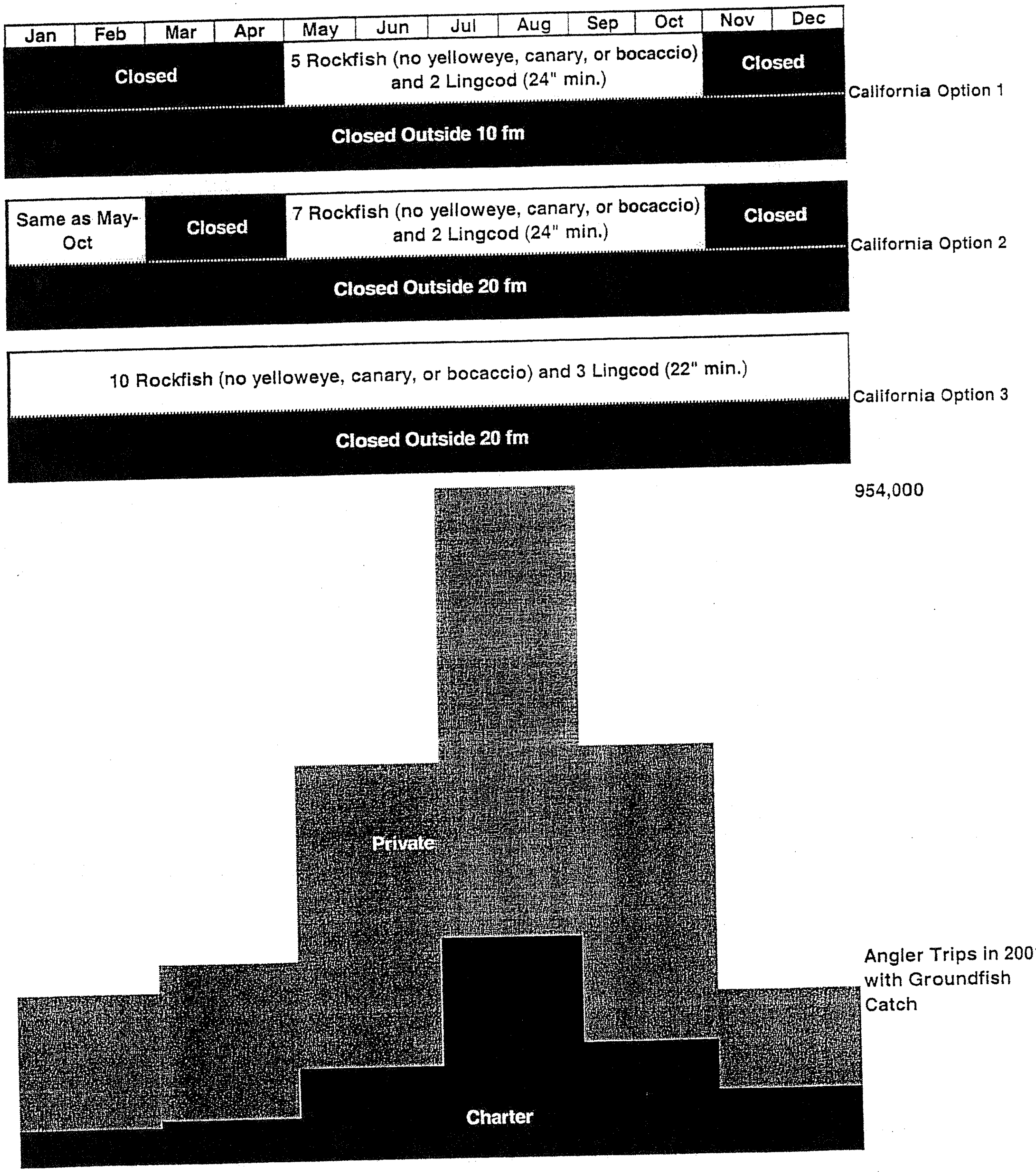


Figure 4.2.4-3. Recreational rockfish and lingcod season options for 2003 in California south of Cape Mendocion, and 2001 effort patterns for California.



5.0 CONSISTENCY WITH THE FMP AND MAGNUSON-STEVENS ACT NATIONAL STANDARDS

5.1 Consistency with the FMP

The Groundfish FMP goals and objectives are listed below. They way in which the 2003 management measures address each objective is briefly described in italics below the relevant statement.

Management Goals.

Goal 1 - Conservation. Prevent overfishing by managing for appropriate harvest levels and prevent any net loss of the habitat of living marine resources.

Goal 2 - Economics. Maximize the value of the groundfish resource as a whole.

Goal 3 - Utilization. Achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

Objectives. To accomplish these management goals, a number of objectives will be considered and followed as closely as practicable:

Conservation.

Objective 1. Maintain an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs.

Objective 2. Adopt harvest specifications and management measures consistent with resource stewardship responsibilities for each groundfish species or species group.

Objective 3. For species or species groups which are below the level necessary to produce maximum sustainable yield (MSY), consider rebuilding the stock to the MSY level and, if necessary, develop a plan to rebuild the stock.

Objective 4. Where conservation problems have been identified for nongroundfish species and the best scientific information shows that the groundfish fishery has a direct impact on the ability of that species to maintain its long-term reproductive health, the Council may consider establishing management measures to control the impacts of groundfish fishing on those species. Management measures may be imposed on the groundfish fishery to reduce fishing mortality of a nongroundfish species for documented conservation reasons. The action will be designed to minimize disruption of the groundfish fishery, in so far as consistent with the goal to minimize the bycatch of nongroundfish species, and will not preclude achievement of a quota, harvest guideline, or allocation of groundfish, if any, unless such action is required by other applicable law.

Objective 5. Describe and identify essential fish habitat (EFH), adverse impacts on EFH, and other actions to conserve and enhance EFH, and adopt management measures that minimize, to the extent practicable, adverse impacts from fishing on EFH.

Economics.

Objective 6. Attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

Objective 7. Identify those sectors of the groundfish fishery for which it is beneficial to promote year-round marketing opportunities and establish management policies that extend those sectors fishing and marketing opportunities as long as practicable during the fishing year.

Objective 8. Gear restrictions to minimize the necessity for other management measures will be used whenever practicable.

Utilization.

Objective 9. Develop management measures and policies that foster and encourage full utilization (harvesting and processing) of the Pacific coast groundfish resources by domestic fisheries.

Objective 10. Recognizing the multispecies nature of the fishery and establish a concept of managing by species and gear or by groups of interrelated species.

Objective 11. Strive to reduce the economic incentives and regulatory measures that lead to wastage of fish. Also, develop management measures that minimize bycatch to the extent practicable and, to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch. In addition, promote and support monitoring programs to improve estimates of total fishing-related mortality and bycatch, as well as those to improve other information necessary to determine the extent to which it is practicable to reduce bycatch and bycatch mortality.

Objective 12. Provide for foreign participation in the fishery, consistent with the other goals to take that portion of the optimum yield (OY) not utilized by domestic fisheries while minimizing conflict with domestic fisheries.

Social Factors.

Objective 13. When conservation actions are necessary to protect a stock or stock assemblage, attempt to develop management measures that will affect users equitably.

Objective 14. Minimize gear conflicts among resource users.

Objective 15. When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures, and the environment.

Objective 16. Avoid unnecessary adverse impacts on small entities.

Objective 17. Consider the importance of groundfish resources to fishing communities, provide for the sustained participation of fishing communities, and minimize adverse economic impacts on fishing communities to the extent practicable.

Objective 18. Promote the safety of human life at sea.

5.2 Consistency with Magnuson-Stevens Act National Standards

An FMP or plan amendment and any pursuant regulations must be consistent with ten national standards contained in the Magnuson-Stevens Act (§301). These are:

National Standard 1 states that conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

National Standard 2 states that conservation and management measures shall be based on the best scientific information available.

National Standard 3 states that, to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

National Standard 4 states that conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. The proposed measures will not discriminate between residents of different States.

National Standard 5 states that conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

National Standard 6 states that conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources and catches.

National Standard 7 states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

National Standard 8 states that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

National Standard 9 states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

National Standard 10 states that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

6.0 OTHER APPLICABLE LAW

6.3 Endangered Species Act

Section 7(a)(2) of the Endangered Species Act, as amended, requires that federal agencies "shall, in consultation with and with the assistance of the Secretary [of Commerce or Interior], insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species, or result in the destruction or adverse modification of habitat of such species...." Based on this section of the law (Section 7), action agencies consult with NMFS (for marine species) or FWS (for terrestrial and freshwater species) in cases where a "major construction activity" (which is considered equivalent to the "major federal action" standard under NEPA) could "jeopardize the continued existence" of an endangered species. For fishery management actions in federal waters NMFS is both the action and consulting agency (although different divisions fulfill these two roles.) Consultations can begin informally, through "phone contacts, meetings, conversations, letters , project modifications and concurrences..." [cite consultation handbook]. During consultations if the lead agency is informed that listed species or critical habitat may be present in the action area, it prepares a biological assessment to disclose the likely adverse effects. Sections 3.2.3 and 4.2.3 in this EIS contain the information necessary for a biological assessment of the effects of the proposed action on ESA-listed species occurring in the action area. If the action agency determines that the proposed action may affect listed species or designated critical habitat formal consultation is required. The consulting agency (in this case, NMFS) must issue a Biological Opinion (or BiOp) within 135 days of the initiation of formal consultation. The BiOp may contain "reasonable and prudent measures" that the action agency must implement (in addition to any proposed mitigation) to ensure the proposed action does not jeopardize the continued existence of the species in question. (These may be referred to as "no jeopardy standards." The Council manages ocean salmon fisheries in part based on such standards for listed salmon species.)

NMFS has issued several BiOps to assess the effects of the groundfish fishery on ESA-listed salmon. (Salmon may be listed by individual spawning runs because these are considered evolutionarily significant units [ESUs] for the purposes of listing.) The most recent BiOp was issued on December 15, 1999, covering the 22 ESUs listed by that time. (These ESUs are listed in Table 3.2-x.) This BiOp represents a re-initiation of previous consultations described in Opinions issued on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, and May 14, 1996.

During the 2000 Pacific whiting season, the whiting fisheries exceeded the chinook bycatch amount specified in the Pacific whiting fishery Biological Opinion's (December 19, 1999) incidental take statement estimate of 11,000 fish, by approximately 500 fish. In the 2001 whiting season, however, the whiting fishery's chinook bycatch was about 7,000 fish, which approximates the long-term average. After reviewing data from, and management of, the 2000 and 2001 whiting fisheries (including industry bycatch minimization measures), the status of the affected listed chinook, environmental baseline information, and the incidental take statement from the 1999 whiting BO, NMFS determined that a re-initiation of the 1999 whiting BO was not required. NMFS has concluded that implementation of the FMP for the Pacific Coast groundfish fishery is not expected to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS, or result in the destruction or adverse modification of critical habitat.

Based on the information in Sections 3.3.2 and 4.2.3 of this EIS, the 2003 management measures fall within the scope of these consultations. Further, this EIS serves as a biological assessment of the likely adverse effects to other listed species (also listed in Table 3.2.-x). Based best available scientific information, no adverse effects are expected.

6.4 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972 is the principle federal legislation guiding marine mammal species protection and conservation policy in the United States. Under the MMPA, NMFS is responsible for the management and conservation of 153 stocks of whales, dolphins, porpoise, seals, sea lions, and fur seals while the FWS is responsible for walrus, sea otters, and the West Indian manatee.

In the WOC region, the Steller sea lion (*Eumetopias jubatus*) Eastern stock, Guadalupe fur seal (*Arctocephalus townsendi*), and Southern sea otter (*Enhydra lutris*) California stock are listed as threatened under the ESA and the sperm whale (*Physeter macrocephalus*) WOC Stock, humpback whale (*Megaptera* *novaeangliae*) WOC - Mexico Stock, blue whale (*Balaenoptera musculus*) Eastern north Pacific stock, and Fin whale (*Balaenoptera physalus*) WOC Stock are listed as depleted under the MMPA. Any species listed as endangered or threatened under the ESA is automatically considered depleted under the MMPA.

The West Coast groundfish fisheries are considered a Category III fishery—denoting a remote likelihood of or no known serious injuries or mortalities to marine mammals–in the annual list of fisheries published in the Federal Register. Based on its Category III status, the incidental take of marine mammals in the West Coast groundfish fisheries does not significantly impact marine mammal stocks.

Section 4.2.3 of this EIS evaluates the impacts of the alternatives on marine mammals. None of the proposed management alternatives are likely to affect the incidental mortality levels of species protected by the MMPA.

6.5 Migratory Bird Treaty Act and Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) was enacted to end the commercial trade of migratory birds and their feathers that, by the early years of the 20th century, had diminished populations of many native bird species. The Act states that it is unlawful to take, kill, or possess migratory birds and their parts (including eggs, nests, and feathers) and is a shared agreement between the United States, Canada, Japan, Mexico, and Russia to protect a common migratory bird resource.

Executive Order 13186 supplements the MBTA by requiring federal agencies to work with the U.S. Fish and Wildlife Service to develop memoranda of agreement to conserve migratory birds. NMFS is scheduled to implement its MOU by January 2003. The protocols developed by this consultation will guide agency regulatory actions and policy decisions in order to address this conservation goal. The EO also directs agencies to evaluate the effects of their actions on migratory birds in environmental documents prepared pursuant to the National Environmental Policy Act.

Section 4.2.3 in this EIS evaluates the impacts of the alternatives on seabirds, including the migratory birds covered by the MBTA and EO 13186. The proposed action is not expected to increase the incidental take of seabirds in managed groundfish fisheries.

6.6 Paperwork Reduction Act

In response to public complaints about the burden of federal paperwork, the Paperwork Reduction Act (PRA) and its implementing regulations require federal agencies to obtain clearance from the OMB if they plan to collect information from the public. Collecting facts and opinions from ten or more people, by means of a survey for example; requiring individuals to provide information to the general public or to some third party; requiring items (e.g., boxes of fish, fishing gear) or vessels to be labeled or marked; or using technological methods to monitor public compliance with government requirements, including automated collection techniques such as VMS, are all covered by the law and regulations.

The PRA requires agencies to compile an Information Collection Budget (ICB), the total burden the agency will be placing on the public, and to obtain OMB clearance by submitting an OMB-83I form (Paperwork Reduction Act Submission) and a supporting statement. The ICB is submitted annually and lists all new information collecting the agency plans for the upcoming fiscal year. As part of the ICB, for each planned collection the agency must describe the purpose of the collection, the approximate number of respondents, and the estimated time taken per respondent. If a proposed rule contains an information collection requirement needing clearance under the PRA, a clearance request needs to be submitted to OMB on or before the date the proposed rule is published in the Federal Register. Once OMB receives the request it has 60 days to review and act on it.

[ICB for proposed action]

6.7 Coastal Zone Management Act

Section 307(c)(1) of the Federal Coastal Zone Management Act (CZMA) of 1972 requires all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. The relationship of the groundfish FMP with the CZMA is discussed in Section 11.7.3 of the groundfish FMP. The groundfish FMP has been found to be consistent with the Washington, Oregon, and California coastal zone management programs.

The proposed action is within the scope of the actions contemplated under the management framework described in the FMP and will be implemented in a manner that is consistent to the maximum extent practicable with the enforceable policies of the aforementioned coastal zone management programs. This determination has been submitted to the responsible state agencies for review under section 307(c)(1) of the CZMA by forwarding a copy of the DEIS to each of the relevant state agencies.

6.8 Regulatory Flexibility Act and Executive Order 12866 (Regulatory Impact Review)

In order to comply with Executive Order (EO) 12866 and the Regulatory Flexibility Act (RFA), this document also serves as a Regulatory Impact Review (RIR) and an Initial Regulatory Flexibility Analysis (IRFA).

6.8.1 Executive Order 12866 (Regulatory Impact Review)

EO 12866, Regulatory Planning and Review, was signed on September 30, 1993, and established guidelines for promulgating new regulations and reviewing existing regulations. The E.O. covers a variety of regulatory policy considerations and establishes procedural requirements for analysis of the benefits and costs of regulatory actions. Section 1 of the Order deals with the regulatory philosophy and principles that are to guide agency development of regulations. It stresses that in deciding whether and how to regulate, agencies should assess all of the costs and benefits across all regulatory alternatives. Based on this analysis, they should choose those approaches that maximize net benefits to society.

The regulatory principles in EO 12866 emphasize careful identification of the problem to be addressed. The agency is to identify and assess alternatives to direct regulation, including economic incentives such as user fees or marketable permits, to encourage the desired behavior. When an agency determines that a regulation is the best available method of achieving the regulatory objective, it must design its regulations in the most cost-effective manner to achieve the regulatory objective. Each agency is to assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only after reasoned determination that the benefits of the intended regulation justify the costs. In reaching its decision agency must use the best reasonably obtainable information, including scientific, technical and economic data, about the need for and consequences of the intended regulation.

NMFS requires the preparation of an RIR for all regulatory actions of public interest, including the specification of annual management measures. The RIR provides a comprehensive review of the changes in net economic benefits to society associated with proposed regulatory actions. The analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems. The purpose of the analysis is to ensure the regulatory agency systematically and comprehensively considers all available alternatives, so the public welfare can be enhanced in the most efficient and cost-effective way. The RIR addresses many of the items in the regulatory philosophy and principles of E.O. 12866.

The RIR analysis and an environmental analyses required by NEPA have many common elements and they have been combined in this document. The following table shows where the elements of an RIR, as required by EO 12866, are located.

Required RIR Elements	Corresponding Sections
Description of management objectives	

Description of the fishery[1/]

Statement of the problem

Description of each selected alternative

An economic analysis of the expected effects of each selected alternative relative to status quo

The RIR is designed to determine whether the proposed actions could be considered "significant regulatory actions" according to E.O. 12866. The following table identifies E.O. 12866 test requirements used to assess whether or not an action would be a "significant regulatory action," and identifies the expected outcomes of the proposed management alternatives. For the purposes of the E.O., none of the proposed alternatives would meet its criteria for a significant regulatory action. A regulatory program is "economically significant" if it is likely to result in the effects described in item 1 in the table:

Summary of E.O. 12866 Test Requirements

EO 12866 Test of "Significant Regulatory Actions"	Status Quo	Preferred Alternative	Alternative 3	Alternative 4
1) Have a annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities				
2) Create a serious inconsistency or otherwise interfere with action taken or planned by another agency				
3) Materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof				
4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order				

[1/] In addition to the information in this document, basic economic information is provided annually in the Council's SAFE document.

6.8.2 Impacts on Small Entities (Regulatory Flexibility Act, RFA)

The RIR is also designed to determine whether the proposed rule has a "significant economic impact on a substantial number of small entities"[2] under the RFA. The purpose of the RFA is to relieve small businesses, small organizations, and small governmental entities of burdensome regulations and record-keeping requirements. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action. An initial regulatory flexibility analysis (IRFA) is conducted unless it is determined that an action will not have a "significant economic impact on a substantial number of small entities." The RFA requires that an initial regulatory flexibility analysis include elements that are similar to those required by E.O. 12866 and NEPA. Therefore, the IRFA has been combined with the RIR and NEPA analyses. The following table references the location of these RFA-required elements:

Required IRFA Elements	Corresponding Sections
A description of the reasons why action by the agency is being considered.	
A succinct statement of the objectives of, and the legal basis for, the proposed rule.	
A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate).	
A description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record.	
An identification to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule.	
A description of any significant alternatives to the proposed rule that accomplish the stated objectives that would minimize any significant economic impact of the proposed rule on small entities.	

6.9 Executive Order 12898 (Environmental Justice)

Executive Order 12898 obligates federal agencies to identify and address "disproportionately high adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations in the United States" as part of any overall environmental impact analysis associated with an action. NOAA guidance, NAO 216-6, at §7.02, states that "consideration of E.O. 12898 should be specifically included in the NEPA documentation for decisionmakng purposes." Agencies should also encourage public participation—especially by affected communities—during scoping as part of a broader strategy to address environmental justice issues.

The environmental justice analysis must first identify minority and low-income groups that live in the project area and may be affected by the action. Typically, census data are used to document the occurrence and distribution of these groups. Agencies should be cognizant of distinct cultural, social, economic or

[2] The Small Business Administration defines a small business in commercial fishing "as a fish harvesting or hatchery business that is independently owned and operated and not dominant in its field of operation" with "annual receipts not in excess of $3,000,000."

occupational factor that could amplify the adverse effects of the proposed action. (For example, if a particular kind of fish is an important dietary component, fishery management actions affecting the availability or price of that fish could have a disproportionate effect.) In the case of Indian tribes, pertinent treaty or other special rights should be considered. Once communities have been identified and characterized and potential adverse impacts of the alternatives are identified, the analysis must determine whether these impacts are disproportionate. Because of the context in which environmental justice developed, health effects are usually considered and three factors may be used in an evaluation: whether the effects are deemed significant, as the term is employed by NEPA; whether the rate or risk of exposure to the effect appreciably exceeds the rate for the general population or some other comparison group; and whether the group in question may be affected by cumulative or multiple sources of exposure. If disproportionately high adverse effects are identified, mitigation measures should be proposed. Community input into appropriate mitigation is encouraged.

Section 3.3.6 of this EIS describes minority and low-income communities that may be affected by the proposed action and Section 4.3.6 analyzes the effects on these communities. Based on this analysis ---

6.10 Executive Order 13132 (Federalism)

Executive Order 13132 enumerates eight "fundamental federalism principles." The first of these principles states "Federalism is rooted in the belief that issues that are not national in scope or significance are most appropriately addressed by the level of government closest to the people." In this spirit the Executive Order directs agencies to consider the implications of policies that may limit the scope of or preempt states' legal authority. Preemptive action having such "federalism implications" is subject to a consultation process with the states; such actions should not create unfunded mandates for the states; and any final rule published in the Federal Issue must be accompanied by a "federalism summary impact statement."

The Council process offers many opportunities for states (through their agencies and Council appointees) to participate in the formulation of management measures. This process encourages states to institute complementary measures to manage fisheries under their jurisdiction that may affect federally managed stocks. Further, §306 of the MSA addresses state jurisdiction over fisheries. Generally, states may regulate fishing by vessels registered in that state if no federal FMP applies, or if a federal FMP delegates such authority to the states.

The proposed action does not have federalism implications.

6.11 Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments)

Executive Order 13175 is intended to ensure regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates on Indian tribes.

The Secretary of Commerce recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. At §302(b)(5), the Magnuson-Stevens Act reserves a seat on the Council for a representative of an Indian tribe with federally recognized fishing rights from California, Oregon, Washington, or Idaho.

The U.S. government formally recognizes that the four Washington Coastal Tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish. In general terms, the quantification of those rights is 50 percent of the harvestable surplus of groundfish available in the tribes' usual and accustomed (U and A) fishing areas (described at 50 CFR 660.324). Each of the treaty tribes has the discretion to administer their fisheries and to establish their own policies to achieve program objectives. Accordingly, tribal allocations and regulations have been developed in consultation with the affected tribe(s) and, insofar as possible, with tribal consensus.

[describe tribal allocation]

7.0 LIST OF PREPARERS; AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THIS STATEMENT WERE SENT

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2003 GROUNDFISH MANAGEMENT MEASURES

Situation: Management measures adopted during the Council process are designed to implement new and existing rebuilding programs, achieve bycatch reduction mandates, keep total catch within the proposed harvest levels, and achieve optimum benefits to the various user groups and fishing communities. In the last three years the Council has implemented a substantial restructuring of the groundfish fishery that includes gear restrictions, seasons, and dramatically lower harvest levels consistent with previously-approved rebuilding programs for overfished species. However, new assessments and rebuilding analyses for bocaccio, canary rockfish, and yelloweye rockfish indicate a worsening crisis in West Coast groundfish management for 2003.

The Council is scheduled to adopt a preferred suite of harvest levels for groundfish species and complexes to recommend for 2003 management in the previous agendum. *The Initial Draft Environmental Impact Statement/Regulatory Impact Review/Initial Regulatory Flexibility Analysis For Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures For The 2003 Pacific Coast Groundfish Fishery* (Annual Specifications EIS; Exhibit C.3, Attachment 1) provides analyses of the potential consequences of management measures estimated to conform to the considered range of harvest levels. The Annual Specifications EIS indicates that rebuilding these species, especially the overfished shelf rockfish species, could require a cessation of most, if not all, on-bottom fishing on the continental shelf with anticipated impacts especially severe in California. Bocaccio rebuilding may require a Mixed Stock Exception designation to allow research or limited fishing opportunities within the depth zones south of Cape Mendocino where bocaccio are encountered. Rebuilding canary and yelloweye rockfish will also significantly impact fishers north of Cape Mendocino.

Allowing access to species in shallower or deeper zones may require new approaches, such as depth-based restrictions and reduced limits for nearshore species. Effort shifts to nearshore and slope areas are likely to exacerbate overcapacity problems in these fisheries. This will create greater challenges for prosecuting sustainable nearshore fishery management and successful rebuilding of darkblotched rockfish and Pacific ocean perch on the slope. The expected economic consequences will be severe for all segments of the commercial and recreational fishing and support industries. There are also significant safety concerns associated with more vessels fishing close to nearshore hazards and in deeper waters farther offshore.

Public outreach to discuss the implications of potential changes to West Coast marine fisheries has been done this summer as part of scoping for the Annual Specifications EIS. All the coastal state agencies sponsored public hearings. The coastal state agency representatives are expected to summarize these comments; the California public hearing comments are summarized in Exhibit C.3.b, CDFG Public Hearing Reports 1, 2, and 3. Written public comments submitted to the Council office since the June meeting are included in Exhibit C.3.j, Public Comment 1 and Supplemental Public Comment 2). The Ad Hoc Allocation Committee (Committee) met in a two day meeting on August 28-29 to further address some of these 2003 West Coast groundfish management challenges (Exhibit C.3.f, Supplemental Ad Hoc Allocation Committee Report). There was also a public scoping session for the Annual Specifications EIS on August 28 at the Committee meeting. A summary of public comments received during that session are found in Exhibit C.2.c, Supplemental Scoping Session Comments.

The Committee is expected to propose a range of management alternatives including allocation alternatives for 2003. Additionally, the Groundfish Management Team (GMT), Groundfish Advisory Subpanel (GAP), and interested public are expected to provide recommendations and alternatives for 2003 management. The severity of the situation for shelf rockfish and the expected effort shifts from the shelf to nearshore and slope fisheries necessitates consideration of major adjustments to all sectors of the groundfish fishery.

The Council needs to adopt final management measures for the 2003 West Coast groundfish fishery by the end of the week. Allocation specifications consistent with adopted management measures should also be approved by the Council at this time. All of the adopted management measures and specifications for next year's fishery will be noted as the preferred alternative in the final draft of the Annual Specifications EIS. Analysis of the preferred alternative and any other considerations judged lacking in the initial draft Annual Specifications EIS (Exhibit C.3, Attachment 1), which are discussed at this Council meeting, will be included by Council staff in the final draft prior to its submission to NOAA Fisheries, currently scheduled for October 4.

This agendum is spread throughout the week to facilitate continuous narrowing of alternatives to a single set of management measures. Council deliberations of 2003 management measures are scheduled to begin on Tuesday, with checkpoints on Wednesday and Thursday before a final decision on Friday. This strategy is designed to allow the Council opportunities to assign analyses to the GMT and GAP in order to consider potential permutations of management alternatives analyzed in the 2003 Annual Specifications EIS.

Council Action:

1. Adopt 2003 groundfish management measures.

Reference Materials:

1. The Initial Draft Environmental Impact Statement/Regulatory Impact Review/Initial Regulatory Flexibility Analysis For Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures For The 2003 Pacific Coast Groundfish Fishery (Exhibit C.3, Attachment 1).
2. California Department of Fish and Game Public Hearing Reports (3) (Exhibit C.3.b, CDFG Public Hearing Reports 1, 2, and 3).
3. August 19 letter from Michele Longo-Eder to Dr. Donald McIsaac requesting consideration for a regulatory amendment to allow stacking of more than three sablefish permits (Exhibit C.3.c, Regulatory Amendment Request).
4. Summary of comments received at the August 28 public scoping session for the Annual Specifications EIS (Exhibit C.3.c, Supplemental Scoping Session Comments). DO NOT HAVE A STAND ALONE - See
5. ✓ Report of the Enforcement Consultants (EC) on the Vessel Monitoring System (Exhibit C.3.e, Supplemental Enforcement Consultants Report). received 9-6-02
6. ✓ Draft minutes of the August 28-29 Ad Hoc Allocation Committee meeting (Exhibit C.3.f, Supplemental Ad Hoc Allocation Committee Report). received 9-6-02
7. July 22, 2002 letter from Rear Admiral Erroll Brown, U.S. Coast Guard to Dr. Donald McIsaac regarding safety concerns of considered groundfish management measures (Exhibit C.3.i, U.S. Coast Guard Comment).
8. July 25, 2002 letter from Representative William M. Thomas to Dr. William Hogarth regarding concerns of potential actions affecting the spiny dogfish fishery (Exhibit C.3.i, Congressional Comment).
9. Written public comments (Exhibit C.3.j, Public Comment 1).
10. ✓ Supplemental written public comments (Exhibit C.3.j, Supplemental Public Comment 2). received 9-6-02

Agenda Order:

NOTE: The following order of events is for Tuesday September,10 2003, the first day this agendum is scheduled for Council action. The Council will readdress groundfish management measures daily thereafter to further refine management measures before final adoption on Friday, September 13 (see above and Council agenda).

a. Agendum Overview	John DeVore
b. Summary of State Hearings	Phil Anderson/Burnie Bohn/LB Boydstun
c. Summary of Written Public Comments and Environmental Impact Statement (EIS) Scoping Meeting	Kit Dahl/John DeVore
d. Report of the GMT	Jim Hastie
e. Report of the Enforcement Consultants (EC) on the Vessel Monitoring System	Dave Cleary/Steve Springer
f. Report of the Ad Hoc Allocation Committee	
g. Reports and Comments of Advisory Bodies	
h. Tribal Comments and Recommendations	Jim Harp
i. Agency Comments and Recommendations	Phil Anderson/Burnie Bohn/LB Boydstun
j. Public Comments	
k. **Council Action:** Tentatively Adopt 2003 Groundfish Management Measures	

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

The GFSP supports making the necessary allocation decisions, so fishery participants can plan on a specific share of future optimum yields (Sec. II.A.1(3)) and establishing an allowable level of catch that prevents overfishing while achieving OY based on best available science (Sec. II.A.2). The GFSP envisions choices made by the Council on 2003 management measures at this stage in the process would be consistent with these criteria.

The GFSP also supports establishing and maintaining a management process that is transparent, participatory, understandable, accessible, consistent, effective, and adaptable (Sec. II.C). The Council process of adopting specific proposed management measures at this September meeting would be consistent with these GFSP principles.

PFMC
08/22/02

Supplemental Reference Materials

11. Draft Minutes GMT/SSC GF Subcommittee meeting, Exhibit C.3.g, Supplemental GMT/SSC GF Subcommittee Report.
12. Exhibit C.3.j, Supplemental Public Comment 3.
13. Exhibit C.3.i, Supplemental CDFG Report.
14. Exhibit C.3.b, Supplemental ODFW State Hearings Report.
15. Exhibit C.3, Supplemental 2003 Annual Specifications EIS Package.
16. Exhibit C.3, Supplemental EC Report 2.
17. C.3.b, Supplemental WDFW State Hearings Report.
18. Exhibit C3.g, Supplemental CPSAS Report.
19. Exhibit C.3.i, Supplemental WDFW Report.
20. Exhibit C.3.g, Supplemental HMSAS Report.
21. Exhibit C.3.g, Supplemental SSC Report.
22. Exhibit C.3.i, Supplemental ODFW Report.
23. Exhibit C.3.d, Supplemental GMT Report.
24. Exhibit C.3.g, Supplemental SAS Report
25. C.3.i, Supplemental CDFG Report 2.
26. C.3.i, Supplemental CDFG Report 3.
27. Exhibit C.3.i, Supplemental ODFW Report 2.

28. Exhibit C.3.h, Proposed Treaty Indian Management Measures

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Supplemental Materials <continued>

29. Exhibit C.3h, Supplemental Proposed Treaty Indian Management Measures 2.

30. Exhibit C.3.i, Supplemental ODFW Report 2 Revised Table

31. Agenda C.3.h, Revised Proposed Treaty Indian Management Measures.

32. Agenda C.3.j, Letter from Laura Deach.

33. Agenda C.3.y, Supplemental Treaty Indian Harvest Levels.

34. Exhibit C.3.W, Supplemental ODFW Report.

35. Exhibit C.3.W, Supplemental CDFG Report.

36. Exhibit C.3.V, Supplemental GMT Report.

37. Exhibit C.3.V, Supplemental GAP Report.

38. Exhibit C.3.V, Supplemental EC Report.

39. Exhibit C.3.W, Supplemental CDFG Report 2.

TABLE 2.2-3. Management measure options for 2003 West Coast tribal groundfish fisheries

Fishery	Status Quo 2002 Management Measures	Proposed 2003 Management Measures
Black rockfish	Harvest guideline of 20,000 lbs for the management area between Cape Alava and the U.S./Canada border; harvest guideline of 10,000 lbs for the management area between Leadbetter Pt. and Destruction Island; no restrictions between Destruction Island and Cape Alava	Same as Status Quo
Sablefish	Harvest guideline = 10% of the total catch OY adopted for the Monterey through U.S./Vancouver INPFC areas; allocation among tribes and gear types to be determined by tribes	Same as Status Quo
Pacific whiting	Harvest guideline based on the Makah Tribe's sliding scale allocation framework	Same as Status Quo
Lingcod	300 lbs/day, not to exceed 900 lbs/week	Same as Status Quo
Thornyheads	300 lb trip limit for shortspine and longspine combined	Same as Status Quo
Canary rockfish	300 lb trip limit	Same as Status Quo
Other minor nearshore, shelf, and slope rockfish	300 lb trip limit for each species group or the limited entry trip limits if less restrictive	Same as Status Quo
Yelloweye rockfish	Consideration for area, depth, season, and bait restrictions to avoid yelloweye	100 lb trip limit
Midwater trawl	Yellowtail limit = 30,000 lbs/vessel/2 mos; widow landings ≤ 10% of yellowtail poundage/period; trip limits to be adjusted downward if there is greater effort than anticipated	Same as Status Quo, except no carry-over of unused portions of cumulative landing limit from previous periods; cumulative limits may be adjusted to minimize incidental catch of canary and widow provided average cumulative limit does not exceed 30,000 lbs yellowtail
Bottom trawl	Same trip limits as in limited entry trawl for Pacific cod, petrale sole, English sole, rex sole, arrowtooth flounder, and other flatfish; limits in place at beginning of season not to be adjusted downward, nor will time restrictions or closures be imposed, unless it is demonstrated inseason the tribes have taken half the harvest in the tribal area; PFMC-approved trawl gear specified	Same as Status Quo

TABLE 2.2-4. Management alternatives for 2003 West Coast non-groundfish fisheries.

Fishery Sector by Area	Status Quo 2002 Management Measures	2003 Management Measures			2003 Management Measures for Allocation Committee-preferred OYs		2003 Management Measures for Council-preferred OYs
		Low OYs	Medium OYs	High OYs	No depth restrictions	With depth restrictions	
Incidental Open Access N. of 40°10' N. lat.	No depth restrictions	No bottom fishing inside 150 fm, except:	No bottom fishing inside 100 fm, except:		No bottom fishing outside 25 fm in WA or 27 fm in OR, except:	No bottom fishing outside 25 fm in WA or 27 fm in OR to 100 fm, except:	To be specified at the September Council meeting
Dungeness crab	Traps allowed during open season	Traps allowed; no fishing in yelloweye hotspot areas?	Traps allowed during open season				
Pacific halibut	Season and regulations as per IPHC Area 2A Halibut Catch Sharing Plan	Depth restrictions considered under the IPHC Area 2A Halibut Catch Sharing Plan?	Season and regulations as per IPHC Area 2A Halibut Catch Sharing Plan				
Pink Shrimp	Trawls not required to use finfish excluders	Trawls with finfish excluders allowed; no fishing in yelloweye hotspot areas	Trawls with finfish excluders allowed		Trawls required to have approved finfish excluders		
Salmon troll	Seasons and regulations as per Council/NMFS regulations; no min. distance between cannonball and first spread or closures in yelloweye hotspot areas	Min. 4 fm distance between cannonball and first spread; no fishing in yelloweye hotspot areas	Min. 4 fm distance between cannonball and first spread?; no fishing in yelloweye hotspot areas?		Min. 4 fm distance between cannonball and first spread		
Spot prawn	Traps and trawls allowed	No trawls; traps allowed except in yelloweye hotspot areas	No trawls				

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TABLE 2.2-4. Management alternatives for 2003 West Coast non-groundfish fisheries.

Fishery Sector by Area	Status Quo 2002 Management Measures	2003 Management Measures			2003 Management Measures for Allocation Committee-preferred OYs		2003 Management Measures for Council-preferred OYs
		Low OYs	Medium OYs	High OYs	No depth restrictions	With depth restrictions	
Incidental Open Access S. of 40°10' N. lat.	No depth restrictions	No bottom fishing inside 150 fm, except:		No bottom fishing in depths 20-150 fm, except:	No fishing outside 20 fm, except:	No bottom fishing in depths 20-150 fm, except:	To be specified at the September Council meeting
California halibut	No footrope restrictions	No fishing inside 150 fm		Only small footrope trawls allowed inside 50 and 100 fm N. and S. of Pt. Conception, respectively	No fishing outside 20 fm	Only small footrope trawls allowed inside 50 and 100 fm N. and S. of Pt. Conception, respectively	
CPS	Round haul gear allowed						
Dungeness crab	No special GF restrictions	Traps allowed provided they have a 5" destruct opening and a 3" (?) round escape port					
Gillnet complex	No special GF restrictions	No fishing inside 150 fm		Set or anchored gill or trammel nets prohibited; drift gill nets allowed			
HMS (excluding GN)	Round haul and harpoon gear allowed						
Pacific Halibut	No special GF restrictions	No fishing inside 150 fm		A 20-150 fm depth restriction considered under the IPHC Area 2A Halibut Catch Sharing Plan?	No fishing outside 20 fm	A 20-150 fm depth restriction considered under the IPHC Area 2A Halibut Catch Sharing Plan?	
Pink shrimp	Trawls not required to use finfish excluders	Trawls with hard grate finfish excluders allowed					
Salmon troll	No special GF restrictions	6 mainlines with multiple hooks; min. 4 fm distance between cannonball and first spread					
Sea Cucumber	Trawls allowed	No trawls					
Spot prawn	Traps and trawls allowed	No traps (?) or trawls		No trawls			
Ridgeback prawn	Traps and trawls	No traps (?) or trawls		No trawls			

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TABLE 2.2-4. Management alternatives for 2003 West Coast non-groundfish fisheries.

Fishery Sector by Area	Status Quo 2002 Management Measures	2003 Management Measures			2003 Management Measures for Allocation Committee-preferred OYs		2003 Management Measures for Council-preferred OYs
		Low OYs	Medium OYs	High OYs	No depth restrictions	With depth restrictions	
Recreational Non-GF Washington	No depth restrictions	No bottom fishing outside 25 fm, except:					To be specified at the September Council meeting
Pacific halibut	No special GF restrictions	No fishing outside 25 fm in Marine Catch Areas 3 and 4; no yelloweye retention	Fishing allowed in specific halibut hotspot areas where yelloweye are not present; no yelloweye retention; fishery closes outside 25 fm if yelloweye harvest guideline is projected to be exceeded				
Salmon	No special GF restrictions	No fishing outside 25 fm in Marine Catch Areas 3 and 4; no yelloweye retention	No fishing in yelloweye hotspot areas; no yelloweye retention				
Recreational Non-GF Oregon and California N. of 40°10' N. lat.	No depth restrictions	No bottom fishing outside 27 fm, except:					
Pacific halibut	No special GF restrictions	No fishing outside 27 fm; all-depth fishery closed on Stonewall Banks; no yelloweye retention when halibut on board	Consider no yelloweye retention when halibut on board; fishery closes outside 27 fm if yelloweye harvest guideline is projected to be exceeded				
Salmon	No special GF restrictions	No fishing outside 27 fm; consider prohibiting mooching	Fishery closes outside 27 fm if yelloweye harvest guideline is projected to be exceeded				
Recreational Non-GF California S. of 40°10 N. lat.	No depth restrictions	No fishing inside 150 fm, except:		No bottom fishing in depths 20-150 fm, except:	No bottom fishing outside 20 fm, except:	No bottom fishing in depths 20-150 fm, except:	
Pacific halibut	No special GF restrictions	No fishing inside 150 fm		A 20-150 fm depth restriction considered under	No fishing outside 20 fm	A 20-150 fm depth restriction considered under	
Salmon	No special GF	No fishing inside 150 fm?		No more than 1 barbless lure/circle hook or >1 oz of weight			

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TABLE 2.2-4b. Management measure options for 2003 non-groundfish fisheries adopted by the Council at its June, 2002 meeting.

Fishery/Area	Option 1 Most Conservative	Option 2	Option 3	Option 4 Least Conservative
Salmon troll- WA	Close in Marine Catch Areas 3 and 4 outside of a line approximating 25 fm	No halibut retention; no canary and yelloweye retention.		Increase the distance between the cannonball and the first spread (see SAS proposed options below).
Salmon troll- OR	No halibut retention; no canary and yelloweye retention			Increase the distance between the cannonball and the first spread (see SAS proposed options below).
Pacific halibut - WA south of Point Chehalis		Close directed halibut fishery between 25 fm and 150 fm.		Allow directed halibut fishery subject to time/area/observer restrictions and requirements.
Pacific halibut - OR		Close directed halibut fishery inside 150 fm.		Close directed halibut fishery inside 100 fm.
Pacific halibut in sablefish fishery north of Point Chehalis		No halibut retention with sablefish.		Status quo.
CPS		No change in current regulations.		
Pink shrimp		Require finfish excluders; mandatory retention of marketable groundfish.		
Exempted trawl north of 40°10' N. Lat.		Require finfish excluders; no groundfish retention allowed.	Require finfish excluders; groundfish retention allowed under half the 2002 limits; no retention of shelf rockfish including canary, cowcod, and yelloweye.	Require finfish excluders; groundfish retention allowed under 2002 limits; no retention of shelf rockfish including canary, cowcod, and yelloweye.
Exempted trawl south of 40°10' N. Lat.		Except for California halibut, require finfish excluders; no groundfish retention allowed.	Except for California halibut, require finfish excluders; groundfish retention allowed under half the 2002 limits; no retention of shelf rockfish including bocaccio, canary, cowcod, and yelloweye.	Except for California halibut, require finfish excluders; groundfish retention allowed under 2002 limits; no retention of shelf rockfish including bocaccio, canary, cowcod, and yelloweye.

TABLE 2.2-4c. Management measure options recommended by the Salmon Advisory Subpanel for 2003 non-Indian commercial salmon troll fisheries.

Area / Fishery	Option 1 Most Conservative	Option 2	Option 3	Option 4 Least Conservative
Washington	Outside 50 fm, minimum of 4 fm between cannonball and lower most spread. No retention of canary or yelloweye rockfish. Salmon troll incidental halibut harvest allowed.	Outside 50 fm, minimum of 4 fm between cannonball and lower most spread. Mandatory retention of legal size groundfish. Salmon troll incidental halibut harvest allowed.	Incidental groundfish and halibut harvest allowed, except no retention of canary or yelloweye rockfish.	Incidental groundfish and halibut harvest allowed with mandatory retention of legal size groundfish.
Oregon	Outside 50 fm, minimum of 4 fm between cannonball and lower most spread. No retention of canary or yelloweye rockfish. Salmon troll incidental halibut harvest allowed.	Outside 50 fm, minimum of 4 fm between cannonball and lower most spread. Mandatory retention of legal size groundfish. Salmon troll incidental halibut harvest allowed.	Incidental groundfish and halibut harvest allowed, except no retention of canary or yelloweye rockfish.	Incidental groundfish and halibut harvest allowed with mandatory retention of legal size groundfish.
California	Outside 50 fm, minimum of 6 fm between cannonball and lower most spread. No retention of bocaccio, canary, or yelloweye rockfish. Incidental halibut harvest allowed.	Outside 50 fm, minimum of 6 fm between cannonball and lower most spread. Mandatory retention of legal size groundfish. Incidental halibut harvest allowed.	Incidental groundfish and halibut harvest allowed, except no retention of bocaccio, canary, or yelloweye rockfish.	Incidental groundfish and halibut harvest allowed with mandatory retention of legal size groundfish.

TABLE 2.4-1. Ranked relative effects of alternative 2003 groundfish harvest levels to the physical (habitat), biological, and socioeconomic (economic) environment (1 is highest rank, 5 is lowest rank).

Alternative	Potential Negative Habitat Effects	Potential Negative Biological Effects	Potential Negative Economic Effects
No Action OY	1	1	5
Low OY	5	5	1
Medium OY	4	4	2
High OY	2	2	4
Allocation Committee-Preferred OY	3	3	3
Council-Preferred OY	Not specified in this initial draft EIS		

3.0 AFFECTED ENVIRONMENT

This chapter describes the affected environment, which is the baseline environmental condition. The baseline represents the status of environmental attributes at a time before the proposed action is implemented and in Chapter 4 serves as a point of comparison to evaluate possible significant impacts. (The baseline differs from the status quo alternative, which predicts a future environmental state in the absence of any action alternative.) Because of the time lag involved in compiling landings data and other fisheries information, 2001 is used as the baseline.

The affected environment description is subdivided into four main sections, describing different components of the human environment. Section 3.1 describes, in general terms, the habitats of and ecological relationships between the marine species potentially affected by the proposed action. Section 3.2 describes potentially affected groundfish, non-groundfish, and non-fish species. Section 3.3 covers socioeconomic components of the human environment, including descriptions of the different fisheries and support industries exploiting groundfish and coastal communities dependent on or substantially engaged in fishing. Section 3.4 describes the management regime, including the various sources of risk and uncertainty that affect groundfish management.

3.1 Ecosystem Habitat, and Biodiversity

3.1.1 West Coast Marine Ecosystems

Ecosystem and habitat, discussed below, are closely related concepts. Ecosystems embody both the relationships between species, represented by the flow of material and energy through a network of relationships, and the sum total of the species comprising the system within a given physical setting. This overlaps with habitat as the physical and biological attributes to the space occupied by a particular species. The ecosystem concept is reflected in groundfish management through the use of biogeographic zones and species complexes to distinguish the application of management measures. These ecological divisions have both a north-south component, with Cape Mendocino representing an important break in the distribution of many groundfish species (particularly rockfish), hence the use of the 40° 10' N. line of latitude (or alternatively, 40° 30' N. lat.). Point Conception represents another important biogeographic boundary considered when crafting management measures. A second and perhaps more influential ecological demarcation depends on distance from shore, or depth. Groundfish are managed based on distinction between nearshore, continental shelf, and continental slope species. Distinct species assemblages characterize these zones; in addition, there are differences between the zones based on possible vertical distribution of species. Finally, particular species may exhibit seasonal migrations, producing some annual variation in the characteristics of these different ecological zones. The nearshore, shelf and slope ecosystems can be characterized by combinations of the habitat composites described below, the species assemblages particular to these ecosystems, and the trophic relationships between these species. More specific information on trophic relationships may be found in the managed species descriptions in Section 3.2.

Bathymetry and physical topography helps determine habitat, by influencing its physical structure, and also the co-occurrence of species. The U.S. West Coast is characterized by a relatively narrow continental shelf. The 200 m depth contour shows a shelf break closest to the shoreline off Cape Mendocino, Point Sur, and in the Southern California Bight, and widest from central Oregon north to the Canadian border as well as off Monterey Bay. Deep submarine canyons pocket the EEZ, with depths greater than 4,000 m south of Cape Mendocino (Figure 3-2).

As on land, climate is another important ecological determinant. However, in the ocean's fluid medium, currents are the predominant expression of this broad environmental influence. Not only do currents influence water temperature, vertical mixing and movement can bring nutrient rich deep-bottom water into the photic zone, strongly influencing biological productivity. In the North Pacific Ocean, the large, clockwise-moving North Pacific Gyre circulates cold, subarctic surface water eastward across the North Pacific, splitting at the North American continent into the northward-moving Alaska Current and the southward-moving California Current (Figure 3-1). Along the U.S. West Coast, the surface California Current flows southward through the U.S. West Coast EEZ. The California Current is known as an eastern boundary current, meaning that it draws ocean water along the eastern edge of an oceanic current gyre. The northward-moving California Undercurrent flows along the continental margin and beneath the California Current. Influenced by the California Current system and coastal winds, waters off the U.S. West Coast are subject to major nutrient upwelling, particularly off Cape Mendocino {Bakun, 1996 #523}. Shoreline topographic features such as Cape Blanco and Point Conception, and bathymetric features such as banks, canyons, and other submerged features, often create large-scale current patterns such as eddies, jets, and squirts. For example, a current jet off Cape Blanco drives surface water offshore, which is replaced by upwelling sub-surface water {Barth, 2000 #526}. One of the better known current eddies off the West Coast occurs in the Southern California Bight between Point Conception and Baja California {Longhurst, 1998 #524}, wherein the current circles back on itself by moving in a northward and counterclockwise just within the Bight.

While the seasonal environmental effects of the California Current and related lesser current patterns are easily observable {Lynn, 1987 #527}, the influence of longer period cycles has only been appreciated recently. The effect of ENSO (El Niño-Southern Oscillation) events on climate and ocean productivity in the NE Pacific is relatively well-known. In the past decade a still longer period cycle, termed the Pacific Decadal Oscillation or PDO, has been identified. Although similar in effect, instead of the 1-2 year periodicity of ENSO, PDO events affect ocean conditions for 15-25 years {Mantua, in press #528}. The PDO shifts between a warm phase characterized by warmer temperatures in the NE Pacific (including the West Coast) and cooler than average sea surface temperatures and lower than average sea level air pressure in the central North Pacific; opposite conditions prevail during cool phases. Because the effects are similar, "in-phase" ENSO events (e.g., an El Niño during a PDO warm phase) can be intensified. (However, aside from these phase effects PDO conditions, although of much longer duration than ENSO events, are milder. It is also important to note that—while the fundamental causes of PDO are not fully understood—they are known to be different from those driving ENSO events. And while ENSO has its primary effect on the tropical Pacific, with secondary effects in colder regions, the opposite is true of PDO; its primary effects occur in the NE Pacific.) The ecosystem effects of PDO conditions are pervasive. Climate conditions directly affect primary production (phytoplankton abundance), but ecosystem linkages ensure that these changes influence the abundance of higher trophic level organisms, including fish populations targeted by fishermen {Francis, 1998 #525}. Scientists have identified four regime shifts during the twentieth century, with the most recent occurring in 1976/77, when a warm phase began. This has produced less productive ocean conditions off the West Coast and more favorable conditions around Alaska. For example, Hare et al.{, 1999 #529} document the inverse relationship between salmon production in Alaska and the Pacific Northwest and relate this to PDO-influenced ocean conditions. Researchers have identified similar relationships between meso-scale climate regimes and the productivity of other fish populations, including groundfish {see \Francis, 1998 #525 for a review}. Researchers have recently identified a second regime shift, occurring in 1989 {Hare, 2000 #530}, which apparently resulted in a further decline in the productivity of some fish populations in the NE Pacific, including some groundfish species {McFarlane, 2000 #531}. (Pacific hake and sardine populations, in contrast, showed increases.) Hare and Mantua {, 2000 #530} hypothesize that a still longer, 50-70 year oscillation may combine with the 15-25 year PDO to produce shifts that vary in their characteristics, as do the 1977 and 1989 phenomena. However, a shift to a more favorable PDO cold phase may have occurred in the late 1990s, as evidenced in recent measurements of sea surface temperature.{Bernton, 2000 #532}.

The influence of ocean conditions, and in particular meso-scale climate regimes that can rapidly shift phases, is an important issue for annual management. As Hare and Mantua {, 2000 #530} point out, current assessment models do not account for these changes in environmental conditions, which may lead to under- or over-estimation of population productivity. In turn, the range of OY values in the harvest level alternatives are derived from these assessments. Unfortunately, the ability to predict regime shifts and determine the precise correlation between environmental conditions and population productivity preclude the incorporation of such measurements into assessment models. In contrast, fishermen's direct empirical evidence (albeit unquantified) of recent increases in productivity (visible, for example, in the abundance of juvenile bocaccio due to a strong year class) causes some to distrust scientific assessments that lead to further reductions in harvest specifications. (These issues are closely related to the nature of scientific uncertainty in the management process, discussed in Section 3.4.4.)

In summary, harvest level alternatives can be evaluated for their effects on several ecosystem-related issues. By specifying the maximum amount of fish that may be removed through fishing these alternatives affect abundance, which in turn can contribute to changes in trophic relationships (target species as either predators or prey) and community structure (relative abundance of species within an assemblage). As just discussed, climate variation at various time scales (e.g., ENSO, PDO) complicates accurate determination of optimum yield harvests through medium- to long-term shifts in population productivity. These effects are indirect and cumulative, especially since ecosystem effects are more likely to result from population changes that are the result of harvests over several years.

3.1.2 Essential Fish Habitat

The 1996 Sustainable Fisheries Act re-authorizing and amending the MSA obligates the Councils and NOAA Fisheries to identify and characterize essential fish habitat (EFH), which for West coast groundfish is defined as the aquatic habitat necessary to allow for groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem. To satisfy this description EFH must be described for all life history stages of managed species. EFH descriptions have been incorporated into the Groundfish FMP in both Section 11.10 and in a detailed appendix (available online at: http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html). West Coast groundfish species managed by the FMP (see section 3.2.1) occur throughout the EEZ and occupy diverse habitats at all stages in their life histories. EFH may be large, because a species' pelagic eggs and larvae are widely dispersed for example, or comparatively small as is the case with the adults of many nearshore rockfishes which show strong affinities to a particular location or type of substrate.

This section summarizes the more than 400 EFH areas identified in the FMP for all the different life history stages of West Coast groundfish species. This EFH collectively includes all waters from the mean high high water line and the upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon, and California seaward to the boundary of the U.S. EEZ.

The FMP groups the various EFH descriptions into seven major habitat types called "composite" EFHs. This approach focuses on ecological relationships among species and between the species and their habitat, reflecting an ecosystem approach in defining EFH. The seven composite EFH identifications are as follows:

1. Estuarine - Those waters, substrates and associated biological communities within bays and estuaries of the EEZ, from mean higher high water level (MHHW, which is the high tide line) or extent of upriver saltwater intrusion to the respective outer boundaries for each bay or estuary as defined in 33 CFR 80.1 (Coast Guard lines of demarcation).

2. Rocky Shelf - Those waters, substrates, and associated biological communities living on or within ten meters (5.5 fathoms) overlying rocky areas, including reefs, pinnacles, boulders and cobble, along the continental shelf, excluding canyons, from the high tide line MHHW to the shelf break (~200 meters or 109 fathoms).

3. Nonrocky Shelf - Those waters, substrates, and associated biological communities living on or within ten meters (5.5 fathoms) overlying the substrates of the continental shelf, excluding the rocky shelf and canyon composites, from the high tide line MHHW to the shelf break (~200 meters or 109 fathoms).

4. Canyon - Those waters, substrates, and associated biological communities living within submarine canyons, including the walls, beds, seafloor, and any outcrops or landslide morphology, such as slump scarps and debris fields.

5. Continental Slope/Basin - Those waters, substrates, and biological communities living on or within 20 meters (11 fathoms) overlying the substrates of the continental slope and basin below the shelf break (~200 meters or 109 fathoms) and extending to the westward boundary of the EEZ.

6. Neritic Zone - Those waters and biological communities living in the water column more than ten meters (5.5 fathoms) above the continental shelf.

7. Oceanic Zone - Those waters and biological communities living in the water column more than 20 meters (11 fathoms) above the continental slope and abyssal plain, extending to the westward boundary of the EEZ.

Management measure alternatives can be evaluated based on their effect on habitat. As discussed in Section 11.10.3.1 of the Groundfish FMP, fishing gear can damage benthic habitat, which may contribute to the kinds of ecological effects described in the previous section. Altered habitat may favor some species, contributing to a change in community structure, and more broadly, to the population productivity of fish populations caught in fisheries.

3.1.3 Biodiversity of Managed Fish Stocks

3.2 Biological Environment - Managed Species

This section describes the species that may be directly or indirectly affected by the proposed action. They are divided into three groups. Section 3.2.1 describes the principal groundfish species directly subject to the annual specifications and management measures evaluated in this EIS. Section 3.2.2 reviews non-groundfish species that may be affected because they are caught incidentally in groundfish fisheries, or conversely because the fisheries targeting them catch groundfish incidentally and therefore may be regulated to reduce or eliminate this incidental catch (thus indirectly affecting the catch of these non-groundfish species). Section 3.2.3 describes various legally protected species covered by the Endangered Species Act, Marine Mammal Protection Act and the Migratory Bird Treaty Act.

3.2.1 Groundfish Resources

There are over 80 species of groundfish managed under the Pacific Coast Groundfish Fishery Management Plan (FMP). These species include over 60 species of rockfish in the family *Scorpaenidae*, 7 roundfish species, 12 flatfish species, and assorted shark, skate, and a few miscellaneous bottom-dwelling marine fish species. Management of these groundfish species is based on principles outlined in the MSA, Groundfish FMP, and National Standard Guidelines, which interpret the tenets of the MSA. Stock assessments are based on resource surveys, catch trends in West Coast fisheries, and other sources of informative data. Section 3.4.1 describes, in general terms, how stock assessments are conducted and reviewed before they are applied in West Coast groundfish management. Table 3.2-1 depicts the latitudinal and depth distributions of groundfish species managed under the FMP.

The passage of the Sustainable Fisheries Act in 1996 incorporated contemporary conservation and rebuilding mandates into the MSA. These mandates—including abundance-based standards for declaring a stock overfished, in a "precautionary" status, or at levels that can support MSY (healthy or "rebuilt")—were subsequently incorporated in the FMP with adoption of amendments 11 and 12. The abundance-based reference points for managing West Coast groundfish species are relative to an estimate of "virgin" or unexploited biomass of the stock, which is denoted as B_0 and is defined as the average equilibrium abundance of a stock's spawning biomass before it is affected by fishing-related mortality. The MSA and National Standard Guidelines employ the maximum sustainable yield concept, or MSY, to frame management objectives. MSY represents a theoretical maximum surplus production from a population of constant size; National Standard Guidelines define it as "the largest long-term average catch or yield that can be taken form a stock or stock complex under prevailing ecological and environmental conditions." Thus, for a given population, and set of ecological conditions, there is a biomass that produces MSY (denoted as B_{MSY}), which is less than the equilibrium size in the absence of fishing (B_0). (Generally, population sizes above B_{MSY} are less productive because of competition for resources.) The harvest rate used to specify harvest levels designed to achieve or sustain B_{MSY} is referred to as the Maximum Fishing Mortality Threshold (MFMT, denoted as F_{MSY}). There are two harvest specification reference points defined in the FMP, a total catch optimum yield (OY) and an acceptable biological catch (ABC). The OY is typically the management target and is usually less than the ABC, based on the need to rebuild stocks to B_{MSY} (see the following discussion). The ABC, which is the maximum allowable harvest, is calculated by applying an estimated or proxy F_{MSY} harvest rate to the estimated abundance of the stock.

The Council-specified proxy MSY abundance for most West Coast groundfish species is 40% of B_0 (denoted as $B_{40\%}$). The Council-specified threshold for declaring a stock overfished is when the stock's spawning biomass declines to less than 25% of B_0 (denoted as $B_{25\%}$). The MSA and National Standard Guidelines refer to this threshold as the Minimum Stock Size Threshold or MSST. A rebuilding plan that specifies how total fishing-related mortality is constrained to achieve an MSY abundance level within the legally allowed time is required by the MSA and FMP when a stock is declared overfished. The harvest levels considered for overfished groundfish stocks in 2003 are based on a range of harvest rates estimated to rebuild these stocks within the requisite time at different probabilities.

Stocks that are estimated to be above the overfishing threshold yet below an abundance level that supports MSY are considered to be in the "precautionary zone". The Council has specified precautionary reductions in harvest rate for such stocks to increase abundance to $B_{40\%}$. The methodology for determining this precautionary reduction is described in the FMP and is referred to as the "40-10" adjustment. As the stock declines below $B_{40\%}$, the total catch OY is reduced from the ABC until, at 10% of B_0, the OY is set to zero. However, in practice the 40-10 adjustment only applies to stocks above $B_{25\%}$ (the MSST) because once a stock falls below this level an adopted rebuilding plan supplants it. Most stocks with an estimated abundance greater than $B_{40\%}$ are managed by setting harvest to the ABC. Figure 3-3 presents this framework graphically.

The remainder of Section 3.2.1 describes groundfish stocks according to the categories just described: overfished, precautionary zone, and healthy. However, it is important to realize that of the more than 80 species in the management unit only a portion are individually managed. Thus Section 3.2.1.3, covering stocks at or above target stock size, describes five species managed under separate harvest specifications. The remaining species are managed and accounted for in groupings or stock complexes because individually they comprise a small part of the landed catch and there is thus insufficient information to develop the stock assessments necessary to set an OY based on yield estimates. (The FMP identifies the OY for these species as an average of historical catch, based on the assumption that this is below MSY.)

3.2.1.1 Overfished Stocks

Based on the FMP's standards for defining overfished groundfish species, nine West Coast groundfish species have been declared overfished by NOAA Fisheries. These nine species are bocaccio, canary rockfish, cowcod, darkblotched rockfish, lingcod, Pacific ocean perch, Pacific whiting, widow rockfish, and yelloweye rockfish. Rebuilding parameters estimated for these stocks are found in Tables 3.2.1-2 and 3.2.1-3.

<u>Bocaccio</u>

Distribution and Life History: Bocaccio (*Sebastes paucispinis*) are found in the Gulf of Alaska off Krozoff and Kodiak Islands, south as far as Sacramento Reef, Baja California (Hart 1973, Miller and Lea 1972). In survey catches, Allen and Smith (1988) found bocaccio to be most common at 100-150 m over the outer continental shelf. Casillas et al. (1998) determined the depth zone where the southern bocaccio stock is most prevalent is 54-82 fm. Sakuma and Ralston (1995) categorized bocaccio as both a nearshore and offshore species. Larvae and small juveniles are pelagic (Garrison and Miller 1982) and are commonly found in the upper 100 m of the water column, often far from shore (MBC 1987). Large juveniles and adults are semi-demersal and are most often found in shallow coastal waters over rocky bottoms associated with algae (Sakuma and Ralston 1995). Adults are commonly found in eelgrass beds, or congregated around floating kelp beds (Love et al. 1990, Sakuma and Ralston 1995). Young and adult bocaccio also occur around artificial structures, such as piers and oil platforms (MBC 1987). Although juveniles and adults are usually found around vertical relief, adult aggregations also occur over firm sand-mud bottoms (MBC 1987). Bocaccio move into shallow waters during their first year of life (Hart 1973), then move into deeper water with increased size and age (Garrison and Miller 1982).

Bocaccio are ovoviviparous (Garrison and Miller 1982, Hart 1973). Love et al. (1990) reported the spawning season to be protracted and last almost year-round (>10 months). Parturition occurs during January to April off Washington, November to March off northern and central California, and October to March off southern California (MBC 1987). Two or more broods may be born in a year in California (Love et al. 1990). The spawning season is not well known in northern waters. Males mature at 3 to 7 years with 50% mature in 4 to 5 years. Females mature at 3 to 8 years with 50% mature in 4 to 6 years (MBC 1987).

Larval bocaccio often eat diatoms, dinoflagellates, tintinnids, and cladocerans (Sumida and Moser 1984). Copepods and euphausiids of all life stages (adults, nauplii and egg masses) are common prey for juveniles (Sumida and Moser 1984). Adults eat small fishes associated with kelp beds, including other species of rockfishes, and occasionally small amounts of shellfish (Sumida and Moser 1984). Bocaccio are eaten by sharks, salmon, other rockfishes, lingcod, albacore, sea lions, porpoises, and whales (MBC 1987). Bocaccio directly compete with chilipepper and widow, yellowtail, and shortbelly rockfishes for both food and habitat resources (Reilly et al. 1992).

Stock Status and Management History: There are two separate West Coast bocaccio populations. The southern stock exists south of Cape Mendocino and the northern stock north of 48° N. lat. in northern Washington (off Cape Flattery). It is unclear whether the southern and northern stock separation implies stock structure. The disjoint distribution of the two populations and evidence of lack of genetic intermixing suggests stock structure, although MacCall (2002) spoke to some recent evidence for a higher possibility of genetic mixing between the two populations. Nonetheless, assessment scientists and managers have treated the two populations as independent stocks north and south of Cape Mendocino.

The northern stock has not been assessed. The southern stock has been assessed (Bence and Hightower 1990, Bence and Rogers 1992, Ralston et al. 1996b, MacCall et al. 1999) and has suffered poor recruitment during the warm water conditions that have prevailed off southern California since the late 1980's. The 1996 assessment (Ralston et al. 1996b) indicated the stock was in severe decline and overfished. NOAA Fisheries formally declared the stock overfished in March 1999 after the FMP was amended to incorporate the tenets of the Sustainable Fisheries Act. MacCall et al. (1999) confirmed the overfished status of bocaccio and estimated spawning output of the southern stock to be 2.1% of its virgin biomass and 5.1% of the MSY level.

A new assessment (MacCall 2002) done this year expanded the assessed area to both the Conception and Monterey INPFC areas (previous assessments were only for the Conception area). While abundance increased slightly in the Conception area from the last assessment (4.8% of virgin biomass), the outlook became more pessimistic with indications that potential productivity is lower than previously thought. The Council assumed a medium recruitment scenario for the 1999 year class, which was not fully selected and accounted for in the surveys used by MacCall et al. (1999). The new assessment indicated that the 1999 year class experienced a relatively low recruitment. This result added to a significantly longer time series of poor recruitments. Since the pattern of past observed recruitments are used to predict future recruitment, a longer period of poor recruitment results in a more pessimistic outlook for future production.

<u>Canary Rockfish</u>

Distribution and Life History: Canary rockfish (*Sebastes pinniger*) are found between Cape Colnett, Baja California, and southeastern Alaska (Boehlert 1980, Boehlert and Kappenman 1980, Hart 1973, Love 1991, Miller and Lea 1972, Richardson and Laroche 1979). There is a major population concentration of canary rockfish off Oregon (Richardson and Laroche 1979). Canary primarily inhabit waters 91-183 m (50-100 fm) deep (Boehlert and Kappenman 1980). In general, canary rockfish inhabit shallow water when they are young and deep water as adults (Mason 1995). Adult canary rockfish are associated with pinnacles and sharp drop-offs (Love 1991) and are most abundant above hard bottoms (Boehlert and Kappenman 1980). Canary rockfish appear to be a reef-associated species in the southern part of its range(Boehlert 1980). In central California, newly settled canary rockfish are first observed at the seaward sand-rock interface and farther seaward in deeper water (18-24 m).

Canary rockfish off the West coast exhibit a protracted spawning period from September through March, probably peaking in December and January off Washington and Oregon (Johnson et al. 1982, Hart 1988). Female canary rockfish reach sexual maturity at roughly 8 years of age. Like many members of *Sebastes*, canary rockfish are ovoviviparous, whereby eggs are internally fertilized within females and hatched eggs are released as live young (Bond 1979; Golden and Demory 1984; Kendall and Lenarz 1987). Canary rockfish are a relatively fecund species, with egg production being correlated with size, e.g., a 49-cm female can produce roughly 0.8 million eggs and a female that has realized maximum length (say 60 cm) produces approximately 1.5 million eggs (Gunderson et al. 1980). Very little is known about the early life history strategies of canary rockfish, but limited research indicates larvae are strictly pelagic (near ocean surface) for a short period of time, begin to migrate to demersal waters during the summer of their first year of life, and develop into juveniles around nearshore rocky reefs, where they may congregate for up to three years (Boehlert 1980; Sampson 1996). Evaluations of length distributions by depth developed from NOAA Fisheries shelf trawl survey data generally supported other research that suggests this species is characterized by an increasing trend in mean size of fish with depth (Boehlert 1980; Archibald et al. 1981). Female canary rockfish generally grow faster and reach slightly larger sizes than males, but do not appear to live longer than males. Adult canary rockfish feed primarily on small fishes, as well as planktonic creatures, such as krill and euphausiids (Phillips 1964; Love 1991).

Stock Status and Management History: From 1983 through 1994, canary rockfish were managed as part of the *Sebastes* complex, with various trip limits imposed over this period. In 1995, limits specific to canary rockfish (cumulative monthly landing limit of 6,000 lb) were imposed and commercial vessels were expected to sort the canary rockfish from the mixed species categories such as the *Sebastes* complex. For 1998, catches of canary rockfish were regulated using a two-month cumulative landing limit of 40,000 pounds for the *Sebastes* complex, of which, no more than 15,000 pounds (38%) could be composed of canary rockfish. From 1998 to present, commercial groundfish fishing for canary has been drastically reduced and the only significant take is that from incidental bycatch. Canary rockfish has become a limiting factor for other non-groundfish fisheries on the West Coast shelf.

The 1999 stock assessment documented that the stock had declined below the overfished level ($B_{25\%}$) in the northern area (Columbia and U.S. Vancouver INPFC areas; Crone et al. 1999) and in the southern area (Conception, Monterey, and Eureka areas; Williams et al. 1999) and was declared overfished in January. The first rebuilding analysis (Methot 2000a) used results from the northern area assessment to project rates of potential stock recovery. The stock was found to have extremely low productivity, defined as production of recruits in excess of the level necessary to maintain the stock at its current, low level. Rates of recovery were highly dependent upon the level of recent recruitment, which could not be estimated with high certainty. The initial rebuilding OY for 2001 and 2002 was set at 93 mt based upon a 50% probability of rebuilding by the year 2057, a medium level for these recent recruitments, and maintaining a constant annual catch of 93 mt through 2002.

A new assessment was done coastwide this year for canary rockfish, treating the stock as a single unit from the Monterey INPFC area north through the U.S. Vancouver INPFC area and thus departing from the methodologies of past assessments (Methot and Piner 2002a). Although there is some evidence of genetic separation of the northern and southern stocks (Boehlert 1980, Wishard et al. 1980), the observed variability in growth rate by sex and area was not significantly different at small vs. large spatial scales. They also determined the areas of highest canary rockfish density were off headlands that separate INPFC areas, which would tend to bias results if the assessment was stratified by area. A critical uncertainty in canary rockfish assessments is the lack of older, mature females in surveys and other assessment indices. The are two competing explanations for this observation. Older females could have a higher natural mortality rate, resulting in their disproportionate disappearance from the population. Alternatively, survey and fishing gears may be less effective at catching them, because older females hide in places inaccessible to the gear, for example. If this is the case, then these fish (which, because of their higher spawning output, may make an important contribution to future recruitment) are part of the population, but remain un-sampled. Methot and Piner (2002a) combined these two hypotheses in a single age-structured version of the SSC-endorsed stock synthesis assessment model (Methot 2000b) by allowing female natural mortality to increase with the maturity function but also allowing selectivity to be domed (the model determines the selectivity of survey and fishery gear as opposed to assuming a fixed selectivity). They estimated the current abundance of canary rockfish coastwide is about 8% of B_0.

Cowcod

Distribution and Life History: Cowcod *(Sebastes levis)* occur from Ranger Bank and Guadalupe Island, Baja California to Usal, Mendocino County, California (Miller and Lea 1972). Cowcod range from 21 to 366 m in depth (Miller and Lea 1972) and are considered to be parademersal (transitional between a midwater pelagic and benthic species). Adults are commonly found at depths of 180-235 m and juveniles are most often found in 30-149 m of water (Love et al. 1990). MacGregor (1986) found that larval cowcod are almost exclusively found in southern California and may occur many miles offshore. Adult cowcod are primarily found over high relief rocky areas (Allen 1982). They are generally solitary, but occasionally aggregate (Love et al. 1990). Solitary subadult cowcod have been found in association with large white sea anemones on outfall pipes in Santa Monica Bay (Allen 1982). Juveniles occur over sandy bottom and solitary ones have been observed resting within a few centimeters of soft-bottom areas where gravel or other low relief was found (Allen 1982). Although the cowcod is generally not migratory; it may move to some extent to follow food (Love 1991). Cowcod are ovoviviparous, and large females may produce up to three broods per season (Love et al. 1990). Spawning peaks in January in the Southern California Bight (MacGregor 1986). Cowcod grow to 94 cm (Allen 1982). Larvae are extruded at about 5.0 mm (MacGregor 1986). Juveniles eat shrimp and crabs and adults eat fish, octopus, and squid (Allen 1982).

Stock Status and Management History: The cowcod stock south of Cape Mendocino has experienced a long-term decline. Abundance indices decreased approximately ten-fold between the 1960s and the 1990s based on CPFV logs (Butler et al. 1999). Recreational and commercial catch also declined substantially from peaks in the 1970s and 1980s, respectively.

The cowcod stock in the Conception INPFC area (Point Conception to the U.S./Mexico border) was assessed for the first time in 1998 (Butler et al. 1999). Virgin spawning biomass (B_0) was estimated to be 3,370 mt and 1998 spawning biomass was estimated at 7% of B_0, well below the 25% overfishing threshold. As a result, NOAA Fisheries declared cowcod in the Conception and Monterey management areas overfished in January 2000. The stock's low productivity and declined spawning biomass necessitates an extended rebuilding period, estimated at 62 years with no fishing-related mortality (T_{MIN}) , to achieve B_{MSY} (1,350 mt in the Conception management area).

Darkblotched Rockfish

Distribution and Life History: Darkblotched rockfish *(Sebastes crameri)* are found from Santa Catalina Island off southern California to the Bering Sea (Miller and Lea 1972, Richardson and Laroche 1979). Off Oregon, Washington, and British Columbia it is primarily an outer shelf/upper slope species (Richardson and Laroche 1979). Distinct population groups have been found off the Oregon coast between lat. 44 30' and 45 20'N (Richardson and Laroche 1979). Adults occur in depths of 25-600 m and 95% are between 50 and 400 m (Allen and Smith 1988). Off central California, young darkblotched rockfish recruit to soft substrate and low (<1 m) relief reefs (Love et al. 1991). Darkblotched rockfish make limited migrations after they have recruited to the adult stock (Gunderson 1997).

Darkblotched rockfish are viviparous (Nichol and Pikitch 1994). Insemination of female darkblotched rockfish occurs from August to December, fertilization and parturition occurs from December to March off Oregon and California, primarily in February off Oregon and Washington (Hart 1973, Nichol and Pikitch

1994, Richardson and Laroche 1979). Females attain 50% maturity at a greater size (36.5 cm) and age (8.4 years) than males (29.6 cm and 5.1 years) (Nichol and Pikitch 1994). Adults can grow to 57 cm (Hart 1973). Pelagic young are food for albacore (Hart 1973).

Stock Status and Management History: Darkblotched rockfish were managed as part of the coastwide *Sebastes* complex, which was later segregated into north and south management units divided at 40°30' N. lat. The first assessment of darkblotched estimated the proxy MSY harvest rate and overfishing rate for the stock (Lenarz 1993). Lenarz (1993) estimated a range of likely natural mortalities (M = 0.025-0.05) for darkblotched based on a range of maximum ages (60-105 years). He also estimated fishery selectivity from length compositions from the California fishery, which he converted to an age-based selectivity function. He then plotted the relative fecundity per recruit as a function of fishing-related and natural mortality to estimate an F_{MSY} of $F_{35\%}$ (the target MSY proxy harvest rate at that time) and $F_{20\%}$ (the overfishing harvest rate) relative to fecundity per recruit. He estimated the range of likely harvest rates (F) at the MSY target ($F_{35\%}$) was 0.04-0.06 and the overfishing harvest rate ($F_{20\%}$) ranged between 0.07 and 0.11. While Lenarz did not calculate an ABC for darkblotched, he did note the estimated harvest rates at MSY and overfishing were lower than expected. He also noted a trend of decreasing size of darkblotched from the length composition data he evaluated.

The next assessment that was informative for darkblotched addressed all West Coast *Sebastes* without individual ABCs (Rogers et al. 1996). Two methodologies were explored for estimating an ABC for darkblotched: 1) fishing-related mortality was assumed to equal natural mortality (F=M) to estimate an $F_{35\%}$ harvest rate, and 2) estimation of $F_{35\%}$ using a simple stock synthesis model. In the F=M approach, a proxy adjustment (Q) to triennial survey data was calculated to estimate relative biomass of generic *Sebastes*. It was determined that adjusting Q by 0.5 and then by M approximated $F_{35\%}$ estimates from stock synthesis models for most rockfish. A Q of 0.8 (instead of 0.5) was assumed for darkblotched since the survey swept most of the depth range of darkblotched and caught smaller fish than the fishery. The other factors that influenced the magnitude of Q was a noted decreasing trend in estimated survey biomass over time and the estimated size at 50% maturity was greater than estimated size at 50% selectivity (i.e., the survey caught darkblotched at sizes less than those estimated for most maturing and mature fish). The F=M method was compared to a stock synthesis modeling approach that incorporated triennial survey data and a Pacific ocean perch bycatch effort index.

Rogers et al. (2000) assessed the stock's status in 2000 and determined the stock was at 14% of its unfished level ($B_{14\%}$). They incorporated five relative abundance indices in a length-based stock synthesis model (Methot 1990) to derive current estimates of abundance and productivity. The five indices included three NOAA Fisheries surveys with different latitudinal and depth coverages, the Pacific ocean perch effort index developed in the generic *Sebastes* assessment (Rogers et al. 1996), and a logbook index derived from California trawl logbook and species composition data stratified by major California port (Ralston 1999). Major uncertainties in the assessment model included the uncertain foreign catch composition, which had a significant effect on estimated unfished biomass (B_0), and assumptions regarding maturity, discard rates, and unchanging selectivity over time. Of these, the foreign catch of darkblotched influences our understanding of stock status the most; larger assumed historical catches increase estimates of B_0. Four accepted model runs varied the assumed foreign catch proportion from 0%-20%, which resulted in significant differences in B_0 and the spawning index. Only one of those model runs (assuming 0% foreign catch of darkblotched) estimated the stock was not overfished.

Lingcod

Distribution and Life History: Lingcod (*Ophiodon elongatus*), a top order predator of the family Hexagrammidae, ranges from Baja California to Kodiak Island in the Gulf of Alaska. Lingcod are demersal at all life stages (Allen and Smith 1988, NOAA 1990, Shaw and Hassler 1989). Adult lingcod prefer two main habitat types: slopes of submerged banks 10-70 m below the surface with seaweed, kelp and eelgrass beds and channels with swift currents that flow around rocky reefs (Emmett et al. 1991, Giorgi and Congleton 1984, NOAA 1990, Shaw and Hassler 1989). Juveniles prefer sandy substrates in estuaries and shallow subtidal zones (Emmett et al. 1991, Forrester 1969, Hart 1973, NOAA 1990, Shaw and Hassler

1989). As the juveniles grow they move to deeper waters. Adult lingcod are considered a relatively sedentary species, but there are reports of migrations of greater than 100 km by sexually immature fish (Jagielo 1990, Mathews and LaRiviere 1987, Mathews 1992, Smith et al. 1990).

Mature females live in deeper water than males and move from deep water to shallow water in the winter to spawn (Forrester 1969, Hart 1973, Jagielo 1990, LaRiviere et al. 1980, Mathews and LaRiviere 1987, Mathews 1992, Smith et al. 1990). Mature males may live their whole lives associated with a single rock reef, possibly out of fidelity to a prime spawning or feeding area (Allen and Smith 1988, Shaw and Hassler 1989). Spawning generally occurs over rocky reefs in areas of swift current (Adams 1986, Adams and Hardwick 1992, Giorgi 1981, Giorgi and Congleton 1984, LaRiviere et al. 1980). After the females leave the spawning grounds, the males remain in nearshore areas to guard the nests until the eggs hatch. Hatching occurs in April off Washington but as early as January and as late as June at the geographic extremes of the lingcod range. Males begin maturing at about 2 years (50 cm), whereas females mature at 3+ years (76 cm). In the northern extent of their range, fish mature at an older age and larger size (Emmett et al. 1991, Hart 1973, Mathews and LaRiviere 1987, Miller and Geibel 1973, Shaw and Hassler 1989). The maximum age for lingcod is about 20 years (Adams and Hardwick 1992).

Lingcod are a visual predator, feeding primarily by day. Larvae are zooplanktivores (NOAA 1990). Small demersal juveniles prey upon copepods, shrimps, and other small crustaceans. Larger juveniles shift to clupeids and other small fishes (Emmett et al. 1991, NOAA 1990). Adults feed primarily on demersal fishes (including smaller lingcod), squids, octopi, and crabs (Hart 1973, Miller and Geibel 1973, Shaw and Hassler 1989). Lingcod eggs are eaten by gastropods, crabs, echinoderms, spiny dogfish, and cabezon. Juveniles and adults are eaten by marine mammals, sharks, and larger lingcod (Miller and Geibel 1973, NOAA 1990).

Stock Status and Management History: In 1997, U.S. scientists assessed the size and condition of the portion of the stock in the Columbia and Vancouver areas (including the Canadian portion of the Vancouver management area), and concluded the stock had fallen to below 10% of its unfished size (Jagielo et al. 1997). The Council responded by imposing substantial harvest reductions coastwide, reducing the harvest targets for the Eureka, Monterey, and Conception areas by the same percentage as in the north. In 1999, scientists assessed the southern portion of the stock, and concluded the condition of the southern stock was similar to the northern stock, thus confirming the Council had taken appropriate action to reduce harvest coastwide (Adams et al. 1999).

Jagielo et al. (2000) conducted a coastwide lingcod assessment and determined the total biomass increased from 6,500 mt in the mid-1990s to about 8,900 mt in 2000. In the south, the population has also increased slightly from 5,600 mt in 1998 to 6,200 mt in 2000. In addition, the assessment concluded previous aging methods portrayed an older population; whereas new aging efforts showed the stock to be younger and more productive. Therefore, the ABC and OY were increased in 2001 on the basis of the new assessment. A revised rebuilding analysis of coastwide lingcod (Jagielo and Hastie 2001) was adopted by the Council in September 2001. It confirmed the major conclusions of the 2000 assessment and rebuilding analysis, but slightly modified recruitment projections to stay on the rebuilding trajectory that reaches target biomass in 2009. This modification resulted in a slight decrease in the 2002 ABC and OY.

Pacific Ocean Perch

Distribution and Life History: Pacific ocean perch (POP, *Sebastes alutus*) are found from La Jolla (southern California) to the western boundary of the Aleutian Archipelago (Eschmeyer et al. 1983, Gunderson 1971, Ito 1986, Miller and Lea 1972), but are common from Oregon northward (Eschmeyer et al. 1983). Pacific ocean perch primarily inhabit waters of the upper continental slope (Dark and Wilkins 1994) and are found along the edge of the continental shelf (Archibald et al. 1983). Pacific ocean perch occur as deep as 825 m, but usually are at 100-450 m and along submarine canyons and depressions (NOAA 1990). Larvae and juveniles are pelagic; subadults and adults are benthopelagic. Adults form large schools 30 m wide, to 80 m deep, and as much as 1,300 m long (NOAA 1990). They also form spawning schools (Gunderson 1971). Juvenile Pacific ocean perch form ball-shaped schools near the surface or hide in rocks (NOAA 1990). Throughout its range, Pacific ocean perch are generally associated with gravel, rocky or boulder type substrate found in and along gullies, canyons, and submarine depressions of the upper continental slope (Ito 1986).

Pacific ocean perch winter and spawn in deeper water (>275 m), then move to feeding grounds in shallower water (180-220 m) in the summer (June-August) to allow gonads to ripen (Archibald et al. 1983, Gunderson 1971, NOAA 1990). Pacific ocean perch are slow-growing and long-lived. The maximum age has been estimated at about 98 years (Heifetz et al. 2000). Largest size is about 54 cm and 2 kg (Archibald et al. 1983, Beamish 1979, Eschmeyer et al. 1983, Ito 1986, Mulligan and Leaman 1992, NOAA 1990, Richards 1994). Pacific ocean perch are carnivorous. Larvae eat small zooplankton. Small juveniles eat copepods and larger juveniles feed on euphausiids. Adults eat euphausiids, shrimps, squids, and small fishes. Immature fish feed throughout the year, but adults feed only seasonally, mostly April-August (NOAA 1990). Predators of Pacific ocean perch include sablefish and Pacific halibut.

Stock Status and Management History: Pacific ocean perch were harvested exclusively by U.S. and Canadian vessels in the Columbia and Vancouver INPFC areas prior to 1965. Large Soviet and Japanese factory trawlers began fishing for POP in 1965 in the Vancouver area and in the Columbia area a year later. Intense fishing pressure by these foreign fleets occurred during the 1966-1975 period. The foreign fishery ended in 1977 after passage of the MSA and the transition to a domestic fishery.

The POP resource off the West Coast was overfished before implementation of the FMP. Large removals of POP in the foreign trawl fishery, followed by significant declines in catch and abundance led the Council to limit harvest beginning in 1979. A 20-year rebuilding plan for POP was adopted in 1981. Rebuilding under the original plan was largely influenced by a cohort analysis of 1966-1976 catch and age composition data (Gunderson 1979), updated with 1977-1980 data (Gunderson 1981), and an evaluation of trip limits as a management tool (Tagart et al. 1980). This was the first time trip limits were used by the Council to discourage targeting and overharvest of an overfished stock. This is a management strategy still in use today in the West Coast groundfish fishery. The OY for POP was also lowered significantly. After twenty years of rebuilding under the original plan, the stock stabilized at a lower equilibrium than estimated in the pre-fishing condition. While continuing stock decline was abated, rebuilding was not achieved as the stock failed to increase in abundance to B_{MSY}.

Ianelli and Zimmerman (1998) estimated POP female spawning biomass in 1997 was 13% of its unfished level, thereby confirming the stock was overfished. NOAA Fisheries formally declared POP overfished in March 1999 after the FMP was amended to incorporate the tenets of the Sustainable Fisheries Act. The Council adopted and NOAA Fisheries enacted more conservative management measures in 1999 as part of a redoubled rebuilding effort.

A new assessment for POP was done in 2000 which indicated the stock was more productive than originally thought (Ianelli et al. 2000). A revised POP rebuilding analysis was completed and adopted by the Council in 2001 (Punt and Ianelli 2001). This analysis estimated a T_{MIN} of 12 years and a T_{MAX} of 42 years. It was noted in the rebuilding analysis that the ongoing retrospective analysis of historic foreign fleet catches (Rogers In Prep.) is likely to change projections of POP rebuilding downward.

Pacific Whiting

Distribution and Life History: Pacific whiting (*Merluccius productus*), also known as Pacific hake, are a semi-pelagic merlucciid (a cod-like fish species) that range from Sanak Island in the western Gulf of Alaska to Magdalena Bay, Baja California Sur. They are most abundant in the California Current System (Bailey 1982, Hart 1973, Love 1991, NOAA 1990). Smaller populations of Pacific whiting occur in several of the larger semi-enclosed inlets of the northeast Pacific Ocean, including the Strait of Georgia, Puget Sound, and the Gulf of California (Bailey et al. 1982, Stauffer 1985). The highest densities of Pacific whiting are usually between 50 and 500 m, but adults occur as deep as 920 m and as far offshore as 400 km (Bailey 1982, Bailey et al. 1982, Dark and Wilkins 1994, Dorn 1995, Hart 1973, NOAA 1990, Stauffer 1985). Pacific whiting school at depth during the day, then move to the surface and disband at night for feeding (McFarlane and Beamish 1986, Sumida and Moser 1984, Tanasich et al. 1991). Coastal stocks spawn off Baja

California in the winter, then the mature adults begin moving northward and inshore following food supply and Davidson currents (NOAA 1990). Pacific whiting reach as far north as southern British Columbia by fall. They then begin a southern migration to spawning grounds further offshore (Bailey et al. 1982, Dorn 1995, Smith 1995, Stauffer 1985).

Spawning occurs from December through March, peaking in late January (Smith 1995). Pacific whiting are oviparous with external fertilization. Eggs of the Pacific whiting are neritic and float to neutral buoyancy (Baily 1981, Bailey et al. 1982, NOAA 1990). Hatching occurs in 5-6 days and within 3-4 months juveniles are typically 35 mm (Hollowed 1992). Juveniles move to deeper water as they get older (NOAA 1990). Females mature at 3-4 years (34-40 cm) and nearly all males are mature by 3 years (28 cm). Females grow more rapidly than males after four years; growth ceases for both sexes at 10-13 years (Bailey et al. 1982).

All life stages feed near the surface late at night and early in the morning (Sumida and Moser 1984). Larvae eat calanoid copepods, as well as their eggs and nauplii (McFarlane and Beamish 1986, Sumida and Moser 1984). Juveniles and small adults feed chiefly on euphausiids (NOAA 1990). Large adults also eat amphipods, squid, herring, smelt, crabs, and sometimes juvenile whiting (Bailey 1982, Dark and Wilkins 1994, McFarlane and Beamish 1986, NOAA 1990). Eggs and larvae of Pacific whiting are eaten by pollock, herring, invertebrates, and sometimes Pacific whiting. Juveniles are eaten by lingcod, Pacific cod, and rockfish species. Adults are preyed on by sablefish, albacore, pollock, Pacific cod, marine mammals, soupfin sharks, and spiny dogfish (Fiscus 1979, McFarlane and Beamish 1986, NOAA 1990).

Stock Status and Management History: The history of the coastal whiting fishery is characterized by rapid changes brought about by the development of foreign fisheries in 1966, joint-venture fisheries in the early 1980's, and domestic fisheries in 1990's. Large-scale harvesting of Pacific whiting in the U.S. zone began in 1966 when factory trawlers from the then Soviet Union began targeting on Pacific whiting. During the mid 1970's, the factory trawlers from Poland, Federal Republic of Germany, the former German Democratic Republic and Bulgaria also participated in the fishery. During 1966-1979, the catch in U.S. waters averaged 137,000 mt per year. A joint-venture fishery was initiated in 1978 between two U.S. trawlers and Soviet factory trawlers acting as motherships. By 1982, the joint-venture catch surpassed the foreign catch. In the late 1980's, joint-ventures involved fishing companies from Poland, Japan, former Soviet Union, Republic of Korea and the People's Republic of China. In 1989 the U.S. fleet capacity had grown to a level sufficient to harvest entire quota, and no foreign fishing was allowed.

Historically, the foreign and joint-venture fisheries produced fillets and headed and gutted products. In 1989, Japanese motherships began producing surimi from Pacific whiting, using a newly developed process to inhibit deterioration of the flesh resulting from myxozoan-induced proteolysis. In 1990, domestic catcher-processors and motherships entered the Pacific whiting fishery in the U.S. zone. Previously, these vessels had engaged primarily in Alaskan pollock fisheries. The development of surimi production techniques made Pacific whiting a viable alternative. In 1991 joint-venture fishery for Pacific whiting ended because of the high level of participation by domestic catcher-processors and motherships, and the growth of shore-based processing capacity. Shore-based processors of Pacific whiting had been constrained historically by a limited domestic market for Pacific whiting fillets and headed and gutted products. The construction of surimi plants in Newport and Astoria led to a rapid expansion of shore-based landings in the early 1990's.

Whiting are assessed annually by a joint technical team of U.S. and Canadian scientists. This year's assessment (Helser et al. 2002) incorporated the 2001 hydroacoustic survey data, was complete and made available for examination by the Council's groundfish assessment review team (STAR) for whiting in late February. As a result of the new whiting stock assessment, it was determined that the spawning stock biomass had substantially declined and has been lower during the past several years than previously estimated. The stock assessment estimated that the biomass in 2001 was 0.7 million mt, and that the female spawning biomass was less than 20 percent of the unfished biomass. This is substantially lower than the 1998 assessment which estimated the biomass to be at 39 percent of its unfished biomass. Therefore, NOAA Fisheries declared the whiting stock overfished in April 2002. The stock was projected to be near 25 percent of the unfished biomass in 2002 and above B25% in 2003. In retrospect, revised biomass estimates based on the results of the new assessment indicate that the exploitation rates in 1999 (28%), 2000 (24%) and 2001 (31%), were above the overfishing level.

Although a large amount of juvenile fish, spawned in 1999, are expected to mature and enter the fishery in the near future, the spawning biomass is not expected to increase above the maximum sustainable yield (MSY) biomass level of B40% for several years. Any increases in biomass will depend on the vigor of juvenile fish that mature and enter the fishery as well as the exploitation rates.

Widow Rockfish

Distribution and Life History: Widow rockfish (*Sebastes entomelas*) range from Albatross Bank of Kodiak Island to Todos Santos Bay, Baja California (Eschmeyer et al. 1983, Miller and Lea 1972, NOAA 1990). Widow rockfish occur over hard bottoms along the continental shelf (NOAA 1990) Widow rockfish prefer rocky banks, seamounts, ridges near canyons, headlands, and muddy bottoms near rocks. Large widow rockfish concentrations occur off headlands such as Cape Blanco, Cape Mendocino, Pt. Reyes, and Pt. Sur. Adults form dense, irregular, midwater and semi-demersal schools deeper than 100 m at night and disperse during the day (Eschmeyer et al. 1983, NOAA 1990, Wilkins 1986). All life stages are pelagic, but older juveniles and adults are often associated with the bottom (NOAA 1990). All life stages are fairly common from Washington to California (NOAA 1990). Pelagic larvae and juveniles co-occur with yellowtail rockfish, chilipepper, shortbelly rockfish, and bocaccio larvae and juveniles off central California (Reilly et al. 1992).

Widow rockfish are viviparous, have internal fertilization, and brood their eggs until released as larvae (NOAA 1990, Ralston et al. 1996, Reilly et al. 1992). Mating occurs from late fall-early winter. Larval release occurs from December-February off California, and from February-March off Oregon. Juveniles are 21-31 mm at metamorphosis, and they grow to 25-26 cm over 3 years. Age and size at sexual maturity varies by region and sex, generally increasing northward and at older ages and larger sizes for females. Some mature in 3 years (25-26 cm), 50% are mature by 4-5 years (25-35 cm), and most are mature in 8 years (39-40 cm) (NOAA 1990). The maximum age of widow rockfish is 28 years, but rarely over 20 years for females and 15 years for males (NOAA 1990). The largest size is 53 cm and about 2.1 kg (Eschmeyer et al. 1983, NOAA 1990).

Widow rockfish are carnivorous. Adults feed on small pelagic crustaceans, midwater fishes (such as age-1 or younger Pacific whiting), salps, caridean shrimp, and small squids (Adams 1987, NOAA 1990). During spring, the most important prey item is salps, during the fall fish are more important, and during the winter widow rockfish primarily eat sergestid shrimp (Adams 1987). Feeding is most intense in the spring after spawning (NOAA 1990). Pelagic juveniles are opportunistic feeders and their prey consists of various life stages of calanoid copepods, and euphausiids (Reilly et al. 1992).

Stock Status and Management History: The most recent assessment of the widow rockfish stock was done in 2000 (Williams et al. 2000). The spawning output level (8,223 mt), based on that assessment and a revised rebuilding analysis (Punt and MacCall 2001) adopted by the Council in June 2001, was at 24.6% of the unfished level (33,490 mt) in 1999, which was computed using the average recruitment from 1968 to 1979 multiplied by the spawning output-per-recruit at F = 0. The analysis concluded the rebuilding period in the absence of fishing is 22 years, and with a mean generation time of 16 years, the maximum allowable time to rebuild is 38 years.

The 2002 widow rockfish ABC (3,727 mt) was based on estimated biomass and an F50% harvest rate. The 2002 OY for widow rockfish was 856 mt, which conforms with a 60% probability of rebuilding within TMAX.

Yelloweye Rockfish

Distribution and Life History: Yelloweye rockfish *(Sebastes ruberrimus*) range from the Aleutian Islands, Alaska to northern Baja California and are common from central California northward to the Gulf of Alaska (Eschmeyer et al. 1983, Hart 1973, Love 1991, Miller and Lea 1972, O'Connell and Funk 1986). Yelloweye rockfish occur in water 25-550 m deep with 95% of survey catches occurring from 50 to 400 m (Allen and

Smith 1988). Yelloweye rockfish are bottom dwelling, generally solitary, rocky reef fish, found either on or just over reefs (Eschmeyer et al. 1983, Love 1991, O'Connell and Funk 1986). Boulder areas in deep water (>180 m) are the most densely populated habitat type and juveniles prefer shallow-zone broken-rock habitat (O'Connell and Carlile 1993). They also reportedly occur around steep cliffs and offshore pinnacles (Rosenthal et al. 1982). The presence of refuge spaces is an important factor affecting their occurrence (O'Connell and Carlile 1993).

Yelloweye rockfish are ovoviviparous and give birth to live young in June off Washington (Hart 1973). The age of first maturity is estimated at 6 years and all are estimated to be mature by 8 years (Wyllie-Echeverria 1987). Yelloweye rockfish can grow to 91 cm (Eschmeyer et al. 1983, Hart 1973). Males and females probably grow at the same rates (Love 1991, O'Connell and Funk 1986). The growth rate of yelloweye rockfish levels off at approximately 30 years of age (O'Connell and Funk 1986). Yelloweye rockfish can live to be 114 years old (Love 1991, O'Connell and Funk 1986). Yelloweye rockfish are a large predatory reef fish that usually feeds close to the bottom (Rosenthal et al. 1988). They have a widely varied diet, including fish, crabs, shrimps and snails, rockfish, cods, sand lances, and herring (Love 1991). Yelloweye have been observed underwater capturing smaller rockfish with rapid bursts of speed and agility. Off Oregon the major food items of the yelloweye rockfish include cancroid crabs, cottids, righteye flounders, adult rockfishes, and pandalid shrimps (Steiner 1978). Quillback and yelloweye rockfish have many trophic features in common (Rosenthal et al. 1988).

Stock Status and Management History: A yelloweye rockfish stock assessment was done for the first time in 2001 (Wallace 2001). This assessment incorporated two area assessments: one from northern California using catch per unit of effort (CPUE) indices constructed from Marine Recreational Fisheries Statistical Survey (MRFSS) sample data and California Department of Fish and Game (CDFG) data collected on board commercial passenger fishing vessels, and the other from Oregon using Oregon Department of Fish and Wildlife (ODFW) sampling data. The assessment concluded current yelloweye stock biomass is about 7% of unexploited biomass in northern California and 13% of unexploited biomass in Oregon. The assessment indicated a thirty year declining biomass trend in both areas with the last above average recruitment occurring in the late 1980s. The assessment conclusion that yelloweye rockfish biomass was well below the 25% of unexploited biomass threshold for overfished stocks led to this stock being separated from the rockfish complexes in which it was previously listed. Previously, yelloweye were listed in the "remaining rockfish" complex on the shelf in the Vancouver, Columbia, and Eureka INPFC areas and the "other rockfish" complex on the shelf in the Monterey and Conception areas. As with the other overfished stocks, yelloweye harvest was tracked separately starting in 2002 when it was declared overfished.

In June 2002 the SSC recommended a new assessment should be done incorporating Washington catch and age data. This recommendation was based on evidence that the biomass distribution of yelloweye on the West Coast was centered in waters off Washington and that workable data from Washington were available. The Council received that testimony and recommended a new assessment be done this summer before a final decision is made on 2003 management. Methot et al. (2002) did the assessment which was reviewed by a STAR Panel in August. The assessment result was much more optimistic than the one prepared by Wallace (2001), largely due to the incorporation of Washington fishery data. While the overfished status of the stock was confirmed (24% of unfished biomass), Methot et al. (2002) provided evidence of higher stock productivity than originally assumed. The assessment also treated the stock as a coastwide assemblage. The SSC and Council are scheduled to review this assessment at the September Council meeting before deciding 2003 management measures.

3.2.1.2 "Precautionary Zone" Stocks

<u>Dover Sole</u>

Distribution and Life History: Dover sole (*Microstomus pacificus*) are distributed from the Navarin Canyon in the northwest Bering Sea and westernmost Aleutian Islands to San Cristobal Bay, Baja California (Hagerman 1952, Hart 1973, NOAA 1990). Dover sole are a dominant flatfish on the continental shelf and slope from Washington to southern California. Adults are demersal and are found from 9-1,450 m, with highest abundance below 200-300 m (Allen and Smith 1988). Adults and juveniles show a high affinity toward soft bottoms of fine sand and mud. Juveniles are often found in deep nearshore waters. Dover sole are considered to be a migratory species. In the summer and fall, mature adults and juveniles can be found in shallow feeding grounds, as shallow as 55 m off British Columbia (Westrheim and Morgan 1963). By late fall, Dover sole begin moving offshore into deep waters (400 m or more) to spawn. Although there is an inshore-offshore seasonal migration, little north-south coastal migration occurs (Westrheim and Morgan 1963).

Spawning occurs from November-April off Oregon and California (Hart 1973, NOAA 1990, Pearcy et al. 1977) in waters 80-550 m depth at or near the bottom (Hagerman 1952, Hart 1973, Pearcy et al. 1977). Dover sole are oviparous and fertilization is external. Larvae are planktonic and are transported to offshore nursery areas by ocean currents and winds for up to two years. Settlement to benthic living occurs mid-autumn to early spring off Oregon, and February-July off California (Markle et al. 1992). Juvenile fish move into deeper water with age, and begin seasonal spawning and feeding migrations upon reaching maturity.

Dover sole larvae eat copepods, eggs and nauplii, as well as other plankton. Juveniles and adults eat polychaetes, bivalves, brittlestars, and small benthic crustaceans. Dover sole feed diurnally by sight and smell (Dark and Wilkins 1994, Gabriel and Pearcy 1981, Hart 1973, NOAA 1990). Dover sole larvae are eaten by pelagic fishes like albacore, jack mackerel and tuna, as well as sea birds. Juveniles and adults are preyed upon by sharks, demersally feeding marine mammals, and to some extent by sablefish (NOAA 1990). Dover sole compete with various eelpout species, rex sole, English sole, and other fishes of the mixed species flatfish assemblage (NOAA 1990).

Stock Status and Management History: The 1997 Dover sole assessment north of the Conception area provided landed catch OYs based on the F40% harvest rate (Brodziak et al. 1997). The GMT recommended a 2001 total catch OY of 7,151 mt, which is the average of yields calculated for 2000 through 2002 at F40% (with the 40-10 adjustment), inflated to reflect 5% discard. The FMP set the original ABC for the Conception Area at 1,000 mt based on average landings. For 1998, this was inflated to reflect 5% discard for a total catch ABC of 1,053 mt. The coastwide total catch ABC is 8,204 mt. To calculate the total catch OY (7,677 mt), the GMT reduced the Conception area's OY contribution by 50% (to 526 mt), consistent with the new harvest policy. The landed catch target was then calculated to be 95% of OY, or 7,293 mt.

The 1997 Dover sole stock assessment treated the entire population from the Monterey area through the U.S./Vancouver area as a single stock based on recent research addressing the genetic structure of the population. The assessment author generated projections of spawning biomass and expecting landings for 1998 to 2000 under a variety of harvest policies and three recruitment scenarios. The hypothetical harvest policies ranged from an immediate reduction to the F45% harvest rate to an increase up to the F20% harvest rate. In all cases, for each of the low, medium, and high projected recruitments, the expected spawning biomass increased from the estimated year-end level in 1997 through the year 2000 due to growth of the exceptionally large 1991 year class and to the lower catches observed in the fishery since 1991.

A new assessment of the Dover sole stock was done in 2001 indicating spawning stock size to be about 29% of the unexploited biomass (Sampson and Wood 2001). Recent abundances appear to be without trend, but were preceded by a steady decline since the late 1950s. The last strong year class was the one produced in 1991, which confirms the findings of the 1997 assessment. Poor ocean conditions associated with the El Niños in the 1990s have likely affected Dover sole recruitment. The 2001 assessment authors projected five years of Dover sole harvest levels based on preferred, optimistic, and pessimistic projections of recruitment. These options varied the harvest rate from F40% (the current FMSY proxy) to F50%. The Council adopted an ABC of 8,510 mt and an OY of 7,440 mt which is calculated using the current FMSY proxy and the 40-10 adjustment.

Sablefish

Distribution and Life History: Sablefish (*Anoplopoma fimbria*) are abundant in the north Pacific, from Honshu Island, Japan, north to the Bering Sea, and southeast to Cedros Island, Baja California. There are at least three genetically distinct populations off the West Coast of North America: one south of Monterey characterized by slower growth rates and smaller average size, one that ranges from Monterey to the U.S./Canada border that is characterized by moderate growth rates and size, and one ranging off British Columbia and Alaska characterized by fast growth rates and large size. Large adults are uncommon south of Point Conception (Hart 1973, Love 1991, McFarlane and Beamish 1983a, McFarlane and Beamish 1983b, NOAA 1990). Adults are found as deep as 1,900 m, but are most abundant between 200 and 1,000 m (Beamish and McFarlane 1988, Kendall and Matarese 1987, Mason et al. 1983). Off southern California, sablefish are abundant to depths of 1,500 m (MBC 1987). Adults and large juveniles commonly occur over sand and mud (McFarlane and Beamish 1983a, NOAA 1990) in deep marine waters. They were also reported on hard-packed mud and clay bottoms in the vicinity of submarine canyons (MBC 1987).

Spawning occurs annually in the late fall through winter in waters greater than 300 m (Hart 1973, NOAA 1990). Sablefish are oviparous with external fertilization (NOAA 1990). Eggs hatch in about 15 days (Mason et al. 1983, NOAA 1990) and are demersal until the yolk sac is absorbed (Mason et al. 1983). Age-0 juveniles become pelagic after the yolk sac is absorbed. Older juveniles and adults are benthopelagic. Larvae and small juveniles move inshore after spawning and may rear for up to four years (Boehlert and Yoklavich 1985, Mason et al. 1983). Older juveniles and adults inhabit progressively deeper waters. Estimates indicate that 50% of females are mature at 5-6 years (24 inches) and 50% of males are mature at 5 years (20 inches).

Sablefish larvae prey on copepods and copepod nauplii. Pelagic juveniles feed on small fishes and cephalopods- mainly squids (Hart 1973, Mason et al. 1983). Demersal juveniles eat small demersal fishes, amphipods, and krill (NOAA 1990). Adult sablefish feed on fishes like rockfishes and octopus (Hart 1973, McFarlane and Beamish 1983a). Larvae and pelagic juvenile sablefish are heavily preyed upon by sea birds and pelagic fishes. Juveniles are eaten by Pacific cod, Pacific halibut, lingcod, spiny dogfish, and marine mammals, such as Orca whales (Cailliet et al. 1988, Hart 1973, Love 1991, Mason et al. 1983, NOAA 1990). Sablefish compete with many other co-occurring species for food, mainly Pacific cod and spiny dogfish (Allen 1982).

Stock Status and Management History: There are at least three genetically distinct populations on the West Coast of North America: one south of Monterey characterized by slower growth rates and smaller average size, one that ranges from Monterey to the U.S./Canada border that is characterized by moderate growth rates and size, and one ranging off British Columbia and Alaska characterized by fast growth rates and large size. The second stock ranging between California and Washington is the one actively assessed and managed within the Council purview.

The 2001 sablefish ABC (7,661 mt) was based on the proxy F45% harvest rate, and the OY (6,895 mt) on application of the 40-10 harvest policy (the stock was estimated at 37% of the initial biomass). The OY applied north of 36° N latitude. A 22% trawl discard rate was based on discard rates observed in the mid to late 1980s. The GMT assumed an average mortality rate of 70% for discarded fish, which may have been too low for a predominantly summer fishery and too high for a winter fishery.

In 2001 two stock assessments were done for the sablefish stock north of Monterey (Hilborn et al. 2001, Schirripa and Methot 2001). The assessments incorporated new survey and fishery data and extended the assessment area south from 36° N latitude to 34°27' N. lat. (Point Conception). Both assessments indicated a normal decline in biomass since the late 1970s due to the fishing down of the virgin stock and an unexpected decline in recruitment during the early 1990s. A change in environmental conditions may have been responsible for the abrupt decline in recruitment in the 1990s, or this low recruitment may have been the natural consequence of the gradual decline in spawning biomass. The sablefish stock is currently estimated to be between 27% and 38% of the unfished biomass, depending on the assessment scenario and the basis for estimating unfished biomass. Recruitment scenarios in both assessments hinged on two different hypotheses on whether sablefish recruitment was most affected by density dependence or environmental regime shifts. Because of this uncertainty, two 2002 ABC estimates were produced and reviewed by the Council: an ABC of 4,786 mt based upon the current FMSY proxy of F45%, and an ABC of 4,062 mt based upon a reduced harvest rate of F50%. The Council adopted the ABC based on the proxy harvest rate, but adjusted it to reflect the distribution north and south of 36° N latitude. This was done because a plan amendment would be needed to change the management area since FMP Amendment 14, permit stacking, specified only the are north of 36° N latitude. The OY was based on the 40-10 adjustment. The Council also wanted to verify industry reports of a large abundance of juvenile sablefish; an observation that was confirmed to some extent by preliminary results from the 2001 NMFS slope survey. Based on these considerations, the Council recommended a new expedited assessment be done in 2002.

Schirripa (2002) did re-assess the stock under the Terms of Reference developed by the SSC for Expedited Stock Assessments. Under these Terms of Reference, the assessment would be updated with new survey and fishery data, but would not be restructured in any substantive fashion. This allowed an expedited review of the updated assessment without the formal rigor needed when a new assessment model is used. The expedited assessment confirmed the anecdotal reports by fishermen and the preliminary results of the 2001 slope survey of a high 1999 year class. Additionally, the new assessment indicated that the 2000 year class was also relatively strong.

Shortspine Thornyhead

Distribution and Life History: Shortspine thornyhead (*Sebastolobus alascanus*) are found from northern Baja California to the Bering Sea and occasionally to the Commander Islands north of Japan (Jacobson and Vetter 1996). They are common from southern California northward (Love 1991). Shortspine thornyhead inhabit areas over the continental shelf and slope (Erickson and Pikitch 1993, Wakefield and Smith 1990). Although they can occur as shallow as 26 m (Eschmeyer et al. 1983), shortspine thornyhead mainly occur between 100 and 1,400 m off Oregon and California, most commonly between 100-1,000 m (Jacobson and Vetter 1996).

Spawning occurs in February and March off California (Wakefield and Smith 1990). Shortspine thornyhead are thought to be oviparous (Wakefield and Smith 1990), although there is no clear evidence to substantiate this (Erickson and Pikitch 1993). Eggs rise to the surface to develop and hatch. Larvae are pelagic for about 12-15 months. During January to June, juveniles settle onto the continental shelf and then move into deeper water as they become adults (Jacobson and Vetter 1996). Off California, they begin to mature at 5 years; 50% are mature by 12-13 years; and all are mature by 28 years (Owen and Jacobson 1992). Although it is difficult to determine the age of older individuals, Owen and Jacobson (1992) report that off California, they may live to over 100 years of age. The mean size of shortspine thornyhead increases with depth and is greatest at 1,000-1,400 m (Jacobson and Vetter 1996).

Benthic individuals are ambush predators that rest on the bottom and remain motionless for extended periods of time (Jacobson and Vetter 1996). Off Alaska, shortspine thornyhead eat a variety of invertebrates such as shrimps, crabs, and amphipods, as well as fishes and worms (Owen and Jacobson 1992). Longspine thornyhead are a common item found in the stomachs of shortspine thornyhead. Cannibalism of newly settled juveniles is important in the life history of thornyheads (Jacobson and Vetter 1996).

Stock Status and Management History: Shortspine thornyhead is a major component of the deepwater fishery on the continental slope, especially the trawl fishery for Dover sole, thornyheads and sablefish (referred to as the DTS complex). The status of this stock is subject to substantial public debate; the species is one of the most numerous components of the slope ecosystem. However, this is an especially long-lived species and cannot sustain aggressive harvest rates. It is taken coincidentally with Dover sole, sablefish, and longspine thornyhead, especially in the upper slope and lower shelf; in deeper water, longspine thornyhead is a more predominate species. The two thornyhead species are often difficult to distinguish, and historical landings data combine the two into a single category. Shortspine thornyhead is a "constraining species" in the deepwater fishery; that is, coincidental catch of this species prevents full harvest of Dover sole and sablefish.

The individual assessments for shortspine thornyhead and longspine thornyhead in 1997 covered the area from central California at 36° N latitude (the southern boundary of the Monterey management area) to the U.S./Canada border (the northern boundary of the U.S./Vancouver management area) (Rogers et al. 1997). The Stock Assessment Review (STAR) Panel expressed concern that management requires more detailed information on thornyheads than could be obtained from the available data. Given the kinds and quality of data, there are major uncertainties in the assessments regarding 1) growth and natural mortality for shortspine thornyhead, 2) problems with separating longspine and shortspine thornyheads in the historic landings, 3) difficulties estimating year class strength, and 4) unknown discard rates.

The 2001 shortspine thornyhead ABC (757 mt) was based on a synthesis of two stock assessments prepared in 1998 (NMFS STAT and OT STAT 1998, Rogers et al. 1998) and application of the $F_{50\%}$ harvest rate. The 2001 shortspine thornyhead ABCs and OYs were separately specified north and south of 36° N latitude, which is the northern boundary of the Conception area. The stock size was estimated to be 32% of the unfished abundance in 1999. The 2001 OY (689 mt) was based on $F_{50\%}$ and the 40-10 policy. The landed catch equivalent reflected a 20% reduction for discard.

The most recent assessment of shortspine thornyhead in 2001 was also fraught with uncertainty, not the least of which was the estimated biomass (Piner and Methot 2001). The assessment was extended south to Point Conception (past surveys were to the Monterey/Conception area boundary at 36° N latitude). The authors concluded the 2001 spawning biomass ranged between 25% and 50% of unexploited spawning biomass. The uncertainty in abundance largely revolved around the uncertainty in recruitment and survey Q, or catchability, of shortspine thornyhead in slope surveys. The authors also concluded the trend in stock biomass was increasing and the stock was not overfished. Based on estimated biomass and application of the GMT-recommended $F = 0.75M$ principle (which approximates an $F_{50\%}$ proxy harvest rate for shortspine thornyhead), the assessment authors and GMT recommended a slight increase in the ABC and OY for 2002 and combining the previous Monterey area north and Conception area specifications to a coastwide one. Despite the uncertainty in biomass estimates and determination of whether shortspine thornyhead should be treated as a "precautionary zone" stock, these recommendations did treat the stock as such by applying the 40-10 adjustment. The Council adopted the GMT-recommended coastwide ABC of 1,004 mt, and the associated total catch OY of 955 mt for 2002 management.

3.2.1.3 Stocks at or Above Target Levels

Arrowtooth Flounder

Distribution and Life History: Arrowtooth flounder (*Atheresthes stomias*) range from the southern coast of Kamchatka to the northwest Bering Sea and Aleutian Islands to San Simeon, California. Arrowtooth flounder is the dominant flounder species on the outer continental shelf from the western Gulf of Alaska to Oregon. Eggs and larvae are pelagic; juveniles and adults are demersal (Garrison and Miller 1982, NOAA 1990). Juveniles and adults are most commonly found on sand or sandy gravel substrates, but occasionally occur over low-relief rock-sponge bottoms. Arrowtooth flounder exhibit a strong migration from shallow water summer feeding grounds on the continental shelf to deep water spawning grounds over the continental slope (NOAA 1990). Depth distribution may vary from as little as 50 m in summer to more than 500 m in the winter (NOAA 1990, Rickey 1995).

Arrowtooth flounder are oviparous with external fertilization. Spawning may occur deeper than 500 m off Washington (Rickey 1995). Larvae eat copepods, their eggs and copepod nauplii (Yang 1995, Yang and Livingston 1985). Juveniles and adults feed on crustaceans (mainly ocean pink shrimp and krill) and fish (mainly gadids, herring and pollock) (Hart 1973, NOAA 1990). Arrowtooth flounder exhibit two feeding peaks, at noon and midnight.

Bank Rockfish

Distribution and Life History: Bank rockfish (*Sebastes rufus*) are found from Newport, Oregon, to central Baja California, most commonly from Fort Bragg southward (Love 1992). Bank rockfish occur offshore

(Eschmeyer et al. 1983) from depths of 31 to 247 m (Love 1992), although adults prefer depths over 210 m (Love et al. 1990). Observations of commercial catches indicate juveniles occupy the shallower part of the species range (Love et al. 1990). Bank rockfish are a midwater, aggregating species and are found over hard bottom (Love 1992), over high relief or on bank edges (Love et al. 1990), and along the ledge of Monterey Canyon (Sullivan 1995). They also frequent deep water over muddy or sandy bottom (Miller and Lea 1972). Spawning occurs from December to May (Love et al. 1990). Peak spawning of bank rockfish in the Southern California Bight occurs in January and a month later in central and northern California. Off California, bank rockfish are multiple brooders (Love et al. 1990). Females grow to a larger maximum size (50 cm) than males (44 cm), but grow at a slightly slower rate (Cailliet et al. 1996). Males reach first maturity at 28 cm, 50% maturity at 31 cm, and 100% at 38 cm. Females reach first maturity at 31 cm, 50% at 36 cm, and 100% maturity at 39 cm (Love et al. 1990). Bank rockfish are midwater feeders, eating mostly gelatinous planktonic organisms such as tunicates, but also preying on small fishes and krill (Love 1992).

Black Rockfish

Distribution and Life History: Black rockfish (*Sebastes melanops*) are found from southern California (San Miguel Island) to the Aleutian Islands (Amchitka Island) and they occur most commonly from San Francisco northward (Hart 1973, Miller and Lea 1972, Phillips 1957, Stein and Hassler 1989). Black rockfish occur from the surface to greater than 366 m; however, they are most abundant at depths less than 54 m (Stein and Hassler 1989). Off California, black rockfish are found along with the blue, olive, kelp, black-and-yellow, and gopher rockfishes (Hallacher and Roberts 1985). Adults are usually observed well up in the water column (Hallacher and Roberts 1985). The abundance of black rockfish in shallow water declines in the winter and increases in the summer (Stein and Hassler 1989). Densities of black rockfish decrease with depth during both the upwelling and non-upwelling seasons (Hallacher and Roberts 1985, PFMC 1996). Off Oregon, larger fish seem to be found in deeper water (20-50 m) (Stein and Hassler 1989). Black rockfish off the northern Washington coast and outer Strait of Juan de Fuca exhibit no significant movement. However, fish appear to move from the central Washington coast southward to the Columbia River, but not into waters off Oregon. Movement displayed by black rockfish off the northern Oregon coast is primarily northward to the Columbia River (Culver 1986). Black rockfish form mixed sex, midwater schools, especially in shallow water (Hart 1973, Stein and Hassler 1989). Black rockfish larvae and young juveniles (<40-50 mm) are pelagic but are benthic at larger sizes (Laroche and Richardson 1980).

Black rockfish have internal fertilization and annual spawning (Stein and Hassler 1989). Parturition occurs from February-April off British Columbia, January-March off Oregon, and January-May off California (Stein and Hassler 1989). Spawning areas are unknown, but spawning may occur in offshore waters because gravid females have been caught well offshore (Dunn and Hitz 1969, Hart 1973, Stein and Hassler 1989). Black rockfish can live to be more than 20 years in age. The maximum length attained by the black rockfish is 60 cm (Hart 1973, Stein and Hassler 1989). Off Oregon, black rockfish primarily prey on pelagic nekton (anchovies and smelt) and zooplankton such as salps, mysids, and crab megalops. Off central California, juveniles eat copepods and zoea, while adults prey on juvenile rockfish, euphausiids, and amphipods during upwelling periods. During periods without upwelling they primarily consume invertebrates. Black rockfish feed almost exclusively in the water column (Culver 1986). Black rockfish are known to be eaten by lingcod and yelloweye rockfish (Stein and Hassler 1989).

Blackgill Rockfish

Distribution and Life History: Blackgill rockfish *(Sebastes melanostomus)* are distributed from Washington to Punta Abreojos in central Baja California (Love 1991, Moser and Ahlstom 1978). Adult blackgill rockfish are found offshore at depths of 219-768 m (Eschmeyer et al. 1983). Blackgill rockfish usually inhabit rocky or hard bottom habitats along steep drop-offs, such as the edges of submarine canyons and over seamounts (Love 1991). However, they may also occur over soft bottoms (Eschmeyer et al. 1983). Blackgill rockfish are a transitional species, occupying both midwater and benthic habitats (Love et al. 1990), although they are rarely taken at more than 9 m above the bottom (Love 1991). Blackgill are considered an aggregating species (Love 1991).

Blackgill rockfish spawn from January-June (peaking in February) off southern California, and in February off central and northern California (Love 1991, Love et al. 1990, Moser and Ahlstom 1978). The largest blackgill rockfish on record is 61 cm (Eschmeyer et al. 1983, Love 1991, Love et al. 1990). Blackgill rockfish primarily prey on such planktonic prey as euphausiids and pelagic tunicates, as well as small fishes (e.g., juvenile rockfishes and Pacific whiting, anchovies, and lantern fishes) and squid (Love et al. 1990).

Chilipepper Rockfish

Distribution and Life History: Chilipepper rockfish (*Sebastes goodei*) are found from Magdalena Bay, Baja California, to as far north as the northwest coast of Vancouver Island, British Columbia (Allen and Smith 1988, Hart 1973, Miller and Lea 1972). Chilipepper have been taken as deep as 425 m, but nearly all in survey catches were taken between 50 and 350 m (Allen and Smith 1988). Adults and older juveniles usually occur over the shelf and slope; larvae and small juveniles are generally found near the surface. In California, chilipepper are most commonly found associated with deep, high relief rocky areas and along cliff drop-offs (Love et al. 1990), as well as on sand and mud bottoms (MBC 1987). They are occasionally found over flat, hard substrates (Love et al. 1990). Love (1991) does not consider this to be a migratory species. Chilipepper may migrate as far as 45 m off the bottom during the day to feed (Love 1991).

Chilipeppers are ovoviviparous and eggs are fertilized internally (Reilly et al. 1992). Chilipepper school by sex just prior to spawning (MBC 1987). In California, fertilization of eggs begins in October ands spawning occurs from September to April (Oda 1992) with the peak occurring during December to January (Love et al. 1990). Chilipepper may spawn multiple broods in a single season (Love et al. 1990). Females of the species are significantly larger, reaching lengths of up to 56 cm (Hart 1973). Males are usually smaller than 40 cm (Dark and Wilkins 1994). Males mature at 2 to 6 years of age and 50% are mature at 3 to 4 years. Females mature at 2 to 5 years with 50% mature at 3 to 4 years (MBC 1987). Females may attain an age of about 27 years whereas the maximum age for males is about 12 years (MBC 1987).

Larval and juvenile chilipepper eat all life stages of copepods and euphausiids, and are considered to be somewhat opportunistic feeders (Reilly et al. 1992). In California, adults prey on large euphausiids, squid, and small fishes such as anchovies, lanternfish and young hake (Hart 1973, Love et al. 1990). Chilipepper are found with widow rockfish, greenspotted rockfish, and swordspine rockfish (Love et al. 1990). Juvenile chilipepper compete for food with bocaccio, yellowtail rockfish, and shortbelly rockfish (Reilly et al. 1992).

English Sole

Distribution and Life History: English sole (*Parophrys vetulus*) are found from Nunivak Island in the southeast Bering Sea and Agattu Island in the Aleutian Islands, to San Cristobal Bay, Baja California Sur (Allen and Smith 1988). In research survey data, nearly all occurred at depths <250 m (Allen and Smith 1988). Adults and juveniles prefer soft bottoms composed of fine sands and mud (Ketchen 1956), but also occur in eelgrass habitats (Pearson and Owen 1992). English soles use nearshore coastal and estuarine waters as nursery areas (Krygier and Pearcy 1986, Rogers et al. 1988). Adults make limited migrations. Those off Washington show a northward post-spawning migration in the spring on their way to summer feeding grounds and a southerly movement in the fall (Garrison and Miller 1982). Tagging studies have identified separate stocks based on this species' limited movements and meristic characteristics (Jow 1969).

Spawning occurs over soft-bottom mud substrates (Ketchen 1956) from winter to early spring depending on the stock. Eggs are neritic and buoyant, but sink just before hatching (Hart 1973), juveniles and adults are demersal (Garrison and Miller 1982). Small juveniles settle in the estuarine and shallow nearshore areas all along the coast, but are less common in southerly areas, particularly south of Point Conception. Large juveniles commonly occur up to depths of 150 m. Although many postlarvae may settle outside of estuaries, most will enter estuaries during some part of their first year of life (Gunderson et al. 1990). Some females mature as 3-year-olds (26 cm), but all females over 35 cm long are mature. Males mature at 2 years (21 cm).

Larvae are planktivorous. Juveniles and adults are carnivorous, eating copepods, amphipods, cumaceans, mysids, polychaetes, small bivalves, clam siphons, and other benthic invertebrates (Allen 1982, Becker 1984, Hogue and Carey 1982, Simenstad et al. 1979). English sole feed primarily by day, using sight and smell, and sometimes dig for prey (Allen 1982, Hulberg and Oliver 1979). A juvenile English sole's main predators are probably piscivorous birds such as great blue heron (*Ardia herodias*), larger fishes, and marine mammals. Adults may be eaten by marine mammals, sharks, and other large fishes.

Longspine Thornyhead

Distribution and Life History: Longspine thornyhead (*Sebastolobus altivelis*) are found from the southern tip of Baja California to the Aleutian Islands (Eschmeyer et al. 1983, Jacobson and Vetter 1996, Love 1991, Miller and Lea 1972, Smith and Brown 1983) but are abundant from southern California northward (Love 1991). Juvenile and adult longspine thornyhead are demersal and occupy the benthic surface (Smith and Brown 1983). Off Oregon and California, longspine thornyhead mainly occur at depths of 400-1,400+ m, most between 600 and 1,000 m in the oxygen minimum zone (Jacobson and Vetter 1996). Thornyhead larvae (*Sebastolobus* spp.) have been taken in research surveys up to 560 km off the California coast (Cross 1987, Moser et al. 1993). Juveniles settle on the continental slope at about 600-1,200 m (Jacobson and Vetter 1996). Longspine thornyhead live on soft bottoms, preferably sand or mud (Eschmeyer et al. 1983, Jacobson and Vetter 1996, Love 1991). Longspine thornyheads neither school nor aggregate (Jacobson and Vetter 1996).

Spawning occurs in February and March at 600-1,000 m (Jacobson and Vetter 1996, Wakefield and Smith 1990). Longspine thornyhead are oviparous and are multiple spawners, spawning 2-4 batches per season (Love 1991, Wakefield and Smith 1990). Eggs rise to the surface to develop and hatch. Floating egg masses can be seen at the surface in March, April, and May (Wakefield and Smith 1990). Juveniles (<5.1 cm long) occur in midwater (Eschmeyer et al. 1983). After settling, longspine thornyhead are completely benthic (Jacobson and Vetter 1996). Longspine thornyhead can grow to 38 cm (Eschmeyer et al. 1983, Jacobson and Vetter 1996, Miller and Lea 1972) and live more than 40 years (Jacobson and Vetter 1996). Longspine thornyhead reach the onset of sexual maturity at 17-19 cm TL (10% of females mature) and 90% are mature by 25-27 cm (Jacobson and Vetter 1996).

Longspine thornyhead are ambush predators (Jacobson and Vetter 1996). They consume fish fragments, crustaceans, bivalves, and polychaetes and occupy a tertiary consumer level in the food web. Pelagic juveniles prey largely on herbivorous euphausiids and occupy a secondary consumer level in the food web (Love 1991, Smith and Brown 1983). Longspine thornyhead are commonly found in shortspine thornyhead stomachs. Cannibalism in newly settled longspine thornyhead may occur because juveniles settle directly onto adult habitat (Jacobson and Vetter 1996). Sablefish commonly prey on longspine thornyhead.

Pacific Cod

Distribution and Life History: Pacific cod (*Gadus macrocephalus*) are widely distributed in the coastal north Pacific, from the Bering Sea to southern California in the east, and to the Sea of Japan in the west. Adult Pacific cod occur as deep as 875 m (Allen and Smith 1988), but the vast majority occurs between 50 and 300 m (Allen and Smith 1988, Hart 1973, Love 1991, NOAA 1990). Along the West Coast, Pacific cod prefer shallow, soft-bottom habitats in marine and estuarine environments (Garrison and Miller 1982), although adults have been found associated with coarse sand and gravel substrates (Palsson 1990, Garrison and Miller 1982). Larvae and small juveniles are pelagic; large juveniles and adults are parademersal (Dunn and Matarese 1987, NOAA 1990). Adult Pacific cod are not considered to be a migratory species. There is, however, a seasonal bathymetric movement from deep spawning areas of the outer shelf and upper slope in fall and winter to shallow middle-upper shelf feeding grounds in the spring (Dunn and Matarese 1987, Hart 1973, NOAA 1990, Shimada and Kimura 1994).

Pacific cod have external fertilization (Hart 1973, NOAA 1990) with spawning occurring from late fall to early spring. Their eggs are demersal. Larvae may be transported to nursery areas by tidal currents (Garrison and Miller 1982). Half of females are mature by 3 years (55 cm) and half of males are mature by 2 years

(45 cm) (Dunn and Matarese 1987, Hart 1973). Juveniles and adults are carnivorous and feed at night (Allen and Smith 1988, Palsson 1990) with the main part of the adult Pacific cod diet being whatever prey species is most abundant (Kihara and Shimada 1988, Klovach et al. 1995). Larval feeding is poorly understood. Pelagic fish and sea birds eat Pacific cod larvae, while juveniles are eaten by larger demersal fishes, including Pacific cod. Adults are preyed upon by toothed whales, Pacific halibut, salmon shark, and larger Pacific cod (Hart 1973, Love 1991, NOAA 1990, Palsson 1990). The closest competitor of the Pacific cod for resources is the sablefish (Allen 1982).

Petrale Sole

Distribution and Life History: Petrale sole (*Eopsetta jordani*) are found from Cape St. Elias, Alaska to Coronado Island, Baja California. The range may possibly extend into the Bering Sea, but the species is rare north and west of southeast Alaska and in the inside waters of British Columbia (Garrison and Miller 1982, Hart 1973). Nine separate breeding stocks have been identified, although stocks intermingle on summer feeding grounds (Hart 1973, NOAA 1990). Of these nine, one occurs off British Columbia, two off Washington, two off Oregon, and four off California (NOAA 1990). Adults are found from the surf line to 550 m, but their highest abundance is <300 m (NOAA 1990). Adults migrate seasonally between deepwater, winter spawning areas to shallower, spring feeding grounds (NOAA 1990). They show an affinity to sand, sandy mud and occasionally muddy substrates (NOAA 1990).

Spawning occurs over the continental shelf and continental slope to as deep as 550 m. Spawning occurs in large spawning aggregations in the winter. Eggs are pelagic and juveniles and adults are demersal (Garrison and Miller 1982). Eggs and larvae are transported from offshore spawning areas to nearshore nursery areas by oceanic currents and wind. Larvae metamorphose into juveniles at six months (22 cm) and settle to the bottom of the inner continental shelf (Pearcy et al. 1977). Petrale sole tend to move into deeper water with increased age and size. Petrale sole begin maturing at three years. Half of males mature by seven years (29-43 cm) and half of the females are mature by eight years (>44 cm) (Pedersen 1975a, Pedersen 1975b). Near the Columbia River, petrale sole mature one to two years earlier (Pedersen 1975a, Pedersen 1975b).

Larvae are planktivorous. Small juveniles eat mysids, sculpins and other juvenile flatfishes. Large juveniles and adults eat shrimps and other decapod crustaceans, as well as euphausiids, pelagic fishes, ophiuroids, and juvenile petrale sole (Garrison and Miller 1982, Hart 1973, NOAA 1990, Pearcy et al. 1977, Pedersen 1975a, Pedersen 1975b). Petrale sole eggs and larvae are eaten by planktivorous invertebrates and pelagic fishes. Juveniles are preyed upon (sometimes heavily) by adult petrale sole, as well as other large flatfishes. Adults are preyed upon by sharks, demersally feeding marine mammals, and larger flatfishes and pelagic fishes (NOAA 1990). Petrale sole competes with other large flatfishes. It has the same summer feeding grounds as lingcod, English sole, rex sole, and Dover sole (NOAA 1990).

Shortbelly Rockfish

Distribution and Life History: Shortbelly rockfish (*Sebastes jordani*) are found from San Benito Islands, Baja California, Mexico to La Perouse Bank, British Columbia (Eschmeyer et al. 1983, Lenarz 1980). The habitat of the shortbelly rockfish is wide ranging (Eschmeyer et al. 1983). Shortbelly rockfish inhabit waters from 50-350 m in depth (Allen and Smith 1988) on the continental shelf (Chess et al. 1988) and upper-slope (Stull and Tang 1996). Adults commonly form very large schools over smooth bottom near the shelf break (Lenarz 1992). Shortbelly rockfish have also been observed along the Monterey Canyon ledge (Sullivan 1995). During the day shortbelly rockfish are found near the bottom in dense aggregations. At night they are more dispersed (Chess et al. 1988). During the summer shortbelly rockfish tend to move into deeper waters and to the north as they grow, but they do not make long return migrations to the south in the winter to spawn (Lenarz 1980).

Shortbelly rockfish are viviparous, bearing advanced yolk sac larvae (Ralston et al. 1996). Shortbelly rockfish spawn off California during January through April (Lenarz 1992). Larvae metamorphose to juveniles at 27 mm and appear to begin forming schools at the surface at that time (Laidig et al. 1991, Lenarz 1980).

A few shortbelly rockfish mature at age 2, while 50% are mature at age 3, and nearly all are mature by age 4 (Lenarz 1992). They live to be about 10 years old (Lenarz 1980, MacGregor 1986) with the maximum recorded age being 22 years (Lenarz 1992).

Shortbelly rockfish feed primarily on various life stages of euphausiids and calanoid copepods both during the day and night (Chess et al. 1988, Lenarz et al. 1991). Shortbelly rockfish play a key role in the food chain as they are preyed upon by chinook and coho salmon, lingcod, black rockfish, Pacific whiting, bocaccio, chilipepper, pigeon guillemots, western gull, marine mammals, and other taxa (Chess et al. 1988, Eschmeyer et al. 1983, Hobson and Howard 1989, Lenarz 1980).

Splitnose Rockfish

Distribution and Life History: Splitnose rockfish (*Sebastes diploproa*) occur from Prince William Sound, Alaska to San Martin Island, Baja California (Miller and Lea 1972). Splitnose rockfish occur from 0-800 m, with most survey catches occurring in depths of 100-450 m (Allen and Smith 1988). The relative abundance of juveniles (<21 cm) is quite high in the 91-272 m depth zone and then decreases sharply in the 274-475 m depth zone (Boehlert 1980). Splitnose rockfish have a pelagic larval stage and prejuvenile stage, and a benthic juvenile stage (Boehlert 1977). Benthic splitnose rockfish associate with mud habitats (Boehlert 1980). Young occur in shallow water, often at the surface under drifting kelp (Eschmeyer et al. 1983). The major types of vegetation juveniles are found under are *Fucus* spp. (dominant), eelgrass, and bull kelp (Shaffer et al. 1995). Juvenile splitnose rockfish off southern California are the dominant rockfish species found under drifting kelp (Boehlert 1977).

Splitnose are ovoviviparous and release yolk sac larvae (Boehlert 1977). They may have two parturition seasons, or may possibly release larvae throughout the year (Boehlert 1977). In general, the main parturition season get progressively shorter and later toward the north (Boehlert 1977). Splitnose rockfish growth rates vary with latitude, being generally faster in the north. Splitnose mean sizes increase with depth in a given latitudinal area. Mean lengths of females are generally greater than males (Boehlert 1980). Off California, 50% maturity occurs at 21 cm, or 5 years of age, whereas off British Columbia 50% of males and females are mature at 27 cm (Hart 1973). Adults can achieve a maximum size of 46 cm (Boehlert 1980, Eschmeyer et al. 1983, Hart 1973). Females have surface ages to 55 years and section ages to 81 years.

Adult splitnose rockfish off southern California feed on midwater plankton, primarily euphausiids (Allen 1982). Juveniles feed mainly on planktonic organisms, including copepods and cladocerans during June and August. In October, their diets shift to larger epiphytic prey and are dominated by a single amphipod species. Juvenile splitnose rockfish actively select prey (Shaffer et al. 1995) and are probably diurnally active (Allen 1982). Adults are probably nocturnally active, at least in part (Allen 1982).

Yellowtail Rockfish

Distribution and Life History: Yellowtail rockfish (*Sebastes flavidus*) range from San Diego, California, to Kodiak Island, Alaska (Fraidenburg 1980, Gotshall 1981, Lorz et al. 1983, Love 1991, Miller and Lea 1972, Norton and MacFarlane 1995). The center of yellowtail rockfish abundance is from Oregon to British Columbia (Fraidenburg 1980). Yellowtail rockfish are a common, demersal species abundant over the middle shelf (Carlson and Haight 1972, Fraidenburg 1980, Tagart 1991, Weinberg 1994). Yellowtail rockfish are most common near the bottom, but not on the bottom (Love 1991, Stanely et al. 1994). Yellowtail adults are considered semi-pelagic (Stanely et al. 1994, Stein et al. 1992) or pelagic which allows them to range over wider areas than benthic rockfish (Pearcy 1992). Adult yellowtail rockfish occur along steeply sloping shores or above rocky reefs (Hart 1973). They can be found above mud with cobble, boulder and rock ridges, and sand habitats; they are not, however, found on mud, mud with boulder, or flat rock (Love 1991, Stein et al. 1992). Yellowtail rockfish form large (sometimes greater than 1,000 fish) schools and can be found alone or in association with other rockfishes (Love 1991, Pearcy 1992, Rosenthal et al. 1982, Stein et al. 1992, Tagart 1991). These schools may persist at the same location for many years (Pearcy 1992).

Yellowtail rockfish are viviparous (Norton and MacFarlane 1995) and mate from October to December. Parturition peaks in February and March and from November-March off California (Westrheim 1975). Young-of-the-year pelagic juveniles often appear in kelp beds beginning in April and live in and around kelp in midwater during the day, descending to the bottom at night (Love 1991, Tagart 1991). Male yellowtail rockfish are 34-41 cm in length (5-9 years) at 50% maturity, females are 37-45 cm (6-10 years) (Tagart 1991). Yellowtail rockfish are long-lived and slow-growing; the oldest recorded individual was 64 years old (Fraidenburg 1981, Tagart 1991). Yellowtail rockfish have a high growth rate relative to other rockfish species (Tagart 1991). They reach a maximum size of about 55 cm in approximately 15 years (Tagart 1991). Yellowtail rockfish feed mainly on pelagic animals, but are opportunistic, occasionally eating benthic animals as well (Lorz et al. 1983). Large juveniles and adults eat fish (small Pacific whiting, Pacific herring, smelt, anchovies, lanternfishes, and others), along with squid, krill, and other planktonic organisms (euphausiids, salps, and pyrosomes) (Love 1991, Phillips 1964, Rosenthal et al. 1982, Tagart 1991).

<u>Other Groundfish Stocks</u>

"Other Flatfish" are those species that do not have individual ABC/OYs and include butter sole, curlfin sole, flathead sole, Pacific sanddab, rex sole, rock sole, sand sole, and starry flounder. Life history descriptions of these species may be found in the EFH appendix document described in Section 3.1.2.

3.2.2 Non-groundfish Fish Stocks

As noted at the beginning of Section 3.2, the proposed action could potentially affect these species in two ways. They may be caught incidentally in fisheries targeting groundfish. Thus management measures that change total fishing effort in groundfish fisheries could increase or decrease fishing mortality on incidentally caught species. Alternatively, those fisheries targeting non-groundfish species (described in Section 3.3.1.1) may be affected by management measures intended to reduce or eliminate incidental catches of overfished groundfish species in these fisheries.

3.2.2.1 California Halibut

California halibut (*Paralichthys californicus*) are a left-eyed flatfish of the family *Bothidae*. They range from northern Washington at approximately the Quileuete River to southern Baja California (Eschmeyer et al. 1983), but are most common south of Oregon. They are predominantly associated with sand substrates from nearshore areas just beyond the surf line to about 183 m.

California halibut feed on fishes and squids and can take their prey well off the bottom. They are an important sport and commercial species, especially in California where they are targeted using hook and line and trawl gear.

3.2.2.2 California Sheephead

California sheephead (*Semicossyphus pulcher*) are a large member of the wrasse family *Labridae*. They range from Monterey Bay south to Guadalupe Island in central Baja California and in the Gulf of California, but are uncommon north of Point Conception. They are associated with rocky bottom habitats, particularly in kelp beds to 55 m, but more commonly at depths of 3-30 m.

They can live to 50 years of age and a maximum length of 91 cm (16 kg). Like some other wrasse species, California sheephead change sex starting first as a female but changing to a male at about 30 cm in length.

3.2.2.3 Coastal Pelagic Species (CPS)

CPS are schooling fish, not associated with the ocean bottom, that migrate in coastal waters. These species include: northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific (chub) mackerel (*Scomber japonicus*), jack mackerel (*Trachurus symmetricus*), and market squid (*Decapoda* spp.). These species are managed under the Council's Coastal Pelagic Species Fishery Management Plan.

Sardines inhabit coastal subtropical and temperate waters and at times have been the most abundant fish species in the California current. During times of high abundance, Pacific sardine range from the tip of Baja California to southeastern Alaska. When abundance is low, Pacific sardine do not occur in large quantities north of Point Conception, California. Pacific mackerel in the northeastern Pacific range from Banderas Bay, Mexico to southeastern Alaska. They are common from Monterey Bay, California to Cabo San Lucas, Baja California, and most abundant south of Point Conception, California. The central subpopulation of northern anchovy ranges from San Francisco, California to Punta Baja, Mexico. Jack mackerel are a pelagic schooling fish that range widely throughout the northeastern Pacific; however, much of their range lies outside the U.S. EEZ. Adult and juvenile market squid are distributed throughout the Alaska and California current systems, but are most abundant between Punta Eugenio, Baja California and Monterey Bay, Central California.

Recent (December 1999 and July 1999, respectively) stock assessments indicate that Pacific sardine and Pacific mackerel are increasing in relative abundance. Pacific sardine biomass in U.S. waters was estimated to be 1,581,346 mt in 1999; Pacific mackerel biomass (in U.S. waters) was estimated to be 239,286 mt. Pacific sardine landings for the directed fisheries off California and Baja California reached the highest level in recent history during 1999, with a combined total of 115,051 mt harvested. In 1998 70,799 mt of Pacific mackerel were landed, representing near-record levels for the combined directed fisheries off California and Baja California. Population dynamics for market squid are poorly understood and annual fluctuations in commercial catch vary from <10,000 mt to 90,000 mt. There are no estimates of MSY available for market squid. They are thought to have an annual mortality rate approaching 100%, which means that the adult population is almost entirely new recruits and successful spawning is crucial to future years' abundance.

3.2.2.4 Dungeness Crab

The Dungeness crab (*Cancer magister*) is distributed from the Aleutian Islands, Alaska, to Monterey Bay, California. They live in bays, inlets, around estuaries, and on the continental shelf . Dungeness crab are found to a depth of about 180 m. Although it is found at times on mud and gravel, this crab is most abundant on sand bottoms; frequently it occurs among eelgrass. The Dungeness crab, which are typically harvested using traps (crab pots), ring nets, by hand (scuba divers) or dip nets, are incidentally taken or harmed unintentionally by groundfish gears. Dungeness crab are managed by the states of Oregon and California, and by the State of Washington in cooperation with Washington Coast treaty tribes.

3.2.2.5 Highly Migratory Species (HMS)

Highly migratory species (HMS) include tunas, billfish, dorado, and sharks—species that range great distances during their lifetime, extending beyond national boundaries into international waters and among the EEZs of many nations in the Pacific. The Council is adopting an FMP to federally regulate the take of HMS within and outside the EEZ. The draft FMP/DEIS describes species proposed for active management in detail; these are five tuna species, five shark species, striped marlin, swordfish and dorado or dolpinfish. A much longer list of species, constituting all those that have been caught in HMS fisheries and not already under state or federal management, will be monitored but are not part of the management unit. EFH descriptions for the adult life history stage of management unit species (PFMC 2001, Chapter 4) are reproduced below:

3.2.2.6 Ocean Whitefish

Ocean whitefish (*Caulolatilus princeps)* occurs as far north as Vancouver Island in British Columbia but is rare north of central California. A solitary species, it inhabits rocky bottoms and is also found on soft sand and mud bottoms. Whitefish dig into the substrate for food.

3.2.2.7 Pacific Pink Shrimp

Pacific pink shrimp (*Pandalus jordani*) are found from Unalaska in the Aleutian Islands to San Diego, California, at depths of 25 - 200 fathoms (46 - 366 m). Off the U.S. West Coast these shrimp are harvested with trawl gear from northern Washington to central California between 60 and 100 fathoms (110-180 m). The majority of the catch is taken off the coast of Oregon. Concentrations of pink shrimp are associated with well-defined areas of green mud and muddy-sand bottom. Shrimp trawl nets are usually constructed with net mesh sizes smaller than the net mesh sizes for legal groundfish trawl gear. Thus it is shrimp trawlers that commonly take groundfish in association with shrimp, rather than the reverse. Pacific shrimp fisheries are managed by the states of Washington, Oregon, and California.

3.2.2.8 Pacific Halibut

Pacific halibut (*Hippoglossus stenolepis*) belong to a family of flounders called Pleuronectidae. Pacific halibut can be found along the continental shelf in the North Pacific and Bering Sea. They have flat, diamond-shaped bodies and are able to migrate long distances. Most adult fish tend to remain on the same grounds year after year, making only a seasonal migrations from the more shallow feeding grounds in summer to deeper spawning grounds in winter. Halibut are usually found in deep water (40-200 m).

Pacific halibut are managed by the bilateral (U.S./Canada) International Pacific Halibut Commission (IPHC). The Pacific Halibut Catch Sharing Plan for waters off Washington, Oregon, and California (Area 2A) specifies IPHC management measures for Pacific halibut on the West Coast. Implementation of IPHC catch levels and regulations is the responsibility of the Council, the states of Washington, Oregon, and California, and the Pacific halibut treaty tribes.

3.2.2.9 Ridgeback Prawn

to be completed before public review

3.2.2.10 Sea Cucumber

to be completed before public review

3.2.2.11 Spot Prawn

Distribution and Life History: Spot prawn (*Pandalus platyceros*) are the largest of the pandalid shrimp and range from Baja California north to the Aleutian Islands and west to the Korean Strait. They inhabit rocky or hard bottoms including coral reefs, glass sponge reefs, and the edges of marine canyons. They have a patchy distribution which may result from active habitat selection and larval transport. Spot prawn are hermaphroditic, first maturing as males at about three years of age. They enter a transition phase after mating at about four years of age when they metamorphose into females.

Spot prawns are taken by both traps and trawls on the West Coast with the fishery taking predominantly older females. These fisheries are open access and managed by the West Coast states.

3.2.2.12 White Seabass

White seabass is primarily targeted with driftnet gear, since the setnet fishery for white seabass was prohibited in 1994. White seabass may also be caught with commercial hook-and-line gear in the early spring, when large seabass are available. Regulations covering white seabass have been in effect since 1931, and have included a minimum size limit, closed seasons, bag limits, and fishing gear restrictions. Such regulations are in effect today, with slight variations. An FMP for white seabass is presently being adopted and the need for additional regulations will be considered (Vojkovich and Crooke 2001).

3.2.2.13 Miscellaneous Species

Little information is available on non-groundfish species that are incidentally captured in the groundfish fishery. Other than those species mentioned above, documentation from the whiting fishery indicates that species such as American shad (*Alosa sapidissima*) and walleye pollock (*Theragra chalcogramma*) are taken incidentally. American shad, introduced in 1885, have flourished throughout the lower Columbia River, producing a record run of 2.2 million fish in 1988 (ODFW and WDF 1989). Preliminary data indicates that approximately 112 mt were taken as incidental catch in the at-sea sector of the Pacific whiting fishery in 2001, through October. American Shad was also taken in the shore-based whiting fishery. Walleye pollock are found in the waters of the Northeastern Pacific Ocean from the Sea of Japan, north to the Sea of Okhotsk, east in the Bering Sea and Gulf of Alaska, and south in the Northwestern Pacific Ocean along the Canadian and U.S. West Coast to Carmel, California. Preliminary data indicates that approximately 280 mt were taken as incidental catch in the at-sea sector of the Pacific Whiting fishery in 2001, through October. Reports of larger concentrations of walleye pollock off Washington in 2002 have led to trawlers targeting this species after the primary whiting fishery closed. Since this species is not managed under any Council FMP, there are no harvest levels, management measures, or observer requirement specified for this fishery.

3.2.3 Protected Species

Protected species fall under three overlapping categories, reflecting four mandates: the Endangered Species Act of 1973 (ESA), the Marine Mammal Protection Act of 1972 (MMPA), the Migratory Bird Treaty Act (MBTA) and E.O. 13186. These mandates, and the species thus protected, are described below.

3.2.3.1 ESA-listed Species

The ESA protects species in danger of extinction throughout all or a significant part of their range and mandates the conservation of the ecosystems on which they depend. "Species" is defined by the Act to mean a species, a subspecies, or—for vertebrates only—a distinct population. Under the ESA, a species is listed as "endangered" if it is in danger of extinction throughout a significant portion of its range and "threatened" if it is likely to become an endangered species within the foreseeable future throughout all, or a significant part, of its range. (As noted in Table 3.2.3-3, three marine mammal stocks are also listed under the Endangered Species Act.)

<u>Salmon</u>

Salmon caught in West Coast fisheries have life cycle ranges that include coastal streams and river systems from central California to Alaska and marine waters along the U.S. and Canada seaward into the north central Pacific Ocean, including Canadian territorial waters and the high seas. Some of the more critical portions of these ranges are the freshwater spawning grounds and migration routes. Chinook, or king salmon (*Oncorhynchus tshawytscha*), and coho, or silver salmon (*O. kisutch*), are the main species caught in Council-managed ocean salmon fisheries. In odd-numbered years, catches of pink salmon (*O. gorbuscha*) can also be significant, primarily off Washington and Oregon. Salmon are targeted in marine fisheries with commercial and recreational troll gear. No other gears are allowed to take and retain salmon in marine fisheries. Small amounts of rockfish and other groundfish are taken as incidental catch in salmon troll fisheries. Fisheries with a potential interaction with protected salmon species listed under the ESA (Table 3.2.3-1) require a consultation with NOAA Fisheries that must issue a Biological Opinion that the take is allowable given ESA conservation constraints.

<u>Sea Turtles</u>

Sea turtles are highly migratory; four of the six species found in U.S. waters have been sighted off the West Coast. Little is known about the interactions between sea turtles and West Coast fisheries. Directed fishing for sea turtles in West Coast groundfish fisheries is prohibited because of their ESA listings (Table 3.2.3-2);

however, incidental take of sea turtles by longline or trawl gear may occur. The management and conservation of sea turtles is shared between NOAA Fisheries and FWS.

3.2.3.2 Marine Mammals

The waters off Washington, Oregon, and California support a wide variety of marine mammals. Approximately thirty species, including seals and sea lions, sea otters, whales, dolphins, and porpoise, occur within the EEZ. Many marine mammal species seasonally migrate through West Coast waters, while others are year round residents.

In addition to the ESA, the federal Marine Mammal Protection Act (MMPA) guides marine mammal species protection and conservation policy. Under the MMPA, on the West Coast NOAA Fisheries is responsible for the management of cetaceans and pinnipeds, while the U.S. Fish and Wildlife Service (FWS) manages sea otters. Stock assessment reports review new information every year for strategic stocks (those whose human-caused mortality and injury exceeds the potential biological removal (PBR)) and every three years for non-strategic stocks. Marine mammals, whose abundance falls below the optimum sustainable population (OSP), are listed as "depleted" according to the MMPA.

Fisheries that interact with species listed as depleted, threatened, or endangered (Table 3.2.3-3) may be subject to management restrictions under the MMPA and ESA. NOAA Fisheries publishes an annual list of fisheries in the *Federal Register* separating commercial fisheries into one of three categories based on the level of serious injury and mortality of marine mammals occurring incidentally in that fishery. The categorization of a fishery in the list of fisheries determines whether participants in that fishery are subject to certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. West Coast groundfish fisheries are in Category III, denoting a remote likelihood of, or no known, serious injuries or mortalities to marine mammals.

3.2.3.3 Seabirds

Over sixty species of seabirds occur off the West Coast. These species include loons, grebes, albatross, fulmars, petrels, shearwaters, storm-petrels, pelicans, cormorants, frigate birds, phalaropes, skuas, jaegers, gulls, kittiwakes, skimmers, terns, guillemots, murrelets, auklets, and puffins. The migratory range of these species includes the entire West Coast EEZ. Fishing also occurs near the breeding colonies of many of these species.

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the Act, taking, killing or possessing migratory birds is unlawful. In addition to the MBTA, an Executive Order, Responsibilities of Federal Agencies to Protect Migratory Birds, (E.O. 13186) directs federal agencies to negotiate Memoranda of Understanding with the U.S. Fish and Wildlife Service that would obligate agencies to evaluate the impact on migratory birds as part of any NEPA process. NOAA is also preparing an National Plan of Action to Reduce the Incidental Take of Seabirds in Longline Fisheries. This document contains guidelines that are applicable to relevant groundfish fisheries and would require seabird incidental catch mitigation if a significant problem is found to exist. The FWS is the primary federal agency responsible for seabird conservation and management. Under the MSA, NMFS must ensure fishery management actions comply with other laws designed to protect seabirds. NMFS is also required to consult with FWS if fishery management plan actions may affect seabird species listed as endangered or threatened. Taken together, these laws and directives underscore the need to consider impacts to seabirds in decision making and consider ways to reduce potential impacts of the proposed action. Four bird species are also ESA-listed, as noted in Table 3.2.3-4.

CHAPTER 3
TABLES
(SUPPLEMENTAL)

TABLE 3.3.1.1-1a. Overview of domestic shoreside landings and at-sea deliveries (roundweight mt) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) north of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council [1997]).

Year	Lincod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	2,303	**73,557**	825	19,771	7,053	45,953	1,542	17,692	0	-	-	160	0	5,871	-	-	0	2	1	6,210	8,670	26	11,021	200,657
1982	2,807	**67,465**	1,019	25,419	12,532	41,982	1,068	12,463	0	-	-	164	1	5,637	-	-	1	52	0	1,477	7,322	35	3,832	183,276
1983	3,468	**72,100**	1,047	23,229	9,820	33,382	663	5,626	0	-	-	322	0	2,010	-	-	12	135	8	2,470	6,812	42	3,490	164,636
1984	3,302	**78,889**	2,697	20,448	10,784	24,623	883	4,357	-	-	-	598	0	762	-	-	3	429	4	1,188	5,850	193	3,867	158,876
1985	3,370	**31,692**	3,891	20,992	10,802	24,648	784	12,391	-	-	-	536	0	2,657	-	-	0	795	1	2,068	7,344	104	3,034	125,107
1986	1,512	**81,639**	3,459	17,025	9,221	24,028	512	25,931	-	-	-	746	0	3,760	-	-	0	13	21	3,118	6,798	69	862	178,713
1987	1,943	**105,997**	4,786	20,116	9,815	29,188	2,480	30,479	-	-	-	302	1	5,115	-	-	2	1	71	1,849	7,234	183	1,144	220,706
1988	1,973	**135,781**	6,862	20,402	8,366	31,001	3,688	31,988	-	-	-	240	1	5,253	-	-	0	0	41	3,955	15,223	206	1,860	266,841
1989	2,621	**203,578**	7,407	22,880	7,585	33,059	2,586	35,160	5	-	-	212	1	4,024	-	-	0	44	62	771	15,559	65	4,723	340,343
1990	2,168	**175,685**	8,112	22,056	6,849	29,901	1,711	24,317	-	-	-	153	2	2,453	-	-	0	1	61	1,590	12,928	84	5,463	293,533
1991	2,532	200,594	21,036	23,472	7,420	25,150	2,877	18,999	-	-	-	169	0	1,858	0	-	0	0	74	1,002	5,652	99	3,454	314,390
1992	1,377	148,186	56,127	17,817	7,237	26,456	3,147	35,709	0	0	-	217	0	1,191	-	-	0	6	364	4,512	14,691	116	3,353	320,508
1993	1,626	91,640	42,107	16,584	6,714	29,788	3,270	22,427	1	-	-	252	0	895	2	-	7	59	656	5,421	17,061	163	2,426	241,100
1994	2,370	162,923	73,607	14,508	6,437	27,729	3,253	14,418	0	0	-	179	2	185	5	-	0	144	539	7,625	16,365	123	2,331	332,743
1995	1,322	98,376	74,966	13,479	6,132	23,755	1,638	10,661	0	-	-	139	5	1,305	-	0	0	114	469	5,464	15,344	175	2,411	255,753
1996	1,434	123,419	85,056	14,337	6,178	22,752	1,357	13,125	1	0	-	148	15	1,227	-	-	1	104	408	9,466	23,666	104	2,992	305,790
1997	1,280	142,726	87,409	13,646	6,127	17,701	1,528	16,101	31		-	201	14	951	4	2	1	128	2,060	8,728	10,758	203	3,756	313,325
1998	406	142,810	88,599	13,502	3,569	15,755	1,429	4,130	1	0	-	220	13	901	-	0	1	31	1,536	11,383	10,263	192	1,833	296,576
1999	357	139,940	83,636	16,531	5,508	13,151	1,096	12,059	1	-	-	218	3	723	0	-	6	18	1,788	4,150	15,057	124	2,406	296,771
2000	116	120,411	85,842	13,096	5,192	9,549	1,125	14,482	-	-	-	223	0	1,060	0	-	0	29	14,774	7,531	12,236	210	2,684	288,562
2001	121	99,875	73,473	11,145	4,683	6,186	1,137	17,482	1	0	-	331	4	2,165	0	0	-	30	24,556	8,744	10,392	218	3,422	263,965

NOTE: 1981-1990 at-sea whiting data from Council 1987.

TABLE 3.3.1.1-1b. Overview of domestic shoreside landings and at-sea deliveries (roundweight mt) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) south of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council [1997]).

Year	Lincod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	1,004	-	13	6,201	4,365	13,822	187	510	174	4	87	-	191	2,096	0	-	1,258	23,508	105,356	146,255	341	1,348	27,343	334,063
1982	1,015	-	7	7,194	6,093	19,488	209	241	162	8	61	-	179	3,194	63	-	1,172	16,307	79,436	114,436	301	1,191	42,382	293,142
1983	695	-	3	6,410	4,865	14,774	226	426	58	1	70	-	289	900	74	-	666	1,824	32,068	112,170	357	1,318	44,915	222,109
1984	758	-	23	7,255	3,293	15,397	196	131	29	0	259	-	238	1,381	24	-	825	564	38,081	84,011	389	1,607	33,352	187,813
1985	513	-	3	9,408	3,506	12,699	183	17	26	4	357	-	149	2,184	-	-	1,954	10,276	26,656	31,936	359	1,587	40,656	142,474
1986	382	-	5	9,102	4,069	12,984	150	400	12	13	130	1	197	3,473	35	-	1,800	21,277	28,795	33,797	604	1,486	50,162	168,874
1987	643	-	10	8,680	2,969	11,054	164	581	21	14	85	5	223	4,021	49	-	1,368	19,984	36,789	34,053	1,230	1,241	55,340	178,523
1988	684	-	6	6,640	2,510	9,978	100	346	23	41	55	19	248	6,989	72	-	1,081	37,232	37,861	32,661	1,492	1,183	57,991	197,210
1989	959	-	6	7,000	2,854	12,275	108	390	25	48	61	0	271	2,711	-	-	875	40,893	35,098	26,674	486	1,684	62,373	194,791
1990	765	-	3	5,645	2,331	13,365	102	235	19	101	34	-	188	2,165	67	-	775	28,446	39,137	14,497	601	2,005	44,139	154,619
1991	634	-	4	7,043	2,076	10,131	100	65	21	103	52	0	235	1,877	264	-	851	37,388	44,973	10,134	533	1,790	28,260	146,533
1992	506	-	1	6,979	2,124	10,544	108	1	35	65	27	-	271	858	-	-	378	13,110	38,855	9,387	433	1,385	23,259	108,325
1993	574	-	1	5,523	1,431	8,464	213	25	50	105	33	0	218	1,319	293	-	302	42,829	30,741	11,879	349	1,520	17,882	123,751
1994	463	-	3	4,776	1,224	7,631	386	563	132	66	71	0	186	1,617	293	118	207	55,313	26,123	12,721	1,314	1,097	15,058	129,364
1995	378	-	1	6,227	1,820	8,416	497	681	136	42	187	3	258	3,449	268	115	276	70,249	52,494	13,070	1,593	1,272	15,431	176,863
1996	357	-	71	6,470	2,160	7,735	1,202	675	176	54	264	2	291	2,079	381	115	346	80,611	48,746	19,930	897	1,377	15,907	189,844
1997	373	-	1	5,862	1,823	7,874	742	1,355	261	79	177	0	401	2,748	205	139	339	70,343	68,558	17,678	1,589	1,805	18,945	201,296
1998	100	-	2	3,219	840	6,863	751	212	256	116	197	3	402	949	349	119	254	2,899	67,041	18,257	1,485	1,455	8,813	114,582
1999	85	-	0	3,683	1,152	3,256	531	345	185	93	632	2	382	1,986	272	63	388	92,105	74,303	13,553	726	1,354	9,470	204,567
2000	29	-	1	3,219	1,103	2,152	373	170	121	81	705	-	218	2,645	290	79	333	117,956	88,587	7,003	779	1,297	10,788	237,931
2001	35	-	1	2,718	962	1,621	289	113	91	95	161	0	241	1,192	323	68	264	85,929	81,549	6,072	842	1,335	9,079	192,980

TABLE 3.3.1.1-1c. Overview of domestic shoreside landings and at-sea deliveries (roundweight mt) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) coastwide, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council [1997]).

Year	Lincod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	3,307	**73,557**	838	25,972	11,419	59,774	1,729	18,202	174	4	87	160	191	7,967	0	0	1,258	23,510	105,357	152,465	9,011	1,480	38,365	534,827
1982	3,822	**67,465**	1,027	32,613	18,625	61,470	1,277	12,704	162	8	61	164	180	8,831	63	0	1,173	16,360	79,436	115,923	7,623	1,233	46,247	476,468
1983	4,163	**72,100**	1,051	29,639	14,685	48,157	889	6,052	58	1	70	322	289	2,936	74	0	678	1,959	32,076	114,644	7,169	1,403	48,437	386,852
1984	4,060	**78,889**	2,721	27,703	14,077	40,020	1,079	4,488	29	0	259	598	239	2,180	24	0	829	993	38,084	85,203	6,239	1,849	37,260	346,822
1985	3,883	**31,692**	3,894	30,400	14,308	37,347	967	12,408	26	4	357	536	149	5,043	0	0	1,954	11,071	26,657	34,004	7,703	1,754	43,790	267,947
1986	1,894	**81,639**	3,463	26,127	13,290	37,012	661	26,330	12	13	130	748	197	7,384	35	0	1,801	21,290	28,817	36,916	7,402	1,567	51,113	347,841
1987	2,586	**105,997**	4,795	28,796	12,784	40,242	2,644	31,060	21	14	85	307	224	9,410	49	0	1,370	19,985	36,860	35,902	8,464	1,447	56,546	399,588
1988	2,656	**135,781**	6,867	27,043	10,876	40,980	3,788	32,334	23	41	55	260	249	12,518	72	0	1,082	37,232	37,902	36,616	16,715	1,430	59,874	464,392
1989	3,580	**203,578**	7,414	29,880	10,439	45,334	2,694	35,550	30	48	61	212	273	6,869	0	0	875	40,936	35,160	27,446	16,045	1,806	67,110	535,341
1990	2,932	**175,685**	8,115	27,701	9,179	43,265	1,813	24,553	19	101	34	153	190	4,682	67	0	775	28,447	39,198	16,088	13,529	2,223	49,672	448,422
1991	3,167	200,594	21,040	30,515	9,496	35,282	2,978	19,064	21	103	52	169	235	3,734	264	0	851	37,388	45,047	11,135	6,185	2,035	31,752	461,107
1992	1,883	148,186	56,127	24,796	9,360	37,000	3,255	35,710	35	65	27	217	272	2,049	0	0	379	13,116	39,219	13,899	15,125	1,607	26,641	428,968
1993	2,200	91,640	42,108	22,107	8,145	38,252	3,483	22,451	51	105	33	252	218	2,214	295	0	309	42,889	31,397	17,300	17,411	1,773	20,341	364,974
1994	2,834	162,923	73,611	19,284	7,661	35,361	3,638	14,981	133	66	71	179	188	1,802	298	118	208	55,489	26,669	20,349	17,682	1,221	17,421	462,186
1995	1,700	98,376	74,967	19,706	7,951	32,171	2,135	11,342	136	42	187	142	262	4,756	268	115	276	70,363	52,963	18,538	16,937	1,462	17,857	432,652
1996	1,790	123,419	85,127	20,807	8,339	30,487	2,559	13,800	178	54	264	150	306	3,306	381	115	347	80,715	49,154	29,396	24,564	1,498	18,931	495,685
1997	1,652	142,726	87,410	19,508	7,951	25,576	2,271	17,456	263	79	177	201	415	3,700	209	141	340	70,471	70,617	26,406	12,347	2,010	22,731	514,655
1998	506	142,810	88,601	16,722	4,410	22,619	2,180	4,342	257	117	197	223	415	1,850	349	119	255	2,931	68,576	29,640	11,748	1,720	10,671	411,294
1999	441	139,940	83,637	20,213	6,660	16,408	1,627	12,404	185	93	632	220	385	2,709	272	63	394	92,122	76,092	17,702	15,783	1,478	11,901	501,575
2000	145	120,411	85,843	16,315	6,296	11,702	1,498	14,653	121	81	705	223	218	3,707	291	79	333	117,984	103,360	14,534	13,015	1,619	13,496	526,692
2001	156	99,875	73,475	13,863	5,646	7,806	1,427	17,595	92	95	161	331	245	3,358	323	68	264	85,959	106,105	14,816	11,234	1,643	12,530	457,100

NOTE 1: This table includes some catch from the WOC ocean area (0-200 miles) for which it could not be determined whether the landing occurred north or south of Cape Mendocino.
NOTE 2: For 1981-1990, at-sea whiing catch estimates are from Council 1987.

TABLE 3.3.1.1-2a1. Overview of domestic shoreside landings and at-sea deliveries (exvessel revenue, thousands of inflation adjusted dollars) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) north of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council [1997]).

Year	Lincod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	1,962	**21,422**	240	19,186	5,787	26,019	1,008	34,143	2	-	-	718	1	37,010	-	-	0	1	0	20,874	30,443	144	16,910	215,873
1982	2,517	**19,535**	295	24,900	10,652	26,975	789	22,997	1	-	-	713	1	35,665	-	-	2	16	0	3,452	28,507	146	6,778	183,942
1983	2,989	**20,220**	294	21,876	7,893	23,510	530	14,241	0	-	-	1,273	1	8,629	-	-	37	126	12	4,773	35,034	134	5,661	147,235
1984	2,661	**17,907**	612	18,389	7,746	18,690	555	6,613	-	-	-	1,686	1	5,130	-	-	11	305	2	2,191	30,684	449	6,602	120,235
1985	2,814	**6,850**	841	18,866	12,660	20,352	456	14,233	-	-	-	1,814	1	13,705	-	-	1	471	2	3,313	34,181	378	6,656	137,596
1986	1,478	**15,351**	650	16,177	11,453	21,633	372	44,147	-	-	-	3,595	2	16,284	-	-	1	4	27	5,636	29,266	283	1,112	167,471
1987	2,263	**20,629**	931	21,940	15,208	29,808	2,425	64,146	-	-	-	1,730	4	33,057	-	-	4	1	80	4,358	30,394	1,073	1,349	229,400
1988	2,108	**30,545**	1,544	21,004	13,951	27,677	2,817	39,197	-	-	-	1,405	5	38,659	-	-	1	0	45	9,959	52,677	682	2,079	244,355
1989	2,532	**38,346**	1,395	19,956	10,808	27,655	1,816	37,076	6	-	-	1,130	9	18,138	-	-	0	10	71	1,746	49,945	207	5,105	215,951
1990	2,046	**28,485**	1,315	16,449	9,383	25,510	1,058	33,209	-	-	-	1,141	9	13,048	-	-	0	0	57	3,796	54,178	237	7,078	196,999
1991	2,295	28,597	2,915	19,226	14,630	22,689	1,858	28,467	-	-	-	1,314	3	6,556	-	-	1	0	49	2,179	23,267	383	5,690	160,120
1992	1,351	21,460	7,027	13,698	13,266	24,088	1,998	32,595	0	2	-	1,238	1	5,711	-	-	1	2	41	13,976	44,411	391	4,651	185,908
1993	1,502	8,225	3,305	12,435	10,103	26,311	1,749	19,138	1	-	-	1,129	2	3,766	8	-	9	36	45	13,326	48,223	515	4,691	154,518
1994	2,199	14,731	5,582	10,573	13,883	29,208	1,695	21,149	0	1	-	1,033	10	951	24	-	1	53	80	16,751	54,789	537	2,849	176,100
1995	1,387	11,370	8,720	11,431	21,252	29,690	962	18,937	1	-	-	738	27	4,228	-	0	1	47	99	10,927	63,663	552	3,433	187,465
1996	1,509	14,899	5,588	11,405	21,910	24,510	739	18,921	15	0	-	827	67	3,911	-	-	5	41	83	19,228	77,547	489	2,298	203,993
1997	1,388	20,621	8,766	10,414	23,889	18,575	932	15,110	38	8	-	957	60	3,015	10	5	2	56	50	16,816	47,560	1,094	2,120	171,485
1998	557	14,364	5,139	10,263	10,036	15,984	898	5,023	9	3	-	832	60	2,878	-	0	4	4	194	16,825	40,882	1,501	997	126,454
1999	551	12,268	7,189	11,051	15,257	14,092	699	12,973	8	-	-	999	14	2,457	0	-	14	0	177	8,038	66,215	1,046	1,284	154,332
2000	274	11,137	8,153	11,262	17,620	11,733	924	13,012	-	-	-	1,237	2	3,853	1	-	0	4	1,936	14,507	58,651	1,687	1,942	157,934
2001	282	10,569	5,747	9,872	14,911	8,300	978	10,205	27	0	-	1,473	16	6,042	0	0	-	1	3,038	16,441	46,346	1,896	2,165	138,307
1981-2001 Avg	1,746	18,454	3,631	15,732	13,443	22,524	1,203	24,073	5	1	-	1,285	14	12,509	2	0	5	56	290	9,958	45,089	658	4,355	175,032

NOTE: For 1981-1990, at-sea whiting catch estimates are from Council 1987 and value estimates are based on shoreside prices.

TABLE 3.3.1.1-2a2. Overview of domestic shoreside landings and at-sea deliveries (**percent** of total **exvessel revenue**, and total exvessel revenue in thousands of inflation adjusted dollars) from West Coast (Washington, Oregon, California) ocean area fisheries (0-200 miles) **north of Cape Mendocino**, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council [1997]).

Year	Lincod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Total Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	0.9	9.9	0.1	8.9	2.7	12.1	0.5	35.0	15.8	0.0	-	-	0.3	0.0	17.1	-	-	0.0	0.0	0.0	9.7	14.1	0.1	7.8	215,873
1982	1.4	10.6	0.2	13.5	5.8	14.7	0.4	46.6	12.5	0.0	-	-	0.4	0.0	19.4	-	-	0.0	0.0	0.0	1.9	15.5	0.1	3.7	183,942
1983	2.0	13.7	0.2	14.9	5.4	16.0	0.4	52.5	9.7	0.0	-	-	0.9	0.0	5.9	-	-	0.0	0.1	0.0	3.2	23.8	0.1	3.8	147,235
1984	2.2	14.9	0.5	15.3	6.4	15.5	0.5	55.4	5.5	-	-	-	1.4	0.0	4.3	-	-	0.0	0.3	0.0	1.8	25.5	0.4	5.5	120,235
1985	2.0	5.0	0.6	13.7	9.2	14.8	0.3	45.7	10.3	-	-	-	1.3	0.0	10.0	-	-	0.0	0.3	0.0	2.4	24.8	0.3	4.8	137,596
1986	0.9	9.2	0.4	9.7	6.8	12.9	0.2	40.1	26.4	-	-	-	2.1	0.0	9.7	-	-	0.0	0.0	0.0	3.4	17.5	0.2	0.7	167,471
1987	1.0	9.0	0.4	9.6	6.6	13.0	1.1	40.6	28.0	-	-	-	0.8	0.0	14.4	-	-	0.0	0.0	0.0	1.9	13.2	0.5	0.6	229,400
1988	0.9	12.5	0.6	8.6	5.7	11.3	1.2	40.8	16.0	-	-	-	0.6	0.0	15.8	-	-	0.0	0.0	0.0	4.1	21.6	0.3	0.9	244,355
1989	1.2	17.8	0.6	9.2	5.0	12.8	0.8	47.5	17.2	0.0	-	-	0.5	0.0	8.4	-	-	0.0	0.0	0.0	0.8	23.1	0.1	2.4	215,951
1990	1.0	14.5	0.7	8.3	4.8	12.9	0.5	42.8	16.9	-	-	-	0.6	0.0	6.6	-	-	0.0	0.0	0.0	1.9	27.5	0.1	3.6	196,999
1991	1.4	17.9	1.8	12.0	9.1	14.2	1.2	57.6	17.8	-	-	-	0.8	0.0	4.1	-	-	0.0	0.0	0.0	1.4	14.5	0.2	3.6	160,120
1992	0.7	11.5	3.8	7.4	7.1	13.0	1.1	44.6	17.5	0.0	0.0	-	0.7	0.0	3.1	-	-	0.0	0.0	0.0	7.5	23.9	0.2	2.5	185,908
1993	1.0	5.3	2.1	8.0	6.5	17.0	1.1	41.2	12.4	0.0	-	-	0.7	0.0	2.4	0.0	-	0.0	0.0	0.0	8.6	31.2	0.3	3.0	154,518
1994	1.2	8.4	3.2	6.0	7.9	16.6	1.0	44.2	12.0	0.0	0.0	-	0.6	0.0	0.5	0.0	-	0.0	0.0	0.0	9.5	31.1	0.3	1.6	176,100
1995	0.7	6.1	4.7	6.1	11.3	15.8	0.5	45.2	10.1	0.0	-	-	0.4	0.0	2.3	-	0.0	0.0	0.0	0.1	5.8	34.0	0.3	1.8	187,465
1996	0.7	7.3	2.7	5.6	10.7	12.0	0.4	39.5	9.3	0.0	0.0	-	0.4	0.0	1.9	-	-	0.0	0.0	0.0	9.4	38.0	0.2	1.1	203,993
1997	0.8	12.0	5.1	6.1	13.9	10.8	0.5	49.3	8.8	0.0	0.0	-	0.6	0.0	1.8	0.0	0.0	0.0	0.0	0.0	9.8	27.7	0.6	1.2	171,485
1998	0.4	11.4	4.1	8.1	7.9	12.6	0.7	45.3	4.0	0.0	0.0	-	0.7	0.0	2.3	-	0.0	0.0	0.0	0.2	13.3	32.3	1.2	0.8	126,454
1999	0.4	7.9	4.7	7.2	9.9	9.1	0.5	39.6	8.4	0.0	-	-	0.6	0.0	1.6	0.0	-	0.0	0.0	0.1	5.2	42.9	0.7	0.8	154,332
2000	0.2	7.1	5.2	7.1	11.2	7.4	0.6	38.7	8.2	-	-	-	0.8	0.0	2.4	0.0	-	0.0	0.0	1.2	9.2	37.1	1.1	1.2	157,934
2001	0.2	7.6	4.2	7.1	10.8	6.0	0.7	36.6	7.4	0.0	0.0	-	1.1	0.0	4.4	0.0	0.0	-	0.0	2.2	11.9	33.5	1.4	1.6	138,307
1981-2001 Avg	1.0	10.5	2.1	9.0	7.7	12.9	0.7	43.8	13.8	0.0	0.0	-	0.7	0.0	7.1	0.0	0.0	0.0	0.0	0.2	5.7	25.8	0.4	2.5	175,032

NOTE: For 1981-1990, at-sea whiting catch estimates are from Council 1987 and value estimates are based on shoreside prices.

TABLE 3.3.1.1-2b1. Overview of domestic shoreside landings and at-sea deliveries (exvessel revenue, thousands of inflation adjusted dollars) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) south of Cape Mendocino, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council [1997]).

Year	Lincod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	941	-	6	6,726	3,397	13,002	314	1,071	1,360	66	289	-	990	18,487	0	-	3,635	8,872	24,773	328,127	1,450	5,764	33,484	452,754
1982	921	-	4	7,584	6,280	16,628	355	514	1,336	144	259	-	906	25,937	41	-	3,122	5,882	15,868	217,977	1,389	6,346	37,976	349,468
1983	624	-	1	6,177	4,273	14,096	306	1,186	585	21	223	-	1,469	5,614	41	-	1,798	1,199	8,624	181,750	2,022	5,889	40,139	276,037
1984	671	-	7	6,567	2,451	15,037	417	291	331	1	499	-	1,366	10,981	15	-	2,119	456	10,450	142,854	2,565	9,735	20,064	226,876
1985	500	-	4	8,693	2,965	13,996	395	37	362	69	714	-	874	15,815	-	-	3,946	5,541	7,216	58,895	2,244	5,768	27,045	155,079
1986	434	-	4	9,047	4,449	15,533	322	691	171	170	339	8	1,251	19,479	23	-	3,593	6,549	7,004	59,485	3,604	7,331	32,568	172,056
1987	763	-	2	9,345	3,680	13,906	316	1,329	286	248	294	29	1,497	29,904	33	-	3,207	5,571	7,670	64,915	5,816	6,032	39,474	194,315
1988	801	-	3	7,304	3,064	12,236	233	455	327	605	210	100	1,691	51,989	44	-	2,634	10,710	8,750	70,446	6,543	6,915	45,322	230,382
1989	1,096	-	9	6,941	3,342	14,467	243	429	276	654	231	1	1,747	16,247	-	-	2,515	9,115	7,820	50,608	2,346	7,825	48,275	174,185
1990	843	-	8	5,313	2,803	15,478	182	313	200	1,388	128	-	1,234	14,258	46	-	2,080	5,989	6,780	27,328	3,336	8,583	53,147	149,438
1991	703	-	8	6,698	2,855	12,601	177	94	271	1,451	180	0	1,519	10,772	228	-	2,154	7,426	8,569	18,838	2,899	7,845	57,454	142,743
1992	580	-	2	5,951	3,018	13,671	197	2	517	1,047	156	-	1,722	5,362	-	-	1,121	2,979	7,448	17,289	2,028	7,591	52,077	122,757
1993	645	-	2	4,626	1,540	11,526	314	20	708	1,797	163	1	1,331	6,621	403	-	1,043	11,821	4,403	22,883	1,484	6,351	39,545	117,228
1994	559	-	4	4,315	2,031	11,587	610	867	1,946	1,138	241	1	1,261	7,317	459	854	615	16,308	4,331	25,937	5,143	5,992	37,927	129,443
1995	490	-	4	5,710	5,116	14,459	958	1,239	2,117	747	531	16	1,720	12,990	464	782	887	24,874	5,888	19,326	7,145	7,868	39,761	153,091
1996	485	-	6	5,677	6,453	12,513	1,385	980	2,808	924	851	11	1,836	6,315	596	760	1,071	23,954	5,888	30,700	3,883	8,351	40,555	156,002
1997	480	-	2	4,973	6,060	11,379	1,265	1,246	3,960	1,317	741	0	2,281	7,842	239	919	1,411	22,190	8,823	26,710	8,146	10,213	35,151	155,349
1998	204	-	2	3,013	2,038	10,538	2,228	337	3,910	1,969	808	11	2,176	3,182	484	734	942	1,726	7,085	25,906	8,221	7,601	11,037	94,153
1999	198	-	0	3,264	2,640	7,358	1,966	445	2,799	1,650	1,617	8	2,164	7,682	437	473	1,538	34,958	7,575	26,518	4,147	5,408	17,358	130,203
2000	79	-	1	3,042	3,176	6,070	1,776	239	2,233	1,673	1,835	-	1,378	10,409	618	607	1,310	27,700	10,275	19,198	4,437	6,647	18,716	121,420
2001	105	-	1	2,759	2,601	4,580	979	88	1,676	1,905	532	2	1,529	4,535	579	515	1,095	16,865	9,284	15,064	4,955	6,527	15,674	91,850
1981-2001 Avg	577	-	4	5,892	3,535	12,412	711	565	1,342	904	516	9	1,521	13,892	226	269	1,992	11,937	8,787	69,083	3,991	7,171	35,369	180,706

TABLE 3.3.1.1-2b2. Overview of domestic shoreside landings and at-sea deliveries (**percent** of total **exvessel revenue**, and total **exvessel revenue** thousands of inflation adjusted dollars) from West Coast (Washington, Oregon, California) ocean area fisheries (0-200 miles) **south of Cape Mendocino**, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council (1997)).

Year	Lincod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Total Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	0.2	-	0.0	1.5	0.8	2.9	0.1	5.4	0.2	0.3	0.0	0.1	-	0.2	4.1	0.0	-	0.8	2.0	5.5	72.5	0.3	1.3	7.4	452,754
1982	0.3	-	0.0	2.2	1.8	4.8	0.1	9.1	0.1	0.4	0.0	0.1	-	0.3	7.4	0.0	-	0.9	1.7	4.5	62.4	0.4	1.8	10.9	349,468
1983	0.2	-	0.0	2.2	1.5	5.1	0.1	9.2	0.4	0.2	0.0	0.1	-	0.5	2.0	0.0	-	0.7	0.4	3.1	65.8	0.7	2.1	14.5	276,037
1984	0.3	-	0.0	2.9	1.1	6.6	0.2	11.1	0.1	0.1	0.0	0.2	-	0.6	4.8	0.0	-	0.9	0.2	4.6	63.0	1.1	4.3	8.8	226,876
1985	0.3	-	0.0	5.6	1.9	9.0	0.3	17.1	0.0	0.2	0.0	0.5	-	0.6	10.2	-	-	2.5	3.6	4.7	38.0	1.4	3.7	17.4	155,079
1986	0.3	-	0.0	5.3	2.6	9.0	0.2	17.3	0.4	0.1	0.1	0.2	0.0	0.7	11.3	0.0	-	2.1	3.8	4.1	34.6	2.1	4.3	18.9	172,056
1987	0.4	-	0.0	4.8	1.9	7.2	0.2	14.4	0.7	0.1	0.1	0.2	0.0	0.8	15.4	0.0	-	1.7	2.9	3.9	33.4	3.0	3.1	20.3	194,315
1988	0.3	-	0.0	3.2	1.3	5.3	0.1	10.3	0.2	0.1	0.3	0.1	0.0	0.7	22.6	0.0	-	1.1	4.6	3.8	30.6	2.8	3.0	19.7	230,382
1989	0.6	-	0.0	4.0	1.9	8.3	0.1	15.0	0.2	0.2	0.4	0.1	0.0	1.0	9.3	-	-	1.4	5.2	4.5	29.1	1.3	4.5	27.7	174,185
1990	0.6	-	0.0	3.6	1.9	10.4	0.1	16.5	0.2	0.1	0.9	0.1	-	0.8	9.5	0.0	-	1.4	4.0	4.5	18.3	2.2	5.7	35.6	149,438
1991	0.5	-	0.0	4.7	2.0	8.8	0.1	16.1	0.1	0.2	1.0	0.1	0.0	1.1	7.5	0.2	-	1.5	5.2	6.0	13.2	2.0	5.5	40.3	142,743
1992	0.5	-	0.0	4.8	2.5	11.1	0.2	19.1	0.0	0.4	0.9	0.1	-	1.4	4.4	-	-	0.9	2.4	6.1	14.1	1.7	6.2	42.4	122,757
1993	0.5	-	0.0	3.9	1.3	9.8	0.3	15.9	0.0	0.6	1.5	0.1	0.0	1.1	5.6	0.3	-	0.9	10.1	3.8	19.5	1.3	5.4	33.7	117,228
1994	0.4	-	0.0	3.3	1.6	9.0	0.5	14.8	0.7	1.5	0.9	0.2	0.0	1.0	5.7	0.4	0.7	0.5	12.6	3.3	20.0	4.0	4.6	29.3	129,443
1995	0.3	-	0.0	3.7	3.3	9.4	0.6	17.5	0.8	1.4	0.5	0.3	0.0	1.1	8.5	0.3	0.5	0.6	16.2	3.8	12.6	4.7	5.1	26.0	153,091
1996	0.3	-	0.0	3.6	4.1	8.0	0.9	17.0	0.6	1.8	0.6	0.5	0.0	1.2	4.0	0.4	0.5	0.7	15.4	3.8	19.7	2.5	5.4	26.0	156,002
1997	0.3	-	0.0	3.2	3.9	7.3	0.8	15.6	0.8	2.5	0.8	0.5	0.0	1.5	5.0	0.2	0.6	0.9	14.3	5.7	17.2	5.2	6.6	22.6	155,349
1998	0.2	-	0.0	3.2	2.2	11.2	2.4	19.1	0.4	4.2	2.1	0.9	0.0	2.3	3.4	0.5	0.8	1.0	1.8	7.5	27.5	8.7	8.1	11.7	94,153
1999	0.2	-	0.0	2.5	2.0	5.7	1.5	11.8	0.3	2.1	1.3	1.2	0.0	1.7	5.9	0.3	0.4	1.2	26.8	5.8	20.4	3.2	4.2	13.3	130,203
2000	0.1	-	0.0	2.5	2.6	5.0	1.5	11.6	0.2	1.8	1.4	1.5	-	1.1	8.6	0.5	0.5	1.1	22.8	8.5	15.8	3.7	5.5	15.4	121,420
2001	0.1	-	0.0	3.0	2.8	5.0	1.1	12.0	0.1	1.8	2.1	0.6	0.0	1.7	4.9	0.6	0.6	1.2	18.4	10.1	16.4	5.4	7.1	17.1	91,850
1981-2001 Avg	0.3	-	0.0	3.3	2.0	6.9	0.4	12.8	0.3	0.7	0.5	0.3	0.0	0.8	7.7	0.1	0.1	1.1	6.6	4.9	38.2	2.2	4.0	19.6	180,706

TABLE 3.3.1.1-2c1. Overview of domestic shoreside landings and at-sea deliveries (exvessel revenue, thousands of inflation adjusted dollars) from West Coast (Washinton, Oregon, California) ocean area fisheries (0-200 miles) coastwide, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council [1997]).

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	2,903	**21,422**	246	25,912	9,184	39,021	1,322	35,215	1,362	66	289	718	990	55,498	0	0	3,636	8,873	24,774	349,001	31,894	5,940	50,397	668,663
1982	3,438	**19,535**	299	32,484	16,932	43,603	1,144	23,511	1,336	144	259	713	907	61,603	41	0	3,123	5,897	15,868	221,464	29,896	6,494	44,789	533,482
1983	3,612	**20,220**	295	28,053	12,166	37,607	836	15,427	585	21	223	1,273	1,470	14,378	41	0	1,836	1,325	8,637	186,543	37,056	6,054	45,837	423,496
1984	3,332	**17,907**	619	24,956	10,196	33,727	972	6,904	331	1	499	1,686	1,368	16,394	15	0	2,131	762	10,452	145,062	33,250	10,227	26,708	347,498
1985	3,314	**6,850**	845	27,559	15,625	34,348	852	14,270	362	69	714	1,814	876	30,866	0	0	3,947	6,012	7,218	62,210	36,425	6,182	33,885	294,242
1986	1,912	**15,351**	654	25,224	15,902	37,166	694	44,838	171	170	339	3,603	1,252	36,460	23	0	3,594	6,553	7,031	65,121	32,872	7,685	33,865	340,484
1987	3,026	**20,629**	934	31,285	18,887	43,715	2,742	65,474	286	248	294	1,759	1,501	64,825	33	0	3,211	5,572	7,750	69,272	36,210	7,285	40,957	425,895
1988	2,909	**30,545**	1,546	28,308	17,014	39,914	3,050	39,651	327	605	210	1,505	1,696	92,630	44	0	2,635	10,710	8,795	80,405	59,221	7,838	47,483	477,042
1989	3,628	**38,346**	1,404	26,897	14,150	42,122	2,058	37,505	282	659	231	1,131	1,756	35,066	0	0	2,515	9,125	7,891	52,354	52,291	8,268	53,446	391,125
1990	2,889	**28,485**	1,323	21,762	12,186	40,988	1,240	33,522	200	1,389	128	1,141	1,242	27,707	46	0	2,080	5,989	6,837	31,125	57,515	9,065	60,424	347,283
1991	2,998	28,597	2,923	25,924	17,485	35,290	2,036	28,561	271	1,451	180	1,314	1,522	17,330	228	0	2,155	7,426	8,618	21,017	26,168	8,370	63,324	303,188
1992	1,931	21,460	7,029	19,649	16,283	37,761	2,195	32,597	517	1,049	156	1,238	1,723	11,073	0	0	1,122	2,982	7,489	31,264	46,441	8,014	56,861	308,835
1993	2,147	8,225	3,307	17,062	11,642	37,837	2,063	19,159	709	1,797	163	1,130	1,333	10,388	411	0	1,052	11,857	4,448	36,209	49,707	6,939	44,357	271,941
1994	2,758	14,731	5,587	14,888	15,914	40,796	2,305	22,016	1,952	1,139	241	1,034	1,272	8,270	483	854	616	16,369	4,422	42,699	59,941	6,541	40,900	305,726
1995	1,877	11,370	8,724	17,141	26,368	44,149	1,920	20,176	2,117	747	531	754	1,747	17,225	464	782	889	24,921	5,987	30,272	70,808	8,440	43,260	340,667
1996	1,994	14,899	5,593	17,082	28,363	37,024	2,125	19,901	2,823	924	851	837	1,903	10,226	596	760	1,076	23,994	5,971	49,928	81,432	8,861	42,992	360,158
1997	1,869	20,621	8,768	15,387	29,949	29,955	2,196	16,355	3,998	1,327	741	957	2,342	10,856	249	924	1,413	22,246	8,873	43,526	55,707	11,310	37,388	326,957
1998	762	14,364	5,141	13,277	12,074	26,522	3,126	5,360	3,923	1,972	808	842	2,236	6,060	484	735	946	1,730	7,279	42,731	49,105	9,186	12,113	220,776
1999	748	12,268	7,190	14,315	17,898	21,450	2,665	13,418	2,807	1,650	1,617	1,007	2,177	10,138	437	473	1,551	34,958	7,752	34,556	70,362	6,454	18,692	284,585
2000	353	11,137	8,154	14,304	20,796	17,802	2,700	13,251	2,233	1,673	1,835	1,237	1,380	14,266	619	607	1,310	27,704	12,212	33,705	63,088	8,387	20,718	279,472
2001	387	10,569	5,748	12,631	17,512	12,880	1,957	10,293	1,703	1,905	532	1,474	1,545	10,578	581	515	1,095	16,866	12,322	31,505	51,301	8,515	17,890	230,303
1981-2001 Avg	2,323	18,454	3,635	21,624	16,978	34,937	1,914	24,638	1,347	905	516	1,294	1,535	26,754	228	269	1,997	11,994	9,077	79,046	49,081	7,907	39,823	356,277

NOTE 1: This table includes some catch from the WOC ocean area (0-200 miles) for which it could not be determined whether the landing occurred north or south of Cape Mendocino.
NOTE 2: For 1981-1990, at-sea whiting catch estimates are from Council 1987 and value estimates are based on shoreside prices.

TABLE 3.3.1.1-2c2. Overview of domestic shoreside landings and at-sea deliveries (**percent** of total **exvessel revenue**, and total exvessel revenue in thousands of inflation adjusted dollars) from West Coast (Washington, Oregon, California) ocean area fisheries (0-200 miles) **north of Cape Mendocino**, 1981-2001 (includes commercial tribal fisheries, based on PacFIN data and Council [1997]).

Year	Lincod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Total Groundfish	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
1981	0.4	3.2	0.0	3.9	1.4	5.8	0.2	15.0	5.3	0.2	0.0	0.0	0.1	0.1	8.3	0.0	-	0.5	1.3	3.7	52.2	4.8	0.9	7.5	668,663
1982	0.6	3.7	0.1	6.1	3.2	8.2	0.2	22.0	4.4	0.3	0.0	0.0	0.1	0.2	11.5	0.0	-	0.6	1.1	3.0	41.5	5.6	1.2	8.4	533,482
1983	0.9	4.8	0.1	6.6	2.9	8.9	0.2	24.3	3.6	0.1	0.0	0.1	0.3	0.3	3.4	0.0	-	0.4	0.3	2.0	44.0	8.8	1.4	10.8	423,496
1984	1.0	5.2	0.2	7.2	2.9	9.7	0.3	26.4	2.0	0.1	0.0	0.1	0.5	0.4	4.7	0.0	-	0.6	0.2	3.0	41.7	9.6	2.9	7.7	347,498
1985	1.1	2.3	0.3	9.4	5.3	11.7	0.3	30.4	4.8	0.1	0.0	0.2	0.6	0.3	10.5	-	-	1.3	2.0	2.5	21.1	12.4	2.1	11.5	294,242
1986	0.6	4.5	0.2	7.4	4.7	10.9	0.2	28.5	13.2	0.1	0.0	0.1	1.1	0.4	10.7	0.0	-	1.1	1.9	2.1	19.1	9.7	2.3	9.9	340,484
1987	0.7	4.8	0.2	7.3	4.4	10.3	0.6	28.5	15.4	0.1	0.1	0.1	0.4	0.4	15.2	0.0	-	0.8	1.3	1.8	16.3	8.5	1.7	9.6	425,895
1988	0.6	6.4	0.3	5.9	3.6	8.4	0.6	25.8	8.3	0.1	0.1	0.0	0.3	0.4	19.4	0.0	-	0.6	2.2	1.8	16.9	12.4	1.6	10.0	477,042
1989	0.9	9.8	0.4	6.9	3.6	10.8	0.5	32.9	9.6	0.1	0.2	0.1	0.3	0.4	9.0	-	-	0.6	2.3	2.0	13.4	13.4	2.1	13.7	391,125
1990	0.8	8.2	0.4	6.3	3.5	11.8	0.4	31.3	9.7	0.1	0.4	0.0	0.3	0.4	8.0	0.0	-	0.6	1.7	2.0	9.0	16.6	2.6	17.4	347,283
1991	1.0	9.4	1.0	8.6	5.8	11.6	0.7	38.0	9.4	0.1	0.5	0.1	0.4	0.5	5.7	0.1	-	0.7	2.4	2.8	6.9	8.6	2.8	20.9	303,188
1992	0.6	6.9	2.3	6.4	5.3	12.2	0.7	34.4	10.6	0.2	0.3	0.1	0.4	0.6	3.6	-	-	0.4	1.0	2.4	10.1	15.0	2.6	18.4	308,835
1993	0.8	3.0	1.2	6.3	4.3	13.9	0.8	30.3	7.0	0.3	0.7	0.1	0.4	0.5	3.8	0.2	-	0.4	4.4	1.6	13.3	18.3	2.6	16.3	271,941
1994	0.9	4.8	1.8	4.9	5.2	13.3	0.8	31.7	7.2	0.6	0.4	0.1	0.3	0.4	2.7	0.2	0.3	0.2	5.4	1.4	14.0	19.6	2.1	13.4	305,726
1995	0.6	3.3	2.6	5.0	7.7	13.0	0.6	32.7	5.9	0.6	0.2	0.2	0.2	0.5	5.1	0.1	0.2	0.3	7.3	1.8	8.9	20.8	2.5	12.7	340,667
1996	0.6	4.1	1.6	4.7	7.9	10.3	0.6	29.7	5.5	0.8	0.3	0.2	0.2	0.5	2.8	0.2	0.2	0.3	6.7	1.7	13.9	22.6	2.5	11.9	360,158
1997	0.6	6.3	2.7	4.7	9.2	9.2	0.7	33.3	5.0	1.2	0.4	0.2	0.3	0.7	3.3	0.1	0.3	0.4	6.8	2.7	13.3	17.0	3.5	11.4	326,957
1998	0.3	6.5	2.3	6.0	5.5	12.0	1.4	34.1	2.4	1.8	0.9	0.4	0.4	1.0	2.7	0.2	0.3	0.4	0.8	3.3	19.4	22.2	4.2	5.5	220,776
1999	0.3	4.3	2.5	5.0	6.3	7.5	0.9	26.9	4.7	1.0	0.6	0.6	0.4	0.8	3.6	0.2	0.2	0.5	12.3	2.7	12.1	24.7	2.3	6.6	284,585
2000	0.1	4.0	2.9	5.1	7.4	6.4	1.0	26.9	4.7	0.8	0.6	0.7	0.4	0.5	5.1	0.2	0.2	0.5	9.9	4.4	12.1	22.6	3.0	7.4	279,472
2001	0.2	4.6	2.5	5.5	7.6	5.6	0.8	26.8	4.5	0.7	0.8	0.2	0.6	0.7	4.6	0.3	0.2	0.5	7.3	5.4	13.7	22.3	3.7	7.8	230,303
1981-2001 Avg	0.7	5.2	1.0	6.1	4.8	9.8	0.5	28.0	6.9	0.4	0.3	0.1	0.4	0.4	7.5	0.1	0.1	0.6	3.4	2.5	22.2	13.8	2.2	11.2	356,277

NOTE 1: This table includes some catch from the WOC ocean area (0-200 miles) for which it could not be determined whether the landing occurred north or south of Cape Mendocino.
NOTE 2: For 1981-1990, at-sea whiting catch estimates are from Council 1987 and value estimates are based on shoreside prices.

TABLE 3.3.1.1-3a. Number of vessels landing at least one pound of the species or species group, from West Coast ocean areas, 1981-2001 (na = not available). (Page 1 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
North of Cape Mendocino																									
1981	1,876	na	22	454	482	3,286	316	3,431	316	1	0	0	250	10	6,641	0	0	1	10	1	1,002	1,057	4	524	7,544
1982	1,938	na	23	458	515	2,856	306	3,024	223	1	0	0	240	16	6,037	0	0	3	13	4	265	1,056	7	459	6,885
1983	1,628	na	53	446	484	2,532	372	2,682	160	1	0	0	212	10	5,428	0	0	4	16	57	717	946	32	530	6,371
1984	1,054	na	51	362	401	1,347	304	1,434	97	0	0	0	209	3	1,624	0	0	3	15	4	257	926	42	412	2,827
1985	1,276	na	44	363	430	1,721	330	1,857	123	0	0	0	237	7	3,451	0	0	10	18	3	210	925	27	373	4,590
1986	1,334	na	63	396	472	1,986	417	2,102	207	0	0	0	315	10	3,807	0	0	14	10	3	205	875	16	397	4,789
1987	1,596	na	69	491	487	2,440	605	2,599	241	0	0	0	313	15	3,150	0	0	24	8	90	282	917	22	501	4,505
1988	1,530	na	49	416	460	2,193	613	2,325	233	0	0	0	211	18	2,756	0	0	3	5	74	458	1,038	25	554	4,078
1989	1,618	na	20	416	429	2,250	478	2,374	247	2	0	0	176	23	2,938	0	0	2	5	2	204	1,016	14	578	4,294
1990	1,372	na	27	395	447	2,018	447	2,106	243	0	0	0	181	15	2,485	0	0	3	3	154	282	1,053	18	442	3,854
1991	1,080	52	32	393	474	1,612	437	1,744	226	0	0	0	192	9	2,051	0	0	4	3	35	128	1,023	24	463	3,541
1992	1,096	47	39	395	638	1,527	471	1,645	253	1	2	0	211	7	1,203	0	0	4	10	11	578	1,052	33	477	2,958
1993	1,021	24	33	383	585	1,356	464	1,450	224	1	0	0	282	13	1,066	5	0	5	9	17	576	1,055	53	447	2,716
1994	811	52	42	400	549	965	431	1,090	224	2	1	0	234	20	395	11	0	5	20	38	681	1,045	52	370	2,198
1995	759	45	51	381	542	967	419	1,067	215	1	0	0	113	28	592	0	1	2	19	35	423	955	52	336	2,121
1996	740	40	53	393	626	990	424	1,093	211	1	1	0	167	38	607	0	0	8	9	32	617	912	40	449	2,166
1997	810	40	68	384	616	1,018	451	1,115	198	3	3	0	261	33	512	4	1	4	53	35	817	815	84	464	1,985
1998	633	35	63	350	524	888	398	966	162	3	2	0	211	27	424	0	1	4	33	49	572	810	59	364	1,761
1999	695	34	52	344	474	810	385	912	156	2	0	0	189	16	427	1	0	5	8	40	472	814	37	380	1,688
2000	590	36	49	311	464	783	402	884	147	0	0	0	206	9	515	1	0	1	32	71	547	780	49	456	1,811
2001	625	31	41	293	454	739	381	868	119	2	1	0	269	15	585	1	1	0	28	71	658	753	63	416	1,755

TABLE 3.3.1.1-3a. Number of vessels landing at least one pound of the species or species group, from West Coast ocean areas, 1981-2001 (na = not available). (Page 2 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
South of Cape Mendocino																									
1981	910	0	14	379	177	2,159	468	2,389	37	52	7	22	0	293	2,900	1	0	359	149	324	1,763	236	357	1,820	5,658
1982	986	0	9	407	156	2,255	489	2,474	28	50	7	25	0	319	2,981	13	0	321	130	209	1,233	244	359	1,810	5,375
1983	743	0	13	399	158	1,858	435	2,006	25	40	4	25	0	382	2,322	12	0	348	111	166	1,756	267	427	2,232	4,777
1984	767	0	20	461	172	1,790	468	1,977	27	34	4	27	0	420	2,007	12	0	354	69	164	1,481	283	518	1,684	4,428
1985	788	0	23	481	206	1,727	489	1,951	12	29	10	27	0	388	2,193	0	0	403	138	188	1,222	275	463	1,538	4,401
1986	850	0	31	539	259	1,738	440	1,933	30	27	9	25	1	472	2,198	6	0	430	111	172	898	305	480	1,535	4,314
1987	1,032	0	12	546	245	1,873	452	2,058	38	29	28	28	2	414	2,128	8	0	366	111	228	855	375	469	1,657	4,241
1988	1,012	0	15	509	256	1,803	402	1,961	21	32	41	25	2	406	2,359	11	0	322	130	239	649	425	482	1,630	4,380
1989	1,092	0	29	567	279	1,977	438	2,122	17	24	43	22	0	521	2,364	0	0	295	106	201	625	361	483	1,755	4,503
1990	1,107	0	16	472	268	1,948	423	2,075	13	18	54	18	0	537	1,976	26	0	250	103	254	546	325	510	1,760	4,227
1991	989	0	26	474	270	1,743	420	1,864	15	23	69	20	1	493	1,733	150	0	213	83	208	416	405	508	1,544	4,008
1992	936	0	6	450	305	1,637	488	1,763	10	23	57	18	0	459	1,088	0	0	169	77	439	515	383	461	1,682	3,451
1993	821	0	11	316	204	1,389	432	1,471	6	33	60	17	1	401	1,206	44	0	159	88	288	521	250	397	1,429	3,210
1994	770	0	13	362	237	1,321	493	1,407	37	54	64	22	1	396	997	50	275	112	87	255	461	327	406	1,261	3,094
1995	800	0	10	364	291	1,229	569	1,350	49	54	44	41	3	446	1,171	66	316	98	112	229	426	300	405	1,148	3,076
1996	776	0	26	322	334	1,251	682	1,379	36	52	41	36	3	435	941	68	388	91	143	245	486	264	375	1,190	2,998
1997	739	0	6	370	326	1,167	740	1,361	38	58	56	26	3	435	818	68	341	102	129	233	775	275	372	1,229	2,907
1998	544	0	12	326	273	1,049	587	1,150	28	50	55	35	3	390	640	71	280	98	79	212	639	290	358	1,024	2,448
1999	507	0	10	341	273	1,003	534	1,111	27	48	58	30	6	383	641	70	297	97	151	146	630	241	366	977	2,465
2000	340	0	12	296	237	910	565	1,022	17	45	38	39	0	371	736	56	245	97	149	183	553	228	351	977	2,360
2001	335	0	9	284	215	699	431	829	9	42	42	27	2	378	672	58	190	74	118	147	590	236	323	922	2,182

TABLE 3.3.1.1-3a. Number of vessels landing at least one pound of the species or species group, from West Coast ocean areas, 1981-2001 (na = not available). (Page 3 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
Coastwide [1/]																									
1981	301	na	18	236	184	461	210	488	92	33	10	13	70	115	412	1	0	159	68	109	300	237	177	472	879
1982	338	na	18	237	193	488	218	532	84	27	8	14	77	127	439	5	0	161	64	88	290	221	182	495	934
1983	358	na	27	234	177	528	221	565	75	26	6	18	61	156	460	6	0	155	74	86	385	229	194	523	994
1984	335	na	29	234	174	475	207	524	54	24	4	35	88	144	292	5	0	136	51	76	326	233	222	475	888
1985	330	na	33	223	190	449	193	498	43	26	13	32	89	138	350	0	0	149	72	56	298	220	202	464	897
1986	314	na	38	230	199	454	196	495	66	19	16	24	83	146	385	4	0	155	70	59	270	226	195	457	885
1987	329	na	27	220	161	511	203	557	61	18	32	26	60	128	467	5	0	132	67	96	291	233	244	447	1131
1988	336	na	28	210	160	516	199	564	48	31	44	22	50	133	420	4	0	117	63	92	264	260	238	444	1074
1989	359	na	32	200	176	536	190	588	42	29	47	12	64	151	450	0	0	116	58	89	273	270	242	481	1141
1990	342	na	29	190	176	525	192	558	40	14	55	5	57	146	392	8	0	111	61	115	288	256	250	510	1108
1991	333	16	39	191	155	489	197	547	43	19	64	12	63	156	359	45	0	93	45	91	220	280	259	485	1081
1992	352	26	24	196	172	550	204	596	51	27	65	16	71	149	291	0	0	85	46	134	288	294	257	467	1051
1993	308	17	26	185	166	469	198	517	41	29	48	18	78	133	322	20	0	90	43	117	331	299	241	418	1063
1994	322	17	31	192	157	467	201	524	54	55	58	25	71	145	254	14	84	71	60	125	284	312	245	454	1039
1995	287	17	27	187	142	410	191	455	50	41	37	46	61	139	271	21	79	69	49	117	245	281	198	410	916
1996	285	16	26	169	154	400	195	447	51	47	29	55	70	157	291	14	97	70	49	113	276	254	197	394	912
1997	300	16	24	185	147	445	256	483	48	57	45	39	72	171	290	23	106	75	56	118	360	241	242	392	946
1998	258	13	32	188	158	446	239	480	43	56	50	46	90	186	314	36	104	89	54	135	445	277	270	390	1069
1999	252	12	26	185	164	416	220	464	37	47	48	53	82	180	306	35	86	92	61	95	385	266	247	404	1027
2000	218	14	28	187	159	411	251	458	33	35	39	52	81	167	332	22	92	80	66	110	343	244	257	399	995
2001	226	12	25	175	141	369	202	422	28	42	38	28	93	159	342	26	77	63	54	99	373	269	255	380	987

[1/] Vessels harvesting in West Coast ocean areas (0-200 mile off Washington, Oregon, California) for which a more specific area of harvest was not recorded are included in the West Coast totals but not in the totals for the north and south of Cape Mendocino areas.

TABLE 3.3.1.1-3b. Number of vessels landing more than $1,000 of the species or species group, from West Coast ocean areas [1/] ($1,000 threshold not adjusted for inflation), 1981-2001. (na = not available). (Page 1 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
North of Cape Mendocino																									
1981	181	na	8	248	171	414	51	489	305	0	0	0	34	0	3,158	0	0	0	0	0	761	867	0	144	4,171
1982	251	na	11	283	261	456	51	570	216	0	0	0	48	0	2,826	0	0	0	1	0	211	795	1	80	3,671
1983	243	na	20	284	259	478	48	585	149	0	0	0	49	0	1,174	0	0	2	4	1	394	746	4	84	2,208
1984	245	na	12	262	242	385	61	490	87	0	0	0	67	0	639	0	0	1	9	0	186	759	12	66	1,659
1985	211	na	21	238	275	414	40	514	119	0	0	0	65	0	1,105	0	0	0	11	0	165	728	2	56	2,067
1986	186	na	19	237	280	458	41	566	204	0	0	0	102	0	1,501	0	0	0	1	2	161	722	2	55	2,365
1987	239	na	24	269	297	544	147	652	240	0	0	0	96	0	1,897	0	0	0	0	2	219	735	2	70	2,796
1988	230	na	15	258	316	480	162	604	227	0	0	0	65	1	1,987	0	0	0	0	2	397	823	5	93	3,026
1989	261	na	14	250	277	499	140	629	244	2	0	0	65	2	1,674	0	0	0	1	2	144	816	3	78	2,688
1990	255	na	17	251	279	534	107	642	239	0	0	0	76	2	1,336	0	0	0	0	2	205	881	7	95	2,462
1991	196	52	22	246	355	496	126	692	223	0	0	0	111	0	939	0	0	0	0	3	106	848	10	98	2,217
1992	174	47	29	238	460	518	120	747	252	0	1	0	124	0	560	0	0	0	1	3	496	904	16	100	2,071
1993	191	24	23	246	365	516	151	645	221	0	0	0	156	0	435	2	0	1	3	5	501	938	23	85	1,959
1994	211	52	34	236	346	473	137	619	216	0	0	0	133	2	157	4	0	0	7	11	579	946	19	64	1,788
1995	188	43	40	224	388	466	97	615	210	0	0	0	55	4	340	0	0	1	3	5	331	870	27	87	1,741
1996	189	40	40	231	448	469	99	652	207	1	0	0	76	7	377	0	0	1	3	6	544	854	15	140	1,822
1997	199	40	49	196	434	461	92	645	193	3	1	0	98	10	307	2	1	0	12	3	665	768	42	187	1,693
1998	144	35	46	184	351	430	111	547	151	2	1	0	69	7	278	0	0	1	1	22	488	757	42	106	1,529
1999	177	34	39	201	359	434	110	553	153	2	0	0	84	4	272	0	0	1	0	6	400	764	25	149	1,477
2000	81	36	38	167	379	358	109	529	141	0	0	0	109	0	358	0	0	0	0	30	471	750	33	199	1,590
2001	94	30	32	163	374	350	126	527	117	2	0	0	125	3	436	0	0	0	0	50	565	703	47	180	1,554

TABLE 3.3.1.1-3b. Number of vessels landing more than $1,000 of the species or species group, from West Coast ocean areas [1/] ($1,000 threshold not adjusted for inflation), 1981-2001. (na = not available). (Page 2 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtota	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
South of Cape Mendocino																									
1981	78	0	1	117	83	478	44	555	23	38	5	11	0	62	1,544	0	0	185	91	86	1,201	115	192	898	3,571
1982	85	0	1	122	75	544	44	599	21	32	5	13	0	75	1,871	5	0	181	86	74	725	123	193	868	3,636
1983	87	0	0	130	66	499	33	548	16	30	3	17	0	122	873	6	0	153	61	71	1,090	127	226	830	2,779
1984	73	0	1	135	67	485	46	550	19	18	0	20	0	138	1,020	4	0	163	35	76	889	134	248	813	2,861
1985	74	0	1	131	78	448	55	534	3	11	5	21	0	104	1,288	0	0	233	90	62	707	143	231	811	2,985
1986	83	0	0	131	102	509	53	604	18	15	5	22	1	143	1,470	4	0	234	61	60	516	160	249	831	3,127
1987	115	0	1	113	90	484	52	562	21	12	17	20	2	121	1,665	4	0	212	63	68	514	227	221	956	3,346
1988	116	0	0	112	90	485	43	552	13	18	25	16	2	110	2,041	7	0	186	84	60	390	294	233	914	3,675
1989	125	0	2	118	118	530	45	614	8	15	21	17	0	140	1,698	0	0	172	77	62	340	224	260	989	3,389
1990	115	0	2	116	123	570	37	632	8	11	33	13	0	142	1,391	9	0	144	60	69	279	208	295	952	3,134
1991	108	0	2	115	126	593	38	655	6	9	47	11	0	122	1,156	36	0	125	63	73	234	275	308	905	2,979
1992	93	0	1	107	144	577	42	650	1	11	40	9	0	111	682	0	0	94	46	68	260	211	283	891	2,516
1993	85	0	0	96	98	516	57	567	3	15	41	11	1	85	799	23	0	73	67	64	295	148	263	795	2,431
1994	94	0	2	114	114	521	97	591	29	39	40	10	0	117	702	37	81	51	66	67	299	240	254	704	2,409
1995	79	0	1	121	203	494	128	587	38	29	34	29	2	143	926	43	69	60	95	82	258	246	267	678	2,530
1996	81	0	0	115	236	500	189	626	33	29	33	25	1	150	653	44	68	55	126	93	325	207	239	680	2,363
1997	78	0	1	104	229	496	194	632	37	41	43	18	0	165	627	31	70	61	109	90	487	232	257	665	2,354
1998	57	0	0	93	143	443	210	525	17	37	41	24	2	138	456	40	60	56	58	68	339	253	258	519	1,927
1999	51	0	0	102	140	444	197	542	23	37	38	27	3	147	523	35	71	58	124	72	404	195	241	522	2,033
2000	16	0	0	97	164	427	215	531	13	33	28	33	0	130	636	36	55	59	114	74	342	199	241	532	2,033
2001	21	0	0	77	146	350	150	449	3	28	35	21	1	140	511	43	50	48	96	72	383	208	219	484	1,828

TABLE 3.3.1.1-3b. Number of vessels landing more than $1,000 of the species or species group, from West Coast ocean areas [1/] ($1,000 threshold not adjusted for inflation), 1981-2001. (na = not available). (Page 3 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
Coastwide [2/]																									
1981	259	na	9	356	244	873	95	1,017	315	38	5	11	34	62	4,501	0	0	185	91	86	1,649	956	193	1,042	7,161
1982	335	na	12	391	327	972	95	1,135	221	32	5	13	48	75	4,431	5	0	181	87	74	879	901	194	948	6,887
1983	326	na	20	393	312	953	83	1,096	160	30	3	17	49	122	2,015	6	0	156	65	72	1,368	849	232	914	4,753
1984	311	na	13	380	293	841	107	1,007	103	18	0	20	67	138	1,628	4	0	164	44	76	1,001	862	262	879	4,306
1985	283	na	22	343	336	833	95	1,010	122	11	5	21	65	104	2,353	0	0	233	101	62	808	838	236	868	4,797
1986	269	na	19	343	355	932	94	1,126	221	15	5	22	103	143	2,805	4	0	234	62	62	605	833	251	890	5,143
1987	356	na	25	359	364	985	200	1,164	253	12	17	20	97	121	3,354	4	0	212	63	70	680	930	223	1,024	5,760
1988	345	na	15	354	387	937	205	1,119	235	18	25	16	67	111	3,749	7	0	186	84	62	730	1,073	240	1,002	6,240
1989	383	na	16	359	388	1,006	185	1,220	250	17	22	17	65	142	3,163	0	0	172	78	64	447	1,006	264	1,070	5,731
1990	368	na	19	354	386	1,071	144	1,239	242	11	33	13	76	144	2,595	9	0	144	60	71	459	1,065	304	1,045	5,323
1991	304	52	24	339	460	1,050	164	1,301	229	9	47	11	111	122	1,995	36	0	125	63	76	325	1,072	319	997	4,916
1992	265	47	30	319	578	1,059	163	1,357	253	11	40	9	124	111	1,226	0	0	94	47	71	676	1,085	299	990	4,378
1993	272	24	23	323	448	1,006	207	1,182	224	15	41	11	157	85	1,210	25	0	74	70	68	690	1,048	287	878	4,133
1994	304	52	36	331	434	948	229	1,162	223	39	40	10	133	119	839	41	81	51	72	79	779	1,113	275	772	3,863
1995	263	43	41	316	554	921	226	1,156	226	29	34	29	57	146	1,205	43	69	60	98	87	519	1,075	295	769	3,981
1996	267	40	40	313	643	931	291	1,229	220	29	33	25	77	157	977	44	68	55	129	99	761	1,020	255	826	3,883
1997	272	40	50	275	633	916	287	1,234	204	41	44	18	98	175	912	33	71	61	121	93	1,027	964	299	854	3,776
1998	200	35	46	260	473	835	317	1,030	159	38	41	24	70	145	715	40	60	56	59	90	759	947	305	634	3,253
1999	234	34	39	283	482	848	307	1,060	163	39	38	27	87	151	767	35	71	59	124	78	736	930	266	676	3,303
2000	98	36	38	239	522	757	324	1,026	149	33	28	33	109	130	938	36	55	59	114	102	719	913	275	730	3,367
2001	117	30	32	224	505	671	274	941	118	30	35	21	126	143	883	43	50	48	96	116	860	888	265	659	3,140

[1/] The $1,000 threshold was applied for each area independently and for the coast as a whole. In a few situations, vessels that did not meet the threshold for an area did meet the threshold when all West Coast purchases were taken into account.

[2/] Vessels harvesting in West Coast ocean areas (0-200 mile off Washington, Oregon, California) for which a more specific area of harvest was not recorded are included in the West Coast totals but not in the totals for the north and south of Cape Mendocino areas.

TABLE 3.3.1.1-4a. Number of buyers purchasing at least one pound of the species or species group, from West Coast ocean areas, 1981-2001 (na = not available). (Page 1 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
North of Cape Mendocino																									
1981	181	na	10	107	111	217	78	229	71	2	0	0	70	7	263	0	0	1	8	1	123	176	34	170	440
1982	192	na	9	100	123	230	79	251	65	1	0	0	77	8	252	0	0	7	8	4	94	170	36	165	450
1983	197	na	16	94	108	231	76	257	54	1	0	0	61	9	301	0	0	6	17	11	147	164	40	161	487
1984	173	na	18	85	102	196	72	224	37	0	0	0	88	3	167	0	0	3	8	5	100	154	57	144	406
1985	174	na	21	89	104	199	68	227	34	0	0	0	89	6	224	0	0	6	11	4	98	152	45	152	431
1986	149	na	19	72	98	185	69	197	44	0	0	0	82	9	232	0	0	9	7	3	86	154	46	143	414
1987	151	na	17	78	74	184	82	196	41	0	0	0	58	6	197	0	0	13	5	12	107	137	40	113	396
1988	157	na	16	71	77	187	93	205	38	0	0	0	49	9	177	0	0	3	3	14	99	167	38	117	383
1989	166	na	9	71	72	195	74	215	34	2	0	0	63	8	211	0	0	2	4	2	96	186	42	126	437
1990	161	na	15	65	85	191	83	204	35	0	0	0	57	5	175	0	0	3	3	19	110	179	40	133	424
1991	138	16	20	63	68	169	78	202	36	0	0	0	62	6	160	0	0	5	3	10	84	164	41	132	409
1992	145	26	17	63	76	190	72	226	39	1	2	0	71	4	121	0	0	3	5	9	133	170	41	130	420
1993	129	17	16	67	88	159	83	189	37	1	0	0	77	7	129	2	0	2	7	10	169	205	55	116	456
1994	129	17	18	68	81	159	77	195	41	2	2	0	71	16	70	1	0	6	13	19	153	209	55	137	424
1995	118	17	18	65	84	152	79	180	41	1	0	0	59	13	89	0	1	2	7	16	109	192	41	119	382
1996	126	16	17	65	88	157	87	189	42	3	1	0	69	19	120	0	0	7	6	13	138	183	49	110	391
1997	133	16	20	62	86	169	90	197	36	7	3	0	69	17	104	2	1	4	16	22	161	164	67	87	379
1998	112	13	20	59	80	153	76	166	33	4	2	0	87	11	99	0	1	4	11	25	219	182	64	81	435
1999	109	12	19	52	82	126	71	148	29	3	0	0	78	7	119	1	0	3	6	20	166	175	53	101	400
2000	113	14	15	55	82	144	83	165	26	0	0	0	81	3	138	1	0	2	12	30	149	164	58	92	386
2001	111	12	16	50	70	134	71	149	22	3	1	0	91	4	185	2	1	0	12	29	175	181	68	97	440

TABLE 3.3.1.1-4a. Number of buyers purchasing at least one pound of the species or species group, from West Coast ocean areas, 1981-2001 (na = not available). (Page 2 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
South of Cape Mendocino																									
1981	125	0	8	131	76	254	132	271	25	31	10	13	0	108	152	1	0	159	60	108	180	68	142	307	465
1982	156	0	9	139	73	279	141	305	20	26	8	14	0	119	194	5	0	154	56	84	198	54	148	330	518
1983	166	0	11	144	73	309	146	321	22	25	6	18	0	147	169	6	0	149	57	75	243	68	154	367	532
1984	169	0	11	155	76	294	140	316	17	24	4	35	0	142	135	5	0	134	43	71	228	88	164	334	508
1985	163	0	12	143	92	265	129	290	9	26	13	32	0	132	131	0	0	144	61	52	200	73	155	310	490
1986	174	0	19	167	111	288	130	317	22	19	16	24	1	141	167	4	0	146	63	56	187	76	146	316	501
1987	188	0	11	146	92	342	125	376	23	18	32	26	3	124	281	5	0	120	62	84	187	103	199	339	761
1988	188	0	13	143	88	347	112	377	12	31	44	22	1	128	252	4	0	114	60	78	168	100	195	331	710
1989	202	0	24	134	111	355	119	388	9	27	47	12	1	146	248	0	0	114	54	87	181	91	196	357	724
1990	197	0	14	130	101	356	114	379	7	14	55	5	0	144	227	8	0	109	59	96	179	90	203	377	716
1991	209	0	19	135	93	338	126	366	9	19	64	12	1	154	204	45	0	90	42	81	140	129	214	352	694
1992	215	0	7	138	103	374	137	385	12	26	64	16	0	146	174	0	0	85	42	127	172	137	217	354	674
1993	192	0	10	124	88	326	124	345	5	28	48	18	1	128	197	18	0	89	37	109	169	110	184	313	638
1994	211	0	13	139	87	341	136	367	18	53	56	25	1	133	188	13	84	68	49	108	142	117	190	333	673
1995	187	0	9	133	74	289	128	311	14	40	37	46	4	134	186	21	79	68	42	102	143	103	161	299	578
1996	183	0	14	117	79	280	130	303	14	46	28	55	2	146	175	14	97	68	43	100	147	88	151	291	577
1997	187	0	4	141	78	313	186	334	18	55	43	39	3	156	190	21	105	74	41	97	208	94	180	309	623
1998	173	0	12	146	98	331	182	353	14	53	48	46	4	178	218	36	104	87	44	113	229	113	209	319	684
1999	165	0	7	150	99	317	163	343	13	44	48	53	5	174	192	34	86	90	55	76	232	107	197	313	675
2000	115	0	13	139	88	288	179	315	11	35	39	52	0	166	200	21	92	78	55	81	203	93	202	316	653
2001	124	0	9	131	80	253	139	292	7	40	37	28	2	156	170	24	76	63	43	70	206	99	188	289	589

TABLE 3.3.1.1-4a. Number of buyers purchasing at least one pound of the species or species group, from West Coast ocean areas, 1981-2001 (na = not available). (Page 3 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
Coastwide [17]																									
1981	301	na	18	236	184	461	210	488	92	33	10	13	70	115	412	1	0	159	68	109	300	237	177	472	879
1982	338	na	18	237	193	488	218	532	84	27	8	14	77	127	439	5	0	161	64	88	290	221	182	495	934
1983	358	na	27	234	177	528	221	565	75	26	6	18	61	156	460	6	0	155	74	86	385	229	194	523	994
1984	335	na	29	234	174	475	207	524	54	24	4	35	88	144	292	5	0	136	51	76	326	233	222	475	888
1985	330	na	33	223	190	449	193	498	43	26	13	32	89	138	350	0	0	149	72	56	298	220	202	464	897
1986	314	na	38	230	199	454	196	495	66	19	16	24	83	146	385	4	0	155	70	59	270	226	195	457	885
1987	329	na	27	220	161	511	203	557	61	18	32	26	60	128	467	5	0	132	67	96	291	233	244	447	1131
1988	336	na	28	210	160	516	199	564	48	31	44	22	50	133	420	4	0	117	63	92	264	260	238	444	1074
1989	359	na	32	200	176	536	190	588	42	29	47	12	64	151	450	0	0	116	58	89	273	270	242	481	1141
1990	342	na	29	190	176	525	192	558	40	14	55	5	57	146	392	8	0	111	61	115	288	256	250	510	1108
1991	333	16	39	191	155	489	197	547	43	19	64	12	63	156	359	45	0	93	45	91	220	280	259	485	1081
1992	352	26	24	196	172	550	204	596	51	27	65	16	71	149	291	0	0	85	46	134	288	294	257	467	1051
1993	308	17	26	185	166	469	198	517	41	29	48	18	78	133	322	20	0	90	43	117	331	299	241	418	1063
1994	322	17	31	192	157	467	201	524	54	55	58	25	71	145	254	14	84	71	60	125	284	312	245	454	1039
1995	287	17	27	187	142	410	191	455	50	41	37	46	61	139	271	21	79	69	49	117	245	281	198	410	916
1996	285	16	26	169	154	400	195	447	51	47	29	55	70	157	291	14	97	70	49	113	276	254	197	394	912
1997	300	16	24	185	147	445	256	483	48	57	45	39	72	171	290	23	106	75	56	118	360	241	242	392	946
1998	258	13	32	188	158	446	239	480	43	56	50	46	90	186	314	36	104	89	54	135	445	277	270	390	1069
1999	252	12	26	185	164	416	220	464	37	47	48	53	82	180	306	35	86	92	61	95	385	266	247	404	1027
2000	218	14	28	187	159	411	251	458	33	35	39	52	81	167	332	22	92	80	66	110	343	244	257	399	995
2001	226	12	25	175	141	369	202	422	28	42	38	28	93	159	342	26	77	63	54	99	373	269	255	380	987

[17] Processors buying from West Coast ocean areas (0-200 mile off Washington, Oregon, California) for which a more specific area of harvest was not recorded are included in the West Coast totals but not in the totals for the north and south of Cape Mendocino areas.

TABLE 3.3.3.1-4b. Number of buyers purchasing more than $1,000 of the species or species group, from West Coast ocean areas [1/] ($1,000 threshold not adjusted for inflation), 1981-2001. (na = not available). (Page 1 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
North of Cape Mendocino																									
1981	68	na	4	73	64	106	28	130	63	0	0	0	27	0	153	0	0	0	0	0	93	135	9	87	440
1982	84	na	4	70	87	117	24	143	61	0	0	0	38	0	150	0	0	0	1	0	69	136	9	81	450
1983	74	na	6	68	76	107	22	128	47	0	0	0	29	0	139	0	0	2	5	1	100	134	13	73	487
1984	74	na	5	64	64	86	26	110	33	0	0	0	41	0	106	0	0	1	6	0	75	130	23	74	406
1985	69	na	13	61	75	93	25	117	32	0	0	0	40	0	114	0	0	0	5	0	76	124	16	71	431
1986	61	na	10	55	69	96	26	109	43	0	0	0	41	0	142	0	0	0	1	2	65	123	23	64	414
1987	62	na	8	56	57	95	43	103	41	0	0	0	34	0	137	0	0	0	0	2	76	104	24	52	396
1988	67	na	8	50	63	93	44	109	36	0	0	0	28	1	130	0	0	0	0	2	75	128	25	56	383
1989	63	na	7	44	54	94	38	112	33	2	0	0	32	3	137	0	0	0	1	2	75	142	25	56	437
1990	67	na	11	45	53	93	35	112	34	0	0	0	24	3	120	0	0	0	0	4	83	138	26	68	424
1991	60	16	16	43	50	82	41	113	34	0	0	0	32	1	112	0	0	0	0	3	65	140	25	65	409
1992	60	26	12	45	58	94	39	131	39	0	1	0	50	0	84	0	0	0	1	2	109	151	26	63	420
1993	61	17	11	50	56	97	37	121	36	0	0	0	54	0	75	2	0	1	3	4	133	173	33	65	456
1994	61	17	14	46	55	83	37	113	39	0	0	0	46	2	43	1	0	0	7	7	126	177	30	62	424
1995	62	17	15	47	65	86	33	117	39	0	0	0	45	5	66	0	0	1	2	4	83	160	31	65	382
1996	57	16	13	44	65	89	29	116	40	3	0	0	54	5	87	0	0	2	2	7	112	153	30	63	391
1997	57	16	16	38	64	98	38	126	35	6	1	0	46	5	66	2	1	1	5	4	130	145	49	49	379
1998	42	13	16	33	52	88	32	105	30	1	1	0	50	2	63	0	0	1	2	12	193	153	50	41	435
1999	51	12	14	33	50	79	35	96	29	3	0	0	47	2	81	0	0	2	0	8	128	152	38	45	400
2000	39	14	14	29	53	81	32	95	26	0	0	0	55	0	87	0	0	0	1	15	130	139	43	56	386
2001	36	12	12	30	48	78	33	99	21	2	0	0	62	1	127	0	0	0	0	19	146	151	46	61	440

TABLE 3.3.3.1-4b. Number of buyers purchasing more than $1,000 of the species or species group, from West Coast ocean areas [1/] ($1,000 threshold not adjusted for inflation), 1981-2001. (na = not available). (Page 2 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
South of Cape Mendocino																									
1981	48	0	1	61	39	144	34	152	15	23	6	5	0	40	101	0	0	87	25	38	144	36	95	197	371
1982	48	0	1	56	37	170	44	177	13	23	6	6	0	41	129	1	0	101	29	34	147	34	87	212	417
1983	53	0	0	62	28	192	37	202	9	18	4	8	0	64	111	2	0	88	22	27	161	41	100	221	411
1984	52	0	1	70	38	195	46	209	10	16	0	20	0	75	95	1	0	74	21	32	148	51	103	209	404
1985	44	0	1	71	42	177	51	194	2	10	5	18	0	60	93	0	0	89	35	24	137	42	90	206	392
1986	51	0	0	79	54	186	48	209	10	11	9	16	1	61	122	2	0	92	29	25	132	45	82	194	420
1987	52	0	0	55	42	173	43	187	11	7	23	16	2	53	157	2	0	67	28	33	125	58	123	200	510
1988	51	0	0	52	40	172	28	188	6	19	22	15	1	54	161	2	0	68	29	26	119	65	120	205	507
1989	58	0	2	59	47	182	35	201	5	16	24	6	0	68	144	0	0	70	27	31	122	59	128	210	515
1990	57	0	1	49	48	195	30	205	5	9	31	3	0	64	139	3	0	66	25	37	116	59	136	226	526
1991	68	0	2	57	43	201	36	215	2	14	37	6	0	69	123	7	0	64	21	32	96	86	137	227	510
1992	64	0	1	53	47	212	30	224	1	18	34	9	0	69	109	0	0	52	20	33	113	81	136	215	504
1993	61	0	0	45	44	184	30	198	2	20	30	11	1	61	118	8	0	45	21	38	117	71	116	185	472
1994	62	0	1	44	40	183	37	194	7	35	31	11	0	63	112	6	30	29	28	42	102	80	119	196	467
1995	51	0	1	49	41	163	38	178	9	26	25	30	3	68	133	11	27	36	26	40	98	76	111	177	463
1996	52	0	1	49	43	162	46	178	8	28	20	39	1	72	126	7	29	37	26	40	101	63	99	180	455
1997	49	0	1	48	45	174	58	184	14	35	26	25	0	77	132	9	32	49	26	47	128	69	133	172	480
1998	38	0	1	53	38	202	71	209	4	35	32	35	2	90	145	16	32	49	17	35	141	89	143	151	532
1999	33	0	0	52	44	171	57	192	6	30	29	36	2	90	138	18	31	60	30	31	150	68	126	163	535
2000	23	0	0	45	44	141	51	165	6	26	22	30	0	76	131	8	25	51	24	30	129	64	135	168	493
2001	27	0	0	40	38	122	45	144	1	29	31	19	1	78	112	9	17	43	20	26	136	80	136	144	454

TABLE 3.3.3.1-4b. Number of buyers purchasing more than $1,000 of the species or species group, from West Coast ocean areas [1/] ($1,000 threshold not adjusted for inflation), 1981-2001. (na = not available). (Page 3 of 3)

Year	Lingcod	Whiting, At Sea	Whiting, Shoreside	Flatfish	Sablefish	Rockfish	Other Groundfish	Groundfish Subtotal	Pink Shrimp	Spot Prawn - Trawl	Spot Prawn - Pot	Ridgeback Prawn - Trawl	Pacific Halibut	California Halibut	Salmon	Sea Cucumber	California Sheephead	Gillnet Complex	CPS Squid	CPS Wetfish	HMS	Dungeness Crab	Other Crustaceans	Other Species	Total
Coastwide [2/]																									
1981	116	na	5	132	101	245	62	275	75	23	6	5	27	40	253	0	0	87	25	38	237	166	105	285	664
1982	133	na	5	124	123	283	68	314	73	23	6	6	38	41	277	1	0	101	30	34	215	168	95	294	711
1983	127	na	6	127	103	294	59	324	56	18	4	8	29	64	246	2	0	91	27	28	259	176	115	294	714
1984	126	na	6	131	100	276	72	314	43	16	0	20	41	75	197	1	0	75	27	32	221	172	128	282	667
1985	113	na	14	128	114	264	76	302	34	10	5	18	40	60	207	0	0	89	40	24	212	161	109	281	678
1986	111	na	10	125	116	276	74	308	53	11	9	16	42	61	256	2	0	92	30	27	195	164	105	259	682
1987	111	na	8	107	95	262	83	284	49	7	23	16	35	53	287	2	0	67	28	35	199	161	150	255	776
1988	114	na	9	98	99	258	73	289	40	19	22	15	29	55	286	2	0	68	29	28	191	187	148	262	781
1989	117	na	9	98	96	268	72	304	37	18	26	6	32	71	275	0	0	70	28	33	194	194	156	268	823
1990	120	na	12	89	96	276	64	304	37	9	32	3	24	67	255	3	0	66	25	41	197	185	166	297	828
1991	124	16	18	96	88	274	76	319	34	14	37	6	32	69	232	7	0	64	21	35	158	214	165	297	810
1992	120	26	13	93	98	299	67	347	40	18	34	9	50	69	191	0	0	52	21	35	206	220	160	280	812
1993	115	17	11	89	92	269	65	307	37	20	30	11	55	61	189	10	0	46	24	42	243	229	151	249	809
1994	116	17	15	86	87	253	72	295	42	35	31	11	46	64	153	7	30	29	33	50	217	247	150	255	762
1995	106	17	16	88	96	236	68	280	43	26	25	30	46	72	196	11	27	36	28	44	177	224	141	242	731
1996	103	16	13	87	101	239	72	279	43	29	20	39	55	75	210	7	29	37	28	47	205	203	129	242	737
1997	100	16	17	80	100	255	90	291	43	36	26	25	46	82	197	11	33	49	31	50	250	201	181	222	763
1998	73	13	17	77	82	267	96	290	31	35	33	35	52	91	207	16	32	49	19	46	330	227	192	194	872
1999	79	12	14	75	87	234	85	268	30	33	29	36	49	91	216	18	31	62	30	39	269	208	160	209	817
2000	59	14	14	68	92	212	83	248	29	26	22	30	55	77	215	8	25	51	25	45	251	191	176	221	775
2001	61	12	12	67	81	187	75	230	21	30	31	19	63	79	234	9	17	43	20	45	276	221	181	203	796

[1/] The $1,000 threshold was applied for each area independently and for the coast as a whole. In a few situations, buyers that did not meet the threshold for an area did meet the threshold when all West Coast purchases were taken into account.

[2/] Processors buying from West Coast ocean areas (0-200 mile off Washington, Oregon, California) for which a more specific area of harvest was not recorded are included in the West Coast totals but not in the totals for the north and south of Cape Mendocino areas.

TABLE 3.3.4.1-1 Recreational fishery harvest for 2001 by region for charter and private boats (mt) (RecFIN data). (Page 1 of 1)

Area	Fishing Mode	Lingcod	Nearshore Rockfish	Shelf Rockfish	Other Nearshore Groundfish	Other Shelf Groundfish	Other Groundfish	Total Groundfish	Salmon	Halibut	Highly Migratory Species	Other	Total
Washington	Charter	17	153	11	1	0	0	182	33	105	0	0	320
	Private	15	20	10	3	0	0	48	38	103	0	0	189
	Total	32	175	21	3	0	0	231	70	208	0	0	509
Oregon	Charter	53	274	33	10	0	0	370	91	21	0	7	489
	Private	60	282	12	33	0	0	387	1,108	3	11	176	1,685
	Total	114	557	46	42	0	0	759	1,199	24	11	183	2,176
N. California	Charter	41	351	316	20	0	0	728	187	0	80	53	1,048
	Private	90	290	111	439	15	0	945	1,384	0	387	1,048	3,764
	Total	131	642	426	460	16	0	1,675	1,572	0	467	1,100	4,814
S. California	Charter	4	26	73	47	14	1	165	0	0	348	1,088	1,601
	Private	19	15	112	78	26	2	252	0	0	411	1,907	2,570
	Total	23	41	186	125	41	3	419	0	0	759	2,999	4,177
California Total	Charter	45	377	389	67	14	1	893	187	0	428	1,141	2,649
	Private	109	305	223	517	41	2	1,197	1,384	0	798	2,955	6,334
	Total	154	683	612	585	57	3	2,094	1,572	0	1,226	4,099	8,991
West Coast Total	Charter	115	804	433	78	14	1	1,445	311	126	428	1,148	3,458
	Private	184	607	245	553	41	2	1,632	2,530	106	809	3,131	8,208
	Total	300	1,415	679	630	57	3	3,084	2,841	232	1,237	4,282	11,676

TABLE 3.3.4.1-2 Effort and personal income related to the recreational ocean fisheries off Washington, Oregon, and California in 2001.

Area	Angler Trips (1,000's)			Coastal Community Income Impacts for the Recreational Fishery ($1,000's)		
	Charter	Private	Total	Charter	Private	Total
Washington Coast	33	18	51	$2,973	$672	$3,646
Oregon	59	306	366	$5,391	$10,714	$16,105
North/Central California[a/]	171	607	778	$21,126	$36,492	$57,618
Southern California[b/]	625	1,448	2,072	$78,315	$66,753	$145,068
California Total	796	2,055	2,850	$99,441	$103,246	$202,686
Grand Total	888	2,379	3,267	$107,805	$114,632	$222,437

a/ Includes counties from Monterey north.
b/ Includes counties from San Luis Obispo south.

REVISED TABLE 3.3.6.3-1. Local income impacts associated with comme .shery landings by major port area for 2001 ($1,000). (p. 1 of 2)

	WASHINGTON						OREGON				
Species Group	Puget Sound	NW Olympic Peninsula	Central WA Coast	South WA Coast	Unsp. Wa	WA TOTAL	Astoria-Tillamook	Newport	Coos Bay	Brookings	OR TOTAL
Whiting	0		6,567	724		7,291	7,923	12,557	1,248		21,728
Sablefish	2,582	3,658	1,112	216	1,174	8,741	4,300	3,695	3,187	1,233	12,414
Shortspine Thornyhead	84	31	35	6	0	156	302	233	245	105	885
Longspine Thornyhead	23	0	24	3	0	51	763	448	680	276	2,166
Slope Rockfish	94	46	31	9	8	188	368	95	75	25	563
Dover Sole	631	119	241	86	0	1,077	2,790	854	1,646	435	5,724
Rex Sole	19	13	7	6		44	190	65	209	41	505
Petrale Sole	914	104	123	33		1,174	1,065	859	841	86	2,851
Arrowtooth Flounder	1,239	57	83	17		1,396	642	161	108	3	914
Other Slope Groundfish						0	9	13	56	13	91
Widow Rockfish	264	63	97	102		526	922	592	248	268	2,030
Chilipepper Rockfish						0	186		1	0	187
Yellowtail Rockfish	602	506	179	84		1,371	1,217	405	55	63	1,740
Shelf Rockfish	101	52	9	3	5	170	70	54	43	79	245
English Sole, Flathead Sole	145	68	21	11		245	242	106	229	36	613
Sandabs	1	2	1	0		4	47	7	90	4	149
Other ShelfGroundfish	1,128	202	17	4	0	1,352	132	54	42	111	338
Nearshore Rockfish	0	1	0	0	0	1	61	16	18	589	684
Other Flatfish	28	9	0	1		38	90	7	52	5	154
Other Groundfish						0	47	1	21	280	349
Groundfish Total	7,854	4,930	8,547	1,305	1,187	23,824	21,365	20,219	9,093	3,653	54,330
Pink Shrimp Trawl			2,500	1,377		3,877	7,024	4,126	5,219	554	16,924
Spot Prawn Trawl						0					0
Spot Prawn Pot						0					0
Ridgeback Prawn Trawl						0					0
Pacific Halibut	104	974	25	72	276	1,452	181	450	119	27	778
CA Halibut (except Gillnet)						0			0		0
Salmon	156	1,380	420	94	38	2,089	770	4,310	2,251	460	7,790
Sea Cucumber						0	0		0		0
CA Sheephead						0					0
Gillnet Complex						0					0
Squid	0		0	0		0	0	0	0		0
Other CPS	0		59	0		59	0	0	0		0
HMS	1,277	54	3,857	10,026	4	15,217	3,475	7,089	3,505	241	14,310
Dungeness Crab	3,984	735	18,877	9,202	1,632	34,430	13,839	7,865	4,947	2,338	28,989
Other Crustaceans	236	2	785	58		1,081	62	100	133	67	361
Other Species			18	124		142	129	639	68	484	1,320
Total	13,611	8,075	35,089	22,258	3,137	82,170	46,845	44,798	25,335	7,824	124,802

REVISED TABLE 3.3.6.3-1. Local income impacts associated with commercial fishery landings by major port area for 2001 ($1,000). (p. 2 of 2)

Species Group	CALIFORNIA												
	Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	San Luis Obispo	Santa Barbara	Los Angeles	San Diego	Unsp. CA	CA TOTAL	At Sea Sector	W - O - C TOTAL
Whiting	1,225	181		0	0	0	a/	0			1,407	43,405	73,830
Sablefish	1,294	1,835	2,125	929	1,443	138	143	396	360	0	8,664	59	29,879
Shortspine Thornyhead	163	283	238	114	296	85	155	181	179	0	1,695	0	2,736
Longspine Thornyhead	616	671	574	99	474	109	340	121	31	0	3,034	0	5,251
Slope Rockfish	22	31	204	148	116	76	65	62	5	1	730	17	1,498
Dover Sole	610	1,279	1,223	444	756	225	a/	1			4,539	2	11,342
Rex Sole	126	169	118	40	35	27	a/	0			516	23	1,088
Petrale Sole	159	866	123	725	237	271	a/	1	0		2,408		6,433
Arrowtooth Flounder	6	4	0				a/				11	2	2,322
Other Slope Groundfish	13	54	34	4	112	2		0			219		310
Widow Rockfish	118	303	48	88	9	5	0	4	0		575	77	3,208
Chilipepper Rockfish	3	5	179	359	138	9	0	3	1		697	1	885
Yellowtail Rockfish	40	32	0	8	1	0					81	232	3,424
Shelf Rockfish	61	68	40	155	89	95	56	37	9	0	609	27	1,052
English Sole, Flathead Sole	147	272	75	214	83	55	a/	0			853	0	1,710
Sandabs	73	186	2	1,370	85	6	a/	83	0		1,810		1,963
Other ShelfGroundfish	83	44	37	87	28	53	47	49	44		473	0	2,164
Nearshore Rockfish	570	272	138	317	404	658	284	74	49	1	2,767	0	3,452
Other Flatfish	104	66	0	248	31	12	22	25	0		509		701
Other Groundfish	65	24	143	48	157	395	164	21	18		1,035		1,385
Groundfish Total	5,499	6,645	5,303	5,396	4,495	2,222	1,313	1,059	697	3	32,633	43,846	154,632
Pink Shrimp Trawl	1,395	1,054				217	4				2,669		23,470
Spot Prawn Trawl	0	19	125	895	149	1,107	699	29			3,024		3,024
Spot Prawn Pot		0	47	3	663	72	1,098	1,098	775		3,756		3,756
Ridgeback Prawn Trawl						1	1,166	199			1,366		1,366
Pacific Halibut	0		3			0					3	0	2,232
CA Halibut (except Gillnet)	5	27	0	1,649	213	261	850	299	14	1	3,317		3,317
Salmon	64	344	1,432	6,804	1,526	133	9	3		3	10,318	0	20,197
Sea Cucumber				2		4	1,256	517	4	4	1,786		1,786
CA Sheephead	0			0	1	5	285	164	167		621		621
Gillnet Complex					15	85	1,177	981	338		2,595		2,595
Squid	0	0		12	8,660	85	43,350	51,801	18		103,927	0	103,927
Other CPS	0	0	0	18	15,208	0	6,884	43,361	8	0	65,479	0	65,538
HMS	874	1,719	269	1,237	2,727	4,422	797	23,189	4,913		40,148	0	69,675
Dungeness Crab	4,287	2,335	1,178	8,008	125	58		0			15,991	0	79,409
Other Crustaceans	636	38	2	1,841	22	340	5,728	3,714	4,031	393	16,745		18,187
Other Species	14	10	5,567	733	0	15	6,547	9,697	1,776	10	24,370		25,831
Total	12,774	12,191	13,925	26,599	33,804	9,024	71,164	136,110	12,741	413	328,746	43,846	579,563

a/ Values omitted to preserve confidentiality. Totals include the value.

REVISED TABLE 3.3.6.3-2. Local income impacts associated with comme ,hery landings by major port area for 2001 (% of Total). (p. 1 of 2)

	WASHINGTON						OREGON				
Species Group	Puget Sound	NW Olympic Peninsula	Central WA Coast	South WA Coast	Unsp. Wa	WA TOTAL	Astoria-Tillamook	Newport	Coos Bay	Brookings	OR TOTAL
Whiting	0.0		18.7	3.3		8.9	16.9	28.0	4.9		17.4
Sablefish	19.0	45.3	3.2	1.0	37.4	10.6	9.2	8.2	12.6	15.8	9.9
Shortspine Thornyhead	0.6	0.4	0.1	0.0	0.0	0.2	0.6	0.5	1.0	1.3	0.7
Longspine Thornyhead	0.2	0.0	0.1	0.0	0.0	0.1	1.6	1.0	2.7	3.5	1.7
Slope Rockfish	0.7	0.6	0.1	0.0	0.3	0.2	0.8	0.2	0.3	0.3	0.5
Dover Sole	4.6	1.5	0.7	0.4	0.0	1.3	6.0	1.9	6.5	5.6	4.6
Rex Sole	0.1	0.2	0.0	0.0		0.1	0.4	0.1	0.8	0.5	0.4
Petrale Sole	6.7	1.3	0.4	0.1		1.4	2.3	1.9	3.3	1.1	2.3
Arrowtooth Flounder	9.1	0.7	0.2	0.1		1.7	1.4	0.4	0.4	0.0	0.7
Other Slope Groundfish						0.0	0.0	0.0	0.2	0.2	0.1
Widow Rockfish	1.9	0.8	0.3	0.5		0.6	2.0	1.3	1.0	3.4	1.6
Chilipepper Rockfish						0.0	0.4		0.0	0.0	0.1
Yellowtail Rockfish	4.4	6.3	0.5	0.4		1.7	2.6	0.9	0.2	0.8	1.4
Shelf Rockfish	0.7	0.7	0.0	0.0	0.2	0.2	0.2	0.1	0.2	1.0	0.2
English Sole, Flathead Sole	1.1	0.8	0.1	0.0		0.3	0.5	0.2	0.9	0.5	0.5
Sandabs	0.0	0.0	0.0	0.0		0.0	0.1	0.0	0.4	0.1	0.1
Other ShelfGroundfish	8.3	2.5	0.0	0.0	0.0	1.6	0.3	0.1	0.2	1.4	0.3
Nearshore Rockfish	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	7.5	0.5
Other Flatfish	0.2	0.1	0.0	0.0		0.0	0.2	0.0	0.2	0.1	0.1
Other Groundfish						0.0	0.1	0.0	0.1	3.6	0.3
Groundfish Total	57.7	61.1	24.4	5.9	37.8	29.0	45.6	45.1	35.9	46.7	43.5
Pink Shrimp Trawl			7.1	6.2		4.7	15.0	9.2	20.6	7.1	13.6
Spot Prawn Trawl						0.0					0.0
Spot Prawn Pot						0.0					0.0
Ridgeback Prawn Trawl						0.0					0.0
Pacific Halibut	0.8	12.1	0.1	0.3	8.8	1.8	0.4	1.0	0.5	0.3	0.6
CA Halibut (except Gillnet)						0.0			0.0		0.0
Salmon	1.1	17.1	1.2	0.4	1.2	2.5	1.6	9.6	8.9	5.9	6.2
Sea Cucumber						0.0	0.0		0.0		0.0
CA Sheephead						0.0					0.0
Gillnet Complex						0.0					0.0
Squid	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Other CPS	0.0		0.2	0.0		0.1	0.0	0.0	0.0		0.0
HMS	9.4	0.7	11.0	45.0	0.1	18.5	7.4	15.8	13.8	3.1	11.5
Dungeness Crab	29.3	9.1	53.8	41.3	52.0	41.9	29.5	17.6	19.5	29.9	23.2
Other Crustaceans	1.7	0.0	2.2	0.3		1.3	0.1	0.2	0.5	0.9	0.3
Other Species			0.1	0.6		0.2	0.3	1.4	0.3	6.2	1.1
Total	100	100	100	100	100	100	100	100	100	100	100

TABLE 3.3.6.3-2(R). Local income impacts associated with commercial fishery landings by major port area for 2001 (% of Total). (p. 2 of 2)

Species Group	CALIFORNIA												
	Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	San Luis Obispo	Santa Barbara	Los Angeles	San Diego	Unsp. CA	CA TOTAL	At Sea Sector	W - O - C TOTAL
Whiting	9.6	1.5		0.0	0.0	0.0	a/	0.0			0.4	99.0	12.7
Sablefish	10.1	15.1	15.3	3.5	4.3	1.5	0.2	0.3	2.8	0.0	2.6	0.1	5.2
Shortspine Thornyhead	1.3	2.3	1.7	0.4	0.9	0.9	0.2	0.1	1.4	0.0	0.5	0.0	0.5
Longspine Thornyhead	4.8	5.5	4.1	0.4	1.4	1.2	0.5	0.1	0.2	0.0	0.9	0.0	0.9
Slope Rockfish	0.2	0.3	1.5	0.6	0.3	0.8	0.1	0.0	0.0	0.3	0.2	0.0	0.3
Dover Sole	4.8	10.5	8.8	1.7	2.2	2.5	a/	0.0			1.4	0.0	2.0
Rex Sole	1.0	1.4	0.8	0.1	0.1	0.3	a/	0.0			0.2	0.1	0.2
Petrale Sole	1.2	7.1	0.9	2.7	0.7	3.0	a/	0.0	0.0		0.7		1.1
Arrowtooth Flounder	0.1	0.0	0.0				a/				0.0	0.0	0.4
Other Slope Groundfish	0.1	0.4	0.2	0.0	0.3	0.0		0.0			0.1		0.1
Widow Rockfish	0.9	2.5	0.3	0.3	0.0	0.1	0.0	0.0	0.0		0.2	0.2	0.6
Chilipepper Rockfish	0.0	0.0	1.3	1.3	0.4	0.1	0.0	0.0	0.0		0.2	0.0	0.2
Yellowtail Rockfish	0.3	0.3	0.0	0.0	0.0	0.0					0.0	0.5	0.6
Shelf Rockfish	0.5	0.6	0.3	0.6	0.3	1.0	0.1	0.0	0.1	0.0	0.2	0.1	0.2
English Sole, Flathead Sole	1.2	2.2	0.5	0.8	0.2	0.6	a/	0.0			0.3	0.0	0.3
Sandabs	0.6	1.5	0.0	5.2	0.3	0.1	a/	0.1	0.0		0.6		0.3
Other ShelfGroundfish	0.7	0.4	0.3	0.3	0.1	0.6	0.1	0.0	0.3		0.1	0.0	0.4
Nearshore Rockfish	4.5	2.2	1.0	1.2	1.2	7.3	0.4	0.1	0.4	0.4	0.8	0.0	0.6
Other Flatfish	0.8	0.5	0.0	0.9	0.1	0.1	0.0	0.0	0.0		0.2		0.1
Other Groundfish	0.5	0.2	1.0	0.2	0.5	4.4	0.2	0.0	0.1		0.3		0.2
Groundfish Total	43.1	54.5	38.1	20.3	13.3	24.6	1.8	0.8	5.5	0.7	9.9	100	26.7
Pink Shrimp Trawl	10.9	8.6				2.4	0.0				0.8		4.0
Spot Prawn Trawl	0.0	0.2	0.9	3.4	0.4	12.3	1.0	0.0			0.9		0.5
Spot Prawn Pot		0.0	0.3	0.0	2.0	0.8	1.5	0.8	6.1		1.1		0.6
Ridgeback Prawn Trawl						0.0	1.6	0.1			0.4		0.2
Pacific Halibut	0.0		0.0			0.0					0.0	0.0	0.4
CA Halibut (except Gillnet)	0.0	0.2	0.0	6.2	0.6	2.9	1.2	0.2	0.1	0.2	1.0		0.6
Salmon	0.5	2.8	10.3	25.6	4.5	1.5	0.0	0.0		0.6	3.1	0.0	3.5
Sea Cucumber				0.0		0.0	1.8	0.4	0.0	1.0	0.5		0.3
CA Sheephead	0.0			0.0	0.0	0.1	0.4	0.1	1.3		0.2		0.1
Gillnet Complex					0.0	0.9	1.7	0.7	2.6		0.8		0.4
Squid	0.0	0.0		0.0	25.6	0.9	60.9	38.1	0.1		31.6	0.0	17.9
Other CPS	0.0	0.0	0.0	0.1	45.0	0.0	9.7	31.9	0.1	0.0	19.9	0.0	11.3
HMS	6.8	14.1	1.9	4.7	8.1	49.0	1.1	17.0	38.6		12.2	0.0	12.0
Dungeness Crab	33.6	19.2	8.5	30.1	0.4	0.6		0.0			4.9	0.0	13.7
Other Crustaceans	5.0	0.3	0.0	6.9	0.1	3.8	8.0	2.7	31.6	95.0	5.1		3.1
Other Species	0.1	0.1	40.0	2.8	0.0	0.2	9.2	7.1	13.9	2.5	7.4		4.5
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

a/ Values omitted to preserve confidentiality. Totals include the value.

REVISED TABLE 3.3.6.3-2. Local income impacts associated with ..nercial fishery landings by major port area for 2001 (% of Total). (p. 2 c

Species Group	CALIFORNIA: Crescent City	Eureka	Fort Bragg	San Francisco	Monterey	San Luis Obispo	Santa Barbara	Los Angeles	San Diego	Unsp. CA	CA TOTAL	At Sea Sector	W - O - C TOTAL
Whiting	9.6	1.5		0.0	0.0	0.0	a/	0.0			0.4	99.0	12.7
Sablefish	10.1	15.1	15.3	3.5	4.3	1.5	0.2	0.3	2.8	0.0	2.6	0.1	5.2
Shortspine Thornyhead	1.3	2.3	1.7	0.4	0.9	0.9	0.2	0.1	1.4	0.0	0.5	0.0	0.5
Longspine Thornyhead	4.8	5.5	4.1	0.4	1.4	1.2	0.5	0.1	0.2	0.0	0.9	0.0	0.9
Slope Rockfish	0.2	0.3	1.5	0.6	0.3	0.8	0.1	0.0	0.0	0.3	0.2	0.0	0.3
Dover Sole	4.8	10.5	8.8	1.7	2.2	2.5	a/	0.0			1.4	0.0	2.0
Rex Sole	1.0	1.4	0.8	0.1	0.1	0.3	a/	0.0			0.2	0.1	0.2
Petrale Sole	1.2	7.1	0.9	2.7	0.7	3.0	a/	0.0	0.0		0.7		1.1
Arrowtooth Flounder	0.1	0.0	0.0				a/				0.0	0.0	0.4
Other Slope Groundfish	0.1	0.4	0.2	0.0	0.3	0.0		0.0			0.1		0.1
Widow Rockfish	0.9	2.5	0.3	0.3	0.0	0.1	0.0	0.0	0.0		0.2	0.2	0.6
Chilipepper Rockfish	0.0	0.0	1.3	1.3	0.4	0.1	0.0	0.0	0.0		0.2	0.0	0.2
Yellowtail Rockfish	0.3	0.3	0.0	0.0	0.0	0.0					0.0	0.5	0.6
Shelf Rockfish	0.5	0.6	0.3	0.6	0.3	1.0	0.1	0.0	0.1	0.0	0.2	0.1	0.2
English Sole, Flathead Sole	1.2	2.2	0.5	0.8	0.2	0.6	a/	0.0			0.3	0.0	0.3
Sandabs	0.6	1.5	0.0	5.2	0.3	0.1	a/	0.1	0.0		0.6		0.3
Other ShelfGroundfish	0.7	0.4	0.3	0.3	0.1	0.6	0.1	0.0	0.3		0.1	0.0	0.4
Nearshore Rockfish	4.5	2.2	1.0	1.2	1.2	7.3	0.4	0.1	0.4	0.4	0.8	0.0	0.6
Other Flatfish	0.8	0.5	0.0	0.9	0.1	0.1	0.0	0.0	0.0		0.2		0.1
Other Groundfish	0.5	0.2	1.0	0.2	0.5	4.4	0.2	0.0	0.1		0.3		0.2
Groundfish Total	43.1	54.5	38.1	20.3	13.3	24.6	1.8	0.8	5.5	0.7	9.9	100	26.7
Pink Shrimp Trawl	10.9	8.6				2.4	0.0				0.8		4.0
Spot Prawn Trawl	0.0	0.2	0.9	3.4	0.4	12.3	1.0	0.0			0.9		0.5
Spot Prawn Pot		0.0	0.3	0.0	2.0	0.8	1.5	0.8	6.1		1.1		0.6
Ridgeback Prawn Trawl						0.0	1.6	0.1			0.4		0.2
Pacific Halibut	0.0		0.0			0.0					0.0	0.0	0.4
CA Halibut (except Gillnet)	0.0	0.2	0.0	6.2	0.6	2.9	1.2	0.2	0.1	0.2	1.0		0.6
Salmon	0.5	2.8	10.3	25.6	4.5	1.5	0.0	0.0		0.6	3.1	0.0	3.5
Sea Cucumber				0.0		0.0	1.8	0.4	0.0	1.0	0.5		0.3
CA Sheephead	0.0			0.0	0.0	0.1	0.4	0.1	1.3		0.2		0.1
Gillnet Complex					0.0	0.9	1.7	0.7	2.6		0.8		0.4
Squid	0.0	0.0		0.0	25.6	0.9	60.9	38.1	0.1		31.6	0.0	17.9
Other CPS	0.0	0.0	0.0	0.1	45.0	0.0	9.7	31.9	0.1	0.0	19.9	0.0	11.3
HMS	6.8	14.1	1.9	4.7	8.1	49.0	1.1	17.0	38.6		12.2	0.0	12.0
Dungeness Crab	33.6	19.2	8.5	30.1	0.4	0.6		0.0			4.9	0.0	13.7
Other Crustaceans	5.0	0.3	0.0	6.9	0.1	3.8	8.0	2.7	31.6	95.0	5.1		3.1
Other Species	0.1	0.1	40.0	2.8	0.0	0.2	9.2	7.1	13.9	2.5	7.4		4.5
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

a/ Values omitted to preserve confidentiality. Totals include the value.

4.0 IMPACTS OF THE ALTERNATIVES

Chapter 4 is organized to parallel the previous chapter, with sections on habitat and ecosystem, affected species and stocks, socioeconomic impacts, and effects on the management system. The description of the affected environment in the previous chapter described baseline conditions—the state of the environment before the proposed action is implemented—and provides the information needed to evaluate the impacts of the alternatives presented in this chapter. NEPA requires seven types of effects to be evaluated: direct and indirect, cumulative, short and long term, and irreversible and irretrievable effects. Direct and indirect effects are described in Sections 4.1 through 4.4. Cumulative effects are summarized in Section 4.7 while Section 4.8 reviews irreversible and irretrievable impacts.

4.1 Impacts to Ecosystem, Habitat, and Biodiversity

Section 11.10.3.1 of the Groundfish FMP describes adverse impacts of fishing gear to EFH, including ecosystem effects, in general terms. Direct effects to ecosystems and habitats are largely indirect. Ecosystem effects are, almost by definition, indirect. Overfishing has reduced some fish stocks to levels that are a small fraction of estimated virgin biomass and may affect trophic relationships: these species are less available both as prey and predators. Direct effects to habitat result from the deployment of fishing gear that damages benthic habitat. Habitat modification can also have indirect ecological effects because different species may be better adapted to the altered habitat, displacing other species. Bottom trawl footrope restrictions implemented by the Council make it difficult for fishers to access rock piles and other areas of complex topography (due to the risk of gear damage). This helps protect important, complex habitat and creates defacto refugia for species preferring that habitat type. Biodiversity impacts are directly and indirectly related to overfishing. Overfished species may become locally extinct in a part of their former range and there is some risk of actual species extinction. It is unlikely that such extinctions would be a direct result of overfishing, in the sense that all organisms were removed by fishing. However, the population could be reduced to such a low level that unfavorable environmental conditions or biological and behavioral constraints (inhibiting successful reproduction for example) could subsequently result in localized or species extinction. Given the current state of knowledge and available data, It is not possible to quantitatively evaluate the ecosystem, habitat, and biodiversity effects of the alternatives. Instead, the alternatives are evaluated qualitatively below.

The effects of fishery management practices on the physical environment typically include such things as fishing gear effects on the ocean floor, changes in water quality associated with vessel traffic, and fish processing discards as a result of fishing practices. There are no data to suggest that characteristics of the California Current System or topography of the coast change with fishery management or fishing practices, however, there is information to indicate that fishery management and fishing practices may have an effect on EFH.

In general, potential bottom trawl fishing-related impacts to groundfish habitat take the form of lost or discarded fishing gear and direct disturbance of the seafloor from contact by trawl nets. While the effects of fishing on darkblotched rockfish habitat have not been directly investigated, there is some research exploring how gear affects habitat. Auster and Langton (1999) reviewed a variety of studies reporting habitat effects due to fishing for a wide range of habitats and gear types. Commonalities of all studies included immediate effects on species composition and diversity and a reduction of habitat complexity.

Bottom trawling gear is known to modify seafloor habitats by altering benthic habitat complexity and by removing or damaging infauna and sessile organisms (Friedlander et al. 1999; Freese et al. 1999). In a study on the shelf and slope off California, high-resolution sidescan-sonar images of the Eureka area revealed deep gouges on the seafloor believed to be caused by trawl doors (Friedlander et al. 1999). The effects of bottom trawling on a 'hard bottom' (pebble, cobble, and boulder) seafloor was also investigated in the Gulf of Alaska and results indicated that a significant number of boulders were displaced and emergent epifauna were removed or damaged after a single pass with trawl gear. Casual observations during the Freese et al. (1999)

study revealed that Sebastes species use cobble-boulder and epifaunal invertebrates for cover. When boulders are displaced they can still provide cover, but when piles of boulders are displaced it reduces the number and complexity of crevices (Freese et al. 1999).

Limited qualitative observations of fish traps, longlines, and gill nets dragged across the seafloor during set and retrieval showed results similar to mobile gear, such that some types of organisms living on the seabed were dislodged. Quantitative studies of acute and chronic effects of fixed gear on habitat have not been conducted (Auster and Langton 1999).

In addition to fishing activities, humans have many direct and indirect effects on groundfish habitat. While non-fishing human impacts have not been directly assessed on darkblotched rockfish habitat, a study of flatfish in Puget Sound, Washington indicated that anthropogenic stressors included chemical contaminant exposure and alteration of nearshore nursery habitats (Johnson et al. 1998). The New England Fishery Management Council compiled a list of human-induced threats to fish habitat that may be used as a guide to factors affecting groundfish species off the west coast. Oil, heavy metals, acid, chlorine, radioactive waste, herbicides and pesticides, sediments, greenhouse gases, and ozone loss are thought to be chemical factors that affect fish habitat. Biological threats can include the introduction of non-indigenous species, stimulation of nuisance and toxic algae, and the spread of disease. Human activities that may physically threaten fish habitat are dredging and disposal, mineral harvesting, vessel activity, shoreline alteration, and debris (Wilbur and Pentony 1999).

In the last few decades, marine debris has also been recognized as posing a risk to marine organisms via entanglement and ingestion. Seafloor debris was surveyed from Point Conception, California to the United States - Mexico international border at depths of 10 to 200 m and anthropogenic debris occurred on approximately 14 percent of the mainland shelf. Of the debris sampled, discarded fishing gear had the largest spatial coverage, followed by plastic, metal, and other debris (e.g., shoe soles and automobile parts) (Moore and Allen 1999). Less is known about the quantity of marine debris off Washington and Oregon, but it may be at levels that could negatively affect marine organisms.

The alternatives for the 2003 Pacific Coast groundfish specifications and management measures may have an effect on EFH; however, it is likely that effects on EFH under any of the alternatives will be reduced from historic levels. Using the size of trip limits as a measure of fishing effort, it is expected that the *Low OY* alternative will have the least impact on EFH as it will likely result in the least fishing effort. Because trip limits under the *Medium OY* and *No Action* alternatives are expected to be similar, these alternatives will likely result in comparable intensities of fishing effort and effects on EFH. It is expected that the *High OY* Alternative will have the greatest relative effect on EFH because it provides for the highest trip limits which may result in the highest intensity of fishing effort. It is difficult to predict the effects of the Pacific Coast groundfish fishery on EFH because footrope restrictions, limited periods of bottom trawl activity, time/area closures, depth-based management measures, and gear restrictions all modify and/or minimize the effects of fishing activities on EFH. As more information is gathered about the effects of fishing and non-fishing human activities on EFH, additional management measures may be taken to mitigate the effects on EFH if necessary.

4.2 Impacts to the Biological Environment - Managed Species

Fishing mortality directly affects stocks by removing some proportion of the population on a periodic basis. The framework that has been developed by fishery biologists and managers, based on the MSY concept, accounts for all sources of mortality, albeit often imperfectly due to limits on our knowledge. Population modeling is dynamic because reproduction, growth, and survival must all be considered. In this sense, a comprehensive assessment of the direct, indirect and cumulative effects of the proposed action on a given species' stock size is "built into" the models used to estimate how many fish can be harvested sustainably. National Standard Guidelines and the Groundfish FMP provide a framework for evaluating harvest specification alternatives (OY levels) and the management measures intended to achieve a given harvest level. Harvest levels that are not in accord with this framework—because they allow overfishing or fishing at a rate that prevents stocks from rebuilding to or maintaining MSY biomass—may be considered to have a significant impact on managed stocks. Harvest level specification alternatives represent a range of values that may fall within this framework; variation is due to various sources of uncertainty, representing different levels of risk. (Risk and uncertainty associated with alternatives are evaluated in Section 4.5.) Different harvest levels is only the first consideration in evaluating impacts. Management measure alternatives (including those for recreational, tribal, and non-groundfish fisheries) ultimately determine the number of fish that will be harvested. These alternatives must be evaluated in terms of their likelihood of achieving a given harvest level. They may result in a harvest that is above a sustainable rate as determined by the management framework, and therefore would have significant biological impacts, or result in harvests below a given OY level, resulting in socioeconomic impacts because of foregone income and fishing opportunities. (Harvests above OY are unlikely because management measures can be changed throughout the year in order to slow harvest rates. However, harvests below OY for a given species have occurred past years because of the difficulty in managing multi-species fisheries.) These socioeconomic impacts are discussed in Section 4.3.

4.2.1 Groundfish Resources

4.2.1.1 Overfished Stocks

Harvest levels for overfished groundfish species considered and analyzed in this EIS for 2003 West Coast fisheries comport with rebuilding constraints specified in the MSA, FMP, NSGs, and other legal mandates. Among these mandates are consideration of rebuilding strategies that have at least a 50% probability of rebuilding (achieving a spawning abundance of $B_{40\%}$ in West Coast groundfish management) within the maximum allowable time (T_{MAX}). The NSGs specify that rebuilding must occur within ten years even if all sources of fishing-related mortality need to be eliminated (F=0). If rebuilding is estimated to take longer than ten years at F=0, then the maximum allowable rebuilding time specified in the NSGs is the minimum possible rebuilding time (T_{MIN} = rebuilding at F=0) plus one mean generation time. One mean generation time is the average length of time it takes for a spawning female to replace herself in the population and is an index of relative productivity. All of these rebuilding specifications are determined in rebuilding analyses that are generated from peer reviewed stock assessments and a rebuilding program developed by Punt (2002). The standards, procedures, methodological approaches, and other terms of reference for conducting stock assessments and rebuilding analyses are formally reviewed, endorsed, and recommended by the Council's SSC. These documents, once formally endorsed by the SSC and adopted by the Council, are considered the best available science for rebuilding overfished groundfish species and prescribing harvest levels and management measures for the West Coast groundfish fishery. Table 4.2.1.1-1 shows the 2003 harvest specifications under the harvest alternatives analyzed in this EIS for overfished West Coast groundfish stocks.

Bocaccio

Management constraints imposed for bocaccio only consider very low harvest levels in 2003; significantly lower than those imposed for 2002 management. In fact the *Low OY* alternative is 0 mt. The original *High OY* alternative of 5.8 mt specified by the Council at its June 2002 meeting was as per a modeled result consistent with any new rebuilding analysis for bocaccio as recommended by the SSC (this was subsequently defined as the *Medium OY* alternative in Table 2.1-1: see discussion below). Specifically, the SSC Guidelines for Rebuilding Analyses recommended a non-overlapping time series of historical recruits and spawner estimates for bocaccio (and any other groundfish stock where recruitment is assumed to be primarily influenced by spawner density-dependence) be used to estimate virgin spawning biomass (B_0) and predict future recruitment. Under the SSC advice, an earlier recruitment time series should be used to calculate B_0 because early recruitment is assumed to best reflect pre-fishery levels. Additionally, according to the SSC's recommendation for conducting rebuilding analyses, a more recent and non-overlapping time series of recruits per spawner (R/S) should be used to predict future recruitment since the effect of the current low spawning biomass would be more heavily weighted. This modeled result was subsequently estimated to be 0 mt for 2003.

The high bocaccio OY of 5.8 mt may therefore be unsupportable. This OY was based on the first draft bocaccio rebuilding analysis conducted by MacCall and He (2002a) that was adopted by the Council at its June 2002 meeting. The SSC-endorsed groundfish rebuilding program (Punt 2002) used to conduct the 2002 bocaccio rebuilding analysis was subsequently modified to extend the rebuilding time horizon to allow rebuilding realizations for yelloweye rockfish. Since this modification, bocaccio rebuilding trajectories that allow some harvest in 2003 and are estimated to have at least a 50% probability of timely rebuilding cannot be replicated. Also, if the aforementioned SSC advice to segregate the R/S time series to estimate B_0 and future recruitment of bocaccio is considered the best available science, no harvest or fishing mortality rate greater than zero is supported under any circumstance other than a mixed stock exception. Subsequent re-analysis of bocaccio rebuilding since the June 2002 meeting did not fully conform to the SSC guidelines in that future recruitment was predicted using the full time series of R/S, which would theoretically predict a higher productivity. The rationale was there is no temporal or biomass trend in the R/S time series. Furthermore, if the high 1963 R/S value is not used in the time series to predict future recruitment, bocaccio abundance does not tend to increase even at F = 0. The estimated 2003 bocaccio OY in this revised rebuilding analysis is 0 mt (MacCall and He 2002b). It is unclear, given our current understanding of bocaccio productivity, what actions other than eliminating fishing-related mortality would mitigate bocaccio rebuilding. The issue of the "high" range of alternative bocaccio harvests in 2003 between 0 and 5.8 mt is a practically moot point anyway. The current ability of management systems to estimate or manage for a total fishing-related mortality within this range may be inadequate to differentiate between these considered harvest limits.

A critical uncertainty in bocaccio rebuilding is whether future recruitment of bocaccio is more driven by environmental factors or spawning stock size. MacCall and He (2002a, 2002b) assumed stock recruitment is driven by stock size or, in scientific parlance, exhibits density-dependence. If environmental factors drive future recruitment to a greater degree than is currently assumed, the outlook for bocaccio might be more optimistic. However, a significantly large proportion of past recruitments have been estimated to be below the replacement line (the theoretical point in a stock-recruitment relationship where spawning populations produce enough new recruits on average to replace their numbers and maintain an equilibrium spawning biomass) (Figure 4.2.1.1-1). This is strong evidence that bocaccio population productivity is very low and rebuilding will likely be a slow, protracted process, even under a very conservative management regime.

Estimated natural mortality (M) for bocaccio is also uncertain. MacCall (2002) assumed M = 0.2 which was assumed in the previous assessment done by MacCall et al. (1999). Past bocaccio assessments assumed a range of natural mortality rates from M = 0.15 to 0.25 (Bence and Hightower 1990, Bence and Rogers 1992, Ralston et al. 1996, and MacCall et al. 1999). Ralston et al. (1996) estimated a fixed natural mortality rate of M = 0.15 by profiling natural mortality under the estimated stock size and likelihood fit of the baseline model. The likelihood surface across the range of M = 0.15 to 0.2 was relatively flat. The assumed natural mortality rate, in this case, was M = 0.15 in light of evidence of increased longevity for the species. MacCall (2002) did a sensitivity analysis of assumed natural mortality rates across the range of M = 0.15 to 0.25. The analysis indicated a similar current biomass relative to B_0 across the range (4.0% at M = 0.15, 4.3% at M = 0.20, and 5.2% at M = 0.25). Use of M = 0.15 yields an average R/S that implies sustainability at a higher fishing rate while M = 0.25 yields a sustainable fishing rate lower than the current proxy of $F_{50\%}$. Assuming M = 0.15, rebuilding times would be shorter (67 years at F = 0) and the estimated 2003 OY would be approximately 4.4 mt (MacCall pers. comm.). The STAR Panel and SSC agreed with the use of M = 0.2 in the new assessment and rebuilding analysis.

There have been widespread anecdotal reports of a larger abundance of juvenile bocaccio than inferred by MacCall (2002). There are two considerations: the strengths of the 1999 and 2002 year classes. Lacking any other evidence, we assumed these are equal in strength. A reasonable range of possibilities goes from the low end, where the strength of the 1999 year class estimated in the 2002 assessment is correct (the 1X case), to the high end, where the 1999 year class is twice as large as was estimated (the 2X case). In the 2X case, the 1999 year class is still a little smaller than the1992 year class. The 1X case examines the consequences of the 2002 assessment results being as is, and assuming the 2002 year class is the same size as the 1999 year class. The result is an OY of 0.4 tons, and a maximum probability of rebuilding by T_{MAX} of 50.2%. T_{MIN} is 94 yr. The 2X case assumes the 1999 year class is twice as large as was estimated and the 2002 year class is equally large. The result is an OY of 19 tons, and a maximum probability of rebuilding by T_{MAX} of 56.4%. T_{MIN} is 81 yr.

With such a low potential productivity and the vulnerability of the stock to further declines, how much fishing mortality can bocaccio sustain at current levels of abundance? MacCall and He (2002b) modeled the probability of no further declines in bocaccio abundance at different levels of fishing mortality (Table 4.2.1.1-2, Figure 4.2.1.1-2). They determined that a fishing mortality rate of F = 0.094 had a 50% probability of causing no further decline in the next 100 years. This fishing mortality rate would result in a 2003 harvest level of 79 mt. There would be a 90% probability of no further decline in the next 100 years if all sources of fishing mortality were eliminated (F = 0).

All of these bocaccio rebuilding considerations and uncertainties were discussed by the GMT and the Groundfish Subcommittee of the SSC in August 2002. There was general agreement that MacCall and He (2002b) modeled bocaccio rebuilding appropriately and the revisions were reasonable. Officials from NOAA Fisheries were present at that meeting and a subsequent meeting of the Council's Ad Hoc Allocation Committee. They discussed the appropriateness of allowing a minimal fishing mortality of bocaccio in 2003 to avoid serious and widespread disruption of fisheries off California that target healthy marine species and have been shown to have a minimal impact on bocaccio. According to NOAA officials, the NSGs never contemplated a situation where rebuilding would pre-empt all sources of potential fishing mortality. The fact that the stock cannot be rebuilt within T_{MAX} was also not contemplated. Therefore, the judgement is that the NSGs are inadequate in this case. NOAA Fisheries therefore went to the MSA for guidance. The biology of the stock and the needs of fishing communities argues against a zero fishing mortality scenario. What criteria should be used to determine a level of incidental fishing mortality? NOAA Fisheries feels the appropriate criteria are consistency with the MSA, a high probability of not driving the stock to extinction or into further decline, not jeopardize future rebuilding, and not drive the stock to be listed under the ESA. The bocaccio sustainability analysis (Table 4.2.1.1-1) will be the guide for this decision. The guidance is to adopt a 2003 OY as close to 0 mt as possible and no greater than 20 mt. The uncertainty in accounting for bocaccio bycatch needs to be taken into account. Whatever management regime is recommended by the Council, the Council, NOAA Fisheries, and the states need to have adequate observer coverage. Incidental catch needs to account for all sources of mortality including research catch. NOAA Fisheries is not invoking a Mixed Stock Exception.

Based on the above considerations, the Allocation Committee specified a *High OY* of ≤20 mt for bocaccio for 2003. They agreed that the management target should be as close to 0 mt as practicable while allowing fishing opportunities with a negligible bocaccio impact. MacCall and He (2002b) estimate that this fishing mortality rate would have a greater than 80% probability of causing no further decline in the next 100 years.

Canary Rockfish

The alternative harvest levels considered for canary rockfish are based on alternative probabilities of rebuilding within T_{MAX} (Table 4.2.1.1-1; Methot and Piner 2002b). The catch sharing scenarios depicted for each harvest alternative in Table 2.1-1 are not allocations or recommendations thereof, but the rebuilding model result of the effect of the recreational fishery taking a greater proportion of younger fish and having a greater "per-ton" impact on rebuilding. The *Low OY* harvest alternative is based on a rebuilding trajectory with an 80% probability of rebuilding within T_{MAX}, while the *Medium OY* and *High OY* alternatives are on rebuilding trajectories consistent with 60% and 50% probabilities, respectively.

Rebuilding canary rockfish will significantly constrain harvests on the West Coast, especially north of Cape Mendocino since the bocaccio stock is the binding constraint on the southern shelf. Harvest levels considered for 2003 are about half those used in annual management since canary rockfish rebuilding measures were first adopted in 2001. Although canary rockfish are a rocky reef shelf species, they are readily caught in midwater trawl fisheries at times, such as those trawl fisheries targeting yellowtail rockfish and pink shrimp. The small footrope restrictions imposed for groundfish trawls landing shelf rockfish, and considerations for hard grate finfish excluders in shrimp trawls in recent years were largely influenced by the need to reduce canary rockfish bycatch. Low sublimits in West Coast marine recreational fisheries and no retention regulations (or low landing limits) in commercial fisheries were also imposed to reduce canary rockfish targeting and bycatch. Reducing canary fishing mortality in 2003 to about half will require a much more conservative management regime. Bocaccio rebuilding measures considered for 2003 and beyond will likely benefit canary rebuilding in the southern end of their range. However, further constraints to shelf fisheries north of Cape Mendocino are likely needed.

Methot and Piner (2002a) describe the uncertainties inherent in the canary rockfish assessment. Foremost, estimating past recruitment and predicting future recruitment provide the basis for any understanding of the productive potential of the stock and the ability to sustain harvest. The strong pattern of declining recruitment at low spawning stock levels was noted in previous assessments (Crone et al. 1999, Williams et al. 1999) and is now quantified by fitting a spawner-recruitment curve. This curve allows calculation of MSY, the fishing mortality rate that would produce MSY (F_{MSY}), and the equilibrium level of spawning stock biomass associated with MSY (B_{MSY}). The curve also provides a basis for calculation of the level of unfished recruitment (R_0) and projection of recruitment levels into the future.

The critical factor influencing the rate of rebuilding is the degree to which recruitments will be above the replacement level, thus able to rebuild the stock and potentially support a small harvest during rebuilding. Since the level of recruitment is not much above the replacement level (Figure 4.2.1.1-3), rebuilding will be extremely slow. The expected level of recruitment is determined by the steepness parameter of the Beverton-Holt formula. Methot and Piner (2002a) provide results for three levels of steepness: the steepness level initially estimated within the model (0.289, lower dashed line in Figure 4.2.1.1-3), the best-estimate of steepness obtained from a focused examination of the recruitment-spawner information (0.33, solid line), and a higher steepness level (0.36, upper dashed line) which provides a contrast to the 0.289 level. If steepness is 0.289, rather than 0.33, then T_{MIN} is extended by 20 years. Steepness levels near 0.7 are normal and Dorn's (2000) review of steepness for rockfish found an average value near 0.6 when he included rockfishes off Alaska and off the west coast. If future steepness for canary rockfish increases to 0.5, rebuilding will accelerate, but will still have a T_{MIN} that is 30 years away. Methot and Piner (2002b) attest a steepness of 0.33 is the best estimate of the level of recruitment to be expected as the stock begins to rebuild.

This low level of steepness is conditional upon all the downward trend in recruitment being caused by the decline in spawner abundance. Other fish species often have steepness levels near 0.7 (Myers 1999) and Dorn's (2000) meta-analysis of rockfish found a level of approximately 0.67. If some of this recruitment downtrend for canary rockfish has been because of long term shifts in the ocean climate, then it is possible that a future shift in the ocean climate will cause an upward shift in recruitment and future estimates of the spawner-recruitment steepness will be higher and representative of a longer-term environmental average. As an illustration of such a shift, a spawner-recruitment curve with steepness of 0.5 is shown on Figure 2. Although there are signs of a shift in the ocean climate towards a more productive regime in 1999 and evidence of stronger sablefish, whiting, and salmon survival in 1999, there is yet no evidence of such a shift for canary rockfish.

The assessment area extends northward to the U.S.-Canada border, but the trawl survey which extends northward to about 49° N. lat. shows that canary rockfish abundance is often high near the border. Canadian catch has been near 200 mt in recent years, so the combined impact of the U.S. and Canadian fisheries could be greater than the levels forecast here as necessary for rebuilding. A combined U.S. and Canadian stock assessment is advised to improve the estimate of total fishery impact.

Cowcod

The range of considered alternative harvest levels consistent with the need to rebuild cowcod is unchanged from the harvest specified for 2002 since there is no new scientific data available relevant to the current status of cowcod. It is uncertain whether the Status Quo strategy of prohibiting bottom fishing activities in two Cowcod Conservation Areas in the Southern California Bight estimated to be the most important habitats for cowcod and no retention regulations coastwide are adequately precautionary. The actual bycatch of cowcod in current fisheries is also uncertain since major sectors of the fishery (i.e., the private boat recreational fishery) have not been directly observed. However, despite these uncertainties, it is anticipated that efforts to minimize bocaccio fishing-related mortality south of Cape Mendocino will provide significant protection for cowcod which have a similar latitudinal and depth distribution and reside in similar habitats as bocaccio. A new stock assessment and rebuilding analysis for cowcod should be considered for 2003 since this is the most outdated of the needed periodic assessments for overfished West Coast groundfish stocks.

Darkblotched Rockfish

The range of alternative harvest levels and associated exploitation rates considered for darkblotched rockfish in 2003 are consistent with estimated probabilities of rebuilding T_{MAX} (Table 4.2.1.1-1). Darkblotched harvest under the *Low OY* alternative is 100 mt and comports to an X% (>80%) probability rebuilding trajectory. This is the most risk-averse harvest level considered for darkblotched in 2003. In June the Council also requested a 130 mt alternative be analyzed. This harvest level, dubbed the *2001 OY* alternative in this EIS, has an X% (>80%) probability of rebuilding within T_{MAX} and equals the darkblotched harvest specification for 2001. Prior to the rebuilding analysis developed by Methot and Rogers (2001), the best available science indicated that darkblotched could be rebuilt within ten years. This was the corresponding 2001 harvest level with an estimated 50% probability of timely rebuilding. Methot and Rogers (2001) updated the darkblotched rebuilding analysis according to the SSC recommendation in June 2001 that "the analysis should be based on an assessment update that included the 2000 NOAA Fisheries slope trawl survey data and recruitments during the more recent era should be the basis for the rebuilding rate". This result indicated darkblotched could not be rebuilt within ten years. In this circumstance, according to the NSGs, the Council and NOAA Fisheries would have the ability to extend rebuilding to as long as T_{MAX} (with a probability ≥50%) to lessen the socioeconomic impacts of reduced harvest. The Allocation Committee recommended consideration of a 172 mt harvest of darkblotched in 2003 (*Alloc. Cm OY* alternative). The *Alloc. Cm OY* alternative has an 80% probability of rebuilding within T_{MAX}. This is also the harvest level consistent with T_{MID}, the rebuilding period halfway between T_{MIN} and T_{MAX}, which is a suggested harvest specification under the NSGs. It is more conservative than the 70% probability trajectory that was part of the Council interim rebuilding strategy adopted last year and defined under the *Medium OY* alternative. The *High OY* alternative for 2003 management is 205 mt (208 mt?) which is on the 50% probability rebuilding trajectory. This is the highest harvest allowed for darkblotched under rebuilding given our current understanding of the stock's status and the limits recommended under the NSGs.

Controlling total fishing-related mortality for darkblotched necessitates constraining the total catch (including bycatch) in limited entry trawl fisheries on the West Coast. The Council recommended consideration of depth-based constraints in the limited entry trawl fishery for 2003 at its June 2002 meeting. Table 3.2.1.1-X depicts the bycatch rates estimated for target trawl fishing opportunities by area (north and south of the Cape Mendocino management line) by 2 month period and depth zone as estimated by logbooks. These rates correspond to the percentage by weight of darkblotched relative to weight of target species' catch. The proposed use of this model dictates the amount of opportunity that might be available for the trawl fleet to target healthy groundfish species such as deepwater flatfish, sablefish, and thornyheads within the 150-250 fm depth zone where darkblotched are most densely distributed. The range of alternative harvest levels defines the degree of bycatch that would be acceptable to effectively harvest target groundfish species that also frequent this depth zone. The target species most likely to frequent the 150-250 fm depth zone are Dover sole, petrale sole in the fall and winter, sablefish, and shortspine thornyhead. Longspine thornyhead, arrowtooth flounder, and minor slope rockfish are also frequently caught in these areas. The most risk-averse strategy and the one most likely to be effective at controlling harvest at the lower end of the range of considered harvest levels (*Low OY* alternative) is to limit trawl opportunities inside the 150 fm line and outside the 250 fm line. Sablefish and many of the target flatfish species are accessible inside 150 fm; however, such opportunities could risk a bycatch of overfished shelf rockfish species such as bocaccio south of Cape Mendocino, yelloweye north of Point Conception, and canary coastwide. Mandating small footropes less than eight inches diameter and prohibiting chafing gear on trawls has been shown to dramatically reduce the take of these species since it effectively keeps trawls out of the rocky reef habitats where these species reside. Under the *Low OY* alternative for these shelf rockfish, any trawling inside 150 fm, even with small footropes, may risk too high a bycatch of canary and yelloweye in the north. Such opportunities probably cannot be considered south of Cape Mendocino where any bocaccio bycatch is too much under rebuilding.

Potential fishing opportunities in deeper waters outside 250 fm exist for the DTS (Dover sole, thornyheads, and sablefish) species. Higher landing limits may be a reasonable incentive to fish in these areas where overfished groundfish species are not found. These opportunities may not be available for the entire limited entry fleet because only the larger trawlers (predominantly greater than 50' in length) are likely able to safely carry the extra wire and gear necessary to fish in the deep. Longer transit times to open fishing areas also poses higher safety risks (see section 4.3.7). As in all depth-based restrictions, compliance would be best accomplished with the use of a VMS system. Safety concerns could be somewhat mitigated by the distress alarm functions in some VMS systems (see section 4.4.1).

The latitudinal management line for darkblotched and the minor slope rockfish species has been the Cape Mendocino management line at 40°10' N. lat. In the first four months of 2002 significantly higher than normal landings of darkblotched rockfish occurred south of Cape Mendocino. At first it was thought the higher limits set for southern minor slope rockfish may have influenced illegal landings of catches made in the north in southern ports. However, scrutiny of fish landing tickets, trawl logbooks, and NOAA Fisheries survey data by the GMT suggest that it is likely these catches came from the northern Monterey INPFC area south of Cape Mendocino. Trawl representatives on the GAP confirmed a high interception of darkblotched occurred just south of the Cape Mendocino line by trawlers who landed in Ft. Bragg this year. The bycatch implications of darkblotched catch south of Cape Mendocino threaten disrupted trawl opportunities in 2002 due to unexpected early attainment of the 2002 darkblotched OY. Since these were ancillary impacts to those modeled and contemplated at the beginning of 2002 in the Hastie (2001) bycatch model where it was assumed all darkblotched would be encountered north of Cape Mendocino, they were even more onerous to the trawl fishery. To avoid such impacts in 2003, the GMT has recommended, and the Council has adopted for consideration, moving the slope rockfish management line further south to Point Reyes at 38° N. lat. Trawl landing limits for slope species north of this line would be significantly decreased (especially under *Low OY* and *2001 OY*) relative to southern limits to reduce fishing-related mortality of darkblotched.

Lingcod

Lingcod harvest alternatives vary by rebuilding probabilities (Table 4.2.1.1-1). The *Low OY* of 555 mt is based on an 80% rebuilding trajectory, while the *Medium OY* (651 mt) and *High OY* (725 mt) alternatives are based on 60% and 50% rebuilding probabilities, respectively. These harvest levels are coastwide specifications, but are constructed by adding the harvests estimated from area-specific harvest rates (north and south of the Eureka-Columbia INPFC area line) determined by Jagielo and Hastie (2001).

Lingcod are on a fast rebuilding trajectory due to their fast growth rate and high reproductive potential. Jagielo and Hastie (2001) estimated that lingcod would rebuild by 2009 under all the alternatives analyzed herein. Preliminary evidence suggests that lingcod are rebuilding coastwide faster than predicted and may reach $B_{40\%}$ 2-3 years early (Jagielo pers. comm.). A new assessment in the next two years should confirm rebuilding progress.

Fishery restrictions anticipated for 2003 are likely to reduce lingcod exploitation and enhance rebuilding progress. The GMT predicts the 2003 harvest of lingcod, even under the *Low OY* alternative, will not be attained due these anticipated restrictions.

Pacific Ocean Perch

As in most of the overfished groundfish species with alternative harvest levels analyzed in this EIS, Pacific ocean perch harvest alternatives vary by estimated rebuilding probabilities. The *Low OY* alternative (311 mt) conforms to an 80% probability of rebuilding by T_{MAX}, while the *Medium OY* (377 mt) and *High OY* (496 mt) alternatives are harvests on the 70% and 50% rebuilding trajectories, respectively. The *Medium OY* alternative is consistent with the Council interim rebuilding strategy adopted for POP in 2001 and is also the alternative recommended by the Allocation Committee for 2003.

Exploitation of Pacific ocean perch is likely to be significantly reduced from past years due to darkblotched protective measures contemplated for 2003. The depth-based restrictions for trawl opportunities north of Cape Mendocino recommended by the GMT to manage darkblotched harvest and control total fishing mortality are likely to reduce effort in the same habitats where POP reside. It is highly probable that all the analyzed OYs for POP in 2003 will not be attained, including the *Low OY* harvest level. The GMT has been concerned that POP trip limits in the past have provided incentives to target this stock. However, among the 2002 management constraints imposed on the trawl fishery to reduce darkblotched bycatch, not the least of which was a trawl closure in September, trip limits for POP were reduced. This is a common management measure/inseason adjustment; co-occurring species' trip and landing limits are often reduced to reduce impact on species of concern. Such precautionary actions effectively reduce targeting since there is no incentive to pursue species with low limits. All precautionary actions designed to reduce darkblotched impacts are likely to reduce impacts on co-occurring POP and therefore, hasten rebuilding.

Pacific Whiting

The 2003 harvest alternatives considered for Pacific whiting do not vary by estimated probabilities of rebuilding by T_{MAX} since a formal rebuilding analysis has not been approved for the stock. A draft analysis was presented to the SSC and Council in June but was rejected. The SSC determined that, while the rebuilding analysis followed the guidelines established by the SSC, results were complicated owing to the highly variable nature of whiting recruitment and the short life span of Pacific whiting. This leads to a short rebuild period even if catches remain high, although, given recruitment variability, the probability of the resource dropping below the overfishing threshold following recovery is high. The predicted rapid recovery of the Pacific whiting spawning output in the rebuilding analysis is due to the presence in the population already of the above-average 1999 year class. The SSC recognized that application of the 40-10 adjustment was adequate to achieve recovery to $B_{40\%}$ within 10 years; projections made by Helser et al. (2002) indicated rebuilding would take 7-9 years in this case. The SSC recommended that any 40-10 adjusted OY values be based on the results of the assessment conducted in 2002 rather than the rebuilding software because the 2002 assessment model includes multiple fisheries and time-varying weight-at-age. The 2002 whiting STAR panel concluded that "given concerns with the current formulation of the stock reconstruction model and the dependence of yield options beyond 2002 on continued recruitment of the 1999 year-class and recruitment from year-classes not actually observed, the Panel recommends against adopting 2003 projections until another assessment is conducted." The SSC supported this recommendation.

However, given the implications of anticipated major fishery restructuring in 2003 to rebuild overfished shelf rockfish, the GMT was uncomfortable modeling fishery effects without considering Pacific whiting harvest alternatives. Concerns about the impacts on other groundfish fisheries were considered by the GMT. Participants in the shore-based whiting fleet have accounted for roughly 50 percent of the annual harvest of species in the DTS species complex, as well as at least 20 percent of the non-Dover sole flatfish species. Many whiting vessels target flatfish and DTS species after the whiting season. It is expected that the length of the whiting season would be reduced proportionately with the OY. Therefore, a drastically reduced OY would likely result in a shorter whiting season and increased fishing pressure on already constrained non-whiting fisheries, resulting in higher than expected landings, inseason reductions in trip limits, and possibly early closures. Therefore, the GMT recommended consideration of 2003 whiting harvest alternatives before a new assessment is completed and reviewed this winter.

The *Low OY* alternative is the 2002 specification and is based on the default $F_{40\%}$ harvest rate applied to abundance at the start of 2002 with the 40-10 adjustment. This alternative assumes the medium recruitment scenario for the 1999 year class presented by Helser et al. (2002). The *Medium OY* alternative uses a more conservative $F_{45\%}$ harvest rate with the 40-10 adjustment applied to the biomass projected to the start of 2003. The *High OY* alternative uses the same criteria for *Low OY* ($F_{40\%}$ harvest rate with the 40-10 adjustment), but assumes projected abundance at the start of 2003.

Protections imposed on midwater trawl fisheries to protect widow rockfish and overfished shelf rockfish will reduce the bycatch of whiting. For instance, shrimp trawls, which have a demonstrated bycatch of whiting, widow rockfish, and other groundfish species, will be required to use hard grate finfish excluders in 2003. This should dramatically reduce whiting bycatch. Limited opportunities, relative to recent years, to target other midwater groundfish species such as yellowtail and widow rockfish, will also reduce whiting bycatch. This stock should recover rapidly under all three harvest alternatives considered for 2003. The new assessment scheduled for this winter is anticipated to confirm the relative strength of the 1999 year class and resolve uncertainties discussed by Helser et al. (2002).

The allocation of the whiting resources between the U.S. and Canada is not resolved. The stock assessment was a collaborative effort between the two nations. However, the results of the new stock assessment were not available in time to hold formal negotiations with Canada before the March Council meeting when the 2002 OY was considered. Consequently, the Council assumed continuation of the 80% share that the U.S. has used in recent years to set harvest levels. Canada, meanwhile, assumed a 30% share of the coastwide OY and rolled over the unused portion of their 2001 share into the 2002 OY. Disparate management strategies for this transboundary stock risk future OYs and economic benefits in this high-value fishery. The Council recommended future whiting negotiations between the U.S. and Canada which are scheduled to begin in October 2002.

Widow Rockfish

The alternative harvest levels considered for widow rockfish are ranged based on their respective probabilities to rebuild within T_{MAX} (Table 4.2.1.1-1). The *Low OY*, *Medium OY*, and *High OY* alternatives are on 80%, 60%, and 50% rebuilding trajectories, respectively.

Widow rockfish are a principle midwater species that are targeted by trawlers also pursuing yellowtail rockfish. Washington tribal fisheries also target widow. Midwater trawl opportunities were seriously constrained in 2002 due to the bycatch implications for canary rockfish. To date, a midwater fishery has not been scheduled to avoid summer interceptions of canary rockfish; the Hastie (2001) bycatch model estimates high canary bycatch rates during the summer. However, one may be planned during the winter period this year if there is enough canary rockfish OY left. These considerations lessen the chance of attaining even the *Low OY* in 2003, despite the bycatch of widow rockfish in other fisheries such as the whiting and shrimp fisheries.

Bycatch in these fisheries has been observed. Whiting fisheries realize an average bycatch of X of widow annually. Widow bycatch is often infrequent, but can be significant due to the aberrant behavior (for a rockfish species) of aggregating at night and dawn and dispersing during the day. When a trawl tow occurs on a widow aggregation, a large amount of bycatch can occur. One tow in the 2002 shoreside whiting fishery took an estimated 80 mt of widow. However, such large tows of widow in this fishery are infrequent. Shorter whiting seasons during rebuilding will lessen the chance of widow bycatch in that fishery. Hard grate finfish excluders expected to be imposed for shrimp trawls in 2003 will reduce the bycatch of widow in that fishery.

Yelloweye Rockfish

The *Low OY* alternative for yelloweye is based on a preliminary rebuilding analysis (Wallace 2002) that was reviewed by the Council at the June Council meeting; they recommended this be updated. The *Medium OY* is the 2002 annual specification and based on half the ABC determined by Wallace (2001). The *High OY* and *Alloc. Cm. OY* alternatives are based on a new rebuilding analysis (Methot et al. 2002) that is scheduled for SSC review at the September Council meeting. Therefore, harvest specifications are not comparable between alternatives since they are based on different scientific assumptions, stock assessments, and rebuilding analyses. The scientific underpinnings of the appropriate yelloweye rebuilding specifications will be resolved at the September Council meeting.

Yelloweye rockfish have been caught in recent years much more frequently as a target species due to their high value and quality fillets. Incidental catches are considered less likely due to their propensity to live in very high relief rocky habitats. Yelloweye catch has therefore come mostly from directed line fisheries like limited entry and open access longline fisheries as well as recreational fisheries targeting shelf rockfish, specifically yelloweye in many instances, and Pacific halibut. While these fisheries may be the dominant sectors catching yelloweye, there are groundfish and non-groundfish fisheries with an incidental catch of yelloweye. In 2002 the Council and NOAA Fisheries prohibited yelloweye retention (except for a 300 lb 2-month cumulative landing limit in the limited entry trawl fishery to determine unavoidable bycatch) to remove incentives for directed harvest. However, under *Low OY*, all fisheries with a potential incidental yelloweye impact need to be considered. Under *Medium OY*, *Alloc. Cm OY* and *High OY* many of these fisheries with only a negligible impact may be held harmless or require only minor restructuring. Those fisheries with a historical directed take of yelloweye may still be too risky under any circumstance under considered rebuilding harvest levels. The non-retention regulations adopted for 2002 management may be adequate protection for yelloweye under the *Medium OY*, *Alloc. Cm OY*, and *High OY* alternatives depending on the bycatch implications.
Small footrope regulations for any limited entry trawl opportunities on the shelf should be risk-averse in this circumstance.

WDFW Proposed Recreational Halibut "Open" Areas: In the past, the yelloweye rockfish catch in the coastal recreational fishery off Washington has been significant (approximately 15 mt in 2001). The majority of the yelloweye rockfish is caught in the recreational halibut fishery, which opens on May 1 off the coast. Information from fishers suggests that the yelloweye rockfish catch is not incidental to the halibut, but, rather, fishers target known yelloweye areas after they have caught their halibut.

In an effort to reduce the yelloweye harvest, the Pacific Fishery Management Council and the Washington Department of Fish and Wildlife (WDFW) approved regulations that prohibited the retention of yelloweye rockfish in the Washington coastal recreational fishery in 2002. Through July 2002, based on portside angler interviews, the estimated catch of yelloweye rockfish in the recreational fishery is 2 mt. Again, the majority of the yelloweye catch occurred in the May/June halibut fishery.

Based on the 2001 stock assessment, the draft rebuilding analysis for yelloweye rockfish indicated that an appropriate OY would be between 2.1 and 3.9 mt for 2003; however, because a subsequent assessment is scheduled to be completed this summer, the Council also approved the status quo OY (13.5 mt) to be considered. In order to meet the lower end of the OY range for yelloweye, while providing access to halibut areas, WDFW proposed measures for its recreational and commercial groundfish fisheries that would significantly reduce the yelloweye harvest. The proposed measures include opening halibut "hotspots" only for the recreational halibut fishery. These "hotspots" would be relatively small areas (1-2 square miles) that are known to have halibut, but which have little to no yelloweye rockfish.

WDFW held three public meetings to solicit input from charter boat operators and private anglers who have participated in the coastal halibut and groundfish fisheries on the location of these halibut "hotspots." Local recreational fishing interests provided latitude/longitude coordinates to WDFW staff. For the North Coast (Neah Bay/La Push) area, there are five "hotspots" being proposed; the South Coast (Westport) is proposing four "hotspots" and the Columbia River area has one larger "hotspot" that encompasses their primary halibut areas (Table 4.2.1.1-3).

The management measures considered for protecting bocaccio south of Cape Mendocino and canary rockfish coastwide will likely benefit yelloweye rebuilding. A large focus of the considered strategy is to shift directed line effort off the West Coast continental shelf, which should reduce any yelloweye bycatch considerably. Over 99% of the yelloweye caught in the IPHC halibut longline survey were caught between 50 and 100 fm (Table 4.2.1.1-4). Therefore, depth restrictions imposed on commercial line fisheries within this depth zone should adequately protect yelloweye.

All three of the coastal state agencies on the West Coast plan on establishing depth restrictions on recreational groundfish fisheries. The CDFG is planning to impose a 20-150 fm restriction on recreational groundfish fisheries south of Cape Mendocino, while ODFW and WDFW intend to restrict their recreational fisheries inside of 27 and 25 fm, respectively if the yelloweye harvest guideline is projected to be exceeded inseason. These plans depend on adequate monitoring of recreational fisheries to estimate bycatch inseason. The ODFW is considering allowing a 1 yelloweye sublimit in the recreational daily bag limit of groundfish. They intend to monitor the recreational catch of yelloweye with their port sampling program. The WDFW is planning on prohibiting yelloweye retention in 2003 as they did in 2002. Their management philosophy is that yelloweye are so desirable that the species would be targeted in the recreational fishery if a small retention limit were allowed. The WDFW is planning to continue their observations of the halibut charter fishery to estimate yelloweye and canary bycatch in that fishery. Such efforts reduce the risk associated with assuming management measures are adequately precautionary.

4.2.1.2 "Precautionary Zone" Stocks

Dover Sole

There are no alternative harvests considered for Dover sole since no new assessment was done this year. The 2002 OY of 7,440 mt is specified for management in 2003. Dover sole is an important target for the limited entry trawl fishery which targets the species in shallow water on the shelf as well as the deeper waters of the slope. While larger trawlers may be able to access Dover sole in deeper water with depth-based restrictions, smaller boats may not be able to fish these depths. Many smaller trawlers may be constrained from getting their Dover sole, especially south of Cape Mendocino where opportunities may be limited. Small footrope restrictions in shallow-water fisheries may be adequately precautionary north of Cape Mendocino under anything but the *Low OY* alternative for yelloweye rockfish, but trawlers in the south may need to consider further gear modifications to gain access to Dover sole. ODFW has been testing experimental flatfish trawls designed to effectively target flatfishes like Dover sole while avoiding rockfish. These trawls have a cutback headrope and a smaller vertical mouth. When they are fishing on the bottom, the natural escape tendency for flatfishes is to dive to the bottom while rockfish tend to escape by swimming up from the footrope. This flatfish trawl configuration shows promise as an effective means to target flatfish in zones where rockfish bycatch is a concern. Use of an EFP to test these trawls should be considered to allow smaller trawlers access to flatfish species such as Dover sole in 2003.

Sablefish

The harvest alternatives considered for sablefish are based on a new assessment done in 2002. The *Low OY* alternative (4,381 mt north of Conception; 233 mt in the Conception INPFC area) is based on a requested model result by the GMT. They were interested in calculating a harvest rate and OY that projected no decline in abundance after ten years when recent recruits no longer contribute to the spawning biomass. This modeled result assumed average future recruitment and an $F_{60\%}$ harvest rate.

The Allocation Committee based its recommended *Alloc. Cm OY* alternative (5,000 mt north of Conception; 251 mt in the Conception INPFC area) on a desire to avoid a volatile management future. They also noted the industry is concerned when the fishery harvests smaller fish; a conservative harvest level would allow greater survival to a larger size bringing future harvest benefits.

The *Medium OY* alternative (7,359 mt north of Conception; 233 mt in the Conception INPFC area) is based on the proxy $F_{45\%}$ harvest rate with the 40-10 adjustment under the assumption that density-dependence is the primary factor determining recruitment (i.e., recruitment levels are based on relative spawning biomass). The *High OY* alternative assumes an environmental regime shift state of nature (i.e., environmental conditions determine recruitment) and is calculated using an $F_{40\%}$ harvest rate with the 40-10 adjustment. The more optimistic assessment this year (Schirripa 2002) may give credence to the environmental regime shift hypothesis in determining sablefish recruitment. An assessment in the near future should help determine which state of nature is the best assumption for sablefish recruitment.

Sablefish are an important commercial species targeted in directed line and trawl fisheries. The seasonal targeting of sablefish on the shelf will likely be reduced given the management measures considered to protect overfished shelf rockfish. However, sablefish are effectively targeted in deeper water by both gears. Without depth-based restrictions, the *Medium OY* and *High OY* harvest alternatives probably could not be attained. Darkblotched protective measures may also force effort to waters deeper than 250 fm during some periods of the year. This could preclude smaller trawlers (≤ 60 feet in length) from accessing appreciable amounts of sablefish. Larger boats are required to safely and effectively trawl with the increased wire and spools necessary to trawl in deeper waters.

Smaller sablefish also tend to get caught on the shelf. In an effort to allow access to sablefish in 2002 after the bocaccio OY was attained, a minimum size limit of 22 inches was specified. The theory was the fishery would have to move off the shelf to get larger sablefish and thereby avoid bocaccio. However, fixed gear fishers south of Pt. Conception, where sablefish are smaller, were seriously constrained by the minimum size limit. An regulatory correction was finally adopted to allow them to fish, but fishing opportunity was lost. There should therefore be consideration for a smaller or no size limit on sablefish south of Pt. Conception in 2003. Depth-based restrictions contemplated for bocaccio protection in that area should be adequately precautionary.

Shortspine Thornyhead

There are no alternative harvests considered for shortspine thornyhead since no new assessment was done this year. The 2002 OY of 955 mt is specified for management in 2003. It is not likely that the OY will be attained in 2003 given the depth-based constraints anticipated to protect overfished shelf and slope rockfish.

4.2.1.3 Stocks at or Above Target Levels

Talking points are offered in the initial draft. This section will be completed before public review.

Arrowtooth Flounder

Abundant species and trawl target
Experimental FF trawls may provide access on shelf?

Bank Rockfish

Black Rockfish

Above $B_{40\%}$ according to last assessment
Nearshore precautionary strategies (section 4.4.2).

Blackgill Rockfish

Point of concern considerations
Reduced impacts south of Pt. Reyes with new darkblotched management line

Chilipepper Rockfish

Above $B_{40\%}$ according to last assessment
Bocaccio protection will reduce impact
Competitive interaction with bocaccio?

English Sole

Longspine Thornyhead

Increased access with depth based restrictions
OY has not been attained in recent years
Stock healthy and outside darkblotched depth zone

Pacific Cod

Petrale Sole

Important trawl target, especially in winter in the north
Market constraints with large winter landings?
Identify areas just within darkblotched depth zones where petrale aggregate in winter but darkblotched are not found

Shortbelly Rockfish

Splitnose Rockfish

Slope RF with anticipated reduction in impacts due to darkblotched protective measures

Yellowtail Rockfish

Healthy stock and important midwater trawl target
Canary bycatch considerations
Reduced bycatch in shrimp fishery due to mandatory use of excluders
Identify midwater trawl opportunities within overfished species' bycatch constraints

4.2.2 Non-groundfish Stocks

4.2.2.1 Salmon

Groundfish catch data were collected in a study of troll gear encounter rates for coho and chinook salmon (Lawson 1990). In this study spreads were spaced at 4 fm intervals with the bottom spread placed 2 fm above the cannonball. Gear was fished close to the bottom in a minimum of 45 fm of water to accommodate 10 spreads. Groundfish catch rates were low, with an average of 0.9 rockfish and 0.7 flatfish per boat-day. Most groundfish were caught on the lowest two spreads. Coho salmon were caught higher on the gear than chinook (Figure 4.1). In general, raising the gear off the bottom should reduce the catch of groundfish and chinook while increasing the catch of coho, however Lawson's (1990) gear study was not designed to measure this effect. More specific analysis of the data require making some assumptions. The most important assumption being that fish do not respond to the gear by moving up and down in the water column. For coho and chinook there is evidence that this assumption may not be true, coho tending to move down to the top spread, and chinook tending to move up to the bottom spread. No information exists about similar behavior in groundfish, however, if groundfish tended to move up to the bottom spread, raising the bottom spread would reduce catch rates less than might otherwise be anticipated. A second assumption is that salmon trollers are positioning their gear near the bottom. This was true during the Lawson (1990) study, but in some years (e.g. 2002) the distribution of salmon in the water column is such that midwater fishing may be more effective. In this case, groundfish encounters should be minimal, and the proposed regulations would have no effect. Assuming no movement of fish up and down the gear and fishing near the bottom, moving the bottom spread up to 4 fm from the cannonball would be equivalent to eliminating the bottom spread in Lawson (1990). With 4 spreads (the current configuration in Oregon south of Cape Falcon), this would reduce the total groundfish catch rate by 74%, the Pacific halibut catch rate by 92%, and the chinook catch by 26%. The coho catch rate would increase by 22% (Table 4.2.2.1-1). For groundfish species of interest, catch rate reductions would be: 95% for canary rockfish, 0% for yelloweye rockfish (only 2 were caught), and 89% for lingcod (Figure 4.2.2.1-2). Requiring a distance of 6 fm between the lower spread and the cannonball would have similar, although slightly greater effects on catch rates for groundfish, and similar but somewhat greater effects on chinook and coho catch rate, based on the assumptions stated above. The central and southern Oregon commercial troll fisheries are currently modeled with lower coho encounter rates when a four spread restriction is in place based on the results of the Lawson (1990) study and corresponding gear profiles of the fleet. By moving the gear up in the water column and increasing the coho encounter rate, opportunity to harvest healthy chinook stocks would be constrained to provide a similar level of protection (e.g. allowable exploitation rate) to depressed natural coho stocks.

Alternatives that require a minimum distance of 4-6 fm between the cannonball and the lower most spread only outside depths of 50 fm are likely to have similar effects on rockfish interception since the primary adult distribution for canary, yelloweye and bocaccio rockfish is in waters deeper than 50 fm (PFMC, GF EFH appendix). The distribution of adult lingcod extends into water deeper than 50 fm so some reduction in interception is likely, however they also occur in shallower water. In deeper water, the effect on coho encounter rates of moving the gear up from the cannonball would be partially mitigated since the gear would be fished deeper to target chinook, and in very deep water where the cannonball is not close to the bottom, the gear could be lowered to locate the lower spread at the desired depth. This would, however, increase the groundfish encounter rate to a level similar to status quo. In areas less than 50 fm, salmon fisheries are generally conducted very close to shore, in less than 10 fm over sandy bottom, where rockfish are rare. The most effective technique involves fishing very near the bottom. Raising the lower spread would essentially eliminate salmon fishing in this area, where almost no groundfish are encountered. Groundfish caught in this depth stratum (<10 fm) could be released with minimal mortality from decompression.

Alternatives that prohibit fishing outside 25 fm in Washington Marine Catch Areas 3 and 4 would eliminate almost all of the productive commercial salmon fishing waters in those areas, and the fleet would be displaced to other area or other fisheries. Approximately 48% yelloweye rockfish catch (0.05 mt), 15% of the widow rockfish catch (0.02 mt), and 10% of the canary rockfish catch (0.08 mt) in salmon troll fisheries coast wide occurred in those areas in 2001 (Table 4.2.2.1-1). In the areas north of Cape Falcon, 100% of the yelloweye and widow rockfish, and 64% of the canary rockfish landings occurred in those areas. Approximately 31% (97,000 lbs) of the non-Indian commercial chinook landings from north of Cape Falcon occurred in those areas in 2001, and the recent 5-year average is 38%PFMC 2001; Review of 2001 Ocean Salmon Fisheries Tables IV-7 and IV-8).

The Pacific halibut catch in the salmon troll fishery is considered incidental in the Council's 2002 Pacific Halibut Catch Sharing Plan for Area 2A. There is little opportunity or incentive to target halibut with troll gear, but fishers may occasionally fish particular areas for that purpose. Alternatives that prohibit retention of Pacific halibut, canary and yelloweye rockfish may reduce halibut catch and the associated bycatch of groundfish, however, the majority of the halibut interception in troll fisheries would continue and the fish discarded. Most rockfish would also be discarded, but with a significant mortality rate. In 2001, the Area 2A non-Indian commercial salmon troll fishery was allocated 34,046 lbs of Pacific halibut.

Alternatives that require mandatory retention of legal size groundfish would provide information on groundfish encounter rates in the commercial salmon fishery subsequent to new management measures, which would allow comparison with past landings (Table 4.2.2.1-1) and encounter rates and assessment of the effectiveness of the new measures. Currently, some groundfish is discarded due to economics (poor price, ice limitations on board, etc.). Mandatory retention would allow sampling of a greater portion of the catch, and reduce wastage. Release of sublegal groundfish would preserve juvenile lingcod, which can be released with minimal mortality, and keep consistent regulations between recreational and commercial fisheries.

4.2.2.2 California Halibut

4.2.2.3 California Sheephead

4.2.2.4 Coastal Pelagic Species (CPS)

CPS are taken incidentally in the groundfish fishery. Incidental take is well documented in the at-sea and shore-based whiting fishery. Table 4.2.2.4-1 shows incidental take of mackerels and sardine in the at-sea whiting fishery from 1996 through 2000. Preliminary data for 2001 indicates that approximately 80 mt of squid was incidentally taken in the at-sea whiting fishery through October. There is little information on the incidental take of CPS by the other segments of the fishery; however, given that CPS are not associated with the ocean bottom, the interaction is expected to be minimal.

There is some documented bycatch of groundfish in CPS fisheries. Bocaccio bycatch in market squid fishery? Light boats vs. diurnal purse seine? Canary and yelloweye bycatch?

4.2.2.5 Dungeness Crab

Dungeness crab, which are typically harvested using traps (crab pots), ring nets, by hand (scuba divers) or dip nets, are incidentally taken or harmed unintentionally by groundfish gears. Very little bycatch of rockfish and other overfished West Coast groundfish species has been noted in pot and trap fisheries, including those targeting Dungeness crab. It is not anticipated that this fishery would need to be constrained or modified to rebuild any of the overfished West Coast groundfish species of concern.

4.2.2.6 Highly Migratory Species (HMS)

4.2.2.7 Ocean Whitefish

4.2.2.8 Pacific Pink Shrimp

4.2.2.9 Pacific Halibut

The proposed actions to rebuild canary and yelloweye rockfish north of the Cape Mendocino management line at 40°10' N. lat. are anticipated to severely limit fishing effort on the continental shelf inside of the 150 fm line. Opportunities to harvest Pacific halibut may depend on determining areas inside 150 fm where canary and yelloweye are not encountered. The Council and the WDFW proposed this general strategy at the June 2002 Council meeting. Such areas may be inferred from IPHC halibut survey data (Table 4.2.2.9-1), WDFW observations of their recreational charter halibut fishery (Table 4.2.2.9-2), port sampling data, NOAA Fisheries shelf trawl surveys, trawl logbooks, and fish tickets. The WDFW is anticipated to identify 1 nm^2 (or larger) halibut hotspot areas north of Point Chehalis, WA where Pacific halibut can be harvested without a bycatch of overfished shelf rockfish. This risk-averse strategy will be particularly effective insofar as the data used to inform the decision of open fishing areas accurately depicts areas where these rockfish do not reside. The strong habitat affiliations and apparent lack of significant movements by canary and yelloweye rockfish may reduce the uncertainty of these data. Observations of 2003 Pacific halibut fisheries, such as the 2002 WDFW effort to place observers on recreational charters, will be important to verify that these fishing opportunities effectively avoid these rockfish species. Pacific halibut fishing opportunities on the shelf will also depend on the effectiveness of enforcing compliance with area restrictions (see section 4.4).

One likely outcome of the proposed action(s) is a decrease in the harvest of Pacific halibut in Catch Area 2A. It is unknown how this may affect any allocation of Pacific halibut in Area 2A in 2003. The IPHC will meet in January 2003 to decide 2003 Pacific halibut management and allocations.

4.2.2.10 Ridgeback Prawn

4.2.2.11 Sea Cucumber

4.2.2.12 Spot Prawn

4.2.2.13 Miscellaneous Species

4.2.3 Protected Species

4.3 Impacts to the Socioeconomic Environment

4.3.1 Fishery Overall

The distribution, low spawning biomass, and particularly low productivity of bocaccio will pose the most significant constraint to fisheries south of Cape Mendocino inside 150 fm in 2003. It is anticipated that all shelf fisheries with a demonstrated bycatch of bocaccio will need to be closed or restructured in 2003 to effectively avoid all interactions. The range of harvest levels considered and analyzed in this initial draft EIS provide no opportunity for an allowable harvest of bocaccio. The standard of a zero fishing mortality on bocaccio allows no interaction with the species. The anticipated socioeconomic impacts to California fisheries and coastal communities will be severe in 2003.

Fisheries and coastal communities north of Cape Mendocino to the U.S./Canada border will be similarly affected by constraints imposed to rebuild canary and yelloweye rockfish. As in the south, fisheries inside 150 fm will be most constrained by the actions considered and analyzed in this initial draft EIS. Fisheries with a demonstrated bycatch of these species will need to be closed or restructured in 2003 to rebuild these species.

Groundfish trawl opportunities will need to be further constrained in 2003 by actions considered and analyzed herein to rebuild darkblotched rockfish. Seasonal and depth restrictions are anticipated to be the most effectively precautionary strategies for avoiding darkblotched and minimizing adverse socioeconomic impacts. These considerations are anticipated to potentially affect groundfish trawl fisheries north of 38° N. lat. near Point Reyes, CA within the 150-250 fm depth zone.

4.3.1 Fishery Overall

4.3.2 Commercial Fishery

4.3.3 Buyers and Processors

4.3.4 Recreational Fishery

Figures 4.3.4-1 through 4.3.4-3 show Washington, Oregon, and California management measure options compared to seasonal effort (angler trips) during the years 1996, and 2000-2002.

4.3.5 Tribal Fisheries

4.3.6 Communities

4.3.7 Health and Safety

4.3.2 Commercial Fishery

4.3.3 Buyers and Processors

4.3.4 Recreational Fishery

4.3.5 Tribal Fisheries

4.3.6 Communities

4.3.7 Health and Safety

4.4 Impacts to the Management Regime

4.4.1 Enforcement Impacts

4.4.2 State-Managed Fishery Impacts

[Likely Impacts on Other Management Measures and Other Fisheries]

4.4.2.1 Nearshore Fishery Impacts South of Cape Mendocino

The preferred depth range of bocaccio, canary and yelloweye rockfish is deeper than 20 fm. Since the allowable catch of these species has been severely restricted for 2003 in order to rebuild the stocks, a depth limit of 20 fm or less for 2003 rockfish fishing has been proposed. Despite their preference for deeper water, these overfished species will nevertheless be encountered at a reduced rate by persons targeting nearshore species in waters less than 20 fm. Consequently, retention of the overfished species will probably be prohibited to eliminate any incentive for targeting, and to provide an opportunity for the incidental take to be released alive. The potential impact of nearshore fishing on these species may be estimated by: 1) examining catch by depth from the recent recreational fishery; 2) estimating potential effort shift based on the recent performance of the recreational rockfish fishery when only 0-20 fm fishing was allowed; and 3) applying hooking mortality estimates to the bycatch of overfished species that will be inadvertently caught and released in the 0-20 fm fishery.

The 2001 fishery provides a "base case" for making 2003 projections. Data on depth of capture is available for the recreational fishery from MRFSS field samples. During 2001, the total catch for each of the three overfished species may be estimated for 0-10 fm, 10-20 fm and >20 fm, based on the depth distribution of sample weight for each species. The results indicate that fishing beyond 20 fm accounted for 81 percent of the bocaccio, 67 percent of the canary, and 74 percent of the yelloweye rockfish caught during 2001 (Table 4.4.2.1-1).

Restricting the rockfish fishery to less than 20 fm will affect the behavior of rockfish anglers. Some will choose to forgo rockfish fishing because the most desirable species are found in the deeper waters. Others will move from the closed deeper waters to the shallow waters that remain open. The net effect is very difficult to analyze or predict, but the performance of the fishery during recent periods when only nearshore fishing was allowed may provide some insight. The areas/periods when this was in effect are: Central area (Cape Mendocino-Pt. Conception) during May-June, 2001 and May-June 2002; Southern area (south of Pt. Conception) during Jan-Feb 2001 and Nov-Dec 2001. The expected change in nearshore fishing effort for 2003 may be bounded by the upper quartile (36 percent increase) and the lower quartile (3 percent increase) from the observed effort during those periods.

Estimates of hooking mortality for rockfish caught in shallow water may be obtained from Albin and Karpov (1995). One aspect of their study was to determine sources of mortality for a rockfish tag and recapture project that was conducted along the northern California coast during the 1990s. Most of the specimens were captured in waters ranging from 50-150 feet deep. Overall mortality for rockfish in the study was 35.5 percent. The direct cause of mortality for most dead fish (23.0 percent) could not be determined. Mortality attributed to barotrauma (5.8 percent) was slightly greater than for hook injuries (5.1 percent). A minor source of mortality was due to injuries from inserting tags (1.6 percent). Of the directly attributed mortality (not counting the tag injuries), about one half was due to barotrauma, and the rest was due to hook injuries.

Based on the Albin and Karpov (1995) mortality results, it is possible to develop a range of plausible mortality impacts for rockfish released during the nearshore fishery. For the 0-10 fm depth zone, only hook injuries would apply; barotrauma is not an issue. The range of mortality for hook injuries is 5.1-15.9 percent. The low value was directly attributed to hook injuries from the study, and the high end of the range is obtained by assuming that hook injuries account for nearly one half of all mortality, including those cases where the direct cause of mortality could not be directly determined.

For the 10-20 fm depth zone, both hook injuries and barotrauma are a factor. In a closely related study by the same authors, about 24.0 percent of all nearshore fish required to be punctured to relieve pressure from expanded swim bladders. For this depth zone, a reasonable range of mortality is 33.9-50.0 percent. The low end of the range is the overall mortality rate observed in the study, minus the tag injuries. The high end is estimated by assuming that the observed mortality will occur (33.9 percent), and also assuming that those fish in need of puncture will not receive the treatment because recreational fishermen are not trained or equipped to perform the procedure. Hence, the maximum mortality from barotrauma is greater than for the study findings, resulting in an upper bound of 50.0 percent for overall 10-20 fm mortality.

Estimates of "high impact" and "low impact" release mortality are provided in Table 4.4.2.1-1. The range for bocaccio was 8.7-3.7 mt. It is clear that additional adjustments may be necessary to the results presented in Table 4.4.2.1-1 if the season length or bag limits (or other significant restrictions) for 2003 are changed from the base year (2001).

As mentioned above, attributable causes of mortality for rockfish caught within 10-20 fm are about equally divided between barotrauma (roughly 53 percent) and hook-related injuries (roughly 47 percent). If barbless circle hooks were required, a major cause of catch-release mortality could be greatly reduced. Since the current estimates for recreational bocaccio mortality in the 2003 nearshore fishery are about 8.7-3.7 mt (assuming the same season structure as 2001), barbless circle hooks might be one option to further reduce the bocaccio impacts. If a 33-50 percent reduction in release mortality could be achieved by minimizing hook injuries, the bocaccio mortality might be reduced to roughly 2-6 mt. This could help keep the recreational impacts within the allotment for next year.

The GMT has recommended a precautionary reduction of the nearshore rockfish OY to avoid overfishing nearshore species. The needs of the California recreational and open access live-fish fishery also predicated the need for a commmercial:recreational allocation. Table 4.4.2.1-2 shows allocation scenarios for three different groups of southern nearshore rockfish: shallow nearshore (species that are completely distributed inside 20 fm), scorpionfish (distributed shallower and deeper than 20 fm), and deeper nearshore rockfish (distributed shallower and deeper than 20 fm). Instead of managing for the current OY, the precautionary principle was applied by cutting the OY in half. A slightly different base period was used than in the past when the nearshore rockfish OY was originally determined. Calculating the proportion of catch occurring within 20 fm more accurately reflects the distribution of nearshore species. The result is an aggregate 1,082 mt average landing. The precautionary half OY is 541 mt. Table 4.4.2.1-1 shows the proportion of the recreational catch of overfished shelf rockfish species that occurred in depths shallower and deeper than 20 fm. Applying this catch proportion within 20 fm to the aggregate catch reduces the OY to 451.7 mt. Commercial and recreational catch shares, as per those adopted by the Council for analysis in June, were applied to this OY to generate the scenarios depicted in Table 4.4.2.1-2. The Allocation Committee discussed the implications of anticipated effort shifts to nearshore areas south of Cape Mendocino in an effort to avoid bocaccio. They recommended Scenario #1B where the overall southern nearshore OY of 452 mt is allocated 20% to the commercial fishery and 80% to the recreational fishery.

4.4.2.2 Nearshore Fishery Impacts North of Cape Mendocino

The Council consideration to ameliorate nearshore impacts north of Cape Mendocino from expected inshore effort shifts is to cap 2003 harvests at 2000 levels. This consideration would largely apply to Oregon and northern California fisheries in the Eureka INPFC area since there is a different strategy for Washington nearshore fisheries (no commercial nearshore fisheries in state waters). Table 4.4.2.2-1 shows the commercial and recreational landings of four select marine species groups caught off Oregon during 1995-2001. These groups include black and blue rockfish, other nearshore rockfish, cabezon, and greenling; the former two groups comprise the northern nearshore rockfish assemblage. Capping the 2003 nearshore OY of nearshore rockfish at the 2000 level would effectively create commercial and recreational harvest guidelines for these species. The commercial nearshore rockfish OY would be 134.3 mt and the recreational OY would be 395.5 mt for a total of 529.8 mt. The Allocation Committee considered setting OYs for cabezon and greenling, but decided this was not needed for management. These species can be tracked in the Quota Species Monitoring (QSM) inseason process (all species and complexes with individual OYs are tracked inseason by the GMT using PacFIN data streams) without setting an OY by setting landing limits. Reliance on MRFSS is generally considered inadequate for inseason management. However, Oregon inseason data/catch estimates are available in a timely fashion. The GMT and the Allocation Committee decided this was an appropriate precautionary recommendation for managing northern nearshore groundfish.

4.5 Impacts of Uncertainty and Risk

4.6 Precedent For Future Significant Actions

4.7 Cumulative Impacts

4.8 Irreversible and Irretrievable Commitment of Resources

4.9 Mitigation Measures Not Already Included in the Alternatives

CHAPTER 4
TABLES

TABLE 4.2.1.1-1. Harvest specifications for overfished West Coast groundfish under alternatives considered by the Council for 2003 management.

Species	Alternative	2003 Harvest (mt)	Exploitation Rate (F)	Rebuilding Probability	Median (50%) Year to Rebuild
Bocaccio [1/]	*Low OY*	0	0.000	50%	2111
	High OY; Alloc. Cm OY	≤20	0.026	50%	2172
Canary (80% Comm:20% Rec)	*Low OY*	38	0.0108	80%	2068
	Medium OY	52	0.0147	60%	2074
	High OY	57	0.0161	50%	2076
Canary (50% Comm:50% Rec)	*Low OY*	30	0.0161	80%	2068
	Medium OY; Alloc. Cm OY	41	0.0220	60%	2074
	High OY	45	0.0242	50%	2076
Canary (20% Comm:80% Rec)	*Low OY*	25	0.0212	80%	2068
	Medium OY	34	0.0289	60%	2074
	High OY	37	0.0317	50%	2076
Cowcod	NA	4.8	0.0136	52%	2095
Darkblotched [2/]	*Low OY*	100	0.017	~92%	20XX
	2001 OY	130	0.022	~85%	20XX
	Alloc. Cm OY	172	0.027	80%	2030
	Medium OY	184	0.029	70%	2034
	High OY	205	0.033	50%	2047
Lingcod	*Low OY*	555	0.0474 N 0.0472 S	80%	2009
	Medium OY; Alloc. Cm OY	651	0.0531 N 0.0610 S	60%	2009
	High OY	725	0.0607 N 0.0667 S	50%	2008
Pacific ocean perch	*Low OY*	311	0.0068	80%	2022
	Medium OY; Alloc. Cm OY	377	0.0082	70%	2027
	High OY	496	0.0109	50%	2042
Pacific whiting [3/]	*Low OY*	129,600	0.128	NA	NA
	Medium OY; Alloc. Cm OY	148,200	NA	NA	NA
	High OY	173,600	NA	NA	NA
Widow	*Low OY*	656	0.0213	80%	2032
	Medium OY; Alloc. Cm OY	832	0.0271	70%	2037
	High OY	916	0.0298	50%	2039

TABLE 4.2.1.1-1. Harvest specifications for overfished West Coast groundfish under alternatives considered by the Council for 2003 management.

Species	Alternative	2003 Harvest (mt)	Exploitation Rate (F)	Rebuilding Probability	Median (50%) Year to Rebuild
Yelloweye [4/]	*Low OY*	2.1	NA	NA	2027
	Medium OY	13.5	NA	NA	2035
	Alloc. Cm OY	22	NA	NA	2050
	High OY	27	0.0173	50%	2070

[1/] The median year to rebuild under *Low OY* is beyond the estimated T_{MAX} of 2109. Estimated median year to rebuild from the bocaccio sustainability analysis (Table 4.2.

[2/] The *Low OY* and *2001 OY* alternatives for darkblotched have not undergone formal modeling. Estimated harvest rates (F) and rebuilding probabilities from interpolation. Formal modeling will be done prior to public review of this draft EIS.

[3/] The *Low OY* is based on estimated biomass at the start of 2002 with an $F_{40\%}$ harvest rate and the 40-10 adjustment. The *Medium OY* and *High OY* alternatives are based on the $F_{40\%}$ and $F_{45\%}$ harvest rates and the 40-10 adjustment using estimated biomass at the start of 2003.

[4/] The *Low OY* is based on a preliminary rebuilding analysis (Wallace 2002) that was reviewed by the Council at the June Council meeting; they recommended this be updated. The *Medium OY* is the 2002 annual specification and based on half the ABC determined by Wallace (2001). The *High OY* and *Alloc. Cm. OY* alternatives are based on a new rebuilding analysis (Methot et al. 2002) that is scheduled for SSC review at the September Council meeting. Therefore, harvest specifications are not comparable. The median year to rebuild under *Low OY* and *Medium OY* were derived by interpolation of the new rebuilding analysis (Figure 3; Methot and Piner 2002). The scientific underpinnings of the appropriate yelloweye rebuilding specifications will be resolved at the September Council meeting.

TABLE 4.2.1.1-2. Results of the bocaccio sustainability analysis (MacCall and He 2002b).

Probability (%) of No Decline by 2102	Catch in 2003	Fishing Mortality Rate	Percent of Cases Rebuilt by 2109	Median Rebuilding Year	Risk (five percentile of abundance)			
					after 25 years		after 100 years	
					Spawning Output (billion eggs)	2027 Abundance Relative to 2002	Spawning Output (billion eggs)	2102 Abundance Relative to 2002
50%	79	0.094	7%	14% by 2602	73.1	10%	2.5	0%
60%	61	0.071	12%	31% by 2602	85.8	12%	5.5	1%
70%	42	0.049	21%	50% by 2367	102.6	14%	13.3	2%
80%	22	0.026	33%	50% by 2172	126.1	18%	30.7	4%
85%	11	0.012	41%	50% by 2135	145.2	20%	52.7	7%
90%	0	0.000	49%	50% by 2111	157.5	22%	86.3	12%

TABLE 4.2.1.1-3. Draft latitude/longitude coordinates for proposed recreational halibut "open" areas for 2003.

Columbia River		South Coast		North Coast	
46.20.00 N. lat.	124.39.00 W. Long.	47.18.50 N. lat.	124.52.50 W. Long.	48.15.00 N. lat.	125.32.50 W. Long.
46.20.00 N. lat.	124.36.00 W. Long.	47.18.50 N. lat.	124.50.50 W. Long.	48.15.00 N. lat.	125.33.50 W. Long.
46.18.50 N. lat.	124.39.00 W. Long.	47.17.00 N. lat.	124.52.50 W. Long.	48.16.00 N. lat.	125.32.50 W. Long.
46.18.50 N. lat.	124.36.00 W. Long.	47.17.00 N. lat.	124.50.50 W. Long.	48.16.00 N. lat.	125.33.50 W. Long.
		47.30.00 N. lat.	124.53.50 W. Long.	48.16.50 N. lat.	125.19.50 W. Long.
		47.30.00 N. lat.	124.52.00 W. Long.	48.16.50 N. lat.	125.22.00 W. Long.
		47.29.00 N. lat.	124.53.50 W. Long.	48.17.50 N. lat.	125.19.50 W. Long.
		47.29.00 N. lat.	124.52.00 W. Long.	48.17.50 N. lat.	125.22.00 W. Long.
		47.02.00 N. lat.	124.58.40 W. Long.	48.18.00 N. lat.	125.05.50 W. Long.
		47.02.00 N. lat.	124.56.40 W. Long.	48.18.00 N. lat.	125.07.00 W. Long.
		47.01.00 N. lat.	124.58.40 W. Long.	48.19.00 N. lat.	125.05.50 W. Long.
		47.01.00 N. lat.	124.56.40 W. Long.	48.19.00 N. lat.	125.07.00 W. Long.
		47.00.50 N. lat.	124.56.50 W. Long.	48.12.50 N. lat.	125.04.00 W. Long.
		47.00.50 N. lat.	124.55.00 W. Long.	48.12.50 N. lat.	125.05.00 W. Long.
		46.59.50 N. lat.	124.56.50 W. Long.	48.13.50 N. lat.	125.04.00 W. Long.
		46.59.50 N. lat.	124.55.00 W. Long.	48.13.50 N. lat.	125.05.00 W. Long.
				47.58.00 N. lat.	125.14.00 W. Long.
				47.58.00 N. lat.	125.17.00 W. Long.
				47.59.00 N. lat.	125.14.00 W. Long.
				47.59.00 N. lat.	125.17.00 W. Long.

TABLE 4.2.1.1-4. Yelloweye rockfish distribution by depth from the IPHC Survey. Halibut distribution by depth from IPHC commercial fishery logbooks. Halibut catch from 1996-2000 commercial logbooks.

Depth (fm)	Percent Weighted Yelloweye Catch [1/]	Percent Commercial Halibut Catch
0-50	0.5%	2.3%
51-100	99.1%	7.7%
101-150	0.1%	35.2%
151-200	0.3%	36.5%
>200	0.0%	18.2%
All depths	100.0%	100.0%

[1/] Yelloweye catch weighted by the number of hooks set per depth stratum (first 20 hooks per skate sampled).

TABLE 4.2.2.1-1. Effects of proposed regulation of a minimum distance of four fathoms between lower spread and cannonball for non-Indian commercial salmon troll fishery. Data are catch per day by spread location of fish encountered in a study of troll gear encounter rates for coho and chinook salmon off central Oregon (Lawson 1990). Gear configurations included 4, 7, and 10 spreads. The bottom spread was located 2 fm above the cannonball and subsequent spreads were located at 2 fm intervals.

	Distance Above Cannonball (fathoms)											Effect of Regulation - Catch Rate Change [1/]
Species	20	18	16	14	12	10	8	6	4	2	Total	
Coho	2.042	2.000	2.417	3.417	2.854	2.667	2.917	1.819	1.458	1.042	22.633	22.5%
Chinook Shakers		0.042	0.167	0.271	0.354	0.375	0.681	0.931	1.125	1.417	5.363	-25.1%
Chinook		0.042	0.042	0.125	0.250	0.542	1.042	1.847	1.944	2.431	8.265	-26.0%
Rockfish												
Black							0.014	0.028	0.069	0.069	0.180	-38.3%
Blue									0.028	0.000	0.028	0.0%
Brown						0.021			0.028	0.042	0.091	-30.0%
Canary									0.014	0.264	0.278	-95.0%
Chilipepper										0.014	0.014	-100.0%
Pacific Ocean Perch							0.014				0.014	0.0%
Yelloweye								0.014	0.014		0.028	0.0%
Yellowtail			0.042					0.014	0.042	0.153	0.251	-73.2%
Unspecified									0.014	0.056	0.070	-80.0%
Lingcod								0.014	0.097	0.903	1.014	-89.1%
Other Groundfish [2/]				0.021	0.042	0.042	0.007	0.097	0.222	0.570	1.064	-55.1%
Pacific Halibut									0.042	0.472	0.514	-91.8%

[1/] Based on maximum 4-spread configuration, which is the current regulation for Oregon ocean waters south of Cape Falcon. Calculated as the total catch/day for the four spreads 4 to 10 fm above the cannonball divided by the sum of catch/day for the four spreads 2 to 8 fm above the cannonball.

[2/] Primarily hake and flatfish.

TABLE 4.2.4-1. Incidental catch levels of Coastal Pelagic Species [1/] in the at-sea whiting fishery during 1996- 2000 (metric tons). [2/]

Species	1996	1997	1998	1999	2000
Pacific mackerel	244.34	54.15	458.78	1.47	15.52
Jack mackerel	60.19	13.18	229.14	53.84	52.98
Pacific sardine	0.37	0.31	1.94	0.18	0.06

[1/] The Coastal Pelagic Species Fishery Management Plan did not become effective until 1999.
[2/] Source: NORPAC observer data.

Table 4.2.2.9-1. IPHC halibut survey data

Table 4.2.2.9-2. WDFW observations of their recreational charter halibut fishery

TABLE 4.3.5-1. Expected catch [1/] of important groundfish species under the proposed tribal fishery management option.

Species	Longline		Trawl		Troll		Total- All Gears	
	lbs	mt	lbs	mt	lbs	mt	lbs	mt
black	0	0	<50	<0.02	0	0	<0	<0.02
lingcod	6,000-7,500	2.7-3.40	2,000	0.91	2,000	0.91	10,000-11,500	4.54-5.22
canary	1,000-1,500	0.45-0.68	2,500	1.13	1,000	0.45	4,500-5,000	2.04-2.27
yelloweye	?	?	50	0.02	100	0.05	≥150	≥0.07
yellowtail	200	0.09	250,000-500,000	113.40-226-80	10,000	4.54	260,200-510,200	118.03-231.43
widow	0	0	30,000-50,000	13.61-22.68	?	?	≥30,000-50,000	≥13.61-22.68
POP	0	0	0	0	0	0	0	0
darkblotched	0	0	0	0	0	0	0	0
thornyheads	4,500-6,000	2.04-2.72	0	0	0	0	4,500-6,000	2.04-2.72

[1/] Numbers not presented as a range represent an upper bound based on landing trends for the past several years.

TABLE 4.4.2.1-1. Estimated 2003 recreational fishing mortality for overfished shelf rockfish species taken incidentally in the nearshore fishery south of Cape Mendocino.

HIGH IMPACT SCENARIO

Distribution of estimated 2001 landings (mt) by depth.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.5	8.8	87.8	109.0
canary	4.8	6.1	22.5	33.4
yelloweye	0.3	0.9	3.4	4.6

Distribution of estimated 2003 catch (mt) by depth. Effort shift = 1.36.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	17.0	11.9	0.0	28.9
canary	6.5	8.3	0.0	14.8
yelloweye	0.4	1.3	0.0	1.7

Distribution of estimated 2003 fishing mortality (mt) by depth. Hooking Mortality (0-59 ft) = 0.159; Hooking Mortality (60-119 ft) = 0.500.

Species	All Modes <60ft	60-119 ft	120+ ft	*Total*
bocaccio	2.7	6.0	0.0	*8.7*
canary	1.0	4.1	0.0	*5.2*
yelloweye	0.1	0.6	0.0	*0.7*

LOW IMPACT SCENARIO

Distribution of estimated 2001 landings (mt) by depth

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.5	8.8	87.8	109.0
canary	4.8	6.1	22.5	33.4
yelloweye	0.3	0.9	3.4	4.6

Distribution of estimated 2003 catch (mt) by depth. Effort shift = 1.03.

Species	All Modes <60ft	60-119 ft	120+ ft	Total
bocaccio	12.9	9.0	0.0	21.9
canary	4.9	6.3	0.0	11.2
yelloweye	0.3	1.0	0.0	1.3

Distribution of estimated 2003 fishing mortality (mt) by depth. Hooking Mortality (0-59 ft) = 0.051; Hooking Mortality (60-119 ft) = 0.339.

Species	**All Modes <60ft**	**60-119 ft**	**120+ ft**	***Total***
bocaccio	0.7	3.1	0.0	*3.7*
canary	0.2	2.1	0.0	*2.4*
yelloweye	0.0	0.3	0.0	*0.3*

TABLE 4.4.2.1-2. Effects of some different approaches for distributing nearshore rockfish between the recreational sector and commercial fleets.

Scenario #1: 540.8 mt OY reduced by amount of non-permit landings in 120+ ft and preferred depth range for each species; OY= 451.7; Commercial and Recreational % based upon 1994-2000 landings

	MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes	104.8	56.3	59.0	43.7	45.8
CA Scorpionfish	84.9	24.8	21.0	75.2	63.8
Deeper NS Rockfishes	262.0	21.3	55.8	78.7	206.2
Total	451.7	30.1	135.9	69.9	315.8

Scenario #1A: Comm. : Rec. Ratio for shallow Sps. based upon 1994-2000 landings; Deeper NS RF % adjusted for overall allotment = 20/80

	MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes	104.8	56.3	59.0	43.7	45.8
CA Scorpionfish	84.9	24.8	21.0	75.2	63.8
Deeper NS Rockfishes	262.0	4.0	10.5	96.0	251.5
Total	451.7	20.0	90.6	80.0	361.2

Scenario #1B: Comm.: Rec. Ratio for shallow Sps. based upon 1983-89 & 93-99 landings; Deeper NS RF % adjusted for overall allotment = 20/80

	MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes	104.8	37.0	38.8	63.0	66.1
CA Scorpionfish	84.9	24.8	21.0	75.2	63.8
Deeper NS Rockfishes	262.0	11.6	30.4	88.4	231.6
Total	451.7	20.0	90.2	80.0	361.5

Scenario #2: Recreational:Commercial Ratio of 1:1 Applied to Each Sector

	MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes	104.8	50.0	52.4	50.0	52.4
CA Scorpionfish	84.9	50.0	42.4	50.0	42.4
Deeper NS Rockfishes	262.0	50.0	131.0	50.0	131.0
Total	451.7	50.0	225.9	50.0	225.9

Scenario #3: Recreational:Commercial Ratio of 7:3 Applied to Each Sector

	MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes	104.8	30.0	31.5	70.0	73.4
CA Scorpionfish	84.9	30.0	25.5	70.0	59.4
Deeper NS Rockfishes	262.0	30.0	78.6	70.0	183.4
Total	451.7	30.0	135.5	70.0	316.2

Scenario #4

Recreational:Commercial Ratio of 5:1 Applied to Each Sector

	MT	Comm %	Comm MT	Rec %	Rec MT
Shallow NS Rockfishes	104.8	16.7	17.5	83.3	87.3
CA Scorpionfish	84.9	16.7	14.2	83.3	70.7
Deeper NS Rockfishes	262.0	16.7	43.8	83.3	218.2

TABLE 4.4.2.1-2. Effects of some different approaches for distributing nearshore rockfish between the recreational sector and commercial fleets.

	Total	451.7	16.7	75.4	83.3	376.3

TABLE 4.4.2.2-1. Landings (mt) of nearshore groundfish species off Oregon by select marine species groups and year.

	Black and Blue Rockfish			Other Nearshore Rockfish			Cabezon			Greenling		
Year	Comm.	Rec.	Total	Comm.	Rec.	Total	Comm.	Rec.	Total	Comm.	Rec.	Total
1995	110.2	410.1	520.3	10.4	6.4	16.8	5.9	14.1	20.0	0.0	4.1	4.1
1996	147.0	430.9	577.9	9.1	7.7	16.8	5.9	14.1	20.0	0.5	3.6	4.1
1997	181.4	445.9	627.3	24.5	13.6	38.1	20.9	24.5	45.4	10.4	5.4	15.9
1998	197.8	403.2	601.0	52.6	13.6	66.2	26.8	15.0	41.7	10.0	3.6	13.6
1999	129.3	356.1	485.3	35.4	18.6	54.0	26.3	17.2	43.5	24.5	5.9	30.4
2000[1/]	112.9	384.2	497.1	21.3	11.3	32.7	31.3	15.9	47.2	19.5	5.0	24.5
2001	152.0	376.0	528.0	26.3	9.1	35.4	46.3	12.2	58.5	29.0	4.1	33.1

[1/] Proposal for 2003 Oregon nearshore management is to cap commercial and recreational harvest at the 2000 level as indicated by the levels outlined. The commercial nearshore rockfish OY would be 134.3 mt and the recreational OY would be 395.5 mt for a total of 529.8 mt.

CHAPTER 4
FIGURES

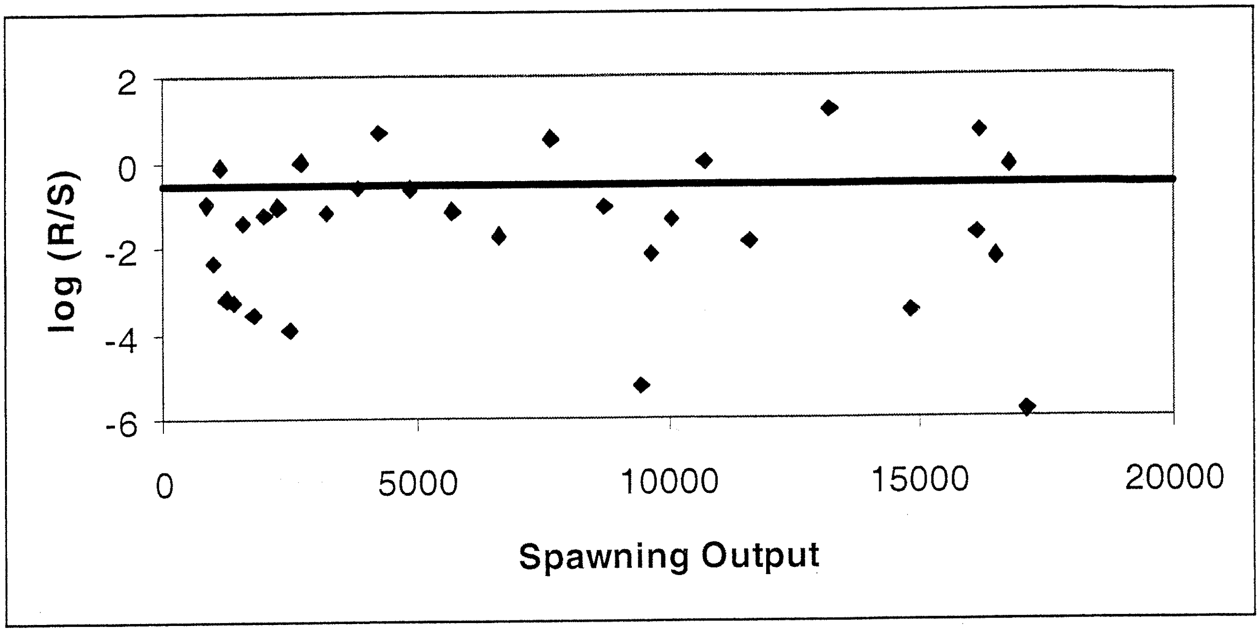


Figure 4.2.1.1-1. Historical bocaccio reproductive success related to parental abundance. Horizontal line is replacement level in the absence of fishing (MacCall and He 2002b).

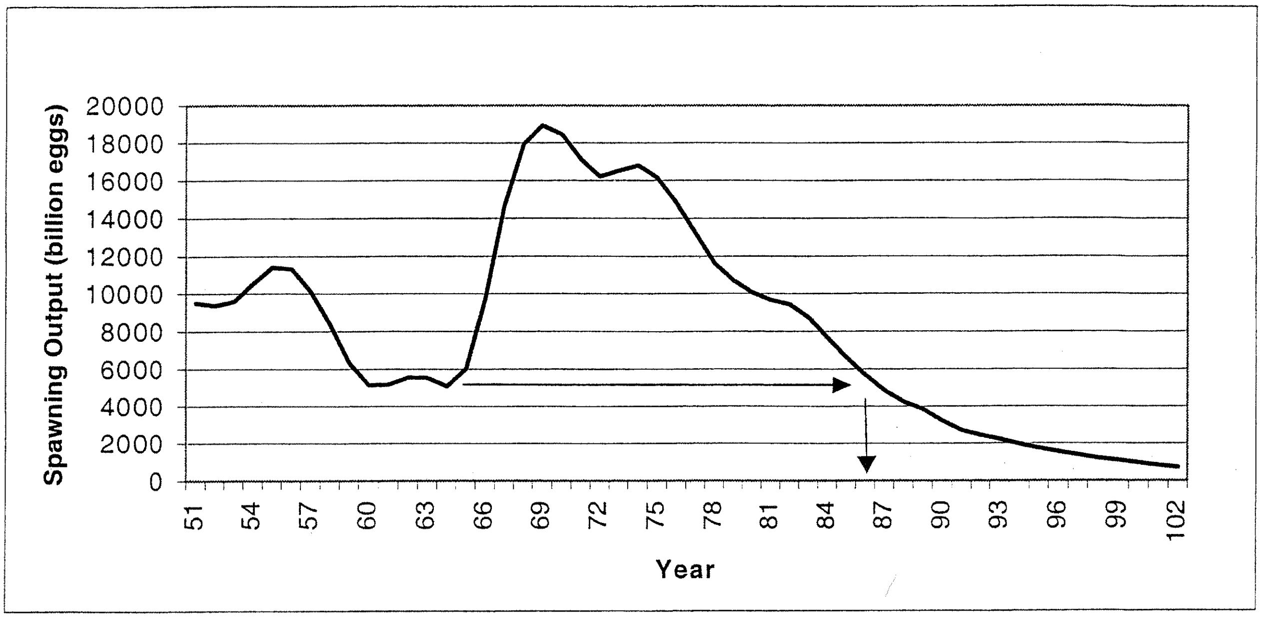


Figure 4.2.1.1-2. Time series of bocaccio abundance, showing rationale for using years 1953 to 1986 as basis for estimating unfished abundance (MacCall and He 2002b).

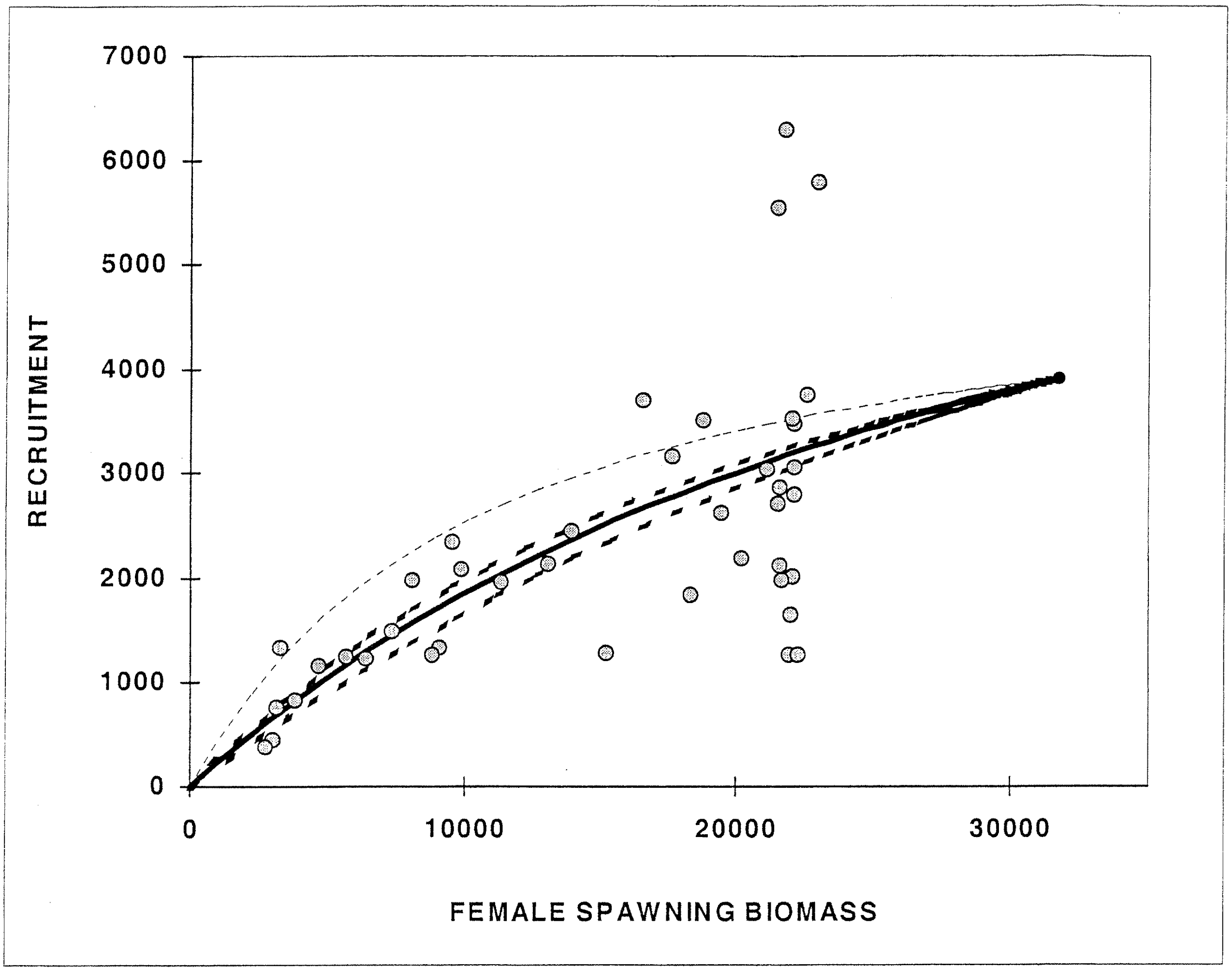


Figure 4.2.1.1-3. Canary rockfish spawner-recruitment relationship from Methot and Piner (2002b). Bold line is the best estimate of steepness (0.33). Bracketing dashed lines are steepness of 0.289 and 0.36. The light upper line has a steepness of 0.50 which clips the upper edge of recent recruitments and is closer to the general rockfish steepness level estimated by Dorn (2000).

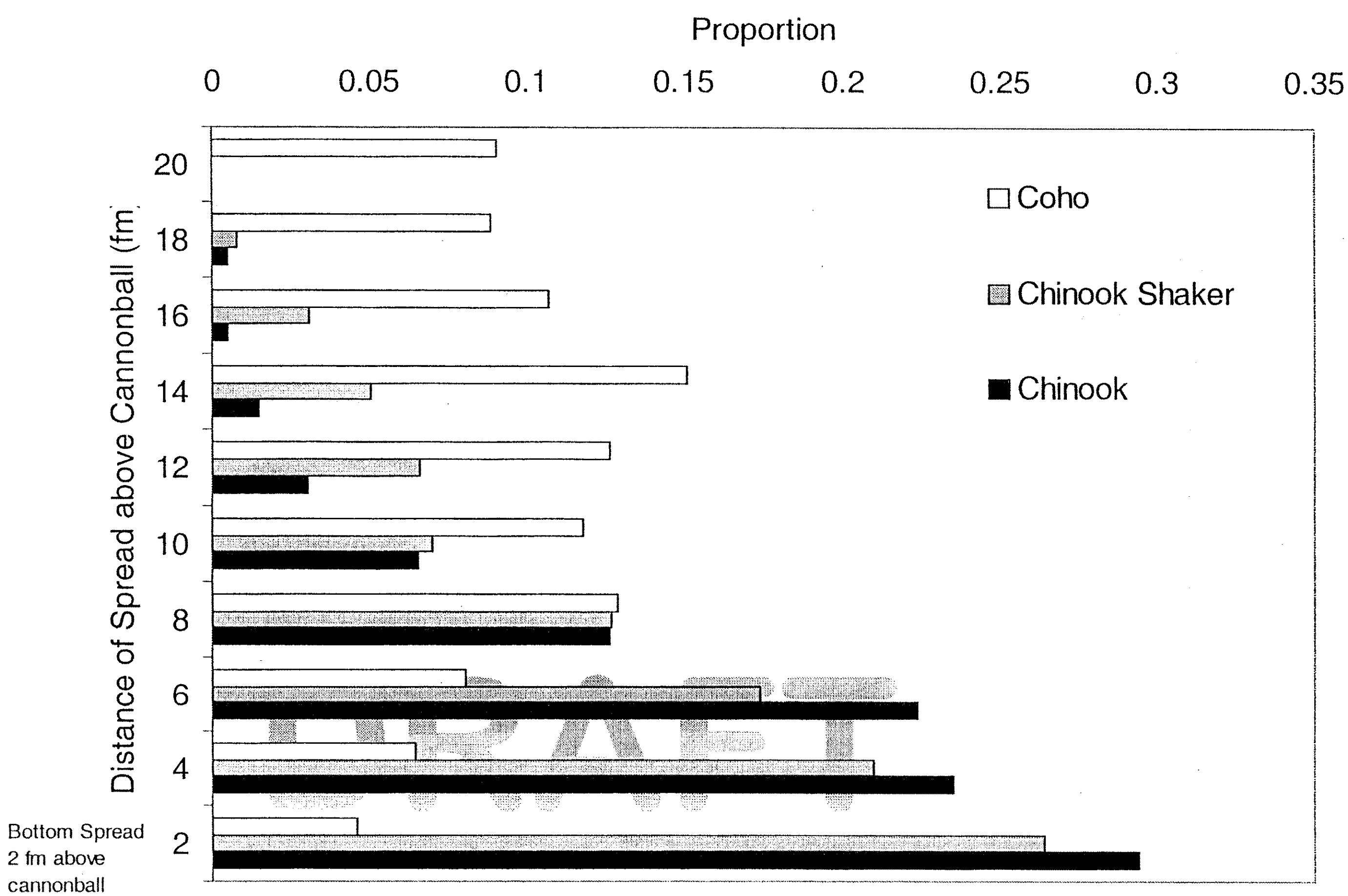


Figure 4.2.2.1-1. Proportion of salmon catch/day by spread location for troll salmon gear off central Oregon (Lawson 1990).

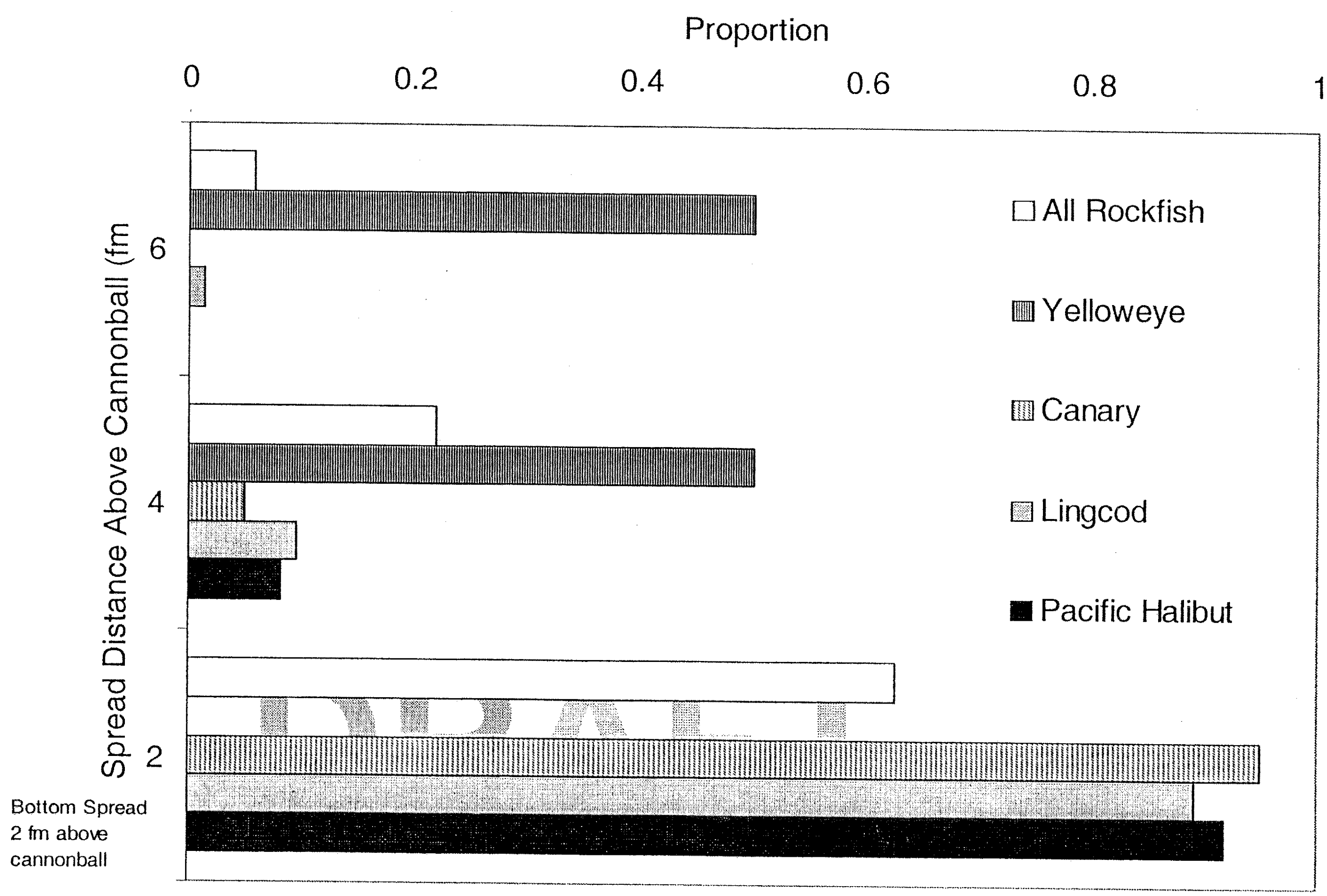
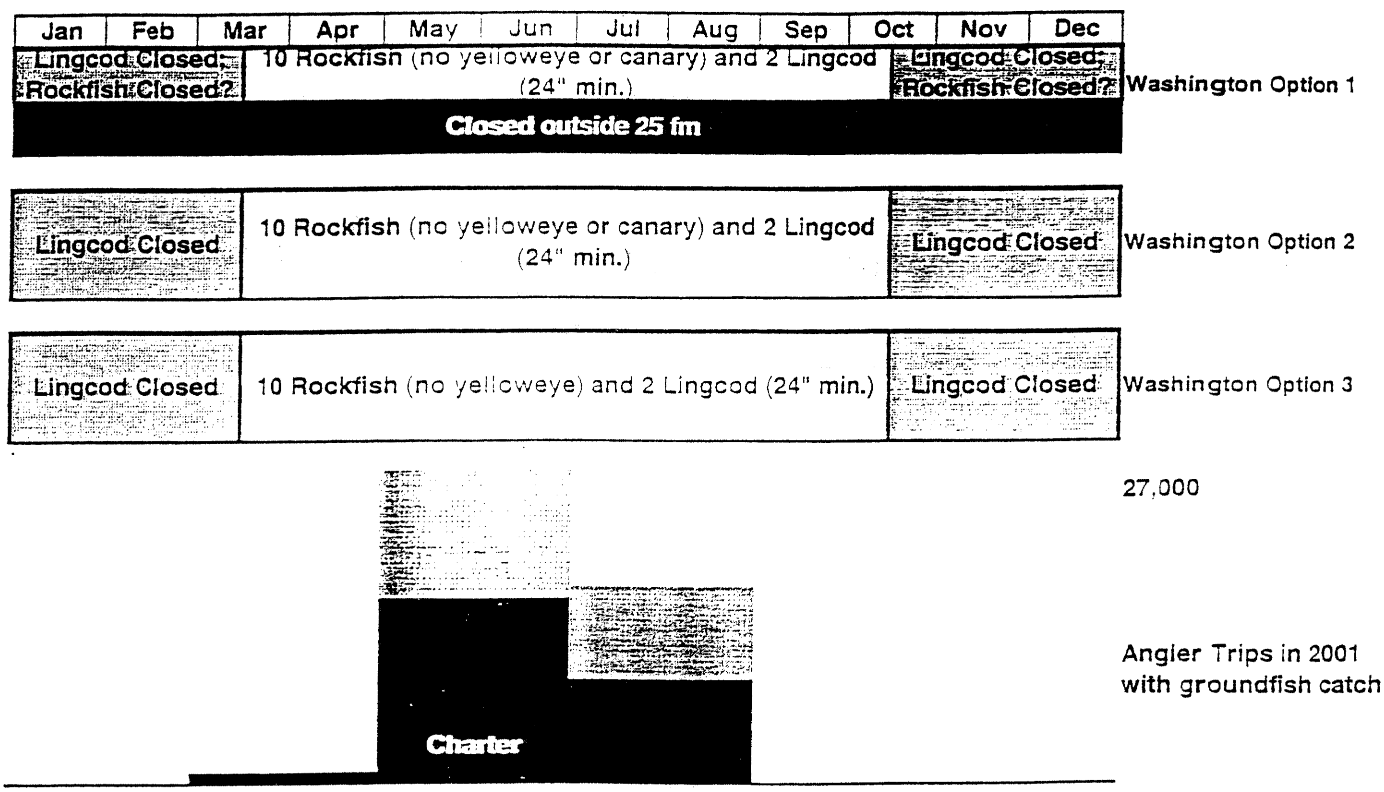


Figure 4.2.2.1-2. Proportion of selected groundfish and Pacific halibut catch/day by spread location for troll salmon gear off central Oregon (Lawson 1990).

Figure 4.3.4-1. Recreational rockfish and lingcod season options for 2003 in Washington, and 2001 effort patterns for Washington.



4.3.4-2. **Recreational rockfish and lingcod season options for 2003 in Oregon and California nor of Cape Mendocino, and 2001 effort patterns for Oregon.**

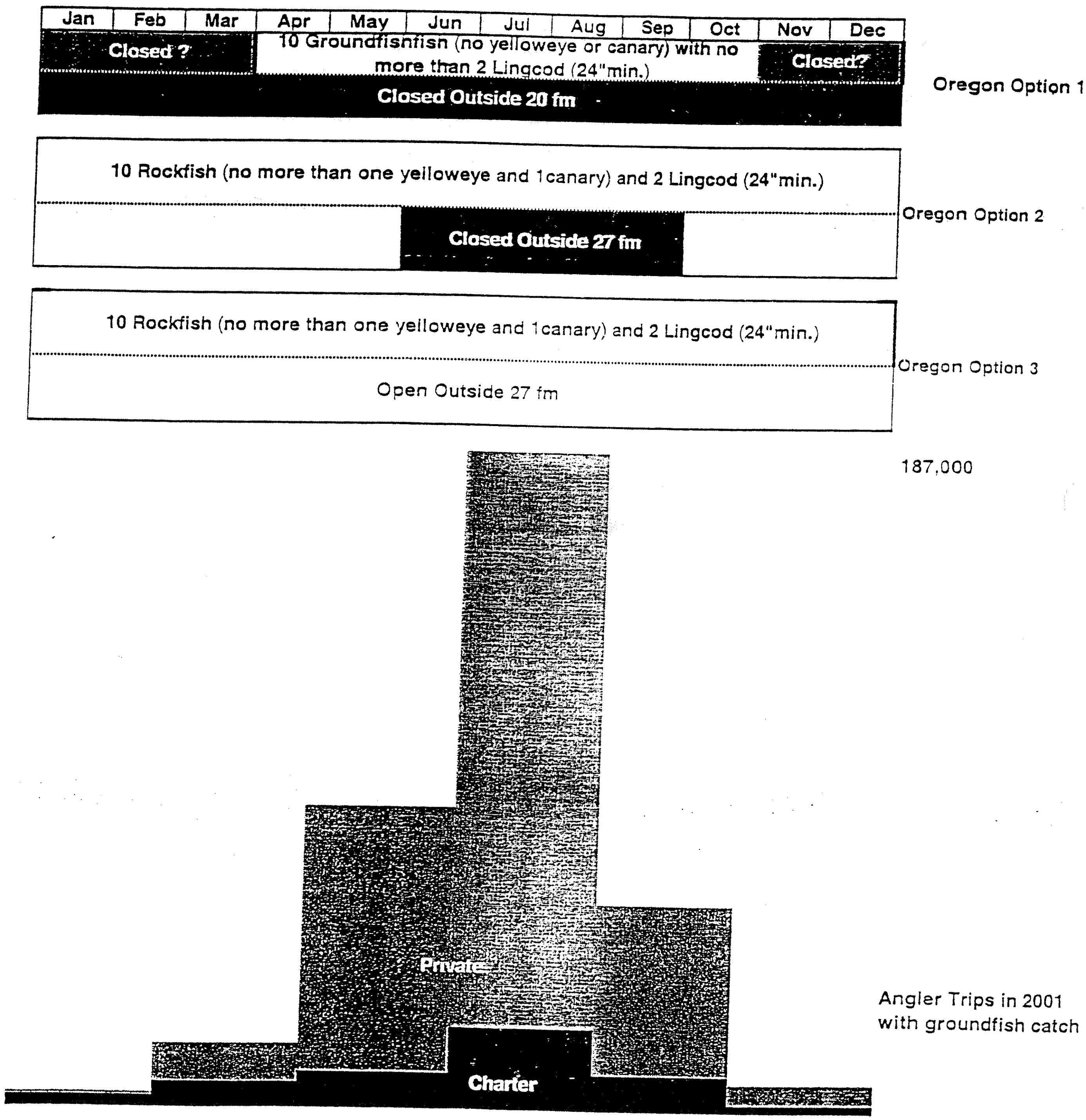
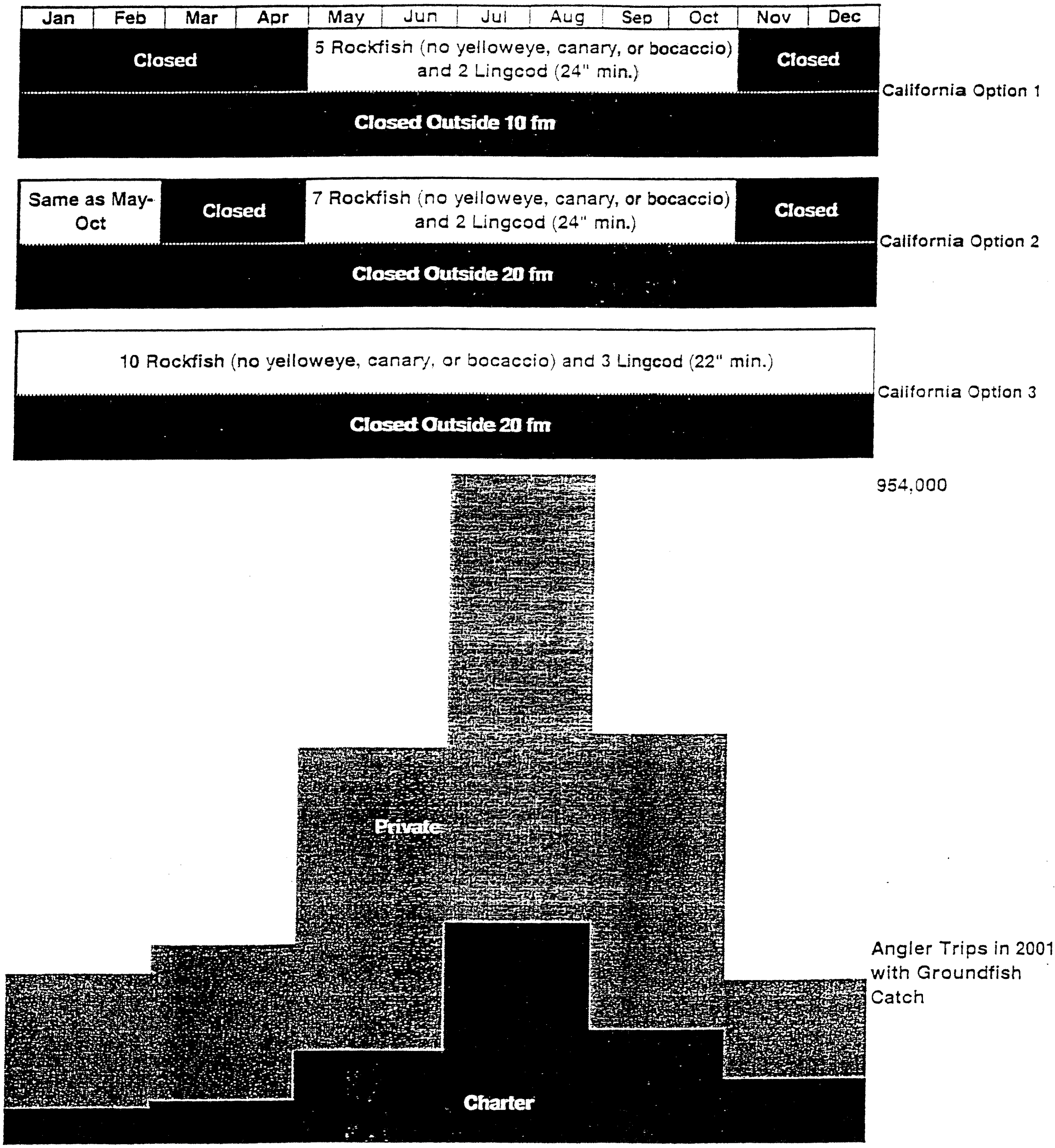


Figure 4.2.4-3. Recreational rockfish and lingcod season options for 2003 in California south of Cape Mendocion, and 2001 effort patterns for California.



Rod Moore 9/12/02 3:13pm

Exhibit C.4.b
Supplemental GAP Report
September 2002

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON STATUS OF FISHERIES AND INSEASON ADJUSTMENTS

The Groundfish Advisory Subpanel (GAP) met with the Groundfish Management Team (GMT) and recommends the following inseason adjustments to the groundfish fishery:

Agree w/ GMT Statement #5

LIMITED ENTRY TRAWL

North of 40 degrees, 10 minutes:

Beginning November 1,2002, for vessels that during the period land fish ONLY with small footrope trawl gear, the following limits apply:

Dover sole	12,000 lbs / 2 month period
Sablefish	2,600 lbs / 2 month period
Longspine thornyhead	6,000 lbs / 2 month period
Shortspine thornyhead	2,200 lbs / 2 month period

Beginning November 1,2002, for vessels that during the period land fish ONLY with large footrope or midwater trawl gear, the following limits apply:

Dover sole	14,000 lbs / 2 month period
Sablefish	2,600 lbs / 2 month period
Longspine thornyhead	8,000 lbs / 2 month period
Shortspine thornyhead	2,200 lbs / 2 month period

For vessels using any trawl gear, beginning November 1, 2002:

Slope rockfish	1,800 lbs / 2 month period

For vessels using midwater gear only, the GMT has presented 2 options for cumulative limits on widow rockfish and yellowtail rockfish. The preferred option for the GAP is to allow a coastwide fishery for widow rockfish and a northern fishery for yellowtail. However, the GAP recognizes the concern regarding bocaccio bycatch and defers to the Council on which option to choose, as long as one of them is chosen.

South of 40 degrees, 10 minutes

Beginning November 1, 2002, the following limits apply:

agree w/ GMT stmnt #5

Petrale sole	30,000 lbs / 2 month period
Rex sole	2,000 lbs / trip
Arrowtooth flounder & English sole	1,000 lbs / trip

South of 36 degrees:

Beginning October 1, 2002

Slope rockfish	25,000 lbs / 2 mos

Beginning November 1, 2002

Slope rockfish	40,000 lbs / 2 mos

support GMT #2's

LIMITED ENTRY FIXED GEAR

North of 40 degrees, 10 minutes

Beginning October 1, 2002, the following limits apply:

Near shore rockfish	7,000 pounds / 2 mos, with a sublimit of 3,000 lbs of species other than blue & black

North of 36 degrees

Beginning October 1, 2002:	
Daily trip limit sablefish	300 lbs / day or 1 landing per week of up to 900 lbs, not to exceed 2,700 lbs / 2 mos

South of 40 degrees, 10 minutes

Beginning October 1, 2002, lingcod is closed

South of 36 degrees:

Beginning September 1, 2002:	
Slope rockfish	25,000 lbs / 2 mos

OPEN ACCESS GEAR

North of 40 degrees, 10 minutes

Beginning October 1, 2002	
Nearshore rockfish	7,000 pounds / 2 mos, with a sublimit of 3,000 lbs of species other than blue & black

South of 40 degrees, 10 minutes

Beginning October 1, 2002, lingcod is closed

ALL GEARS

Beginning October 1, 2002, dogfish may not be retained coastwide

Beginning October 1, 2002, between 40 degrees, 10 minutes and 36 degrees, sablefish 20 inches and greater in length may be retained by all gears.

The GAP also asks that the regulations clarify for enforcement purposes that "per trip" limits should be measured when the vessel returns to port, not while it is in the process of fishing.

Jim Hastie
9-12-02 2:54 pm

Exhibit C.4.b
Supplemental GMT Report
September 2002

GMT proposed trip-limit changes for the remainder of 2002.

Limited-entry trawl DTS - north of 40°10', change in period 6 only

	Current	Proposed
Sablefish	1,250 lb/month	**2,600 lb/2 months**
Longspine	1,000 lb/month	**8,000 lb/2 months**
Shortspine	750 lb/month	**2,200 lb/2 months**
Dover sole	7,000 lb/month	**22,000/2 mo**, If only large footrope or midwater gear are used throughout the period
		12,000/2 mo, If small footrope gear other than midwater gear is used for any trip in the period

Limited-entry minor slope rockfish

Trawl - north of 36°, change in period 6 only

Current	Proposed
300 lb/month	**1,800 lb/2 months**

South of 36°	Current		Proposed	
	Period 5	Period 6	Period 5	Period 6
LE Trawl	15,000 lb/2 months		**25,000 lb/2 months**	**40,000 lb/2 months**
LE Fixed-gear	15,000 lb/2 months		**25,000 lb/2 months**	

Limited-entry trawl, mid-water widow/yellowtail, period 6 only

	Widow	Yellowtail
If north of 40°10' only	13,000 lb/2 months	20,000 lb/2 months
If coastwide widow	12,000 lb/2 months	18,000 lb/2 months (north only)

Potential range of bocaccio impacts: 0.1-0.5 mt

Limited-entry trawl - south of 40°10', change in period 6 only

	Current	Proposed
Petrale	1,000 lb / trip	**30,000 lb/2months**
Rex		**2,000 lb / trip**
English		**1,000 lb / trip**
Arrowtooth		

Limited-entry fixed gear and open access

	Current	Proposed
Daily-trip-limit sablefish north of 36° (beginning Oct. 1)	300 lb/day, or once/week up to 800 lb with a 2-month limit of 2,400 lb	300 lb/day, or **once/week up to 900 lb** with a 2-month limit of **2,700 lb**
Nearshore rockfish, north of 40°10' (beginning Oct. 1)	6,000 lb/2 months overall 3,000 lb/2 months species other than black or blue rockfish	**7,000 lb/2 months** overall **3,000 lb/2 months** species other than black or blue rockfish
Lingcod during October - south of 40°10', inside 20 fm	500 lb / month	**Closed**

All gears

Retention of all 'Other Groundfish' species permitted, except spiny dogfish, beginning October 1

Table 3. Trip Limits[1] and Gear Requirements[2] for Limited Entry Trawl Gear

Other Limits and Requirements Apply -- Read Sections IV. A. and B. NMFS Actions before using this table

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	**NOTE FOR NORTH OF 40°10' N. LAT: ALL BOTTOM TRAWLING WITH GROUNDFISH GEAR IS PROHIBITED WITHIN THE DBCA11/, ALL TRAWLING IS PROHIBITED SHOREWARD OF THE DBCA DURING SEPTEMBER, SMALL FOOTROPE GEAR5/ IS REQUIRED SHOREWARD OF THE DBCA OCT - DEC, AND LARGE FOOTROPE GEAR IS PERMITTED SEAWARD OF THE DBCA SEPT - DEC. PROHIBITION AGAINST TRAWLING SHOREWARD OF THE DBCA ALSO APPLIES TO THE "B" PLATOON FISHING AGAINST JULY - AUGUST LIMITS.						
	**NOTE FOR SOUTH OF 40°10' N. LAT: ALL TRAWLING FOR GROUNDFISH IS PROHIBITED EXCEPT FOR DTS COMPLEX, SLOPE ROCKFISH SPECIES, SPECIFIED FLATFISH, AND "OTHER FISH" TAKEN INCIDENTALLY IN THOSE FISHERIES.						
1	**Minor slope rockfish**						
2	North	1,800 lb/ 2 months				600 lb / 2 months	**1,800 lb / 2 months**
3	South						
4	40°10' - 36° N. lat.	50,000 lb/ 2 months		5,000 lb/ 2 months			
5	South of 36° N. lat.	50,000 lb/ 2 months				**25,000 lb/ 2 months**	**40,000 lb/2 months**
6	**Splitnose - South**						
7	40°10' - 36° N. lat.	25,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb / 2 months	
8	South of 36° N. lat.	25,000 lb/ 2 months				15,000 lb/ 2 months	
9	**Pacific ocean perch - North[4]**	2,000 lb/ month		4,000 lb/ month	4,000 lb/ 2 months		2,000 lb / month
10	**Chilipepper - South[6]**						
11	mid-water trawl	25,000 lb/ 2 months			CLOSED[7]		
12	small footrope trawl	7,500 lb/ 2 months		4,000 lb/ 2 months			
13	large footrope trawl	500 lb/ trip, not to exceed small footrope cumulative 2-month limits at any time during the year					
14	**DTS complex - North[11]**	ALL TRAWLING IS PROHIBITED SHOREWARD OF THE DBCA DURING SEPTEMBER Small footrope required Oct - Dec shoreward of the DBCA; large footrope permitted Sept - Dec seaward of the DBCA					
15	Sablefish	6,000 lb/ 2 months		3,500 lb/ 2 months	3,000 lb/ 2 months	In times and areas where open - 3,500 lb/ 2 months	**2,600 lb/ 2 months**
16	Longspine thornyhead	10,000 lb/ 2 months		6,000 lb/ 2 months	1,500 lb/ 2 months	In times and areas where open - 10,000 lb/ 2 months	**8,000 lb/ 2 months**
17	Shortspine thornyhead	2,600 lb/ 2 months		2,000 lb/ 2 months	1,500 lb/ 2 months	In times and areas where open - 2,600 lb/ 2 months	**2,200 lb/ 2 months**
18	Dover sole	30,000 lb/ 2 months	28,000 lb/ 2 months	14,000 lb/ 2 months		In times and areas where open - 20,000 lb/ 2 months	**22,000 lb/ 2 months providing that only large footrope gear is used to land any groundfish species during entire limit period , if small footrope bottom trawl is used at any time constrained to lower limit of 12,000 lb/ 2 months.**
19	DTS complex - South						
20	Sablefish[9]	4,500 lb/ 2 months					
21	Longspine thornyhead	10,000 lb/ 2 months					
22	Shortspine thornyhead	2,600 lb/ 2 months					
23	Dover sole	22,000 lb/ 2 months					
24	**Flatfish - North[11]**	ALL TRAWLING IS PROHIBITED SHOREWARD OF THE DBCA DURING SEPTEMBER Small footrope required Oct - Dec shoreward of the DBCA; large footrope permitted Sept - Dec seaward of the DBCA					
25	All other flatfish[3]	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits, includes arrowtooth flounder. SMALL FOOTROPE: 15,000 lb/ month	SMALL FOOTROPE: 35,000 lb/ month	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits. Retention of **petrale and rex sole** prohibited if large footrope gear is onboard. SMALL FOOTROPE: 30,000 lb/ month, no more than 10,000 of which may be petrale sole	SMALL FOOTROPE REQUIRED: 40,000 lb/ month, no more than 15,000 of which may be petrale sole	In times and areas where open - 25,000 lb/ month, no more than 10,000 of which may be petrale sole.	50,000 lb/ month, no more than 20,000 lb / month of which may be petrale
26	Petrale sole	Not limited, large footrope allowed					
27	Rex sole						
28	Arrowtooth flounder	LARGE FOOTROPE: included in "all other flatfish" limit. SMALL FOOTROPE: 30,000 lb/ trip		SMALL FOOTROPE REQUIRED: 7,500 lb/ trip, no more than 30,000 lb/ month; large footrope prohibited		In times and areas where open - 3,500 lb/ trip, no more than 15,000 lb/ month.	30,000 lb/ trip
29	**Flatfish - South**						
30	All other flatfish[3]	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits, includes arrowtooth flounder. SMALL FOOTROPE: 70,000 lb/ month, no more than 40,000 lb of which may be species other than Pacific sanddabs.		LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits. Retention of **petrale and rex sole** prohibited if large footrope gear is onboard. SMALL FOOTROPE: 70,000 lb/ month, no more than 40,000 lb of which may be species other than Pacific sanddabs. Of the species other than Pacific sanddabs, no more than 15,000 lb may be petrale sole.	CLOSED[7] With the exception of 1,000 lb/ trip of rex sole, petrale sole, English sole, and arrowtooth flounder combined when landed with DTS complex. The amount of per trip flatfish landings must not exceed the amount of DTS landed. Landings can be made with small or large footrope gear. or petrale and petrale		**If Council moves to adopt area closure for 50-150 fm or 50-250 fm then limits would be be re-calculated by the GMT and returned to the Council at that time.** **CLOSED[7]** **With the following exceptions: Petrale sole 30,000 lb/2 months; Rex sole 2,000 lb/ trip; and 1,000 lb/ trip of English sole and arrowtooth flounder combined when landed with DTS complex. The amount of per trip flatfish landings must not exceed the amount of DTS landed. Landings can be made with small or large footrope gear.**
31	Petrale sole	Not limited, large footrope allowed					
32	Rex sole						
33	Arrowtooth flounder	LARGE FOOTROPE: included in "all other flatfish" limit. SMALL FOOTROPE: 30,000 lb/ trip		SMALL FOOTROPE REQUIRED: 7,500 lb/ trip, no more than 30,000 lb/ month; large footrope prohibited			
35	**Whiting[4]**	20,000 lb/ trip		Primary Season		CLOSED[7]	

<< TABLE 3 CONTINUED ON NEXT PAGE >>

Table 3. (CONTINUED) Trip Limits1/ and Gear Requirements2/ for Limited Entry Trawl Gear

Other Limits and Requirements Apply -- Read Sections IV. A. and B. NMFS Actions before using this table

NOTE FOR **NORTH OF 40°10' N. LAT: ALL **BOTTOM TRAWLING WITH GROUNDFISH GEAR IS PROHIBITED** WITHIN THE DBCA11/, ALL **TRAWLING IS PROHIBITED** SHOREWARD OF THE DBCA DURING SEPTEMBER, **SMALL FOOTROPE GEAR5/ IS REQUIRED SHOREWARD** OF THE DBCA OCT - DEC, AND **LARGE FOOTROPE GEAR IS PERMITTED** SEAWARD OF THE DBCA SEPT - DEC. **PROHIBITION AGAINST TRAWLING** SHOREWARD OF THE DBCA ALSO APPLIES TO THE "B" PLATOON FISHING AGAINST JULY - AUGUST LIMITS.

NOTE FOR **SOUTH OF 40°10' N. LAT: ALL **TRAWLING FOR GROUNDFISH IS PROHIBITED** EXCEPT FOR DTS COMPLEX, SLOPE ROCKFISH SPECIES, SPECIFIED FLATFISH, AND "OTHER FISH" TAKEN INCIDENTALLY IN THOSE FISHERIES.

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
37	**Minor shelf rockfish**						
38	North	300 lb/ month		1,000 lb/ month, no more than 300 lb of which may be yelloweye rockfish		CLOSED7/	300 lb / month
39	South	500 lb/ month		1,000 lb/ month, no more than 300 lb of which may be yelloweye rockfish	CLOSED7/		
40	**Canary rockfish**						
	North	200 lb/ 2 months		600 lb/ 2months	600 lb/ 2 months	CLOSED7/	200 lb / month
	South				CLOSED7/		
	Widow rockfish						
41	North						
42	mid-water trawl	CLOSED7/		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative widow limit of 1,500 lb/ month		**CLOSED7/**	**If coastwide 12,000 lb/ 2 months if north only 13,000 lb/ 2 months**
43	small footrope trawl	1,000 lb/ month				CLOSED7/	
	South						
	mid-water trawl	CLOSED7/		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative widow limit of 1,500 lb/ month	**CLOSED7/ if coastwide Nov-Dec 12,000 lb/ 2 months**		
	small footrope trawl	1,000 lb/ month			CLOSED7/		
44	**Yellowtail - North6/**						
45	mid-water trawl	CLOSED7/		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative yellowtail limit of 2,000 lb/ month		**CLOSED7/**	**If coastwide 18,000 lb/ 2 months if north only 20,000 lb/2 months**
46	small footrope trawl	In landings without flatfish, 1,000 lb/ month. As flatfish bycatch, per trip limit is the sum of 33% (by weight) of all flatfish except arrowtooth flounder, plus 10% (by weight) of arrowtooth flounder. Combined with and without flatfish, not to exceed 30,000 lb/ 2 months.				CLOSED7/	As flatfish bycatch, per trip limit is the sum of 33% (by weight) of all flatfish except arrowtooth flounder, plus 10% (by weight) of arrowtooth flounder not to exceed 4,500 lb/ month.
47	**Bocaccio - South6/**	600 lb/ 2 months		1,000 lb/ 2 months	CLOSED7/		
48	**Cowcod**	CLOSED7/					
49	**Minor nearshore rockfish**						
50	North	300 lb/ month				CLOSED7/	
51	South	300 lb/ month			CLOSED7/		
	Lingcod8/						
	North	800 lb/ 2 months		1,000 lb/ 2 months		500 lb / month	
	South			1,000 lb/ 2 months	CLOSED7/		
52	**Other Fish10/**	Not limited			Grenadier retention permitted	**Not limited, with the exception of dogfish which is prohibited**	

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ Gear requirements and prohibitions are explained above. See IV.A.(14).

3/ "Other" flatfish means all flatfish at 50 CFR 660.302 except those in this Table 3 with species specific management measures, including trip limits.

4/ The whiting "per trip" limit in the Eureka area shoreward 100 fm is 10,000 lb/ trip from January 1 - August 31, 2002. From September 1 - December 31, 2002, the whiting fishery is closed.

5/ Small footrope trawl means a bottom trawl net with a footrope no larger than 8 inches (20 cm) in diameter. In areas where trawl gear is restricted, only one type of trawl gear is allowed on board at ony one time. See above.

6/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

7/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

8/ The minimum size limit for lingcod is 24 inches (61 cm) total length.

9/ The minimum size requirement for sablefish is 20 inches (XX cm) total lengthand. No more than 500 lb of undersized sablefish may be landed per trip.

10/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

11/ All bottom trawling is prohibited within the DBCA ; gear must be covered and stowed when transiting through the area. See IV.A.(22).

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 4. Trip Limits[1/] for Limited Entry Fixed Gear

Other Limits and Requirements Apply – Read Sections IV. A. and B. NMFS Actions before using this table

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	NOTE FOR FISHING SOUTH OF 40°10': ALL GROUNDFISH FISHING IS **CLOSED SEAWARD OF THE 20 FATHOM DEPTH CONTOUR, EXCEPT FOR SABLEFISH, THORNYHEADS, AND SLOPE ROCKFISH.						
1	**Minor slope rockfish**						
2	North	1,000 lb/ month		5,000 lb/ 2 months			2,000 lb/ 2 months
3	South						
4	40°10' - 36° N. lat.	25,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb/ 2 months	
5	South of 36° N. lat.	25,000 lb/ 2 months				**25,000 lb/2 months**	
6	**Splitnose - South**						
7	40°10' - 36° N. lat.	25,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb/ 2 months	
8	South of 36° N. lat.	25,000 lb/ 2 months				15,000 lb / 2 months	
9	**Pacific ocean perch - North[5/]**	2,000 lb/ month	4,000 lb/ month		4,000 lb/ 2 months		2,000 lb/ month
10	**Sablefish**						
11	North of 36° N. lat.[8/]	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months					**300 lb/ day, or 1 landing per week of up to 900 lb, not to exceed 2,700 lb/ 2 months**
12	South of 36° N. lat.	350 lb/ day, or 1 landing per week of up to 1,050 lb		300 lb/ day, or 1 landing per week of up to 900 lb			
13	**Longspine thornyhead**	9,000 lb/ 2 months					
14	**Shortspine thornyhead**	2,000 lb/ 2 months					
15	**Dover sole**	5,000 lb/ month (all flatfish)			North of 40°10': 5,000 lb/ month (all flatfish). South of 40°10': Shoreward of 20 ftm depth, 5,000 lb/month, otherwise CLOSED[4/]		
16	**Arrowtooth flounder**						
17	**Petrale sole**						
18	**Rex sole**						
19	**All other flatfish[2/]**						
20	**Whiting[3/]**	20,000 lb/ trip				CLOSED4/	
21	**Shelf rockfish, including minor shelf rockfish, widow and yellowtail rockfish[5/]**						
22	North	200 lb/ month					
23	South						
24	40°10' - 34°27' N. lat.	200 lb/ month	CLOSED[4/]	Shoreward of 20 ftm depth, 200 lb/ month, otherwise CLOSED[4/]	CLOSED[4/]		
25	South of 34°27' N. lat.	CLOSED[4/]	1,000 lb/ month				
26	**Canary rockfish**	CLOSED[4/]					
27	**Yelloweye rockfish**	CLOSED[4/]					
28	**Cowcod**	CLOSED[4/]					
29	**Bocaccio - South[5/]**						
30	40°10' - 34°27' N. lat.	200 lb/ month	CLOSED[4/]		CLOSED[4/]		
31	South of 34°27' N. lat.	CLOSED[4/]	200 lb/ month				
32	**Chilipepper - South[5/]**						
33	40°10' - 34°27' N. lat.	500 lb/ month	CLOSED[4/]		CLOSED[4/]		
34	South of 34°27' N. lat.	CLOSED[4/]	2,500 lb/ month				
35	**Minor nearshore rockfish**						
36	North	5,000 lb/ month, no more than 2,000 lb of which may be species other than black or blue rockfish[6/]		6,000 lb/ 2 months, no more than 3,000 lb of which may be species other than black or blue rockfish6/			**7,000 lb/ 2 months no more than 3,000 lb of which may be species other than black or blue rockfish6/**
37	South						
38	40°10' - 34°27' N. lat.	1,600 lb/ 2 months	CLOSED[4/]	Shoreward of 20 ftm depth, 1,600 lb/ 2 months, otherwise CLOSED[4/]		CLOSED[4/]	
39	South of 34°27' N. lat.	CLOSED[4/]	2,000 lb/ 2 months		Shoreward of 20 ftm depth, 2,000 lb/ 2 months, otherwise CLOSED[4/]		
40	**Lingcod[7/]**						
41	North	CLOSED[4/]		400 lb/ month			CLOSED[4/]
42	South						
43	40°10' - 34°27' N. lat.	CLOSED[4/]		Shoreward of 20 ftm depth, 400 lb/ month, otherwise CLOSED[4/]	Shoreward of 20 ftm depth, 400 lb/ month, otherwise CLOSED[4/]	**CLOSED[4/] October 1**	
44	South of 34°27' N. lat.			400 lb/ month			
45	**Other Fish[9/]**	Not limited			Grenadier retention permitted		**Not limited, with the exception of dogfish which is prohibited**

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 4 with species specific management measures, including trip limits.

3/ The whiting "per trip" limit in the Eureka area inside 100 fm is 10,000 lb/ trip. Outside Eureka area, the 20,000 lb/ trip limit applies. From September 1 - December 31, 2002, the whiting fishery is

4/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

5/ Yellowtail rockfish and widow rockfish coastwide and bocaccio and chilipepper rockfishes in the north are included in the trip limits for shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

6/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

7/ The minimum size limit for lingcod is 24 inches (61 cm) total length.

8/ The minimum size requirement for sablefish is 20 inches (XX cm) total length between 40°10' N. lat. and 36° N. lat.

9/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 5. Trip Limits[1/] for Open Access Gears
Other Limits and Requirements Apply -- Read Sections IV. A. and C. NMFS Actions before using this table
Exceptions for exempted gears at Section IV.C.

<table>
<tr><th>line</th><th>Species/groups</th><th>JAN-FEB</th><th>MAR-APR</th><th>MAY-JUN</th><th>JUL-AUG</th><th>SEP-OCT</th><th>NOV-DEC</th></tr>
<tr><td></td><td colspan="7">**NOTE FOR FISHING SOUTH OF 40°10': ALL GROUNDFISH FISHING IS CLOSED SEAWARD OF THE 20 FATHOM DEPTH CONTOUR, EXCEPT SABLEFISH AND SLOPE ROCKFISH.
** NOTE: EFFECTIVE JULY 1, 2002, THERE IS NO RETENTION OF GROUNDFISH WITH EXEMPTED TRAWL GEAR.</td></tr>
<tr><td>1</td><td>Minor slope rockfish</td><td colspan="6"></td></tr>
<tr><td>2</td><td>North</td><td colspan="6">Per trip, no more than 25% of weight of the sablefish landed</td></tr>
<tr><td>3</td><td>South</td><td colspan="6"></td></tr>
<tr><td>4</td><td>40°10' - 36° N. lat.</td><td colspan="2">10,000 lb/ 2 months</td><td colspan="2">5,000 lb/ 2 months</td><td colspan="2">1,800 lb/ 2 months</td></tr>
<tr><td>5</td><td>South of 36° N. lat.</td><td colspan="6">10,000 lb/ 2 months</td></tr>
<tr><td>6</td><td>Splitnose - South</td><td colspan="6">200 lb/ month</td></tr>
<tr><td>7</td><td>Pacific ocean perch - North[4/]</td><td colspan="6">100 lb/ month</td></tr>
<tr><td>8</td><td>Sablefish</td><td colspan="6"></td></tr>
<tr><td>9</td><td>North of 36° N. lat.[7/]</td><td colspan="6">300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months</td></tr>
<tr><td>10</td><td>South of 36° N. lat.</td><td colspan="2">350 lb/ day, or 1 landing per week of up to 1,050 lb</td><td colspan="4">300 lb/ day, or 1 landing per week of up to 900 lb</td></tr>
<tr><td>11</td><td>Thornyheads</td><td colspan="6"></td></tr>
<tr><td>12</td><td>North of 34° 27' N. lat.</td><td colspan="6">CLOSED[3/]</td></tr>
<tr><td>13</td><td>South of 34° 27' N. lat.</td><td colspan="6">50 lb/ day, no more than 2,000 lb/ 2 months</td></tr>
<tr><td>14</td><td>Dover sole</td><td colspan="3" rowspan="5">3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sanddabs</td><td colspan="3" rowspan="5">North of 40°10': 3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sandabs.
South of 40°10': Shoreward of 20 ftm, 3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sandabs, otherwise CLOSED[3/]</td></tr>
<tr><td>15</td><td>Arrowtooth flounder</td></tr>
<tr><td>16</td><td>Petrale sole</td></tr>
<tr><td>17</td><td>Rex sole</td></tr>
<tr><td>18</td><td>All other flatfish[2/]</td></tr>
<tr><td>19</td><td>Whiting</td><td colspan="4">300 lb/ month</td><td colspan="2">CLOSED[3/]</td></tr>
<tr><td>20</td><td colspan="7">Shelf rockfish, including minor shelf rockfish, widow and yellowtail rockfish[4/]</td></tr>
<tr><td>21</td><td>North</td><td colspan="6">200 lb/ month</td></tr>
<tr><td>22</td><td>South</td><td colspan="6"></td></tr>
<tr><td>23</td><td>40°10' - 34°27' N. lat.</td><td>200 lb/ month</td><td>CLOSED[3/]</td><td>Shoreward of 20 ftm depth, 200 lb/ month, otherwise CLOSED[3/]</td><td colspan="3" rowspan="2">CLOSED[3/]</td></tr>
<tr><td>24</td><td>South of 34°27' N. lat.</td><td>CLOSED[3/]</td><td colspan="2">500 lb/ month</td></tr>
<tr><td>25</td><td>Canary rockfish</td><td colspan="6">CLOSED[3/]</td></tr>
<tr><td>26</td><td>Yelloweye rockfish</td><td colspan="6">CLOSED[3/]</td></tr>
<tr><td>27</td><td>Cowcod</td><td colspan="6">CLOSED[3/]</td></tr>
<tr><td>28</td><td>Bocaccio - South[4/]</td><td colspan="6"></td></tr>
<tr><td>29</td><td>40°10' - 34°27' N. lat.</td><td>200 lb/ month</td><td colspan="2">CLOSED[3/]</td><td colspan="3" rowspan="2">CLOSED[3/]</td></tr>
<tr><td>30</td><td>South of 34°27' N. lat.</td><td>CLOSED[3/]</td><td colspan="2">200 lb/ month</td></tr>
<tr><td>31</td><td>Chilipepper - South[4/]</td><td colspan="6"></td></tr>
<tr><td>32</td><td>40°10' - 34°27' N. lat.</td><td>500 lb/ month</td><td colspan="2">CLOSED[3/]</td><td colspan="3" rowspan="2">CLOSED[3/]</td></tr>
<tr><td>33</td><td>South of 34°27' N. lat.</td><td>CLOSED[3/]</td><td colspan="2">2,500 lb/ month</td></tr>
<tr><td>34</td><td>Minor nearshore rockfish</td><td colspan="6"></td></tr>
<tr><td>35</td><td>North</td><td colspan="2">3,000 lb/ 2 months, no more than 1,200 lb of which may be species other than black or blue rockfish[5/]</td><td colspan="3">6,000 lb/ 2 months, no more than 3,000 lb of which may be species other than black or blue rockfish[5/]</td><td>7,000 lb/ 2 months no more than 3,000 lb of which may be species other than black or blue rockfish[5/]</td></tr>
<tr><td>36</td><td>South</td><td colspan="6"></td></tr>
<tr><td>37</td><td>40°10' - 34°27' N. lat.</td><td>1,200 lb/ 2 months</td><td>CLOSED[3/]</td><td>Shoreward of 20 ftm depth, 1,200 lb/ 2 months, otherwise CLOSED[3/]</td><td rowspan="2">Shoreward of 20 ftm depth, 1,200 lb/ 2 months, otherwise CLOSED[3/]</td><td colspan="2" rowspan="2">CLOSED[3/]</td></tr>
<tr><td>38</td><td>South of 34°27' N. lat.</td><td>CLOSED[3/]</td><td colspan="2">1,200 lb/ 2 months</td></tr>
<tr><td>39</td><td>Lingcod[6/]</td><td colspan="6"></td></tr>
<tr><td>40</td><td>North</td><td colspan="2">CLOSED[3/]</td><td colspan="3">300 lb/ month</td><td>CLOSED[3/]</td></tr>
<tr><td>41</td><td>South</td><td colspan="6"></td></tr>
<tr><td>42</td><td>40°10' - 34°27' N. lat.</td><td colspan="2" rowspan="2">CLOSED[3/]</td><td>Shoreward of 20 ftm depth, 300 lb/ month, otherwise CLOSED[3/]</td><td colspan="2" rowspan="2">Shoreward of 20 ftm depth, 300 lb/ month, otherwise CLOSED[3/]</td><td rowspan="2">CLOSED[3/] October 1</td></tr>
<tr><td>43</td><td>South of 34°27' N. lat.</td><td>300 lb/ month</td></tr>
<tr><td>44</td><td>Other Fish[8/]</td><td colspan="3">Not limited</td><td colspan="2">Grenadier retention permitted</td><td>Not limited, with the exception of dogfish which is prohibited</td></tr>
</table>

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. To the U.S.-Canada border. "South" means 40°10' N. lat. To the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 5 with species specific management measures, including trip limits.

3/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

4/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. Pop in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

5/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

6/ The size limit for lingcod is 24 inches (61 cm) total length.

7/ The minimum size requirement for sablefish is 20 inches (XX cm) total length between 40°10' N. lat. and 36° N. lat.

8/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

ENFORCEMENT CONSULTANTS REPORT ON STATUS OF FISHERIES AND INSEASON ADJUSTMENTS PROSECUTING MIDWATER OPPORTUNITIES IN THE DARKBLOTCHED CONSERVATION AREA

The enforcement consultants have discussed the possibly of a declaration system. A system can be implemented in Washington & Oregon through emergency rule.

The Federal regulations must reflect that no more than two trips may be made in period 6. The Federal regulations should footnote that the states will have landing requirements.

The states would then pass a declaration regulation. There would be some differences between states in the declaration systems.

WASHINGTON STATE DECLARATION PROCESS

To participate in midwater fishing opportunities in the Darkblotched Conservation Area (DBCA), all vessels landing in a Washington Port must first:

1. At least 24 hours prior to departure from Port declare:
   -Fishing vessel name and operator name;
   -Area to be fished south or north of Destruction Island;
   -Date and estimated time of departure on trip

2. At least 6 hours prior to arrival in port declare:
   -Vessel name and operator;
   -Port and estimated time of arrival
   -Name of fish company accepting fish.

Trips can be canceled and re-declared to allow for inclement weather or other considerations. Vessels are restricted from making more than two trips per period. This allows for unforseen mechanical or other trip limiting issues and provides for minimum declaration traffic. A call-in number for tape recorded declarations will be provided and printed in state rule.

OREGON STATE DECLARATION PROCESS

To participate in midwater fishing opportunities in the Darkblotched Conservation Area (DBCA), all vessels landing in Oregon must:

1. Declare their intent to fish in November by 5 p.m. on November 1 st. The vessels would then be allowed to make one delivery during the month of November 2002.

2. Vessels that had remaining limits or wished to make their first trip, would be allowed to declare intent to fish in December by declaring such by 5 p.m. on November 29th. Each vessel would be limited to one delivery in December.

A list of these declarations would be provided to the appropriate enforcement agencies.

PFMC
09/13/02

Jim Hastie
9-13-02; 12:34p

Table 3. Trip Limits[1/] and Gear Requirements[2/] for Limited Entry Trawl Gear

Other Limits and Requirements Apply -- Read Sections IV. A. and B. NMFS Actions before using this table

**NOTE FOR NORTH OF 40°10' N. LAT: ALL BOTTOM TRAWLING WITH GROUNDFISH GEAR IS PROHIBITEDWITHIN THE DBCA11/, ALL TRAWLING IS PROHIBITED SHOREWARD OF THE DBCA DURING SEPTEMBER, SMALL FOOTROPE GEAR5/ IS REQUIRED SHOREWARDOF THE DBCA OCT - DEC, AND LARGE FOOTROPE GEAR IS PERMITTED SEAWARD OF THE DBCA SEPT - DEC.

**NOTE FOR SOUTH OF 40°10' N. LAT: ALL TRAWLING FOR GROUNDFISH IS PROHIBITEDEXCEPT FOR DTS COMPLEX, SLOPE ROCKFISH SPECIES, SPECIFIED FLATFISH, WIDOW ROCKFISH, AND GRENADIERS.

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North	1,800 lb/ 2 months				600 lb / 2 months	**1,800 lb / 2 months**
3	South						
4	40°10' - 36° N. lat.	50,000 lb/ 2 months		5,000 lb/ 2 months			
5	South of 36° N. lat.	50,000 lb/ 2 months				**25,000 lb/ 2 months**	**40,000 lb/2 months**
6	**Splitnose - South**						
7	40°10' - 36° N. lat.	25,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb / 2 months	
8	South of 36° N. lat.	25,000 lb/ 2 months				**25,000 lb/ 2 months**	**40,000 lb/2 months**
9	**Pacific ocean perch - North[6/]**	2,000 lb/ month		4,000 lb/ month	4,000 lb/ 2 months		2,000 lb / month
10	**Chilipepper - South[6/]**						
11	mid-water trawl	25,000 lb/ 2 months			CLOSED[7/]		
12	small footrope trawl	7,500 lb/ 2 months		4,000 lb/ 2 months			
13	large footrope trawl	500 lb/ trip, not to exceed small footrope cumulative 2-month limits at any time during the year					
14	**DTS complex - North[11/]**						
15	Sablefish	6,000 lb/ 2 months		3,500 lb/ 2 months	3,000 lb/ 2 months	In times and areas where open - 3,500 lb/ 2 months	**2,600 lb/ 2 months**
16	Longspine thornyhead	10,000 lb/ 2 months		6,000 lb/ 2 months	1,500 lb/ 2 months	In times and areas where open - 10,000 lb/ 2 months	**8,000 lb/ 2 months**
17	Shortspine thornyhead	2,600 lb/ 2 months		2,000 lb/ 2 months	1,500 lb/ 2 months	In times and areas where open - 2,600 lb/ 2 months	**2,200 lb/ 2 months**
18	Dover sole	30,000 lb/ 2 months	28,000 lb/ 2 months	14,000 lb/ 2 months		In times and areas where open - 20,000 lb/ 2 months	**22,000 lb/ 2 months providing that only large footrope or midwater trawl gear is used to land any groundfish species during entire limit period, if small footrope bottom trawl is used at any time then constrained to lower limit of 12,000 lb/ 2 months.**
19	**DTS complex - South**						
20	Sablefish[9/]	4,500 lb/ 2 months					
21	Longspine thornyhead	10,000 lb/ 2 months					
22	Shortspine thornyhead	2,600 lb/ 2 months					
23	Dover sole	22,000 lb/ 2 months					
24	**Flatfish - North[11/]**						
25	All other flatfish[3/]	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits, includes arrowtooth flounder. SMALL FOOTROPE: 15,000 lb/ month	35,000 lb/ month	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits. Retention of **petrale** and **rex sole** prohibited if large footrope gear is onboard. SMALL FOOTROPE: 30,000 lb/ month, no more than 10,000 of which may be petrale sole	SMALL FOOTROPE REQUIRED: 40,000 lb/ month, no more than 15,000 of which may be petrale sole	In times and areas where open - 25,000 lb/ month, no more than 10,000 of which may be petrale sole.	50,000 lb/ month, no more than 20,000 lb month of which may be petrale
26	Petrale sole	Not limited, large footrope allowed					
27	Rex sole						
28	Arrowtooth flounder	LARGE FOOTROPE: included in "all other flatfish" limit. SMALL FOOTROPE: 30,000 lb/ trip		SMALL FOOTROPE REQUIRED: 7,500 lb/ trip, no more than 30,000 lb/ month; large footrope prohibited		In times and areas where open - 3,500 lb/ trip, no more than 15,000 lb/ month.	30,000 lb/ trip
29	**Flatfish - South**						
30	All other flatfish[3/]	LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits, includes arrowtooth flounder. SMALL FOOTROPE: 70,000 lb/ month, no more than 40,000 lb of which may be species other than Pacific sanddabs.		LARGE FOOTROPE: 1,000 lb/trip, not to exceed small footrope cumulative monthly limits. Retention of **petrale** and **rex sole** prohibited if large footrope gear is onboard. SMALL FOOTROPE: 70,000 lb/ month, no more than 40,000 lb of which may be species other than Pacific sanddabs. Of the species other than Pacific sanddabs, no more than 15,000 lb may be petrale sole.	CLOSED[7/] With the exception of 1,000 lb/ trip of rex sole, petrale sole, English sole, and arrowtooth flounder combined when landed with DTS complex. The amount of per trip flatfish landings must not exceed the amount of DTS landed. Landings can be made with small or large footrope gear.		**CLOSED[7/]** **With the following exceptions: Petrale sole 30,000 lb/2 months; Rex sole 2,000 lb/ trip; and 1,000 lb/ trip of English sole and arrowtooth flounder combined when landed with DTS complex or Petrale sole. The amount of per trip flatfish landings (Rex sole, English sole, and arrowtooth flounder) must not exceed the amount of DTS and Petrale sole landed. Landings can be made with small or large footrope gear.**
31	Petrale sole	Not limited, large footrope allowed					
32	Rex sole						
33	Arrowtooth flounder	LARGE FOOTROPE: included in "all other flatfish" limit. SMALL FOOTROPE: 30,000 lb/ trip		SMALL FOOTROPE REQUIRED: 7,500 lb/ trip, no more than 30,000 lb/ month; large footrope prohibited			
35	**Whiting[4/]**	20,000 lb/ trip		Primary Season		CLOSED[7/]	

<< TABLE 3 CONTINUED ON NEXT PAGE >>

Table 3. (CONTINUED) Trip Limits [1/] and Gear Requirements [2/] for Limited Entry Trawl Gear

Other Limits and Requirements Apply -- Read Sections IV. A. and B. NMFS Actions before using this table

NOTE FOR **NORTH OF 40°10' N. LAT: ALL **BOTTOM TRAWLING WITH GROUNDFISH GEAR IS PROHIBITED** WITHIN THE DBCA11/, ALL **TRAWLING IS PROHIBITED** SHOREWARD OF THE DBCA DURING SEPTEMBER, **SMALL FOOTROPE GEAR5/ IS REQUIRED SHOREWARD** OF THE DBCA OCT - DEC, AND **LARGE FOOTROPE GEAR IS PERMITTED** SEAWARD OF THE DBCA SEPT - DEC .

NOTE FOR **SOUTH OF 40°10' N. LAT: ALL **TRAWLING FOR GROUNDFISH IS PROHIBITED** EXCEPT FOR DTS COMPLEX, SLOPE ROCKFISH SPECIES, SPECIFIED FLATFISH, WIDOW ROCKFISH, AND GRENADIERS.

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
37	**Minor shelf rockfish**						
38	North	300 lb/ month		1,000 lb/ month, no more than 300 lb of which may be yelloweye rockfish		CLOSED[7/]	300 lb / month
39	South	500 lb/ month		1,000 lb/ month, no more than 300 lb of which may be yelloweye rockfish	CLOSED[7/]		
40	**Canary rockfish**						
	North	200 lb/ 2 months		600 lb/ 2months	600 lb/ 2 months	CLOSED[7/]	200 lb / month
	South				CLOSED[7/]		
	Widow rockfish						
41	North						
42	mid-water trawl	CLOSED[7/]		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative widow limit of 1,500 lb/ month		CLOSED[7/]	**12,000 lb/ 2 months; restricted to no more than 2 landings per vessel per 2 month period**
43	small footrope trawl	1,000 lb/ month				CLOSED[7/]	
	South						
	mid-water trawl	CLOSED[7/]		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative widow limit of 1,500 lb/ month	CLOSED[7/]		**12,000 lb/ 2 months**
	small footrope trawl	1,000 lb/ month			CLOSED[7/]		
44	**Yellowtail - North[6/]**						
45	mid-water trawl	CLOSED[7/]		During primary whiting season, in trips of at least 10,000 lb of whiting: combined widow and yellowtail limit of 500 lb/ trip, cumulative yellowtail limit of 2,000 lb/ month		CLOSED[7/]	**18,000 lb/ 2 months; restricted to no more than 2 landings per vessel per 2 month period**
46	small footrope trawl	In landings without flatfish, 1,000 lb/ month. As flatfish bycatch, per trip limit is the sum of 33% (by weight) of all flatfish except arrowtooth flounder, plus 10% (by weight) of arrowtooth flounder. Combined with and without flatfish, not to exceed 30,000 lb/ 2 months.				CLOSED[7/]	As flatfish bycatch, per trip limit is the sum of 33% (by weight) of all flatfish except arrowtooth flounder, plus 10% (by weight) of arrowtooth flounder not to exceed 4,500 lb/ month.
47	**Bocaccio - South[6/]**	600 lb/ 2 months		1,000 lb/ 2 months	CLOSED[7/]		
48	**Cowcod**	CLOSED[7/]					
49	**Minor nearshore rockfish**						
50	North	300 lb/ month				CLOSED[7/]	
51	South	300 lb/ month			CLOSED[7/]		
52	**Lingcod[8/]**						
53	North	800 lb/ 2 months		1,000 lb/ 2 months		500 lb / month	
54	South			1,000 lb/ 2 months	CLOSED[7/]		
55	**Other Fish[10/]**						
56	North	Not limited			Grenadier retention permitted		**Not limited, except spiny dogfish prohibited with large footrope gear.**
57	South						**CLOSED[7/], except grenadier permitted.**

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ Gear requirements and prohibitions are explained above. See IV.A.(14).

3/ "Other" flatfish means all flatfish at 50 CFR 660.302 except those in this Table 3 with species specific management measures, including trip limits.

4/ The whiting "per trip" limit in the Eureka area shoreward 100 fm is 10,000 lb/ trip from January 1 - August 31, 2002. From September 1 - December 31, 2002, the whiting fishery is closed.

5/ Small footrope trawl means a bottom trawl net with a footrope no larger than 8 inches (20 cm) in diameter. In areas where trawl gear is restricted, only one type of trawl gear is allowed on board at any one time. See above.

6/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

7/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

8/ The minimum size limit for lingcod is 24 inches (61 cm) total length.

9/ The minimum size requirement for sablefish is 20 inches (XX cm) total length and no more than 500 lb of undersized sablefish may be landed per trip.

10/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

11/ All bottom trawling is prohibited within the DBCA ; bottom trawl gear must be covered and stowed when transiting through the area. See IV.A.(22).

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 4. Trip Limits[1/] for Limited Entry Fixed Gear

Other Limits and Requirements Apply -- Read Sections IV. A. and B. NMFS Actions before using this table

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	NOTE FOR FISHING **SOUTH OF 40°10': ALL GROUNDFISH FISHING IS **CLOSED** SEAWARD OF THE 20 FATHOM DEPTH CONTOUR, EXCEPT FOR SABLEFISH, THORNYHEADS, GRENADIERS AND SLOPE ROCKFISH.						
1	**Minor slope rockfish**						
2	North	1,000 lb/ month		5,000 lb/ 2 months			2,000 lb/ 2 months
3	South						
4	40°10' - 36° N. lat.	25,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb/ 2 months	
5	South of 36° N. lat.	25,000 lb/ 2 months				**25,000 lb/2 months**	
6	**Splitnose - South**						
7	40°10' - 36° N. lat.	25,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb/ 2 months	
8	South of 36° N. lat.	25,000 lb/ 2 months				**25,000 lb/2 months**	
9	**Pacific ocean perch - North[5/]**	2,000 lb/ month	4,000 lb/ month		4,000 lb/ 2 months		2,000 lb/ month
10	**Sablefish**						
11	North of 36° N. lat.[8/]	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months					**300 lb/ day, or 1 landing per week of up to 900 lb, not to exceed 2,700 lb/ 2 months**
12	South of 36° N. lat.	350 lb/ day, or 1 landing per week of up to 1,050 lb		300 lb/ day, or 1 landing per week of up to 900 lb			
13	**Longspine thornyhead**	9,000 lb/ 2 months					
14	**Shortspine thornyhead**	2,000 lb/ 2 months					
15	**Dover sole**	5,000 lb/ month (all flatfish)			North of 40°10': 5,000 lb/ month (all flatfish). South of 40°10': Shoreward of 20 ftm depth, 5,000 lb/month, otherwise CLOSED[4/]		
16	**Arrowtooth flounder**						
17	**Petrale sole**						
18	**Rex sole**						
19	**All other flatfish[2/]**						
20	**Whiting[3/]**	20,000 lb/ trip				CLOSED[4/]	
21	**Shelf rockfish, including minor shelf rockfish, widow and yellowtail rockfish[5/]**						
22	North	200 lb/ month					
23	South						
24	40°10' - 34°27' N. lat.	200 lb/ month	CLOSED[4/]	Shoreward of 20 ftm depth, 200 lb/ month, otherwise CLOSED[4/]	CLOSED[4/]		
25	South of 34°27' N. lat.	CLOSED[4/]	1,000 lb/ month				
26	**Canary rockfish**	CLOSED[4/]					
27	**Yelloweye rockfish**	CLOSED[4/]					
28	**Cowcod**	CLOSED[4/]					
29	**Bocaccio - South[5/]**						
30	40°10' - 34°27' N. lat.	200 lb/ month	CLOSED[4/]		CLOSED[4/]		
31	South of 34°27' N. lat.	CLOSED[4/]	200 lb/ month				
32	**Chilipepper - South[5/]**						
33	40°10' - 34°27' N. lat.	500 lb/ month	CLOSED[4/]		CLOSED[4/]		
34	South of 34°27' N. lat.	CLOSED[4/]	2,500 lb/ month				
35	**Minor nearshore rockfish**						
36	North	5,000 lb/ month, no more than 2,000 lb of which may be species other than black or blue rockfish[6/]		6,000 lb/ 2 months, no more than 3,000 lb of which may be species other than black or blue rockfish[6/]			**7,000 lb/ 2 months no more than 3,000 lb of which may be species other than black or blue rockfish[6/]**
37	South						
38	40°10' - 34°27' N. lat.	1,600 lb/ 2 months	CLOSED[4/]	Shoreward of 20 ftm depth, 1,600 lb/ 2 months, otherwise CLOSED[4/]		CLOSED[4/]	
39	South of 34°27' N. lat.	CLOSED[4/]	2,000 lb/ 2 months		Shoreward of 20 ftm depth, 2,000 lb/ 2 months, otherwise CLOSED[4/]		
40	**Lingcod[7/]**						
41	North	CLOSED[4/]		400 lb/ month			CLOSED[4/]
42	South						
43	40°10' - 34°27' N. lat.	CLOSED[4/]		Shoreward of 20 ftm depth, 400 lb/ month, otherwise CLOSED[4/]	Shoreward of 20 ftm depth, 400 lb/ month, otherwise CLOSED[4/]		**CLOSED[4/]**
44	South of 34°27' N. lat.			400 lb/ month			
45	**Other Fish[9/]**						
46	North	Not limited			Grenadier retention permitted		**Not limited, except spiny dogfish prohibited.**
47	South						**CLOSED[4/], except grenadier permitted.**

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. to the U.S.-Canada border. "South" means 40°10' N. lat. to the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 4 with species specific management measures, including trip limits.

3/ The whiting "per trip" limit in the Eureka area inside 100 fm is 10,000 lb/ trip. Outside Eureka area, the 20,000 lb/ trip limit applies. From September 1 - December 31, 2002, the whiting fishery is closed.

4/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

5/ Yellowtail rockfish and widow rockfish coastwide and bocaccio and chilipepper rockfishes in the north are included in the trip limits for shelf rockfish in the appropriate area. POP in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

6/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

7/ The minimum size limit for lingcod is 24 inches (61 cm) total length.

8/ The minimum size requirement for sablefish is 20 inches (XX cm) total length between 40°10' N. lat. and 36° N. lat.

9/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 5. Trip Limits[1/] for Open Access Gears
Other Limits and Requirements Apply -- Read Sections IV. A. and C. NMFS Actions before using this table
Exceptions for exempted gears at Section IV.C.

NOTE FOR FISHING **SOUTH OF 40°10': ALL GROUNDFISH FISHING IS **CLOSED** SEAWARD OF THE 20 FATHOM DEPTH CONTOUR, EXCEPT SABLEFISH, THORNYHEADS, GRENADIERS AND SLOPE ROCKFISH.

line	Species/groups	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
1	**Minor slope rockfish**						
2	North	Per trip, no more than 25% of weight of the sablefish landed					
3	South						
4	40°10' - 36° N. lat.	10,000 lb/ 2 months		5,000 lb/ 2 months		1,800 lb/ 2 months	
5	South of 36° N. lat.	10,000 lb/ 2 months					
6	**Splitnose - South**	200 lb/ month					
7	**Pacific ocean perch - North**[4/]	100 lb/ month					
8	**Sablefish**						
9	North of 36° N. lat.[7/]	300 lb/ day, or 1 landing per week of up to 800 lb, not to exceed 2,400 lb/ 2 months				**300 lb/ day, or 1 landing per week of up to 900 lb, not to exceed 2,700 lb/ 2 months**	
10	South of 36° N. lat.	350 lb/ day, or 1 landing per week of up to 1,050 lb		300 lb/ day, or 1 landing per week of up to 900 lb			
11	**Thornyheads**						
12	North of 34° 27' N. lat.	CLOSED[3/]					
13	South of 34° 27' N. lat.	50 lb/ day, no more than 2,000 lb/ 2 months					
14	**Dover sole**	3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sanddabs			North of 40°10': 3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sandabs. South of 40°10': Shoreward of 20 ftm, 3,000 lb/ month, no more than 300 lb of which may be species other than Pacific sandabs, otherwise CLOSED[3/]		
15	**Arrowtooth flounder**						
16	**Petrale sole**						
17	**Rex sole**						
18	**All other flatfish**[2/]						
19	**Whiting**	300 lb/ month				CLOSED[3/]	
20	**Shelf rockfish, including minor shelf rockfish, widow and yellowtail rockfish**[4/]						
21	North	200 lb/ month					
22	South						
23	40°10' - 34°27' N. lat.	200 lb/ month	CLOSED[3/]	Shoreward of 20 ftm depth, 200 lb/ month, otherwise CLOSED[3/]	CLOSED[3/]		
24	South of 34°27' N. lat.	CLOSED[3/]	500 lb/ month				
25	**Canary rockfish**	CLOSED[3/]					
26	**Yelloweye rockfish**	CLOSED[3/]					
27	**Cowcod**	CLOSED[3/]					
28	**Bocaccio - South**[4/]						
29	40°10' - 34°27' N. lat.	200 lb/ month	CLOSED[3/]		CLOSED[3/]		
30	South of 34°27' N. lat.	CLOSED[3/]	200 lb/ month				
31	**Chilipepper - South**[4/]						
32	40°10' - 34°27' N. lat.	500 lb/ month	CLOSED[3/]		CLOSED[3/]		
33	South of 34°27' N. lat.	CLOSED[3/]	2,500 lb/ month				
34	**Minor nearshore rockfish**						
35	North	3,000 lb/ 2 months, no more than 1,200 lb of which may be species other than black or blue rockfish[5/]		6,000 lb/ 2 months, no more than 3,000 lb of which may be species other than black or blue rockfish[5/]		**7,000 lb/ 2 months no more than 3,000 lb of which may be species other than black or blue rockfish[5/]**	
36	South						
37	40°10' - 34°27' N. lat.	1,200 lb/ 2 months	CLOSED[3/]	Shoreward of 20 ftm depth, 1,200 lb/ 2 months, otherwise CLOSED[3/]	Shoreward of 20 ftm depth, 1,200 lb/ 2 months, otherwise CLOSED[3/]	CLOSED[3/]	
38	South of 34°27' N. lat.	CLOSED[3/]	1,200 lb/ 2 months				
39	**Lingcod**[6/]						
40	North	CLOSED[3/]		300 lb/ month			CLOSED[3/]
41	South						
42	40°10' - 34°27' N. lat.	CLOSED[3/]		Shoreward of 20 ftm depth, 300 lb/ month, otherwise CLOSED[3/]	Shoreward of 20 ftm depth, 300 lb/ month, otherwise CLOSED[3/]	**CLOSED[3/]**	
43	South of 34°27' N. lat.			300 lb/ month			
44	**Other Fish**[8/]						
45	North	Not limited			Grenadier retention permitted	**Not limited, except spiny dogfish prohibited.**	
46	South					**CLOSED[3/], except grenadier permitted.**	
47	**PINK SHRIMP EXEMPTED TRAWL GEAR**						
48	**North**	**Effective October 1 - 31, 2002: groundfish 500 lb/day, multiplied by the number of days of the trip, not to exceed 1,500 lb/trip. The following sublimits apply: canary rockfish 200 lb/month, lingcod 400 lb/month (minimum 24 inch size limit), sablefish 2,000 lb/month.**					
49	**South**	CLOSED[3/]					

1/ Trip limits apply coastwide unless otherwise specified. "North" means 40°10' N. lat. To the U.S.-Canada border. "South" means 40°10' N. lat. To the U.S.-Mexico border. 40°10' N. lat. is about 20 nm south of Cape Mendocino, CA.

2/ "Other flatfish" means all flatfish at 50 CFR 660.302 except those in this Table 5 with species specific management measures, including trip limits.

3/ Closed means that it is prohibited to take and retain, possess, or land the designated species in the time or area indicated. See IV.A.(7).

4/ Yellowtail rockfish in the south and bocaccio and chilipepper rockfishes in the north are included in the trip limits for minor shelf rockfish in the appropriate area. Pop in the south and splitnose rockfish in the north are included in the trip limits for minor slope rockfish in the appropriate area.

5/ For black rockfish north of Cape Alava (48°09'30" N.lat.), and between Destruction Island (47°40'00" N.lat.) and Leadbetter Point (46°38'10" N.lat.), there is an additional limit of 100 lbs or 30 percent by weight of all fish on board, whichever is greater, per vessel, per fishing trip.

6/ The size limit for lingcod is 24 inches (61 cm) total length.

7/ The minimum size requirement for sablefish is 20 inches (XX cm) total length between 40°10' N. lat. and 36° N. lat.

8/ Other fish are defined at 50 CFR 660.302, as those groundfish species or species groups for which there is no trip limit, size limit, quota, or harvest guideline.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

State of California - The Resources Agency
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
1416 Ninth Street
Sacramento, CA 95814
(916) 653-7667

GRAY DAVIS, Governor

August 16, 2002

The Honorable Virginia Strom-Martin, Chairman
Joint Committee on Fisheries and Aquaculture
State Capitol, Room 3146
Sacramento, California 95814

RECEIVED
AUG 16 2002
PFMC

Dear Assembly Member Strom-Martin:

Decision To Retain Current Regulations Affecting Non-groundfish Trawl Fisheries

Your committee was recently notified of a proposed action to close trawl fisheries for non-groundfish species during times and in areas when take and possession of federal groundfish is prohibited. The non-groundfish species include California halibut, prawns, shrimp, and sea cucumber. The regulation was proposed pursuant to Section 7652 of the Fish and Game Code (FGC) with the intent of eliminating discard and waste of federal groundfish, which are currently prohibited in trawl fisheries south of Cape Mendocino, Humboldt County, and to conform State law to the federal regulations. This is an important matter because Department of Fish and Game (Department) records show that non-groundfish trawl vessels take substantial amounts of federal groundfish in association with landings of non-groundfish species.

The Department held a hearing on the proposed regulation on August 2, 2002 and took testimony as required under Section 7652.1 of the FGC. Based on that testimony and subsequent discussion with federal representatives, we have determined that current State law is consistent with the federal regulation, thus we do not have the authority to implement the proposed regulation pursuant to Section 7652, FGC.

We have learned that the *Federal Register* notice upon which we were basing our action does not prohibit take of federal groundfish in the course of non-groundfish trawl fisheries. This is because the federal groundfish plan, upon which the federal regulation is based, only prohibits the take and retention of federal groundfish in non-groundfish (exempted) trawl fisheries. It does not prohibit simply the take of federal groundfish when pursuing these other species and, therefore, does not constitute a conflict between existing State and federal regulations.

The take and waste of federal groundfish during closed fishing periods and in closed fishing areas is a matter that needs to be taken up through the Pacific Fishery Management Council and the State's regulatory processes. For your information, commercial fishing for California halibut is under legislative purview while fisheries for prawns, shrimp and sea cucumber are regulated by the Fish and Game Commission (Commission). The Commission is currently addressing bycatch concerns associated with the trawl spot prawn fishery.

Mr. LB Boydstun, Intergovernmental Affairs Office Representative is available at the letterhead address, telephone (916) 653-6281, to answer questions about this letter.

Sincerely,

Robert C. Hight

ROBERT C. HIGHT
Director

cc: Same as original letter plus speakers at public hearing.

same letter sent to :

The Honorable Joe Canciamilla, Chairman
Assembly Water, Parks and Wildlife Committee
State Capitol, Room 6011
Sacramento, California 95814

The Honorable Sheila Kuehl, Chairman
Senate Committee on Natural Resources and Wildlife
State Capitol, Room 4032
Sacramento, California 95814

STATUS OF FISHERIES AND INSEASON ADJUSTMENTS

Situation: In the current groundfish management program, the Council sets annual harvest targets (optimum yield [OY] levels) and individual vessel landing limits for specified periods, with the understanding these vessel landing limits will likely need to be adjusted periodically through the year in order to attain, but not exceed, the OYs. The initial vessel landing limits are based on predicted participation rates, estimates of how successful participants will be at attaining their limits for each period, and comparisons with previous years. The Groundfish Management Team (GMT) tracks landings data throughout the year and periodically makes projections based on all the information available. The GMT presents these landings data and projections to the Groundfish Advisory Subpanel (GAP), and they discuss adjustments that may be necessary and beneficial.

Significant challenges have been posed this year by early attainment of the bocaccio OY in California and projected early attainment of the coastwide darkblotched rockfish OY. The Council recommended widespread fishery closures and no groundfish retention regulations for many of the California fisheries at the June meeting to protect bocaccio. The Council also recommended an emergency rule to adopt depth based restrictions in this year's limited entry trawl fishery north of Cape Mendocino to allow the fishery to continue after August and avoid exceeding the darkblotched OY. It was uncertain as of the briefing book deadline whether NOAA Fisheries would be able to adopt emergency rules that comply with the Council recommendation. The Council may, therefore, consider addressing trawl fishery options at this time depending on the outcome of emergency rulemaking.

The Council is to consider advice from the GMT, the GAP, and the public on additional recommended inseason adjustments to the groundfish fishery and adopt changes as necessary.

Council Action:

1. Consider and adopt inseason adjustments if necessary.

Reference Materials:

1. August 16, 2002 letter from Robert C. Hight, Director of California Department of Fish and Game (CDFG), to the Honorable Virginia Strom-Martin regarding the CDFG decision to retain current regulations affecting nongroundfish trawl fisheries (Exhibit C.4, Attachment 1).

Agenda Order:

over →

a. Agendum Overview — John DeVore
b. Reports and Comments of Advisory Bodies
c. Public Comment
d. **Council Action:** Consider Adjustments in 2002 Management Measures

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

The GFSP supports establishing an allowable level of catch that prevents overfishing while achieving OY based on best available science (Sec. II.A.2). The GFSP also supports establishing and maintaining a management process that is transparent, participatory, understandable, accessible, consistent, effective, and adaptable (Sec. II.C). The Council process of adopting inseason adjustments to landing limits is consistent with these GFSP principles.

PFMC
08/20/02

Supplemental Reference Materials

2. Exhibit C.4., Supplemental NMFS Emergency Rule EA.
3. Letter from Thomas Genochio, Agenda C.4.c.
4. Exhibit C.4.b, Supplemental GMT Report,
5. Exhibit C.4.b, Supplemental GAP Report.
6. Exhibit C.4.f, Supplemental GMT Report on Inseason Adjustments.
7. Exhibit C.4.f, Supplemental EC Report.

Exhibit C.4
Supplemental NMFS Emergency Rule EA
September 2002

Draft Environmental Assessment and Regulatory Impact Review

Emergency Rule to Implement New Depth-Based Management Measures in the 2002 Pacific Coast Groundfish Fishery

Prepared by
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northwest Region

August 2002

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1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Purpose of and Need for Action

> The purpose of and need for this action is to implement September - December 2002 depth-based management measures that would allow limited fishing for healthy groundfish stocks that co-occur with darkblotched rockfish, an overfished species, while also protecting darkblotched rockfish from incidental harvest. This action would prevent the darkblotched rockfish optimum yield from being exceeded, but would also allow the limited entry trawl fleet that operates off the northern West Coast to access healthy groundfish stocks in depths and areas where darkblotched rockfish less frequently co-occurs with those healthier stocks.
>
> Darkblotched rockfish, an overfished species, is incidentally taken by the limited entry trawl sector of the Pacific Coast groundfish fishery. Higher than expected landings of darkblotched rockfish occurred during the first four months of 2002; projected darkblotched rockfish landings through the end of August are estimated to be between 155 mt and 160 mt (approximately 95% the optimum yield (OY)). Because of darkblotched rockfish incidental take, limited entry bottom trawl access is scheduled to closed September 1, 2002 off Washington, Oregon, and northern California for the remainder of the year. Implementing new depth-based management measures would create a geographical closed area to control the incidental take of darkblotched rockfish while allowing limited entry trawl access outside that area to healthy deepwater groundfish stocks (e.g., Dover sole, thornyhead, sablefish) and nearshore flatfish species (e.g., Dover sole (seasonally), petrale sole, arrowtooth flounder, English sole).
>
> If new depth-based management measures are implemented in the Pacific Coast groundfish fishery during 2002, when should they be implemented? Following the Pacific Coast Groundfish Fishery Management Plan's (FMP's) guidelines to implement new management measures, they could be implemented for the September - December period (via an emergency rule) or for the October - December period (via the two-meeting process and abbreviated rulemaking). This EA will analyze how the timing of implementing new depth-based management measures affects the Pacific Coast groundfish fishery.

Background on Pacific Coast Groundfish Management
The Pacific Coast Groundfish Fishery Management Plan (FMP) provides guidance for the Pacific Fishery Management Council's (Council's) groundfish fishery management policies. This FMP covers over 80 species of groundfish (listed in Section 3.0 of the FMP) taken in multi-user

fisheries occurring within the Exclusive Economic Zone (EEZ, 3 - 200 nautical miles offshore) off the coasts of Washington, Oregon, and California. Many of the FMP's guiding policies have been implemented through long-term Federal regulations at 50 CFR 660.301 Subpart G. These regulations cover issues ranging from allocations of particular species between different user groups to gear marking requirements to licensing and observer requirements.

In addition to establishing long-term groundfish fishery regulations, the Council sets groundfish harvest levels through an annual regulatory process. This annual process establishes harvest "specifications", which are harvest levels or limits such as Acceptable Biological Catches (ABCs), optimum yields (OYs), or allocations for different user groups. Management measures, such as trip limits, closed times and areas, and gear restrictions are also set in the annual regulatory process and managed through two-month cumulative periods. Management measures are partnered with the specifications in the annual process because these measures are specifically designed to allow the fisheries to achieve, but not to exceed, the specification's harvest levels.

Section 6.2 of the FMP describes the process by which the Council and NMFS establish and adjust management measures. If a particular management measure has never been used before, that management measure must be developed and analyzed in at least two Council meetings. Depending on the management measure being developed, NMFS may announce the new measure through a single Federal Register notice, or may take public comment on the measure through a two-notice proposed and final rule process. Once a management measure has been evaluated and established through the Council's two-meeting process and initially implemented by NMFS, it may be considered a "routine" management measure. Routine management measures may be adjusted at a single Council meeting, with NMFS approval and announcement in a single Federal Register notice. For example, if the Council wished to establish a size limit for Dover sole, which have never been managed with size limits, the new size limit would be considered by the Council and the public through two meetings. Following those meetings, NMFS could implement the new size limit through announcement in the Federal Register. If the Council were to decide at a later meeting that it wished to remove that size limit and then later changed its position again, wishing to reinstate it later in the year, that reinstatement would be possible within a single Council meeting because the size limit had been earlier established as a routine management measure.

Development of specifications and management measures, with regulatory review and implementation by NMFS, is authorized in Section 6.2 of the FMP. Under this section of the FMP, certain management measures have been designated as routine for many of the groundfish species managed under the FMP. Routine management measures are those the Council determines are likely to be adjusted on an annual or more frequent basis. Measures are classified as routine by the Council through either the full or abbreviated rulemaking process and published annually in its Stock Assessment and Fishery Evaluation (SAFE) Report. These routine management measures include such limits as landing, size, frequency, boat, and hook, along with fish dressing requirements.

As is the case with all proposed management measures, prior to initial implementation as a routine measure, the Council will analyze the need for the measures, their impacts, and the rationale for their use in accordance with the National Environmental Policy Act (NEPA). Once a management measure has been classified as routine, it may be modified thereafter through discussion at a single Council meeting and one notice in the Federal Register, provided the modification is proposed for the same purpose as the original measure and the impacts of the modification are within the scope of the impacts analyzed when the measure was originally classified as routine.

In addition to full and abbreviated rulemaking, NMFS may use an emergency rule to implement management measures, if immediate regulatory action is necessary. Emergency rules are implemented, under the authority of the U.S. Secretary of Commerce (Secretary) as provided for in Section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), if an emergency exists involving any groundfish resource or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(d) of the Magnuson-Stevens Act.

In cases where protection of an overfished or depleted stock is required, the Council may impose limits that differ by gear type, or establish closed areas or seasons. These two measures have not historically been imposed through the annual management cycle because of their allocation implications, however, this additional flexibility has become necessary in recent years to allow the harvest of healthy stocks as much as possible while protecting and rebuilding overfished and depleted stocks, and equitably distributing the burdens of rebuilding among sectors. The first time a differential trip limit or closed season is to be imposed in a fishery, it must be considered during a two-meeting Council process, typically during the Council's consideration of annual specifications and management measures. As part of its process, the Council provides the public with an analysis of the new action under consideration and takes comment on that action. Once the new management measure has been established through the two-meeting process, it may be modified inseason through the routine management measures process for inseason actions. To date, the only depth-based management measure classified as routine is California's 20 fathom depth contour. Depth-based management measures to apply differential trip limits or closed areas have not yet been analyzed and designated as a routine measure for any overfished species.

Background on Darkblotched Rockfish

Darkblotched rockfish *(Sebastes crameri)* was declared overfished in 2001 and has a distribution extending from the Bering Sea to Santa Catalina Island, California (Allen and Smith 1988). Based on the location of commercial landings and NMFS triennial survey data, darkblotched rockfish are frequently encountered along the central Pacific Coast (Oregon and northern California). Because darkblotched rockfish can be found at depths ranging from 29 - 549 m (Rodgers et al. 2000) and are usually deeper than 76 m, they are managed in the FMP as part of the slope rockfish complex.

Darkblotched rockfish, an overfished species, are typically encountered along the central Pacific Coast (Oregon and northern California) and occur at depths between 180 m and 360 m along the continental slope. Both adult and juvenile darkblotched rockfish are associated with mud and rock habitats. Adults move to deeper water as they increase in size and age; they are typically observed resting on mud, near cobble and boulders and do not often rise above the ocean floor.

Darkblotched rockfish were managed as part of the coastwide *Sebastes* complex during 1983-1999, with separation in the later years into complexes north and south of Cape Mendocino, California (approximately 40°10' N. latitude). Through the 2000 specifications and management measures process, the Council identified those rockfish species without species-specific management measures as "minor" rockfish and separated them into minor rockfish management groups of nearshore, continental shelf, and continental slope species. In Amendment 11 to the FMP (1998,) the Council described the default harvest rates used for managing groundfish species, with $F_{40\%}$ being the default harvest rate for all rockfish species. This default harvest rate was considered a proxy for F_{MSY}, or the "maximum sustainable yield" fishing mortality rate. Different species are able to sustain different harvest rates over time, with less productive species needing more conservative harvest rates. Higher percentage values associated with the fishing mortality rate ($F_{50\%}$ versus $F_{40\%}$,) are more conservative and are generally used with less productive fish stocks.

One of the work priorities the Council set for itself following Amendment 11 was a reevaluation of its harvest proxies. In 2000, the Council's Scientific and Statistical Committee (SSC) met to discuss and evaluate those harvest proxies in light of new scientific information on West Coast groundfish productivity. Based on the SSC's work, the Council established new harvest proxies with the 2001 specifications: $F_{40\%}$ for flatfish and whiting, $F_{50\%}$ for all rockfish species (including darkblotched,) $F_{45\%}$ for other groundfish stocks such as sablefish and lingcod. These proxies assume a similar life history for these different stock groupings, such that rockfish species as a group tend to be less productive and to need more conservative harvest rates than flatfish species.

Rebuilding measures for darkblotched rockfish have eliminated opportunities to target darkblotched and have reduced occasions where darkblotched rockfish might be taken incidentally to fisheries targeting other species. Darkblotched rockfish is a slope rockfish species and most commonly co-occurs with other slope rockfish species and with other deepwater species such as the northern DTS complex (Dover sole, sablefish, and thornyheads). For 2002, the darkblotched rockfish ABC was set at 187 mt and the OY at 168 mt; this low OY represents a 70% probability that the stock will rebuild to a level where the biomass could support a sustainable yield (B_{MSY}) by 2034. These harvest levels were based on the most recent darkblotched rockfish stock assessment, which indicated that the stock is at 22 percent of its unfished biomass. According to the latest darkblotched rockfish rebuilding analyses (Methot and Rodgers 2001) the maximum allowable time period to rebuild to B_{MSY} is 47 years, the expected median time to rebuild is 34 years, and the F_{MSY} proxy rate expected to achieve rebuilding is $F_{50\%}$.

2002 Management measures intended to provide protection for darkblotched rockfish included: relatively small cumulative trip limits for slope rockfish in the area north of Cape Mendocino, California (40°10' N. latitude) (intended to accommodate incidental bycatch without encouraging targeting); constrained northern DTS trawl fisheries limits during the November – December period (intended to reduce the incidental take of darkblotched rockfish); constrained flatfish fisheries during the summer months when participation in the fishery is greatest and darkblotched rockfish are most likely to be encountered; and decreased sablefish and Dover sole OYs (intended to reduce the incidental take of darkblotched rockfish).

The best available science provided to the Council at its June 17 - 21, 2002, meeting in Foster City, California, indicated that by the end of August the projected catch of darkblotched rockfish will equal approximately 95% of its OY, leaving between 8 mt and 13 mt for the remainder of the year. The Council discussed the economic loss that would be experienced by fishing communities dependent on groundfish income as a result of the need to protect darkblotched rockfish, through the use of trip limit reductions and fishery closures. To protect darkblotched rockfish, the Council recommended coastwide groundfish trip limit reductions and some area closures effective July 1 through August 31, 2002. The Council could not recommend depth-based management measures to protect dark-blotched rockfish for implementation July 1 because such measures had not been analyzed in the EA for the 2002 groundfish specifications and management measures, nor had they been contemplated by the Council in a two-meeting process. Without the ability to implement additional depth-based management measures to design trip limits for the September - October cumulative period, additional closures intended to slow the catch of darkblotched rockfish will take effect on September 1, 2002. Therefore, the Council requested that NOAA implement new depth-based management measures via emergency rule during September 2002. Darkblotched rockfish is the primary species of concern in this action because it is the only groundfish species (overfished or healthy) north of 40° 10' N. latitude that is anticipated to have its OY exceeded before the end of the year under the current management regime.

These new depth-based management measures are intended to allow limited entry trawl fisheries access to healthy deepwater (e.g., Dover sole, thornyhead, sablefish) and nearshore (e.g., Dover sole (seasonally), petrale sole, arrowtooth flounder, English sole) stocks in areas outside the primary distribution of darkblotched rockfish species. Fisheries in relatively deep water (depths greater than 250 fathoms) and nearshore (less than 100 fathoms) are known to have a minimal interception of darkblotched rockfish species (Groundfish Management Team, personal communication, July 20, 2002). With the implementation of new depth-based management measures, the harvest of deepwater groundfish species would be allowed to continue while still offering the necessary protection for an overfished species specified in the Magnuson-Stevens Act.

There are several biological and socio-economic issues relevant to and associated with the proposed action that warrant analysis. To help discuss these issues, this EA will focus on comparing how the timing of implementing new depth-based management measures affects the human environment. Effects on the human environment will be measured by analyzing biological and socio-economic indicators. The primary biological indicators considered with this proposed action are the projected incidental take of darkblotched rockfish and other overfished species whose distributions overlap with darkblotched rockfish (e.g., Pacific ocean perch (POP), widow rockfish, yelloweye rockfish, and Pacific whiting (hake)) and the projected incidental take of overfished species, such as canary rockfish, that occur in areas that would remain open. As management measures are designed, in part, to help fisheries achieve OYs, another biological indicator would be projected landings of healthy deepwater and nearshore groundfish stocks. As far as socio-economic indicators, enforceability of new depth-based management measures is a consideration. Availability, cost, and effectiveness of enforcing new depth-based management measures are all factors considered. The proposed action and range of alternatives discussed in this EA are largely driven by providing opportunity for groundfish harvest and the associated economic effects on the Pacific coast groundfish fleet. Additionally, the safety of the groundfish fleet pursuing deepwater and nearshore groundfish harvest opportunities, and the associated safety of groundfish observers and enforcement personnel, is another other socio-economic indicator that should be considered.

Objectives for the proposed action are as follows:

✓ Keep landings of darkblotched rockfish within the 2002 rebuilding OY of 168 mt as established by the 2002 groundfish specifications (March 7, 2002, 67 FR 10490).

✓ Help achieve 2002 OYs for deepwater (e.g., Dover sole, thornyhead, sablefish) and nearshore (e.g., Dover sole (seasonally), petrale sole, arrowtooth flounder, English sole) species as established by the 2002 groundfish specifications (March 7, 2002, 67 FR 10490) while avoiding the incidental take of darkblotched rockfish to the extent practicable.

✓ Ease economic effects of 2002 trip limit reductions and closures in the Pacific Coast groundfish trawl fishery.

1.2 Opportunity for Public Participation Concerning the Proposed Action

The 2002 specifications and management measures were considered and finalized by the Council at its September and November 2001 meetings. Rebuilding measures needed to protect darkblotched rockfish were discussed during those meetings and during the Council's subsequent 2002 meetings. NMFS published the 2002 annual specifications and management measures as a proposed rule on January 11, 2002 (67 FR 1540) taking public comment through February 11, 2002. A final rule, including considerations of and responses to public comments received, was effective on March 1, 2002 and published on March 7, 2002 (67 FR 10490).

During the Council's June 17-21, 2002 meeting in Foster City, CA, the Council, its advisory committees and the public discussed inseason groundfish management. At that meeting, the Council's Groundfish Advisory Subpanel (GAP) recommended that the Council ask NMFS to develop an emergency rule to allow fishing in the latter months of the year under depth-based management to protect darkblotched rockfish. During the GAP meeting, held concurrent with Council discussions of non-groundfish issues, GAP members and the public discussed a range of possible inseason actions. Meeting participants were concerned that without depth-based management, the fisheries with incidental darkblotched rockfish catch would likely have to be closed entirely for the September-December 2002 period. As discussed above in Section 1.1, the Council took the advice of the GAP and the public and asked that NMFS implement depth-based management for the September-December 2002 period to allow fishing for species outside of the range of darkblotched rockfish.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Development of Alternatives

This chapter describes the different alternatives for implementing new depth-based management measures in the Pacific Coast groundfish fishery during 2002.

As discussed in Section 1.1, the Council requested that NMFS consider creating a geographic closed area to control the incidental take of darkblotched rockfish while allowing limited entry trawl access to deepwater and nearshore groundfish species outside the closed area. Because of higher than expected incidental take of darkblotched rockfish during the first four months of 2002, limited entry trawl fisheries for deepwater and nearshore species are currently scheduled to be closed September 1 - December 31.

Analysis of the alternatives will weigh the effects of the alternatives, specifically the timing of implementing a darkblotched rockfish closed area and allowing limited entry trawl access to deepwater and nearshore groundfish species, on the human environment. The darkblotched rockfish closed area discussed for each of the alternatives would be an area between the U.S./Canada border and 40°10' N. lat. and waters from the 100 fathom contour to the 250 fathom contour. In this darkblotched rockfish closed area, all limited entry groundfish trawling would be prohibited. Limited entry and open access groundfish fishing by nontrawl gears would not be affected by this action, primarily because those gears tend to have lower darkblotched rockfish encounter rates than trawl gear. This closed area would be expected to protect darkblotched rockfish by closing trawling at its most common habitat depths. Healthy stocks that co-occur with darkblotched in those depths may also be harvested in depths where darkblotched rockfish occurs less frequently (i.e., inshore of 100 fathoms and offshore of 250 fathoms).

2.2 Description of Alternatives

Alternative 1 (No Action Alternative): No additional depth-based management measures would be implemented during 2002 to control the incidental take of darkblotched rockfish, therefore, there would be no limited entry trawl access to healthy deepwater or nearshore flatfish stocks from September 1 - December 31, 2002.

Alternative 2 (Council Preferred Alternative): Establish new depth-based management measures for the September - December periods, via emergency rulemaking These depth-based management measures would create a geographic zone (U.S./Canada border to 40°10' N. lat. and from 100 - 250 fathoms) to protect darkblotched rockfish while allowing limited entry trawl access to healthy deepwater and nearshore flatfish stocks outside of the closed area. There would be limited entry trawl access to healthy deepwater and nearshore flatfish stocks from September - December 31, 2002.

Alternative 3 (NMFS Preferred Alternative/Proposed Action): Proposed action to establish new depth-based management measures for the September - December and October - December periods, via emergency rulemaking. These depth-based management measures would create a geographic zone (U.S./Canada border to 40°10' N. lat. and from 100 - 250 fathoms) to protect darkblotched rockfish while allowing limited entry trawl access to healthy deepwater stocks during September - December and to nearshore flatfish stocks during October - December. There would be no limited entry trawl access to nearshore flatfish stocks from September 1 - October 1, 2002, because allowing trawling in all areas in the month of September would likely result in the fishery exceeding the darkblotched rockfish OY.

Alternative 4: Establish new depth-based management measures for the October - December periods, via the two-meeting process and abbreviated rulemaking. These depth-based management measures would create a geographic zone (U.S./Canada border to 40°10' N. lat. and from 100 - 250 fathoms) to protect darkblotched rockfish while allowing limited entry trawl access to healthy deepwater and nearshore flatfish stocks outside the closed area. There would be no limited entry trawl access to healthy deepwater and nearshore flatfish stocks from September 1 - October 1, 2002, because via the two-meeting process and abbreviated rulemaking October 1, 2002 is the soonest new depth-based management measures could be implemented.

2.3 Issues Considered but not Analyzed

There were several issues relevant to the development of new depth-based management measures that were considered for this EA but which were not analyzed in detail because they were beyond the scope of the proposed action. These issues primarily dealt with deciding which criteria should be the basis of the depth-based management measures. Possible bases for depth-based management measures included: essential fish habitat types, oceanographic conditions, associations of groundfish species complexes, enforcement, and fleet capabilities and behavior. Because this proposed action is designed to control the incidental take of an overfished species, darkblotched rockfish, while allowing trawl fishery access to deepwater stocks, it was important to create a geographic area that separated the known distribution of darkblotched rockfish from the location of deepwater trawl fisheries. This was most simply accomplished by using research survey and landings data to identify the distribution of darkblotched rockfish, then creating a geographic area encompassing that distribution (the area between 100 and 250 fathom depth contour lines from 40°10' N. lat. north to the U.S./Canada border). NMFS expects that the Council will be considering longer-term depth-based closures to protect darkblotched rockfish and other overfished species during the coming months and year. During those Council deliberations and in the analyses for those deliberations, the Council will consider whether other bases for depth based management measures (essential fish habitat types, oceanographic conditions, groundfish species complex associations, enforcement abilities, etc.) are more useful for longer-term management measures. Because the action considered in this analysis is a short-term action intended to protect darkblotched rockfish, the Council and NMFS determined that using the most readily-available darkblotched rockfish habitat data would maximize the efficient implementation of the action.

2.4 Comparison of the Alternatives

Table 2.4.1. Comparison of indicators across the alternatives.

Indicators	Alternative 1 (No Action Alternative Sept - Dec)	Alternative 2 (Council Preferred Alternative Sept - Dec)	Alternative 3 (NMFS Preferred Alternative Sept/Oct - Dec)	Alternative 4 (Oct - Dec)
Biological Indicators				
Incidental take of darkblotched rockfish	All trawl fisheries in which darkblotched have historically been taken would be closed, thus incidental take of darkblotched rockfish would be negligible or non-existent. Fixed gear and open access fisheries are not anticipated to incur significant darkblotched catch.	Fisheries in which darkblotched rockfish have historically been taken would be moved outside of the primary darkblotched rockfish range, thus incidental take of this species would be minimized. Total catch of darkblotched is not expected to approach the OY.	Incidental take of darkblotched rockfish would be greater than Alternative 1, less than Alternative 2, and similar to Alternative 4. Total catch of darkblotched is not expected to exceed the OY.	Incidental take of darkblotched rockfish would be more than Alternative 1, less than Alternative 2, and similar to Alternative 3. Total catch of darkblotched is not expected to exceed the OY.
Incidental take of other overfished species	All trawl fisheries, except for mid-water trawl gear fisheries for whiting, yellowtail and widow rockfish would be eliminated and any incidental take associated with bottom-trawl fisheries would be eliminated. Widow rockfish is an overfished species and retention rates for widow rockfish are set at incidental take levels expected to keep total catch within the widow rockfish OY. Fixed gear and open access fisheries are not anticipated to incur significant catch of overfished species.	Bottom trawl fisheries would be allowed inshore of the 100 fathom depth contour and offshore of the 250 fathom depth contour. Incidental take of overfished species is highest under Alternative 2, however, total catch is not expected to exceed the OYs of any overfished species.	Incidental take of other overfished species would be greater than Alternative 1 and Alternative 4 but less than Alternative 2. Total catch is not expected to exceed the OYs of any overfished species.	Incidental take of other overfished species would be greater than Alternative 1 but less than Alternative 2 or Alternative 3. Total catch is not expected to exceed the OYs of any overfished species.

Table 2.4.1. Comparison of indicators across alternatives continued...				
Indicators	**Alternative 1 (No Action Alternative Sept - Dec)**	**Alternative 2 (Council Preferred Alternative Sept - Dec)**	**Alternative 3 (NMFS Preferred Alternative Sept/Oct - Dec)**	**Alternative 4 (Oct - Dec)**
Biological Indicators continued				
Landings of deepwater groundfish species	Although trawl landings of deepwater groundfish species would be eliminated, landings of deepwater species by limited entry and open access fixed gear fisheries would continue. Landings of some deepwater species, such as Dover sole and Pacific ocean perch would be virtually eliminated, as those species are usually not taken with gear other than trawl gear.	Landings of deepwater species by trawl vessels would continue, but the reduced fishing area would likely eliminate some fishing opportunities. Although implementing the closed area would allow fishing for deepwater species, the landings of those species would likely continue at a slower pace than in past years. Landings of deepwater species by the limited entry fixed gear and open access fisheries would not be affected.	Landings of deepwater species would be similar to Alternative 2 for the months of September - December	Landings of deepwater species would be similar to Alternative 1 for the months of September and similar to Alternatives 2 and 3 for the months of October - December.
Landings of nearshore flatfish species	Landings of nearshore flatfish species would be virtually eliminated as very few, if any, of these species are taken in the limited entry fixed gear and open access fisheries that would be open during September - December.	Landings of nearshore flatfish species by trawl vessels would continue, but the reduced fishing area could eliminate some fishing opportunities. Conversely, it is also possible that vessels that would have otherwise fished for continental shelf species will concentrate their efforts more strongly in the nearshore area.	Landings of nearshore flatfish species would be similar to Alternative 1 for the month of September and similar to Alternative 2 for the months of October - December.	Landings of nearshore flatfish species would be similar to Alternative 1 for the months of September and similar to Alternatives 2 and 3 for the months of October - December.

Table 2.4.1. Comparison of indicators across alternatives continued...				
Indicators	**Alternative 1 (No Action Alternative Sept - Dec)**	**Alternative 2 (Council Preferred Alternative Sept - Dec)**	**Alternative 3 (NMFS Preferred Alternative Sept/Oct - Dec)**	**Alternative 4 (Oct - Dec)**
Socio-economic Indicators				
Economic effects of modified groundfish harvest	For the trawl fisheries, all groundfish landings would be eliminated except for those species taken with mid-water gear. Reduced groundfish harvest would likely have a notable negative economic effect on vessels and processing plants from September through mid-November.	This alternative would allow those vessels and processing plants that have historically relied on groundfish harvest during the months of September - December to continue operating. For vessels that would not normally operate offshore of 250 fathoms, additional time and resources (particularly fuel) would be needed to access deepwater groundfish species.	Economic effects of modified DTS harvest would be similar to Alternative 2 for the month of September. Economic effects of modified nearshore flatfish harvest would be similar to Alternative 1 during September and similar to Alternative 2 for the months of October - December.	Economic effects of modified groundfish harvest would be similar to Alternative 1 for the months of September and similar to Alternative 2 for the months of October - December.
Enforcement of depth-based management measures	The resources available for enforcement of depth-based management measures will remain constant across alternatives. USCG and NMFS Enforcement costs will remain constant but costs to the states will be less than Alternatives 2, 3, or 4.	The resources available for enforcement of depth-based management measures will remain constant across alternatives. USCG and NMFS Enforcement costs will remain constant but costs to the states will be greater than Alternatives 1 and 4, but similar to Alternative 3.	The resources available for enforcement of depth-based management measures will remain constant across alternatives. USCG and NMFS Enforcement costs will remain constant but costs to the states will be greater than Alternatives 1 and 4, but similar to Alternative 2.	The resources available for enforcement of depth-based management measures will remain constant across alternatives. USCG and NMFS Enforcement costs will remain constant but costs to the states will be greater than Alternative 1 but less but less than Alternative 2 or Alternative 3.

Table 2.4.1. Comparison of indicators across alternatives continued...				
Indicators	**Alternative 1 (No Action Alternative Sept - Dec)**	**Alternative 2 (Council Preferred Alternative Sept - Dec)**	**Alternative 3 (NMFS Preferred Alternative Sept/Oct - Dec)**	**Alternative 4 (Oct - Dec)**
Safety	Safety would increase for those vessels that would normally be participating in the closed fisheries, mainly because they would not be operating in those fisheries at all.	Some vessels that would not normally fish offshore of 250 fathoms will likely begin fishing in that offshore area in order to take some groundfish during the September - October period. For those vessels operating in unfamiliar waters, safety would decrease.	Safety effects would be less than Alternative 1 but more than Alternative 2 for the month of September. Safety would be similar to Alternative 2 and Alternative 4 for the months of October - December.	Safety effects would be similar to Alternative 1 for the month of September and similar Alternative 2 and Alternative 3 for the months of October - December.

3.0 AFFECTED ENVIRONMENT

3.1 Chapter Overview

This chapter describes the Pacific Coast groundfish fishery and the resources that would be affected by the proposed action. The physical environment is addressed in Section 3.2, the biological environment is addressed in Section 3.3, and the socio-economic environment is addressed in Section 3.4.

3.2 Physical Characteristics of the Affected Resource

California Current System

In the North Pacific Ocean, the large, clockwise-moving North Pacific Gyre circulates cold, sub-arctic surface water eastward across the North Pacific, splitting at the North American continent into the northward-moving Alaska Current and the southward-moving California Current (Figure 3.2.1). Along the U.S. West Coast, the surface California Current flows southward through the U.S. West Coast EEZ, the management area for the groundfish FMP. The California Current is known as an eastern boundary current, meaning that it draws ocean water along the eastern edge of an oceanic current gyre. Along the continental margin and beneath the California Current flows the northward-moving California Undercurrent. Influenced by the

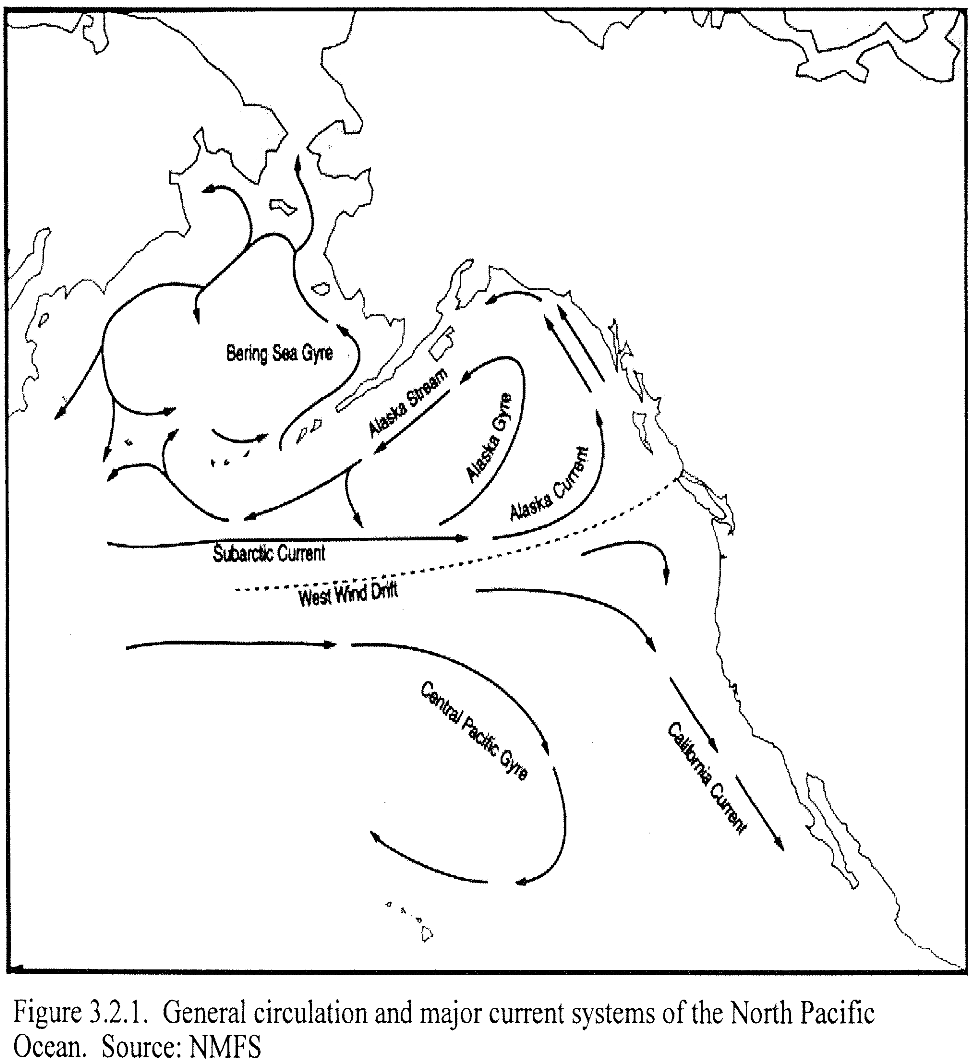

Figure 3.2.1. General circulation and major current systems of the North Pacific Ocean. Source: NMFS

California Current system and coastal winds, waters off the U.S. West Coast are subject to major nutrient upwelling, particularly off Cape Mendocino (Bakun, 1996). Shoreline topographic features such as Cape Blanco, Point Conception and bathymetric features such as banks, canyons, and other submerged features, often create large-scale current patterns like eddies, jets, and squirts. Currents off Cape Blanco, for example, are known for a current "jet" that drives surface water offshore to be replaced by upwelling sub-surface water (Barth, et al, 2000). One of the better-known current eddies off the West Coast occurs in the Southern California between Point Conception and Baja California (Longhurst, 1998), wherein the current

Figure 3.2.2. Bathymetric map of the U.S. West Coast EEZ; 200 m, 2000 m, and 4000 m contours shown.

circles back on itself by moving in a northward and counterclockwise direction just within the Bight. The influence of these lesser current patterns and of the California Current on the physical and biological environment varies seasonally (Lynn, 1987) and through larger-scale climate variation, such as El Niño-La Niña or Pacific Decadal Oscillation (Longhurst, 1998).

Topography Physical topography off the U.S. West Coast is characterized by a relatively narrow continental shelf. The 200 m depth contour shows a shelf break closest to the shoreline off Cape Mendocino, Point Sur, and in the Southern California Bight and widest from central Oregon north to the Canadian border as well as off Monterey Bay. Deep submarine canyons pocket the EEZ, with depths greater than 4,000 m south of Cape Mendocino (Figure 3.2.2).

Essential Fish Habitat. The 80+ groundfish species managed by the FMP occur throughout the EEZ and occupy diverse habitats at all stages in their life histories. Some species are widely dispersed during certain life stages, particularly those with pelagic eggs and larvae; the essential fish habitat (EFH) for these species/stages is correspondingly large. On the other hand, the EFH of some species/stages may be comparatively small, such as that of adults of many nearshore rockfishes which show strong affinities to a particular location or type of substrate.

EFH for Pacific coast groundfish is defined as the aquatic habitat necessary to allow for groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem. Descriptions of groundfish fishery EFH for each of the 80+ groundfish species and their life stages result in over 400 EFH identifications. When these EFHs are taken together, the groundfish fishery EFH includes all waters from the mean higher high water line, and the upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon, and California seaward to the boundary of the U.S. EEZ.

The FMP groups the various EFH descriptions into seven major habitat types called "composite" EFHs. This approach focuses on ecological relationships among species and between the species and their habitat, reflecting an ecosystem approach in defining EFH. The seven "composite" EFH identifications are as follows:

1. Estuarine - Those waters, substrates and associated biological communities within bays and estuaries of the EEZ, from mean higher high water level (MHHW, which is the high tide line) or extent of upriver saltwater intrusion to the respective outer boundaries for each bay or estuary as defined in 33 CFR 80.1 (Coast Guard lines of demarcation).

2. Rocky Shelf - Those waters, substrates, and associated biological communities living on or within ten meters (5.5 fathoms) overlying rocky areas, including reefs, pinnacles, boulders and cobble, along the continental shelf, excluding canyons, from the high tide line MHHW to the shelf break (~200 meters or 109 fathoms).

3. Nonrocky Shelf - Those waters, substrates, and associated biological communities living on or within ten meters (5.5 fathoms) overlying the substrates of the continental shelf, excluding the rocky shelf and canyon composites, from the high tide line MHHW to the shelf break (~200

meters or 109 fathoms).

4. Canyon - Those waters, substrates, and associated biological communities living within submarine canyons, including the walls, beds, seafloor, and any outcrops or landslide morphology, such as slump scarps and debris fields.

5. Continental Slope/Basin - Those waters, substrates, and biological communities living on or within 20 meters (11 fathoms) overlying the substrates of the continental slope and basin below the shelf break (~200 meters or 109 fathoms) and extending to the westward boundary of the EEZ.

6. Neritic Zone - Those waters and biological communities living in the water column more than ten meters (5.5 fathoms) above the continental shelf.

7. Oceanic Zone - Those waters and biological communities living in the water column more than 20 meters (11 fathoms) above the continental slope and abyssal plain, extending to the westward boundary of the EEZ.

Life history and habitat needs for the 80+ species managed under the FMP are described in the EFH appendix to Amendment 11, which is available online at http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html

The habitat types specifically involved in this proposed action would be the rocky shelf, nonrocky shelf, continental slope/basin, and oceanic zone. Generally speaking, a closure would occur between the rocky shelf and continental slope/basin zones with bottom trawling allowed in parts of the estuarine, rocky shelf, nonrocky shelf, and oceanic zones.

3.3 Biological Characteristics of the Affected Resource

Groundfish Resources

The Pacific Coast groundfish FMP manages over 80 species, many of which are caught in multi-species fisheries. These species, which include an array of flatfish, rockfish, and roundfish, occur throughout the EEZ and occupy diverse habitats during all stages of life history. Information on the interactions between groundfish species and between groundfish and non-groundfish species varies in completeness. While a few species have been intensely studied, there is relatively little information on most species. Few of the groundfish species have ever been comprehensively assessed.

Each fishing year, the Council assesses the biological condition of the Pacific Coast groundfish fishery and develops estimates of the ABC for major groundfish stocks. Species and species groups with ABCs in 2002 include lingcod, Pacific whiting, sablefish, POP, shortbelly rockfish, shortspine thornyhead, longspine thornyhead, widow rockfish, chilipepper rockfish, splitnose rockfish, cowcod, darkblotched rockfish, yellowtail rockfish, bocaccio, canary rockfish, yelloweye rockfish, Dover sole, and the minor rockfish complexes (northern and southern for nearshore, continental shelf, and continental slope species). The following nine groundfish stocks have been designated as "overfished" (less than 25% of its B_{MSY}): POP, bocaccio, lingcod, canary rockfish, cowcod, darkblotched rockfish, widow rockfish, and yelloweye rockfish, and Pacific whiting (hake).

When setting 2002 ABCs, the Council maintained a policy of using a default harvest rate as a proxy (also called harvest control rule) for the fishing mortality rate that is expected to achieve the maximum sustainable yield. The ABC for a species or species group is generally derived by multiplying the harvest rate proxy by the current estimated biomass. The Council continued to use the default harvest rate proxies recommended by the Council's SSC in 2001 (66 FR 2338, January 11, 2001). The proxy adopted in 2001 for rockfish species (including darkblotched rockfish) was $F_{50\%}$.

Darkblotched Rockfish

Darkblotched rockfish has a distribution extending from the Bering Sea to Santa Catalina Island, California (Allen and Smith 1988). Based on the location of commercial landings and NMFS triennial survey data, darkblotched rockfish are frequently encountered along the central Pacific Coast (Oregon and northern California). Because they can be found at depths ranging from 29 - 549 m (Rodgers et al. 2000), usually deeper than 76 m, they are managed in the FMP as part of the slope rockfish complex. Darkblotched rockfish are an important component of the commercial groundfish trawl fishery (Nichol and Pikitch 1994; Weinburg 1994). For this fishery, they comprise the deep-water assemblage, along with shortspine thornyhead, Pacific ocean perch, and splitnose rockfish (Weinburg 1994).

Darkblotched rockfish move into deeper water as they increase in size and age. Older larvae and pelagic juveniles are found closer to the surface than many other rockfish species (Love 2002). Off Oregon, benthic juveniles are taken at depths of 55 - 200 m. Adults have been found in water as shallow as 29 m, but are most abundant in the deeper portion of their range. In 1999, NMFS triennial survey data found that 91% of the estimated darkblotched rockfish biomass was found at depths between 180 - 360 m, with the remaining balance between 360 - 540 m (Rodgers et al. 2000).

Throughout their range, darkblotched rockfish are associated with mud and rock habitats. The greatest numbers of darkblotched larvae and pelagic juveniles are found 83 - 93 km offshore; juvenile darkblotched can be taken as far offshore as 194 km. Off central California, young darkblotched rockfish recruit to soft substrate and low relief. Demersal juveniles are often found perched on the highest structure in the benthic habitat (Love 2002). Adults are typically observed resting on mud, near cobble and boulders and do not often rise above the bottom (Love 2002). In Soquel Canyon, California, adults were most frequently associated with mud boulder, mud rock, rock mud, and mud cobble habitats (Yoklavich et al. 2000). Darkblotched rockfish make limited migrations once they recruit to the adult stock.

Darkblotched rockfish are viviparous (Nichol and Pickitch 1994). Insemination of female darkblotched rockfish occurs from August to December, fertilization and parturition occurs from

December to March off Oregon and California, primarily in February off Oregon and Washington (Hart 1973; Nichol and Pickitch 1994; Richardson and Laroche 1979). Females attain 50% maturity at a greater size (36.5 cm) and age (8.4 years) than males (29.6 cm and 5.1 years) (Nichol and Pickitch 1994). Adults can grow to 57 cm (Hart 1973). Pelagic young are food for albacore (Hart 1973).

Distributions of five of the nine Pacific Coast overfished groundfish species overlap with that of darkblotched rockfish and, therefore, can be found within the geographic area (U.S./Canada border to 40°10' N. lat. and from 100 - 250 fathoms) created to control the incidental take of darkblotched rockfish in the limited entry trawl fishery. The other overfished species include yelloweye rockfish, widow rockfish, Pacific ocean perch, Pacific whiting, and canary rockfish.

Yelloweye rockfish *(Sebastes ruberrimus)* range from the Aleutian Islands, Alaska to northern Baja California; they are common from central California northward to the Gulf of Alaska (Eschmeyer et al. 1983; Hart 1973; Love 1991; Miller and Lea 1972; O'Connell and Funk 1986). Yelloweye rockfish occur in water 25 - 550 m deep; 95% of survey catches occurred from 50 to 400 m (Allen and Smith 1988). Yelloweye rockfish are bottom dwelling, generally solitary, rocky reef fish, found either on or just over reefs (Eschmeyer et al. 1983; Love 1991; O'Connell and Funk 1986). Boulder areas in deep water (>180 m) are the most densely-populated habitat type and juveniles prefer shallow-zone broken-rock habitat (O'Connell and Carlile 1993). They also reportedly occur around steep cliffs and offshore pinnacles (Rosenthal et al. 1982). The presence of refuge spaces is an important factor affecting their occurrence (O'Connell and Carlile 1993).

Yelloweye rockfish are ovoviviparous and give birth to live young in June off Washington (Hart 1973). The age of first maturity is estimated at 6 years and all are estimated to be mature by 8 years. Yelloweye rockfish can grow to 91 cm (Eschmeyer et al. 1983; Hart 1973). Males and females probably grow at the same rates (Love 1991; O'Connell and Funk 1986). The growth rate of yelloweye rockfish levels off at approximately 30 years of age (O'Connell and Funk 1986). Yelloweye rockfish can live to be 114 years old (Love 1991; O'Connell and Funk 1986). Yelloweye rockfish are a large predatory reef fish that usually feeds close to the bottom (Rosenthal et al. 1988). They have a widely varied diet, including fish, crabs, shrimps and snails, rockfish, cods, sand lances and herring (Love 1991). Yelloweye have been observed underwater capturing smaller rockfish with rapid bursts of speed and agility. Off Oregon, the major food items of the yelloweye rockfish include cancroid crabs, cottids, righteye flounders, adult rockfishes, and pandalid shrimps (Steiner 1978). Quillback and yelloweye rockfish have many trophic features in common (Rosenthal et al. 1988).

Widow rockfish (*Sebastes entomelas*) range from Albatross Bank of Kodiak Island to Todos Santos Bay, Baja California (Eschmeyer et al. 1983; Miller and Lea 1972; NOAA 1990). Widow rockfish occur over hard bottoms along the continental shelf (NOAA 1990) Widow rockfish prefer rocky banks, seamounts, ridges near canyons, headlands, and muddy bottoms near rocks. Large widow rockfish concentrations occur off headlands such as Cape Blanco, Cape

Mendocino, Point Reyes, and Point Sur. Adults form dense, irregular, midwater and semi-demersal schools deeper than 100 m at night and disperse during the day (Eschmeyer et al. 1983; NOAA 1990; Wilkins 1986). All life stages are pelagic, but older juveniles and adults are often associated with the bottom (NOAA 1990). All life stages are fairly common from Washington to California (NOAA 1990). Pelagic larvae and juveniles co-occur with yellowtail rockfish, chilipepper, shortbelly rockfish, and bocaccio larvae and juveniles off central California (Reilly et al. 1992).

Widow rockfish are viviparous, have internal fertilization, and brood their eggs until released as larvae (NOAA 1990; Ralston et al. 1996; Reilly et al. 1992). Mating occurs from late fall to early winter. Larval release occurs from December - February off California, and from February - March off Oregon. Juveniles are 21-31 mm at metamorphosis, and they grow to 25-26 cm over 3 years. Age and size at sexual maturity varies by region and sex; size generally increases with age, for females, and the further north the fish are found. Some widow rockfish mature in 3 years (25-26 cm), 50% are mature by 4-5 years (25-35 cm), and most are mature in 8 years (39-40 cm) (NOAA 1990). The maximum age of widow rockfish is 28 years, but rarely over 20 years for females and 15 years for males (NOAA 1990). The largest size is 53 cm, about 2.1 kg (Eschmeyer et al. 1983; NOAA 1990).

Widow rockfish are carnivorous, with adults feeding on small pelagic crustaceans, midwater fishes (such as age-1 or younger Pacific hake), salps, caridean shrimp, and small squids (Adams 1987; NOAA 1990). During spring, the most important prey item is salps, during the fall fish are more important, and during the winter widow rockfish primarily eat sergestid shrimp (Adams 1987). Feeding is most intense in the spring after spawning (NOAA 1990). Pelagic juveniles are opportunistic feeders and their prey consists of various life stages of calanoid copepods, and euphausiids (Reilly et al. 1992).

Pacific ocean perch (*Sebastes alutus*) are found from La Jolla (southern California) to the western boundary of the Aleutian Archipelago (Eschmeyer et al 1983; Gunderson 1971; Ito 1986; Miller and Lea 1972), but are common from Oregon northward (Eschmeyer et al. 1983). Pacific ocean perch primarily inhabit waters of the upper continental slope (Dark and Wilkins 1994) and are found along the edge of the continental shelf (Archibald et al. 1983). Pacific ocean perch occur as deep as 825 m, but usually are at 100 - 450 m and along submarine canyons and depressions (NOAA 1990). Larvae and juveniles are pelagic; subadults and adults are benthopelagic. Adults form large schools 30 m wide, to 80 m deep, and as much as 1,300 m long (NOAA 1990). They also form spawning schools (Gunderson 1971). Juvenile Pacific ocean perch form ball-shaped schools near the surface or hide in rocks (NOAA 1990). Throughout its range, Pacific ocean perch is generally associated with gravel, rocky or boulder type substrate found in and along gullies, canyons, and submarine depressions of the upper continental slope (Ito 1986).

Pacific ocean perch winter and spawn in deeper water (>275 m), then move to feeding grounds in shallower water (180-220 m) in the summer (June-August) to allow gonads to ripen (Archibald et al. 1983; Gunderson 1971; NOAA 1990). Pacific ocean perch are a slow-growing and long-lived species. The maximum age for Pacific ocean perch has been estimated at about 90 years (ODFW, personal communication). Largest size is about 54 cm and 2 kg (Archibald et al. 1983; Beamish 1979; Eschmeyer et al. 1983; Ito 1986; Mulligan and Leaman 1992; NOAA 1990; Richards 1994). Pacific ocean perch are carnivorous; larvae eat small zooplankton. Small juveniles eat copepods, and larger juveniles feed on euphausiids. Adults eat euphausiids, shrimps, squids, and small fishes. Immature fish feed throughout the year, but adults feed only seasonally, mostly April-August (NOAA 1990). Predators of Pacific ocean perch include sablefish and Pacific halibut.

Pacific Whiting (*Merluccius productus*), also known as Pacific hake, is a semi-pelagic merlucciid (a cod-like fish species) that range from Sanak Island in the western Gulf of Alaska to Magdalena Bay, Baja California Sur. They are most abundant in the California Current System (Bailey 1982; Hart 1973; Love 1991; NOAA 1990). Smaller populations of Pacific whiting occur in several of the larger semi-enclosed inlets of the northeast Pacific Ocean, including the Strait of Georgia, Puget Sound, and the Gulf of California (Bailey et al. 1982; Stauffer 1985). The highest densities of Pacific hake are usually between 50 and 500 m, but adults occur as deep as 920 m and as far offshore as 400 km (Bailey 1982; Bailey et al. 1982; Dark and Wilkins 1994; Dorn 1995; Hart 1973; NOAA 1990; Stauffer 1985). Hake school at depth during the day, then move to the surface and disband at night for feeding (McFarlane and Beamish 1986; Sumida and Moser 1984; Tanasich et al. 1991). Coastal stocks spawn off Baja California in the winter, then the mature adults begin moving northward and inshore, following food supply and Davidson currents (NOAA 1990). Hake reach as far north as southern British Columbia by fall. They then begin the southern migration to spawning grounds and further offshore (Bailey et al. 1982; Dorn 1995; Smith 1995; Stauffer 1985).

Spawning occurs from December through March, peaking in late January (Smith 1995). Pacific hake are oviparous with external fertilization. Eggs of the Pacific hake are neritic and float to neutral buoyancy (Bailey et al. 1982; NOAA 1990). Hatching occurs in 5 - 6 days and within 3 - 4 months juveniles are typically 35 mm (Hollowed 1992). Juveniles move to deeper water as they get older (NOAA 1990). Females off mature at 3 - 4 years (34 - 40 cm,) and nearly all males are mature by 3 years (28 cm). Females grow more rapidly than males after four years; growth ceases for both sexes at 10 - 13 years (Bailey et al. 1982).

Canary Rockfish (*Sebastes pinniger*) are found between Cape Colnett, Baja California, and southeastern Alaska (Boehlert 1980; Boehlert and Kappenman 1980; Hart 1973; Love 1991; Miller and Lea 1972; Richardson and Laroche 1979). There is a major population concentration of canary rockfish off Oregon (Richardson and Laroche 1979). Canary primarily inhabit waters 91 - 183 m deep (Boehlert and Kappenman 1980). In general, canary rockfish inhabit shallow water when they are young and deep water as adults (Mason 1995). Adult canary rockfish are associated with pinnacles and sharp drop-offs (Love 1991). Canary rockfish are most abundant above hard bottoms (Boehlert and Kappenman 1980). In the southern part of its range, the canary rockfish appears to be a reef-associated species (Boehlert 1980). In central California, newly settled canary rockfish are first observed at the seaward, sand-rock interface and farther seaward in deeper water (18 - 24 m).

Canary rockfish are ovoviviparous and have internal fertilization (Boehlert and Kappenman 1980; Richardson and Laroche 1979). Off California, canary rockfish spawn from November - March and from January - March off Oregon and Washington (Hart 1973; Love 1991; Richardson and Laroche 1979). The age of 50% maturity of canary rockfish is 9 years; nearly all are mature by age 13. The maximum length canary rockfish grow to is 76 cm (Boehlert and Kappenman 1980; Hart 1973; Love 1991). Canary rockfish primarily prey on planktonic creatures, such as krill, and occasionally on fish (Love 1991). Canary rockfish feeding increases during the spring-summer upwelling period when euphausiids are the dominant prey and the frequency of empty stomachs is lower (Boehlert et al. 1989).

Lingcod (*Ophiodon elongatus*), a top order predator of the family Hexagrammidae, ranges from Baja California to Kodiak Island in the Gulf of Alaska. Lingcod is demersal at all life stages (Allen and Smith 1988; NOAA 1990; Shaw and Hassler 1989). Adult lingcod prefer two main habitat types: slopes of submerged banks 10 - 70 m below the surface with seaweed, kelp and eelgrass beds and channels with swift currents that flow around rocky reefs (Emmett et al. 1991; Giorgi and Congleton 1984; NOAA 1990; Shaw and Hassler 1989). Juveniles prefer sandy substrates in estuaries and shallow subtidal zones (Emmett et al. 1991; Forrester 1969; Hart 1973; NOAA 1990; Shaw and Hassler 1989). As the juveniles grow they move to deeper waters. Adult lingcod are considered a relatively sedentary species, but there are reports of migrations of greater than 100 km by sexually immature fish (Jagielo 1990; Mathews and LaRiviere 1987; Mathews 1992; Smith et al. 1990).

Mature females live in deeper water than males and move from deep water to shallow water in the winter to spawn (Forrester 1969; Hart 1973; Jagielo 1990; LaRiviere et al. 1980; Mathews and LaRiviere 1987; Mathews 1992; Smith et al. 1990). Mature males may live their whole lives associated with a single rock reef, possibly out of fidelity to a prime spawning or feeding area (Allen and Smith 1988; Shaw and Hassler 1989). Spawning generally occurs over rocky reefs in areas of swift current (Adams 1986; Adams and Hardwick 1992; Giorgi 1981; Giorgi and Congleton 1984; LaRiviere et al. 1980). After the females leave the spawning grounds, the males remain in nearshore areas to guard the nests until the eggs hatch. Hatching occurs in April off Washington but as early as January and as late as June at the geographic extremes of the lingcod range. Males begin maturing at about 2 years (50 cm), whereas females mature at 3+ years (76 cm). In the northern extent of their range, fish mature at an older age and larger size (Emmett et al. 1991; Hart 1973; Mathews and LaRiviere 1987; Miller and Geibel 1973; Shaw and Hassler 1989). The maximum age for lingcod is about 20 years (Adams and Hardwick 1992).

Lingcod are a visual predator, feeding primarily by day. Larvae are zooplanktivores (NOAA 1990). Small demersal juveniles prey upon copepods, shrimps and other small crustaceans. Larger juveniles shift to clupeids and other small fishes (Emmett et al. 1991; NOAA 1990). Adults feed primarily on demersal fishes (including smaller lingcod), squids, octopi and crabs (Hart 1973; Miller and Geibel 1973; Shaw and Hassler 1989). Lingcod eggs are eaten by gastropods, crabs, echinoderms, spiny dogfish, and cabezon. Juveniles and adults are eaten by marine mammals, sharks, and larger lingcod (Miller and Geibel 1973; NOAA 1990).

Bocaccio rockfish (*Sebastes paucispinis)* ranges from Kodiak Island, Alaska to Sacramento Reef, Baja California. It is abundant off southern and central California and uncommon between Cape Mendocino and Cape Blanco, although a second population exists near the Oregon-Washington border and extends north to Cape Flattery. They are found at depths ranging from 50 to 300 m (Ralston et al. 1996) and are classified as a middle shelf-mesobenthal species.

Bocaccio frequent a exceptional variety of habitats including, kelp forests, rocky reefs, midwater, and open, low relief bottoms. Larvae and small juveniles are pelagic and are commonly found in the upper 100 m of the water column. In central California, post-pelagic larvae are associated with the giant kelp canopy and also seen throughout the water column. Moser et al. (2000) found relatively high average abundances of bocaccio larvae when surveying stations in the Point Conception and Channel Islands areas, in addition to, a station southwest of Santa Rosa, a station northeast of San Nicholas Island, and a station southwest of Point Conception.

Bocaccio have been categorized as both a nearshore and offshore species because they occupy different habitats depending on life stage. After spending their first year in shallow areas along the coast, bocaccio move into deeper habitats as they age. Large juvenile and adult bocaccio are semi-demersal, found in both rocky and non-rocky habitats, and have been known to occur around artificial structures. Love et al. (2000) found the highest density of adult bocaccio (10.5 fish/100 m^2) around an oil platform was greater than the highest density of bocaccio around a natural reef (4.4 fish/100 m^2).

While adult bocaccio are usually associated with rocky vertical relief, they are also found occurring over firm sand-mud bottom, in eelgrass beds, or congregated around floating kelp beds. In Soquel Canyon, California, adults were associated with mud-boulder, rock-mud, rock-ridge, and rock-boulder habitats (Yoklavich et al. 2000). Adult bocaccio have been known to aggregate and disperse quickly and may travel more than two km per day. Bocaccio movements may also have a seasonal component, as bocaccio disappear from traditional commercial fishing areas during winter spawning and return in the spring.

All life stages of bocaccio are found in euhaline waters and they may congregate in local areas of high salinity. Warm temperatures are preferred by larvae and high larval densities have been observed in waters of 12EC and higher. However, average larval abundance declined abruptly during the shift from the cool regime (1951 - 1976) to the warm regime (1977 - 1998) of the Pacific Decadal Osillation (PDO) in the Southern California Bight region (Moser et al. 2000).

Cowcod (*Sebastes levis)* is found from central Oregon to central Baja California and Guadalupe Island, but they are rare off Oregon and Northern California (Butler et al. 1999). They commonly inhabit depths ranging from 20 to 366 m and are classified as a parademersal species.

Cowcod are found at varying depths depending on life stage. Larval cowcod have been found in northern California to northern Baja, California and between 13 and 306 km offshore. Juveniles settle to the bottom and have been found as deep as 224 m (Love 2002). Adult cowcod are primarily found from 50 to 303 m, with smaller fish generally found at the shallower end of the depth range (Barnes 2001).

Life stage also plays a role in cowcod habitat associations. Moser et al. (2000) found the highest number of larvae around the Channel Islands. From March to September, young settle into fine sand and clay sediments, as well as over oil platform shell mounds, oil pipelines, crinoid beds, and other complex strata. Juveniles occur on similar strata where they are often accompanied by shrimp and other juvenile rockfish such as stripetail, splitnose, or swordspine. Larger immature fish are often found among anemones, sponges, crinoids and in association with greenspotted, greenblotched, and flag rockfish, in addition to bocaccio (Love 2002). Individual subadults have also been found in association with large white sea anemones on outfall pipes in Santa Monica Bay (Butler et al. 1999). Adult cowcod occur on high-relief rock outcrops, particularly those with caves, crevices, and boulders, as well as the undercut bottom crossbeams of some oil platforms. This species is generally solitary and does not migrate, however, they may occasionally aggregate or move in search of food. Adult cowcod are reclusive fish and are often found with either their heads or bodies inside caves and crevices (Love 2002). Adults in Soquel Canyon are associated with rocky mud, ridge, and boulder habitats (Yoklavich et al. 2000). Information on habitat needs during mating is unavailable but parturition occurs from November through March, and presumed to occur around rocky ledges and steep slopes.

The proposed action would provide limited entry trawl access to deepwater groundfish species, typically found north of 40°10' N. lat. and at depths greater than 250 fathoms, such as sablefish, Dover sole, and thornyheads.

Sablefish (*Anoplopoma fimbria*) are abundant in the north Pacific, from Honshu Island, Japan, north to the Bering Sea, and southeast to Cedros Island, Baja California. There are at least three genetically distinct populations off the West Coast of North America: one south of Monterey characterized by slower growth rates and smaller average size, one that ranges from Monterey to the U.S./Canada border that is characterized by moderate growth rates and size, and one ranging off British Columbia and Alaska characterized by fast growth rates and large size. Large adults are uncommon south of Point Conception (Hart 1973; Love 1991; McFarlane and Beamish 1983a; McFarlane and Beamish 1983b; NOAA 1990). Adults are found as deep as 1,900 m, but are most abundant between 200 and 1,000 m (Mason et al. 1983). Off southern California, sablefish were abundant to depths of 1500 m. Adults and large juveniles commonly occur over sand and mud (McFarlane and Beamish 1983a; NOAA 1990) in deep marine waters. They were also reported on hard-packed mud and clay bottoms in the vicinity of submarine canyons (MBC 1987).

Spawning occurs annually in the late fall through winter in waters greater than 300 m (Hart 1973; NOAA 1990). Sablefish are oviparous with external fertilization (NOAA 1990). Eggs hatch in about 15 days (Mason et al. 1983; NOAA 1990) and are demersal until the yolk sac is absorbed (Mason et al. 1983). After yolk sac is absorbed, juveniles become pelagic. Older juveniles and adults are benthopelagic. Larvae and small juveniles move inshore after spawning and may rear for up to four years (Boehlert and Yoklavich 1985; Mason et al. 1983). Older juveniles and adults inhabit progressively deeper waters. The best estimates indicate that 50% of females are mature at 5 - 6 years (24 inches), and 50% of males are mature at 5 years (20 inches).

Sablefish larvae prey on copepods and copepod nauplii. Pelagic juveniles feed on small fishes and cephalopods, mainly squids (Hart 1973; Mason et al. 1983). Demersal juveniles eat small demersal fishes, amphipods and krill (NOAA 1990). Adult sablefish feed on fishes like rockfishes and octopus (Hart 1973; McFarlane and Beamish 1983a). Larvae and pelagic juvenile sablefish are heavily preyed upon by sea birds and pelagic fishes. Juveniles are eaten by Pacific cod, Pacific halibut, lingcod, spiny dogfish, and marine mammals, such as Orcas (Cailliet et al. 1988; Hart 1973; Love 1991; Mason et al. 1983; NOAA 1990). Sablefish compete with many other co-occurring species for food, mainly Pacific cod and spiny dogfish (Allen 1982).

Dover Sole (*Microstomus pacificus*) are distributed from the Navarin Canyon in the northwest Bering Sea and westernmost Aleutian Islands to San Cristobal Bay, Baja California (Hagerman 1952; Hart 1973; NOAA 1990). Dover sole are a dominant flatfish on the continental shelf and slope from Washington to southern California. Adults are demersal and are found from 9 - 1,450 m, with highest abundance below 200 - 300 m (Allen and Smith 1988). Adults and juveniles, show a high affinity toward soft bottoms of fine sand and mud. Juveniles are often found in deep nearshore waters. Dover sole are considered to be a migratory species. In the summer and fall, mature adults and juveniles can be found in shallow feeding grounds, as shallow as 55 m off British Columbia (Westrheim and Morgan 1963). By late fall, the Dover sole begin moving offshore into deep waters (400 m plus) to spawn. Although there is an inshore-offshore seasonal migration, little north-south coastal migration occurs (Westrheim and Morgan 1963)

Spawning occurs from November - April off Oregon and California (Hart 1973; NOAA 1990; Pearcy et al. 1977) in waters 80 - 550 m depth at or near the bottom (Hagerman 1952; Hart 1973; Pearcy et al. 1977). Dover sole are oviparous; fertilization is external. Larvae are planktonic, being transported offshore and to nursery areas by ocean currents and winds for up to two years. Settlement to benthic living occurs mid-autumn to early spring off Oregon, and February - July off California (Markle et al. 1992). Juvenile fish move into deeper water with age, and begin seasonal spawning-feeding migrations upon reaching maturity.

Dover sole larvae eat copepods, eggs and nauplii, as well as other plankton. Juveniles and adults eat polychaetes, bivalves, brittlestars and small benthic crustaceans. Dover sole feed diurnally by sight and smell (Dark and Wilkins 1994; Gabriel and Pearcy 1981; Hart 1973; NOAA 1990). Dover sole larvae are eaten by pelagic fishes like albacore, jack mackerel and tuna, as well as sea birds. Juveniles and adults are preyed upon by sharks, demersally feeding marine mammals, and to some extent by sablefish (NOAA 1990). Dover sole compete with various eelpout species, rex sole, English sole, and other fishes of the mixed species flatfish assemblage (NOAA 1990).

Shortspine Thornyhead (*Sebastolobus alascanus*) are found from northern Baja California to the Bering Sea and occasionally to the Commander Islands north of Japan (Jacobson and Vetter 1996). They are common from southern California northward (Love 1991). Shortspine thornyhead inhabit areas over the continental shelf and slope (Erickson and Pikitch 1993; Wakefield and Smith 1990). Although they can occur as shallow as 26 m (Eschmeyer et al. 1983), shortspine thornyhead mainly occur between 100 and 1400 m off Oregon and California, most commonly between 100 - 1000 m (Jacobson and Vetter 1996).

Spawning occurs in February and March off California (Wakefield and Smith 1990). Shortspine thornyhead are thought to be oviparous (Wakefield and Smith 1990), although there is no clear evidence to substantiate this (Erickson and Pikitch 1993). Eggs rise to the surface to develop and hatch. Larvae are pelagic for about 12 - 15 months. During January to June, juveniles settle onto the continental shelf and then move into deeper water as they become adults (Jacobson and Hunter 1993). Off California, they begin to mature at 5 years; 50% are mature by 12 - 13 years; and all are mature by 28 years (Owen and Jacobson 1992). Although it is difficult to determine the age of older individuals, Owen and Jacobson (1992) report that off California, they may live to over 100 years of age. The mean size of shortspine thornyhead increases with depth and is greatest at 1000 - 1400 m (Jacobson and Vetter 1996).

Benthic individuals are sit-and-wait predators that rest on the bottom and remain motionless for extended periods of time (Jacobson and Vetter 1996). Off Alaska, shortspine thornyhead eat a variety of invertebrates such as shrimps, crabs, and amphipods, as well as fishes and worms (Owen and Jacobson 1992). Longspine thornyhead are a common item found in the stomachs of shortspine thornyhead. Cannibalism of newly settled juveniles is important in the life history of thornyheads (Jacobson and Vetter 1996).

Longspine Thornyhead (*Sebastolobus altivelis*) are found from the southern tip of Baja California to the Aleutian Islands (Eschmeyer et al. 1983; Jacobson and Vetter 1996; Love 1991; Miller and Lea 1972; Smith and Brown 1983) but are abundant from southern California northward (Love 1991). Juvenile and adult longspine thornyhead are demersal and occupy the sediment surface (Smith and Brown 1983). Off Oregon and California, longspine thornyhead mainly occur at depths of 400 - 1400 m plus, most between 600 and 1000 m in the oxygen minimum zone (Jacobson and Vetter 1996). Thornyhead larvae (Sebastolobus spp.) have been taken in research surveys up to 560 km off the California coast (Cross 1987; Moser et al. 1993). Juveniles settle on the continental slope at about 600 - 1200 m (Jacobson and Vetter 1996). Longspine thornyhead live on soft bottoms, preferably sand or mud (Eschmeyer et al. 1983; Jacobson and Vetter 1996; Love 1991). Longspine thornyheads neither school nor aggregate (Jacobson and Vetter 1996).

Spawning occurs in February and March at 600 - 1000 m (Jacobson and Vetter 1996; Wakefield and Smith 1990). Longspine thornyhead are oviparous and are multiple spawners, spawning 2 - 4 batches per season (Love 1991; Wakefield and Smith 1990). Eggs rise to the surface to develop and hatch. Floating egg masses can be seen at the surface in March, April, and May

(Wakefield and Smith 1990). Juveniles (< 5.1 cm long) occur in midwater (Eschmeyer et al. 1983). After settling, longspine thornyhead are completely benthic (Jacobson and Vetter 1996). Longspine thornyhead can grow to 38 cm (Eschmeyer et al. 1983; Jacobson and Vetter 1996; Miller and Lea 1972) and live more than 40 years (Jacobson and Vetter 1996). Longspine thornyhead reach the onset of sexual maturity at 17 - 19 cm TL (10% of females mature) and 90% are mature by 25 - 27 cm (Jacobson and Vetter 1996).

Longspine thornyhead are sit-and-wait predators (Jacobson and Vetter 1996). They consume fish fragments, crustaceans, bivalves, and polychaetes and occupy a tertiary consumer level in the food web. Pelagic juveniles prey largely on herbivorous euphausiids and occupy a secondary consumer level in the food web (Love 1991; Smith and Brown 1983). Longspine thornyhead are commonly seen in shortspine thornyhead stomachs. Cannibalism in newly settled longspine thornyhead may occur because juveniles settle directly onto adult habitat (Jacobson and Vetter 1996). Sablefish commonly prey on longspine thornyhead.

The proposed action would also provide limited entry trawl access to nearshore flatfish species, typically found at depths less than 100 fathoms, such as English sole, petrale sole, arrowtooth flounder, and Dover sole, butter sole, curlfin sole, flathead sole, Pacific sanddab, rex sole, rock sole, sand sole, and starry flounder.

English Sole (*Parophrys vetulus*) are found from Nunivak Island in the southeast Bering Sea and Agattu Island in the Aleutian Islands, to San Cristobal Bay, Baja California Sur (Allen and Smith 1988). In research survey data, nearly all occurred at depths < 250 m (Allen and Smith 1988). Adults and juveniles prefer soft bottoms composed of fine sands and mud (Ketchen 1956), but also occur in eelgrass habitats (Pearson and Owen 1992). English sole uses nearshore coastal and estuarine waters as nursery areas (Krygier and Pearcy 1986; Rogers et al. 1988). Adults make limited migrations. Those off Washington show a northward post-spawning migration in the spring on their way to summer feeding grounds, and a southerly movement in the fall (Garrison and Miller 1982). Tagging studies have identified separate stocks based on this species' limited movements and meristic characteristics (Jow 1969).

Spawning occurs over soft-bottom mud substrates (Ketchen 1956) from winter to early spring depending on the stock. Eggs are neritic and buoyant, but sink just before hatching (Hart 1973), juveniles and adults are demersal (Garrison and Miller 1982). Small juveniles settle in the estuarine and shallow nearshore areas all along the coast, but are less common in southerly areas, particularly south of Point Conception. Large juveniles commonly occur up to depths of 150 m. Although many post-larvae may settle outside of estuaries, most will enter estuaries during some part of their first year of life (Gunderson et al. 1990). Some females mature as three year olds (26 cm), but all females over 35 cm long are mature. Males mature at two years of age (21 cm).

Larvae are planktivorous. Juveniles and adults are carnivorous, eating copepods, amphipods, cumaceans, mysids, polychaetes, small bivalves, clam siphons, and other benthic invertebrates (Allen 1982; Becker 1984; Hogue and Carey 1982; Simenstad et al. 1079) . English sole feed primarily by day, using sight and smell,and sometimes dig for prey (Allen 1982; Hulberg and Oliver 1979). A juvenile English sole's main predators are probably piscivorous birds such as great blue heron, larger fishes and marine mammals. Adults may be eaten by marine mammals, sharks, and other large fishes.

Petrale Sole (*Eopsetta jordani*) are found form Cape St. Elias, Alaska to Coronado Island, Baja California. The range may possibly extend into the Bering Sea, but the species is rare north and west of southeast Alaska and in the inside waters of British Columbia (Garrison and Miller 1982; Hart 1973). Nine separate breeding stocks have been identified, although stocks intermingle on summer feeding grounds (Hart 1973; NOAA 1990). Of these nine stocks, one occurs off British Columbia, two off Washington, two off Oregon and four off California (NOAA 1990). Adults are found from the surf line to 550 m, but their highest abundance is < 300 m (NOAA 1990). Adults migrate seasonally between deepwater, winter spawning areas to shallower, spring feeding grounds (NOAA 1990). They show an affinity to sand, sandy mud and occasionally muddy substrates (NOAA 1990).

Spawning occurs over the continental shelf and continental slope to as deep as 550 m. Eggs are pelagic and juveniles and adults are demersal (Garrison and Miller 1982). Eggs and larvae are transported from offshore spawning areas to nearshore nursery areas by oceanic currents and wind. Larvae metamorphose into juveniles at six months (22 cm) and settle to the bottom of the inner continental shelf (Pearcy et al. 1977). Petrale sole tend to move into deeper water with increased age and size. Petrale sole begin maturing at three years. Half of males mature by seven years (29 - 43 cm) and half of the females are mature by eight years (> 44 cm) (Pedersen 1975a; Pedersen 1975b). Near the Columbia River, petrale sole mature one to two years earlier (Pedersen 1975a; Pedersen 1975b).

Larvae are planktivorous. Small juveniles eat mysids, sculpins and other juvenile flatfishes. Large juveniles and adults eat shrimps and other decapod crustaceans, as well as euphausiids, pelagic fishes, ophiuroids and juvenile petrale sole (Garrison and Miller 1982; Hart 1973; NOAA 1990; Pearcy et al. 1977; Pedersen 1975a; Pedersen 1975b). Petrale sole eggs and larvae are eaten by planktivorous invertebrates and pelagic fishes. Juveniles are preyed upon (sometimes heavily) by adult petrale sole, as well as other large flatfishes. Adults are preyed upon by sharks, demersally feeding marine mammals, and larger flatfishes and pelagic fishes (NOAA 1990). Petrale sole competes with other large flatfishes. Petrale sole has the same summer feeding grounds as lingcod, English sole, rex sole and Dover sole (NOAA 1990).

Arrowtooth Flounder (*Atheresthes stomias*) range from the southern coast of Kamchatka to the northwest Bering Sea and Aleutian Islands to San Simeon, California. Arrowtooth flounder is the dominant flounder species on the outer continental shelf from the western Gulf of Alaska to Oregon. Eggs and larvae are pelagic and juveniles and adults are demersal (Garrison and Miller 1982; NOAA 1990). Juveniles and adults are most commonly found on sand or sandy gravel substrates, but occasionally occur over low-relief rock-sponge bottoms. Arrowtooth flounder exhibit a strong migration from shallow water summer feeding grounds on the continental shelf to deep water spawning grounds over the continental slope (NOAA 1990). Depth distribution may vary from as little as 50 m in summer to more than 500 m in the winter (NOAA 1990, Rickey 1995).

Arrowtooth flounder are oviparous with external fertilization (Barry 1996). Spawning may occur deeper than 500 m off Washington (Rickey 1995). Larvae eat copepods, their eggs and copepod nauplii (Yang 1995; Yang and Livingston 1985). Juveniles and adults feed on crustaceans (mainly ocean pink shrimp and krill) and fish (mainly gadids, herring and pollock) (Hart 1973; NOAA 1990). Arrowtooth flounder exhibit two feeding peaks, one at noon and the other at midnight.

Nearshore Flatfish are those species that do not have individual ABC/OYs and include butter sole, curlfin sole, flathead sole, Pacific sanddab, rex sole, rock sole, sand sole, and starry flounder. Life history descriptions of these species may be found in the Essential Fish Habitat West Coast Groundfish which was prepared for Amendment 11 to the FMP. This document may be requested from the Council office and is available at http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html.

Endangered Species
West Coast marine species listed as endangered or threatened under the Endangered Species Act (ESA) are discussed below the marine mammal, seabird, sea turtle, salmon sections. Under the ESA, a species is listed as "endangered" if it is in danger of extinction throughout a significant portion of its range and "threatened" if it is likely to become an endangered species within the foreseeable future throughout all, or a significant portion, of its range. Species is the adjoining table are subject to the conservation and management requirements of the ESA.

Marine Mammals	
Threatened	Steller sea lion (*Eumetopias jubatus*)Eastern Stock, Guadalupe fur seal (*Arctocephalus townsendi*), and Southern sea otter (*Enhydra lutris*) California Stock.
Seabirds	
Endangered	Short-tail albatross (*Phoebastria (=Diomedea) albatrus*), California brown pelican (*Pelecanus occidentalis*), and California least tern (*Sterna antillarum browni*).
Threatened	Marbled murrelet (*Brachyramphs marmoratus*).
Sea Turtles	
Endangered	Green turtle (*Chelonia mydas*) Leatherback turtle (*Dermochelys coriacea*) Olive ridely turtle (*Lepidochelys olivacea*)
Threatened	Loggerhead turtle (*Caretta caretta*)
Salmon	
Endangered	Chinook salmon (*Oncorhynchus tshawytscha)* Sacramento River Winter; Upper Columbia Spring Sockeye salmon (*Oncorhynchus nerka)* Snake River Steelhead trout (*Oncorhynchus mykiss)* Southern California; Upper Columbia
Threatened	Coho salmon (*Oncorhynchus kisutch)* Central California, Southern Oregon, and Northern California Coasts Chinook salmon (*Oncorhynchus tshawytscha*) Snake River Fall, Spring, and Summer; Puget Sound; Lower Columbia; Upper Willamette; Central Valley Spring; California Coastal Chum salmon (*Oncorhynchus keta)* Hood Canal Summer; Columbia River Sockeye salmon (*Oncorhynchus nerka)* Ozette Lake Steelhead trout (*Oncorhynchus mykiss)* South-Central California, Central California Coast, Snake River Basin, Lower Columbia, California Central Valley, Upper Willamette, Middle Columbia, Northern California

Marine Mammals
The waters off Washington, Oregon, and California (WOC) support a wide variety of marine mammals. Approximately thirty species, including seals and sea lions, sea otters, and whales, dolphins, and porpoise, occur within the EEZ. Many marine mammal species seasonally migrate through West Coast

waters, while others are year round residents.

The Marine Mammal Protection Act (MMPA) and the ESA are the Federal legislation that guide marine mammal species protection and conservation policy. Under the MMPA on the West Coast, NMFS is responsible for the management of cetaceans and pinnipeds, while the U.S. Fish and Wildlife Service (FWS) manages sea otters. Stock assessment reports review new information every year for strategic stocks (those whose human-caused mortality and injury exceeds the potential biological removal (PBR)) and every three years for non-strategic stocks. Marine mammals whose abundance falls below the optimum sustainable population (OSP) are listed as "depleted" according to the MMPA.

Fisheries that interact with species listed as depleted, threatened, or endangered may be subject to management restrictions under the MMPA and ESA. NMFS publishes an annual list of fisheries in the Federal Register separating commercial fisheries into one of three categories, based on the level of serious injury and mortality of marine mammals occurring incidentally in that fishery. The categorization of a fishery in the list of fisheries determines whether participants in that fishery are subject to certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. The WOC groundfish fisheries are in Category III, indicating a remote likelihood of, or no known serious injuries or mortalities, to marine mammals.

Species Listed as Depleted under the MMPA

Sperm whale (*Physeter macrocephalus*) WOC Stock,
Humpback whale (*Megaptera novaeangliae*) WOC - Mexico Stock,
Blue whale (*Balaenoptera musculus*) Eastern North Pacific Stock, and

Seabirds

Over sixty species of seabirds occur in waters off the coast of WOC within the EEZ. These species include: loons, grebes, albatross, fulmars, petrels, shearwaters, storm-petrels, pelicans, cormorants, frigate birds, phalaropes, skuas, jaegers, gulls, kittiwakes, skimmers, terns, guillemots, murrelets, auklets, and puffins. The migratory range of these species includes commercial fishing areas; fishing also occurs near the breeding colonies of many of these species.

The FWS is the primary Federal agency responsible for seabird conservation and management. Under the Magnuson-Stevens Act, NMFS is required to ensure fishery management actions comply with other laws designed to protect seabirds. NMFS is also required to consult with FWS if fishery management plan actions may affect seabird species listed as endangered or threatened.

Sea Turtles

Sea turtles are highly migratory; four of the six species found in U.S. waters have been sighted off the West Coast. Little is known about the interactions between sea turtles and West Coast commercial fisheries. The directed fishing for sea turtles in WOC groundfish fisheries is prohibited, because of their ESA listings, but the incidental take of sea turtles by trawl gear may occur. The management and conservation of sea turtles is shared between NMFS and FWS.

Salmon

Salmon caught in the U.S. West Coast fishery have life cycle ranges that include coastal streams and river systems from central California to Alaska and oceanic waters along the U.S. and Canada seaward into the north central Pacific Ocean, including Canadian territorial waters and the high seas. Some of the more critical portions of these ranges are the freshwater spawning grounds and migration routes.

Chinook or king salmon (*Oncorhynchus tshawytscha*) and coho or silver salmon (*O. kisutch*) are the main species caught in Council-managed ocean salmon fisheries. In odd-numbered years, catches of pink salmon (*O. gorbuscha*) can also be significant, primarily off Washington and Oregon. Ocean salmon are caught with commercial and recreational troll gear. No other gears are allowed to take and retain salmon in the ocean fisheries. Small amounts of rockfish and other groundfish are taken as incidental take in salmon troll fisheries.

3.4 Socio-Economic Characteristics of the Affected Resource

History of the Trawl Fishery

The Pacific coast groundfish fishery is a year-round, multi-species fishery that takes place off the coasts of Washington, Oregon, and California. In 1994, NMFS implemented Amendment 6 to the FMP, a license limitation program intended to restrict vessel participation in the directed commercial groundfish fisheries off Washington, Oregon, and California. The limited entry permits that were created through that program specify the gear type that a permitted vessel may use to participate in the limited entry fishery, and the vessel length

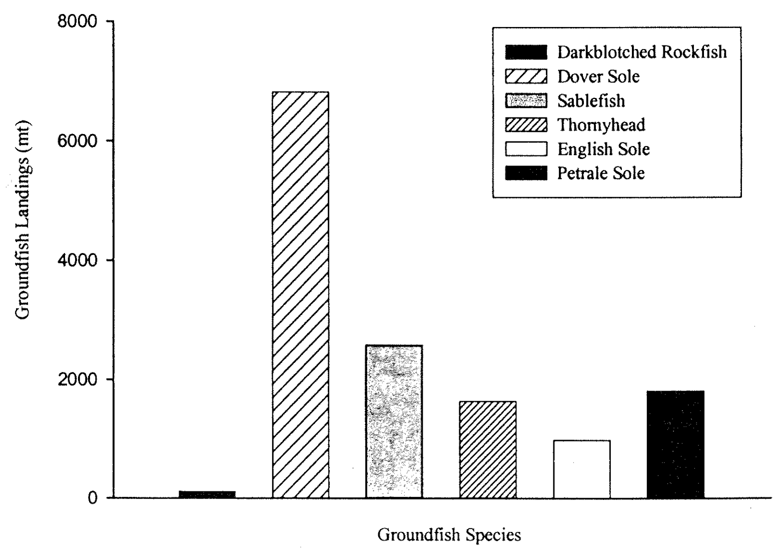

Figure 3.4.1. Coastwide landings (mt) of groundfish species taken by trawl gear in 2001. Source: PacFIN

associated with the permit. Most of the Pacific commercial groundfish harvest is taken by the limited entry fleet using for trawl, longline, and trap (or pot) gears.

As of March, 2002, there were 450 vessels with Pacific Coast groundfish limited entry permits, of which approximately 54 percent were trawl vessels, 40 percent were longline vessels, 6 percent were trap vessels.

Limited entry fishers focus their efforts on many different species, with the largest landings by volume (other than Pacific whiting) from the following species: Dover sole, arrowtooth flounder, petrale sole, sablefish, thornyheads, and yellowtail rockfish. There are 55+ rockfish species managed by the Pacific coast groundfish FMP, of which seven species have been declared overfished in the past four years. Protective fisheries regulations intended to reduce the directed and incidental take of overfished rockfish and other depleted species have significantly reduced the harvest of rockfish and other species in recent years.

Enforcement of New Depth-based Management Measures

Enforcing regulations in the Pacific Coast groundfish fishery is shared by Federal and state agencies. Federal fisheries enforcement is divided between the United States Coast Guard (USCG) and NMFS Enforcement while each of the states provide enforcement support from Washington Department of Fish and Wildlife (WDFW), Oregon State Police, California Department of Fish and Game (CDFG). Implementing depth-based management measures extending from the U.S./Canada border south to 40°10' N. lat. represents a change from past Council recommended management measures and will mark the transition to a much greater dependence upon at-sea enforcement.

Safety Issues Associated with New Depth-Based Management Measures

The Pacific Coast groundfish trawl fleet is comprised of about 200 vessels, many of which have not historically fished offshore of 250 fathoms during fall and winter months. About 75% of the limited entry trawl fleet is less than 80 feet in length and travel at relatively slow speeds.

Weather and sea conditions off the Pacific coast typically become harsh during fall and winter months, often making fishing difficult and/or impossible for periods of time. Historically, fewer vessels fish during fall and winter months than at other times of the year. Encouraging fishing offshore of 250 fathoms as winter approaches may have an effect on the safety of the limited entry trawl fleet, fisheries observers, and enforcement personnel.

4.0 ANALYSIS OF THE ALTERNATIVES

4.1 Chapter Overview

This chapter describes the effects of the proposed action, implementing a geographic closed zone control the incidental take of darkblotched rockfish while allowing limited entry bottom trawl access to deepwater species offshore of the closed zone during September - December and nearshore species inshore of the closed zone during October - December, on the Pacific Coast groundfish fishery. Effects on the physical environment are addressed in Section 4.2, effects on the biological environment are addressed in Section 4.3, and effects on the socio-economic environment are addressed in Section 4.4.

4.2 Effects on the Physical Environment

The effects of fishery management practices on the physical environment typically include such things as fishing gear effects on the ocean floor, changes in water quality associated with vessel traffic, and fish processing discards as a result of fishing practices. There are no data to suggest that characteristics of the California Current System and topography of the coast change with fishery management or fishing practices, however, there is information to indicate that fishery management and fishing practices may have an effect on EFH.

In general, potential bottom trawl fishing-related impacts to groundfish habitat take the form of lost or discarded fishing gear and direct disturbance of the seafloor from contact by trawl nets. While the effects of fishing on darkblotched rockfish habitat have not been directly investigated, there is some research exploring how gear affects habitat. Auster and Langton (1999) reviewed a variety of studies reporting habitat effects due to fishing for a wide range of habitats and gear types. Commonalities of all studies included immediate effects on species composition and diversity and a reduction of habitat complexity.

Bottom trawling gear is known to modify seafloor habitats by altering benthic habitat complexity and by removing or damaging infauna and sessile organisms (Friedlander et al. 1999; Freese et al. 1999). In a study on the shelf and slope off California, high-resolution sidescan-sonar images of the Eureka area revealed deep gouges on the seafloor believed to be caused by trawl doors (Friedlander et al. 1999). The effects of bottom trawling on a 'hard bottom' (pebble, cobble, and boulder) seafloor was also investigated in the Gulf of Alaska and results indicated that a significant number of boulders were displaced and emergent epifauna were removed or damaged after a single pass with trawl gear. Casual observations during the Freese et al. (1999) study revealed that Sebastes species use cobble-boulder and epifaunal invertebrates for cover. When boulders are displaced they can still provide cover, but when piles of boulders are displaced it reduces the number and complexity of crevices (Freese et al. 1999).

In addition to fishing activities, humans have many direct and indirect effects on groundfish habitat. While non-fishing human impacts have not been directly assessed on darkblotched rockfish habitat, a study of flatfish in Puget Sound, Washington indicated that anthropogenic stressors included chemical contaminant exposure and alteration of nearshore nursery habitats (Johnson et al. 1998). The New England Fishery Management Council compiled a list of human-induced threats to fish habitat that may be used as a guide to factors affecting groundfish species off the west coast. Oil, heavy metals, acid, chlorine, radioactive waste, herbicides and pesticides, sediments, greenhouse gases, and ozone loss are thought to be chemical factors that affect fish habitat. Biological threats can include the introduction of non-indigenous species, stimulation of nuisance and toxic algae, and the spread of disease. Human activities that may physically threaten fish habitat are dredging and disposal, mineral harvesting, vessel activity, shoreline alteration, and debris (Wilbur and Pentony 1999).

In the last few decades, marine debris has also been recognized as posing a risk to marine organisms via entanglement and ingestion. Seafloor debris was surveyed from Point Conception, California to the United States - Mexico international border at depths of 10 to 200 m and anthropogenic debris occurred on approximately 14 percent of the mainland shelf. Of the debris sampled, discarded fishing gear had the largest spatial coverage, followed by plastic, metal, and other debris (e.g., shoe soles and automobile parts) (Moore and Allen 1999). Less is known about the quantity of marine debris off Washington and Oregon, but it may be at levels that could negatively affect marine organisms.

The proposed action is not expected to have a significant effect on the physical environment of the Pacific Coast groundfish fishery, nor is it expected that there will be a significant difference in the effects on the physical environment between alternatives. However, effects on EFH may vary with duration and intensity of fishing effort. Alternative 1 is expected to have the least impact on the EFH as there will be no bottom trawling in the EEZ from the U.S./Canada border south to 40°10' N. latitude (approximately Cape Mendocino, California) during September through December. Alternative 4 and Alternative 3 will result in limited periods of bottom trawl activity (October through December and September/October through December, respectively) offshore of 250 fathoms and inshore of 100 fathoms. Alternative 4 is expected to have less of an effect on EFH than Alternative 3 because of the shorter duration of trawling activity. It is difficult to predict the effects on EFH because, on one hand, these alternatives may result in intense bottom trawl activity either offshore of 250 fathoms or inshore of 100 fathoms during the open period, while on the other hand rough weather may prevent bottom trawling from occurring offshore of 250 fathoms and/or inshore of 100 fathoms for some, if not all, of the open period. Of all the alternatives, Alternative 2 is anticipated to potentially have the most effect on EFH because it would provide the longest duration of bottom trawl activity and vessel traffic.

As more information is gathered about the effects of fishing and non-fishing human activities on groundfish habitat, additional management measures may be taken to mitigate the effects if necessary.

4.3 Effects on the Biological Environment

The effects of fishery management practices on the biological environment include such things as rebuilding overfished groundfish stocks, effects on groundfish target species, effects on endangered species (salmon, seabirds, sea turtles), and the incidental take of protected species (marine mammals, seabirds, sea turtles, and salmon).

Overfished Groundfish Species

As previously discussed, nine groundfish species managed by the Pacific Coast FMP have been declared overfished. The rationale for implementing new depth-based management measures north 40°10' N. lat. was out of concern for the higher than projected landings of darkblotched rockfish during the spring and summer. The best available science provided to the Council at its June 17 - 21, 2002, meeting in Foster City, California, indicated that by the end of August the projected catch of darkblotched rockfish would equal approximately 95% of its OY. Any new management measures implemented during 2002 need to not only consider the effects on darkblotched rockfish, but also must consider the effects on all overfished groundfish species.

Using the Hastie bycatch by depth model (2002) and the projected catch of deepwater and nearshore flatfish species (see Table 4.3.3) during the September - December periods provides an estimate of the total catch of overfished species under the different alternatives. This information is presented in the following table (Table 4.3.1). One uncertainty associated with these estimates is the uncertainty around the projected total catch (projected landings plus estimated discard) of overfished species, deepwater species, and nearshore flatfish species through August. The total catch of these species is projected through August in order to calculate what percentage of the OY remains for the September - December period and to project the total catch of deepwater and nearshore species during the final four months of 2002. The total catch of overfished species through August is projected to be: darkblotched rockfish 155 mt - 160 mt, widow rockfish 30 mt, POP 180 mt, canary rockfish 22 mt, lingcod 130 mt. Projected total catch through August of bocaccio, Pacific whiting, cowcod, and yelloweye rockfish are unavailable at this time.

Another uncertainty associated with these estimates is how well the Hastie bycatch by depth model (2002) predicts the bycatch of overfished species that will occur during September - December. Using the best scientific information available, the bycatch by depth model is based on the seasonal distribution of both groundfish species and fishing effort. Catch of the four DTS species occurs coastwide, but due to more extensive shelf closures south of 40°10' N. lat., will have canary rockfish bycatch implications only in the area north of 40°10' N. lat. The portion of Dover sole caught inshore of 100 fm during September - October of 1999 was roughly 23%. However, only 7% of the Dover sole caught as part of DTS target fishing was inside of 100 fm, compared with 45% of the Dover sole caught with nearshore flatfish targeting. Oregon logbooks from 2001 suggest that during September - October of that year, the overall percentage of Dover sole caught inshore of 100 fm may have been as high as 38%. However, these data have not yet been processed sufficiently to assign catches to target fisheries. Averaging the overall percentages from 1999 and 2001 provides an estimate of 30% of projected September - October

Dover sole being caught inshore of 100 fm. While the increase from the overall percentage of Dover sole caught inshore of 100 fm from 1999 to 2001 could be attributed to a higher percentage of DTS fishing occurring in those depths, the differences observed between target fisheries in the 1999 data suggest a more likely explanation is that a greater portion Dover sole was caught as part of nearshore flatfish targeting since 1999.

In projections for the 2002 fishery, about 20% of the Dover sole during September - October was attributed to areas south of 40°10' N. lat. Multiplying the percentage of all September - October Dover sole caught in the DTS fishery inside of 100 fm (3.8%) by 80%, roughly 3% of the total Dover sole projected for this period would be assigned to the northern DTS fishery inside of 100 fm. Assuming that a total of 30% of the northern Dover sole will be caught inside of 100 fm, the remaining portion assigned to the flatfish fishery inside of 100 fm would be 26.2% times 80%, or 21% of the total projected Dover sole. All remaining Dover sole for this period is assigned to the DTS fishery occurring outside of 250 fm. Minimal Dover sole is expected to be caught inside of 100 fm during November - December. The percentage of total sablefish attributable to DTS target fishing inside 100 fm is about 5.5%. Since just over 80% of the sablefish caught during this period would be expected to come from waters north of 40°10', the distribution of total sablefish to DTS fishing is adjusted downward to 5%. Minimal sablefish is expected to be caught inside of 100 fm during November - December. Catch of thornyheads inside of 100 fm during the last four months is expected to be very minimal. Flatfish amounts used for the remainder of 2002 reflect projections for the area north of 40°10' N. lat. under existing limits.

Table 4.3.1. Estimated total catch (mt) of overfished species.				
Overfished Species	**Alternative 1 (No Action Alternative Sept - Dec)**	**Alternative 2 (Council Preferred Alternative Sept - Dec)**	**Alternative 3 (NMFS Preferred Alternative Sept/Oct - Dec)**	**Alternative 4 (Oct - Dec)**
Darkblotched Rockfish	Alternative 1 is not expected to result in significant bycatch of any overfished species.	6.21 mt (96% - 99% of OY)	3.83 mt (95% - 98% of OY)	3.83 mt (95% - 98% of OY)
Widow Rockfish		2.29 mt (4% of OY)	2.12 mt (4% of OY)	1.99 mt (4% of OY)
POP		16.91 mt (56% of OY)	14.33 mt (56% of OY)	14.78 mt (56% of OY)
Canary Rockfish		11.32 mt (76 % of OY)	8.91 mt (70% of OY)	8.48 mt (69% of OY)
Lingcod		34.57 mt (66% of OY)	23.23 mt (61% of OY)	22.90 mt (61% of OY)
Bocaccio	Alternatives are not expected to result in any additional catch of bocaccio.			
Pacific Whiting	No bycatch rate by depth information is available for Pacific whiting, cowcod, or yelloweye rockfish at this time. Alternatives are not expected to cause any of these species to exceed their OYs.			
Cowcod				
Yelloweye Rockfish				
Fixed gear fisheries are not anticipated to result in significant bycatch of overfished species under any of the alternatives.				
Assumptions used in bycatch model included: 1) During Sept - Oct, 6% of sablefish, 3% of Dover sole, and 5% of shortspine thornyhead fishing occurs at depths less than 100 fathoms; 2) During Nov - Dec, all DTS fishing occurs at depths greater than 250 fathoms; 3) During Sept - Dec, all nearshore flatfish fishing occurs at depths less than 100 fathoms.				

As shown in the table above, the proposed action is not expected to cause the OYs to be exceeded for any of the overfished species. Because catch of overfished species is affected by the seasonal distribution of overfished species and the seasonal duration of trawling effort, the total catch of overfished species is expected to vary with the alternatives. It is anticipated that the total catch of overfished species would be greatest under Alternative 2 with the total catch of darkblotched rockfish approaching the OY. Alternative 3 is expected to have the next highest total catch overfished species followed by the total catch of overfished species under Alternative 4. Total catch of darkblotched rockfish and other overfished species is expected to be the least under Alternative 1.

Because many of these overfished species are less likely to be taken with fixed gear than with trawl gear, fixed fisheries operating during September through December are not anticipated to result in additional catch of any overfished species. Because there is limited logbook data available for Pacific whiting, cowcod, and yelloweye rockfish taken during directed fishing for northern DTS and nearshore flatfish species, total catch of those species could not be calculated under the different alternatives. The proposed action would implement new depth-based management measures north of 40°10' N. lat. and bocaccio and cowcod are primarily found south of 40°10' N. lat., therefore, the total catch of those species is not expected to vary with alternatives. The total catch of Pacific whiting is also not expected to vary with the alternatives as Pacific whiting are a pelagic species and not often taken with the bottom dwelling DTS and nearshore flatfish. Additionally, the total catch of yelloweye rockfish is not expected to vary with alternatives as yelloweye rockfish is primarily taken with fixed gear and not trawl gear.

Oregon's 2001 trawl logbooks were also analyzed to estimate the percentage of overfished species catch that occurred between 100 and 250 fathoms and what percentage of catch would have occurred within the proposed closed zone (Table 4.3.2). Logbook data were sorted by the position (latitude/longitude) of gear deployment and depths recorded were where the vessel operator thought the majority of the fish were caught. Tows that were set outside the proposed closure zone, but fished their way into the proposed closed zone were not included in this analysis. Therefore, this analysis should be viewed as a minimal estimate of fish caught within the proposed closed zone. Because DTS opportunities were severely curtailed during the final quarter of 2001, fishing patterns may be substantially different during 2002.

Table 4.3.2. Location and percentage of catch for overfished species documented in 2001 Oregon trawl logbooks.

Overfished Species	Tows Set Between 100 and 250 fathoms	Tows Set Within Coordinates of Proposed Closed Zone	Logbook Catch (mt)
Darkblotched Rockfish	96.59%	67.88%	5.19
Widow Rockfish	15.32%	51.48%	311.91
POP	90.79%	83.07%	23.14
Canary Rockfish	10.19%	48.37%	.904
Lingcod	31.70%	35.74%	5.15
Slope Rockfish	92.16%	88.98%	17.92

Logbook data were analyzed by Brian Culver (WDFW). Logbook data were not available for yelloweye rockfish or Pacific whiting, and cowcod and bocaccio are not typically found off Oregon between 100 and 250 fathoms.

As illustrated in the table above, the proposed closed zone should help reduce the incidental take of POP, widow rockfish, canary rockfish, lingcod, along with darkblotched rockfish. The percentage of darkblotched rockfish catch decreases from the category *tows set between 100 and 250 fathoms* to the category *tows set within the coordinates of the proposed closed zone*. This is due, in part, to the fact that darkblotched rockfish were poorly identified in 2001 logbooks. For a better measure of the effectiveness of the proposed closed zone to reduce the incidental take of darkblotched rockfish, also refer to the slope rockfish category, as it may be a more accurate representation of the location of darkblotched rockfish catch than the darkblotched rockfish category.

Deepwater and Nearshore Groundfish Species

Providing the opportunity to harvest healthy groundfish species and achieve the OY is an important aim of the Pacific Coast FMP. Through the end of August, projected landings of deepwater (Dover sole, thornyheads, sablefish) and nearshore (English sole, petrale sole, arrowtooth flounder) species do not approach or exceed their OY.

Table 4.3.3. Projected limited entry trawl total catch of DTS and nearshore flatfish during September - December.

Species	Projected landings through August (mt)	Remaining OY (mt)	Projected landings during September (mt)	Projected landings during October (mt)	Projected landings during November (mt)	Projected landings during December (mt)
Dover sole						
Alt. 1			0	0	0	
Alt. 2	4,265	3,103	858	613	613	368
Alt. 3			813	613	613	368
Alt. 4			0	1348	686	417
Longspine Thornyhead						
Alt. 1			0	0	0	0
Alt. 2	1,080	837	293	209	209	126
Alt. 3			293	209	209	126
Alt. 4			0	460	234	142
Shortspine Thornyhead						
Alt. 1			0	0	0	0
Alt. 2	483	465	163	116	116	70
Alt. 3			163	116	116	70
Alt. 4			0	256	130	79
Sablefish						
Alt. 1			0	0	0	0
Alt. 2	1080	972	340	243	243	146
Alt. 3			340	243	243	146
Alt. 4			0	535	272	16

Table 4.3.3. Projected limited entry trawl total catch of DTS and nearshore flatfish during September - December continued...

Nearshore Flatfish						
Alt. 1	well within the OY	900	0	0	0	0
Alt. 2			551	551	80	60
Alt. 3			0	626	80	60
Alt. 4			0	626	80	60

Table assumes a percentage of remaining OY caught per month: 35% during September, 25% during October, 25% during November, and 15% during December. Table also assumes that 21% of the remaining Dover sole OY will be taken with nearshore flatfish, total catch of longspine thornyhead will be approximately 1.8 times the catch of shortspine thornyhead, and that catch of nearshore flatfish may be limited by seasonal distribution of fish (i.e., fish moving into deeper water as winter approaches) and market conditions. Projected landings are estimated using the latest PacFIN 2002 catch information along with historical landings during September - December.

The proposed action is not anticipated to have a significant effect on landings of deepwater or nearshore groundfish species for the remainder of 2002 because trip limits would be adjusted to allow the OY to be achieved for each species. For example, if 15,000 mt of Dover sole were available for the September - December period but trawl access to the deepwater species were only allowed October - December, then trip limits would be 5,000 mt per month. However, if access to nearshore groundfish species were limited, such as under Alternative 3 or 4, then achieving the OYs for those species would be difficult as English sole, petrale sole, and arrowtooth flounder move out of nearshore areas as winter approaches.

While trip limits should not prevent OYs from being achieved for deepwater and nearshore species, weather, safety, the processor sector, and market conditions might affect whether those OYs are achieved or not. The effects of these issues is discussed in Section 4.4.

Endangered Species

The effects of this proposed action and the differences between alternatives on endangered and/or threatened marine mammals, seabirds, sea turtles, and salmon will be discussed in the following four sections as appropriate.

Marine Mammals

There is limited information documenting the interactions of groundfish fisheries and marine mammals, but marine mammals are probably affected by many aspects of groundfish fisheries. The incidental take of marine mammals, defined as any serious injury or mortality resulting from commercial fishing operations, is reported to NMFS by vessel operators. In the Pacific Coast groundfish fisheries, incidental take is infrequent and primarily occurs in trawl fisheries (Forney et al. 2000). Additional effects of groundfish fisheries on marine mammals are more difficult to quantify due to a lack of behavioral and ecological information about marine mammals. However, marine mammals may be affected by increased noise in the oceans, change in prey availability, habitat changes due to fishing gear, vessel traffic in and around important habitat (i.e., areas used for foraging, breeding, raising offspring, or hauling-out), at-sea garbage dumping, and diesel or oil discharged into the water associated with commercial fisheries.

Of the marine mammal species incidentally caught in Pacific Coast trawl fisheries, the Steller sea lion is listed as threatened under the ESA, the northern elephant seal may be within its optimum sustainable population (OSP) range, and there is insufficient data to determine the status of the harbor seal, California sea lion, Dall's porpoise, and Pacific white-sided dolphin relative to their OSPs. None of these species are classified as strategic stocks under the MMPA. Based on its Category III status, the incidental take of marine mammals in the Pacific Coast groundfish fisheries does not significantly impact marine mammal stocks.

Marine mammals species found off the Pacific Coast are either year around residents in the area affected by the proposed action or will be traveling south to winter breeding grounds through the affected area during the period of September to December. The proposed action is not anticipated to have a significant effect on either resident, transient, or ESA listed marine mammals species, nor is it expected that there would be a significant difference in the effects on marine mammals between alternatives. However, effects on marine mammals may vary with duration and intensity of fishing effort. It is expected that Alternative 1 would have the least impact on marine mammals as there would be no bottom trawling in the EEZ from the U.S./Canada border south to 40°10' N. lat. during September - December. Alternative 4 and Alternative 3 would result in limited periods of bottom trawl activity (November - December and September/October - December, respectively) offshore of 250 fathoms and inshore of 100 fathoms. Alternative 4 could be expected to have less of an effect on marine mammals than Alternative 3 because of the shorter duration of trawling activity. Of all the alternatives, Alternative 2 may have the most effect on marine mammals because it provides the longest duration of bottom trawl activity.

As more information is gathered about the effects of fishing and non-fishing human activities on marine mammals, additional management measures may be taken to mitigate the effects if necessary.

Seabirds

Interactions between seabirds and fishing operations are wide-spread and have led to conservation concerns in many fisheries throughout the world. Abundant food in the form of offal (discarded fish and fish processing waste) and bait attract birds to fishing vessels. Of the gear used in the Pacific Coast groundfish fisheries, seabirds are occasionally taken incidentally by trawl and pot gear, but they are most often taken by longline gear. Besides entanglement in fishing gear, seabirds may be affected by commercial fisheries in various ways. Change in prey availability may be linked to directed fishing and the discarding of fish and offal. Vessel traffic may affect seabirds when it occurs in and around important foraging and breeding habitat and increases the likelihood of bird storms. In addition, seabirds may be exposed to at-sea garbage dumping and the diesel and oil discharged into the water associated with commercial fisheries.

The proposed action is not anticipated to have a significant effect on seabird or ESA listed seabird species, nor is it expected that there would be a significant difference in the effects on seabirds between alternatives. This is due, in part, to the fact that seabird species in the area affected by the proposed action will not be engaged in nesting/chick rearing activities during the September - December period. However, the effects on seabirds may vary with duration and intensity of fishing effort. It is expected that Alternative 1 would have the least effects on seabirds as there would be no bottom trawling in the EEZ from the U.S./Canada border south to 40°10' N. lat. during September - December. Alternative 4 and Alternative 3 would result in limited periods of bottom trawl activity (November - December and September/October - December, respectively) offshore of 250 fathoms and inshore of 100 fathoms. Alternative 4 could be expected to have less of an effect on seabirds than Alternative 3 because of the shorter duration of trawling activity. Of all the alternatives, Alternative 2 could have the most effect on seabirds because it would provide the longest duration of bottom trawl activity.

As more information is gathered about the effects of fishing and non-fishing human activities on seabirds, additional management measures may be taken to mitigate the effects if necessary.

Sea Turtles
There is limited information about interactions between sea turtles and Pacific Coast commercial fisheries. Sea turtles are known to be taken incidentally by the California-based pelagic longline fleet and the California halibut gillnet fishery. Because of gear and fishing strategies differences between those fisheries and the groundfish fisheries, the expected take of sea turtles by groundfish gear is minimal. In addition to being incidentally taken in fishing gear, turtles are vulnerable to collisions with vessels and can be killed or injured when struck, especially if struck with an engaged propeller. Entanglement in abandoned fishing gear can also cause death or injury to sea turtles by drowning or loss of a limb. The discard of garbage at sea can be harmful for sea turtles, because the ingestion of such garbage may choke or poison them. Sea turtles have ingested plastic bags, beverage six-pack rings, styrofoam, and other items commonly found aboard fishing vessels. The accidental discharge of diesel and oil from fishing vessels may also put sea turtles at risk, as they are sensitive to chemical contaminates in the water.

The proposed action is not anticipated to have a significant effect on ESA listed sea turtle species, nor is it expected that there would be a significant difference in the effects on sea turtles between alternatives. However, the effects on sea turtles may vary with duration and intensity of fishing effort. It is expected that Alternative 1 would have the least impact on sea turtles as there would be no bottom trawling in the EEZ from the U.S./Canada border south to 40°10' N. lat. during September - December. Alternative 4 and Alternative 3 would result in limited periods of bottom trawl activity (November - December and September/October - December, respectively) offshore of 250 fathoms and inshore of 100 fathoms. Alternative 4 could be expected to have less of an effect on sea turtles than Alternative 3 because of the shorter duration of trawling activity. Of all the alternatives, Alternative 2 could have the most effect on sea turtles because it provides the longest duration of bottom trawl activity.

As more information is gathered about the effects of fishing and non-fishing human activities on sea turtles, additional management measures may be taken to mitigate the effects if necessary.

Salmon
NMFS issued Biological Opinions under the ESA on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999 pertaining to the

effects of the groundfish fishery on chinook salmon (Puget Sound, Snake River spring/summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal, Oregon coastal), chum salmon (Hood Canal, Columbia River), sockeye salmon (Snake River, Ozette Lake), and steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south-central California, northern California, southern California).

The proposed action is not anticipated to have a significant effect on salmon or ESA listed salmon species, nor is it expected that there will be a significant difference in the effects on salmon between alternatives. However, the effects on salmon may vary with duration and intensity of fishing effort. Is expected that Alternative 1 would have the least impact on salmon as there would be no bottom trawling in the EEZ from the U.S./Canada border south to 40°10' N. lat. during September - December. Alternative 4 and Alternative 3 would result in limited periods of bottom trawl activity (November - December and September/October - December, respectively) offshore of 250 fathoms and inshore of 100 fathoms. Alternative 4 could be expected to have less of an effect on salmon than Alternative 3 because of the shorter duration of trawling activity. Of all the alternatives, Alternative 2 could have the most effect on salmon because it provides the longest duration of bottom trawl activity.

As more information is gathered about the effects of fishing and non-fishing human activities on salmon, additional management measures may be taken to mitigate the effects if necessary.

4.4 Effects on the Socio-Economic Environment

The effects of fishery management practices on the socio-economic environment include such things as the economic effects of groundfish harvest on fishing fleets and communities, the effectiveness and cost associated with enforcing fishery management measures, and safety issues associated with fishery management practices for both the groundfish fleet and enforcement agencies.

Figure 4.4.1. Landings (mt) of Darkblotched Rockfish by Area in 2001. Source: PacFIN

Effects on the Trawl Fishery

The majority of the biomass and catch of darkblotched rockfish are located north of 40°10' N. latitude and groundfish limited entry trawl fisheries have accounted for 96.5% of darkblotched rockfish landings on the Pacific Coast from 1981-2001.

While fishing communities in Washington, Oregon, and northern California are not heavily dependent on revenue from darkblotched rockfish, they have a strong dependence on revenue from deepwater (offshore of 250 fathoms) and nearshore (inshore of 100 fathoms) species outside the typical distribution of darkblotched rockfish.

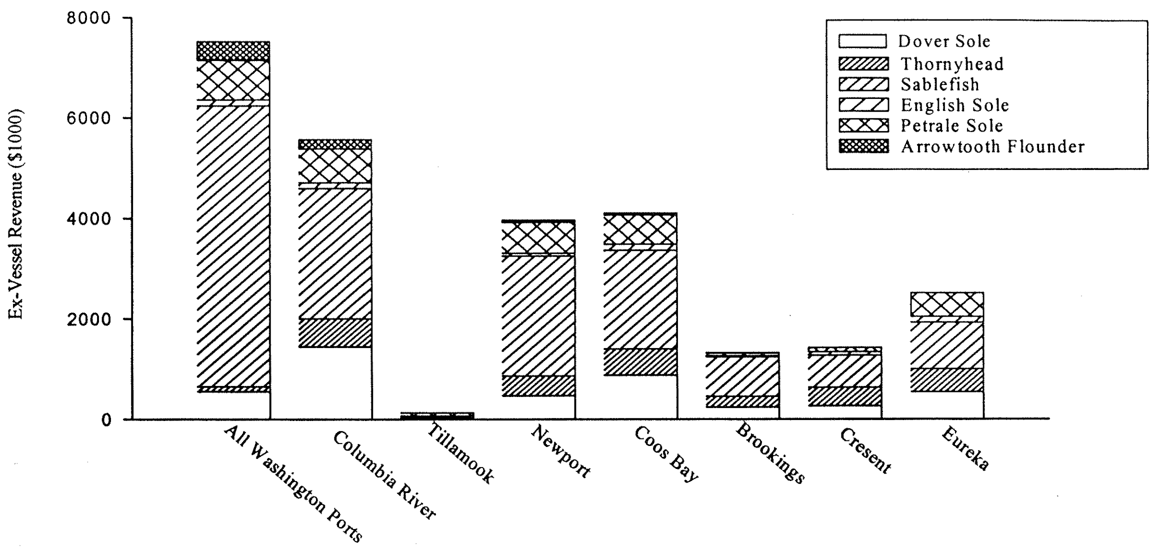

Figure 4.4.2. The ex-vessel revenue for groundfish taken with trawl gear by port for 2001. Source: PacFIN

Because of the importance of revenue from deepwater and nearshore groundfish species taken with trawl gear, the proposed action and different alternatives are expected to have differing effects on the limited entry trawl fleet and associated fishing communities. The following table is a summary of the estimated revenue from deepwater and nearshore species for the September through December period.

Table 4.4.1. Estimated revenue ($1000) to the limited entry trawl fleet from the harvest of deepwater and nearshore groundfish species during September through December 2002.				
Groundfish Species	**Alternative 1 (No Action Alternative Sept - Dec)**	**Alternative 2 (Council Preferred Alternative Sept - Dec)**	**Alternative 3 (NMFS Preferred Alternative Sept/Oct - Dec)**	**Alternative 4 (Oct - Dec)**
Dover Sole	0	2,475	2,430	1,933
Longspine Thornyhead	0	2,788	2,788	3,373
Shortspine Thornyhead	0	1,420	1,420	1,484
Sablefish	0	3,163	3,163	3,088
Nearshore Flatfish	0	1,108	685	684
Total	0	10,954	10,486	10,562
Estimated revenue was based on projected landings for September through December applied to PacFIN's 2001 ex-vessel monthly price per pound. Projected landings during September through December were applied to the species prices for Dover sole, longspine thornyhead, shortspine thornyhead, and sablefish while a monthly average price from Dover sole, English sole, starry flounder, and sandab was calculated to estimate revenue for nearshore flatfish.				

The proposed action is not anticipated to have a significant effect on the limited entry trawl fleet and associated fishing communities, but not implementing new depth-based management measures in 2002 is expected to have a significant effect. Revenue is expected to vary with alternatives because of monthly variations in projected landings and the price of fish. Alternative 1 could be expected to result in the least amount of revenue for the trawl fleet and associated communities for the remainder of 2002, as there would be no revenue from DTS and nearshore flatfish from September - December. While some of the trawl allocation may be transferred to the fixed gear fleet, only a few of the DTS species and none of the nearshore species are taken with fixed gear. Therefore, the allocation transfer would only be an option for shortspine thornyhead and sablefish. Processing facilities along the coast rely on DTS species to continue their groundfish operation. If there were not adequate amounts fixed gear groundfish deliveries, Alternative 1 would result in the closure of groundfish operations and the loss of skilled, fillet workers, perhaps through the remainder of the year. For those processing facilities that handle non-groundfish species, salmon would be available in September, shrimp would be available in September - October, and crab would be available in December.

Alternative 2 could be expected to be the most equitable economic scenario for both harvesters and processors. Alternative 2 would ensure that revenue from DTS and nearshore species is available to fishers aboard both small and large trawl vessels as well as offering the best chance that most processing facilities would continue groundfish operations for the remainder of 2002.

Revenue associated with Alternative 3 also may not be available to all harvesters. Because a large percentage of vessels in the trawl fleet are less than 80 feet in length, weather and sea conditions could curtail access to deepwater species during September. With DTS to process during the month of September, many processors should be able to keep their groundfish operations open for the remainder of the year. In addition, estimated revenue was based on prices and market conditions in 2001. The market may be a limiting factor for nearshore species during October - December.

Much like Alternative 3, trip limits may not be available to the smaller trawl vessels. Locating a groundfish processor may be difficult, if many processing facilities were to close their groundfish operations because of a lack of DTS during September. Additionally, market conditions, rather than trip limits, could limit the amount of harvest sold for profit during the October- December period.

Enforcement of New Depth-based Management Measures

The effectiveness of creating a geographic area, based on the distribution of darkblotched rockfish, and prohibiting bottom trawling within that area is largely dependent upon the ability to enforce such management measures. Implementing depth-based management measures extending from the U.S./Canada border south to 40°10' N. lat. represents a change from past Council recommended management measures and would mark the transition to a much greater dependence upon at-sea enforcement.

In the past, fishery management measures, such as landing limits, size limits, and species landing restrictions were largely enforced by the relatively easy and inexpensive method of dockside enforcement. Enforcing depth-based closed areas represents a more expensive and difficult challenge. Off Oregon and Washington, the proposed access to deepwater species would require vessels to fish over 40 miles offshore. State agency patrol planes and vessels would not routinely be capable of patrolling the 250 fathom line, therefore, enforcement would rely heavily and possibly exclusively on USCG air and surface assets. In order to patrol this area effectively, the USCG would need to commit resources in the form of an aircraft and larger cutter. As always, USCG operational requirements may force these assets to shift to other missions for part or all of the September - December period.

The following table summarizes the estimated enforcement costs associated with the darkblotched rockfish geographic closed area and allowing access to deepwater and nearshore fisheries.

Table 4.4.2. Estimated enforcement costs associated with enforcing new depth-based management measures during 2002.				
Enforcement Resources	**Alternative 1 (No Action Alternative Sept - Dec)**	**Alternative 2 (Council Preferred Alternative Sept - Dec)**	**Alternative 3 (NMFS Preferred Alternative Sept/Oct - Dec)**	**Alternative 4 (Oct - Dec)**
United States Coast Guard	$8,554,856			
NMFS Enforcement	$384,000			
Washington	$110,000	$160,000	$160,000	$131,000
Oregon	$100,800	$158,400	$158,400	$123,200
California	No information is available at this time			

The USCG would likely be handling the majority of the at-sea enforcement of new depth-based management measures in 2002. Their estimated costs represent the total projected expense to operate cutters and aircrafts offshore during the months of September through December. These costs reflect the at-sea assets needed to patrol any type of coastwide closure, whether the closure be at all depths (Alternative 1) or depth dependent (Alternatives 2 - 4) and do not include dockside enforcement. Because the USCG engages in multi-purpose missions, some of these costs are associated with homeland defense, search and rescue, pollution response, law enforcement, and training and effort may be diverted from depth-based management patrols, at any time, should the need arise. Historically, the USCG has spent 90% of their time law enforcement patrol time patrolling in support of living marine resource management, with 45% of that time based on groundfish enforcement.

Much like the USCG, costs estimated by NMFS Enforcement include all activities necessary to enforce any type of coastwide closure. NMFS enforcement activities include training, coordinating with state agencies, participating in airplane and cutter patrols, dockside enforcement, and investigations. Because these activities are necessary to enforce any type of coastwide closure, NMFS Enforcement costs do not vary with alternatives.

Estimated costs for enforcing new depth-based management measures during 2002 were unavailable from CDFG, but the states of Washington and Oregon anticipated that their costs would differ with the alternatives. Oregon's enforcement costs are for the most part directly proportional to the length of limited entry trawl access to deepwater and nearshore groundfish species. Enforcing Alternative 2 could be expected to be similar cost to enforcing Alternative 3. The cost of enforcing Alternative 1 could be expected to be the least expensive.

Safety Issues Associated with New Depth-Based Management Measures

The USCG has safety concerns with encouraging fishing offshore of 250 fathoms during the months of September through December. Trawlers off Oregon and Washington would be forced to transit approximately 40 miles offshore to reach open fishing grounds. These extended transits would result in longer exposure to harsh weather conditions, especially as winter approaches. This problem is compounded by the relatively small size (less than 80 feet) and slow speed of most of these fishing vessels. Vessels less than 80 feet in length find are often unable to withstand rough seas as well as larger vessels. In order for these small vessels to fish at depths greater than 250 fathoms, they would need additional cable in order to set their gear at deeper depths. Additional cable would result in gear and deck modifications that add weight topside, above the vessel's center of gravity. The relatively slow speed of the trawl fleet would make it difficult for vessels to run from weather or return to port before sea conditions become hazardous. Additionally, should the USCG need to assist a fishing vessel in distress, search and rescue missions are more dangerous during winter months. It usually takes USCG surface vessels longer to respond during harsh weather and if the weather is really rough, fishing vessels cannot afford a lengthy wait for assistance. Therefore, length and speed of the limited entry trawl fleet, gear and deck modifications necessary to fish a depths greater than 250 fathoms, in combination with weather and sea conditions may reduce the safety margins available to fishers, observers, and enforcement personnel during fall and winter months.

While effects on safety are not expected to be significant under any of the alternatives, it is difficult to predict just how safety will compare across the alternatives. On one hand, it is expected that the level of safety to fishers, groundfish observers, and enforcement personnel would be inversely proportional to the length of limited entry trawl access to groundfish species. Therefore, Alternative 1 would have the greatest safety benefits followed by Alternative 4, Alternative 3, and Alternative 2. On the other hand, weather and sea conditions also play a significant role in safety. As weather and sea conditions are expected to become harsher as winter approaches, Alternative 4 and/or Alternative 3 may be the least safe scenarios for the Pacific Coast groundfish fishery. If weather and sea conditions are so rough that fishing is impossible later in the year, the safety of Alternative 4 and/or Alternative 3 may be comparable to Alternative 1. The cost of search and rescue efforts is likely affected by both the level of fishing opportunity and level of difficulty associated with search and rescue activities.

4.5 Cumulative Effects of the Alternatives

When implementing new depth-based management measures, it is necessary to consider the cumulative effects these management measures would have on resources, species, and issues that may directly or indirectly interact with the Pacific Coast groundfish fishery. Cumulative effects are those effects on the environment which results from the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

As discussed in Chapter 4.2 of the EA, the effects of fishery management practices on the physical environment typically include such things as fishing gear effects on the ocean floor, changes in water quality associated with vessel traffic, and fish processing discards as a result of fishing practices. There are no data to suggest that characteristics of the California Current System and topography of the coast change with fishery management or fishing practices, however, there is information to indicate that fishery management and fishing practices may have an effect on EFH. As more information is gathered about the cumulative effects of fishing and non-fishing human activities on the physical environment, additional management measures may be taken to mitigate the effects if necessary.

As discussed in Chapter 4.3 of the EA, the effects of fishery management practices on the biological environment include such things as rebuilding overfished groundfish stocks, effects on groundfish target species, effects on endangered species (salmon, seabirds, sea turtles), and the incidental take of protected species (marine mammals, seabirds, sea turtles, and salmon). While the proposed action is not expected to significantly affect overfished species, other groundfish species, endangered species, or protected species, the cumulative effects of fishing and non-fishing activities may have an effect on the biological environment. As more information is gathered about the cumulative effects of fishing and non-fishing human activities on the biological environment, additional management measures may be taken to mitigate the effects if necessary.

As discussed in Chapter 4.4 of the EA, the effects of fishery management practices on the socio-economic environment include such things as the economic effects of groundfish harvest on fishing fleets and communities, the effectiveness and cost associated with enforcing fishery management measures, and safety issues associated with fishery management practices for both the groundfish fleet and enforcement personnel. While the proposed action is not expected to significantly affect groundfish fishing fleets and communities, ability to enforce fishery management measures, and the safety of both the groundfish fleet and enforcement personnel, not implementing new depth-based management measures during 2002 is expected to have a significant economic effect on the limited entry groundfish fleet and associated communities. It is unknown how Alternative 4 will affect the safety of the groundfish fleet and enforcement personnel. The reduced duration of fishing opportunity (October - December) may cause fishers to be out in marginal conditions, or weather and sea conditions may be so harsh that fishing opportunities are rare. Over time, the cumulative effects of fishing and non-fishing activities may have an effect on the socio-economic environment. As more information is gathered about the cumulative effects of fishing and non-fishing human activities on the socio-economic environment, additional management measures may be taken to mitigate the effects if necessary.

4.6 Determination of Significance

Section 1508.27 of the CEQ Regulations lists ten points to be considered in determining whether or not impacts are significant. Those points are as follows: (1) beneficial and adverse impacts, (2) public health or safety, (3) unique characteristics, (4) controversial effects, (5) uncertainty or unique/unknown risks, (6) precedent/principle setting, (7) relationship/cumulative impact, (8) historical/cultural impacts, (9) endangered/threatened species impacts, and (10) interaction with existing laws for habitat protection. The following table summarizes the expected effects of the proposed action and alternatives discussed throughout Chapter 4 of this EA.

Table 4.6.1. Summary of the effects of the alternatives on the Pacific Coast groundfish fishery.				
Issues	**Alternative 1 (No Action Alternative Sept - Dec)**	**Alternative 2 (Council Preferred Alternative Sept - Dec)**	**Alternative 3 (NMFS Preferred Alternative Sept/Oct - Dec)**	**Alternative 4 (Oct - Dec)**
Physical Environment				
California Current System	N	N	N	N
Topography	N	N	N	N
Essential Fish Habitat	N	N	N	N
Biological Environment				
Overfished Species	N	N	N	N
Deepwater Groundfish Species	N	N	N	N
Nearshore Flatfish Species	N	N	N	N
Endangered Species	N	N	N	N
Marine Mammals	N	N	N	N
Seabirds	N	N	N	N
Sea Turtles	N	N	N	N
Salmon	N	N	N	N
Socio-Economic Environment				
Groundfish Trawl Fishery	S	N	N	N
Enforceability of New Depth-Based Management Measures	N	N	N	N
Safety Issues Associated with New Depth-Based Management Measures	N	U	U	U
N= Non-significant Effect; S = Significant Effect; U = Unknown Effect				

1. As discussed in Chapter 4 of the EA, the proposed action (NMFS Preferred Alternative) is not expected to have significant physical, biological, or socio-economic effects. However, not implementing the proposed action (Alternative 1) is expected to have significant economic effects on the limited entry trawl fleet, groundfish processing facilities, and fishing communities.

2. As discussed in Chapter 4.4 of the EA, the proposed action is not expected to significantly affect public health.

3. As discussed in Chapter 4.3 of the EA, the proposed action is not expected to cause the 2002

OY of any overfished species to be exceeded nor is it expected to cause the 2002 OY of any groundfish species to be exceeded. Therefore, the proposed action is not expected to jeopardize the sustainability of any groundfish species affected by this action.

4. Implementing new depth-based management measures is not controversial, but not implementing new depth-based management measures is controversial because of the economic effects on the limited entry groundfish trawl fleet and associated communities. However, the proposed action has controversial aspects since it modifies the Council's Preferred Alternative with a more conservative action. Continuing to prohibit trawling inshore of the DBCA during September and re-opening that area during October - December will decrease landings of nearshore flatfish species and the associated revenue, but it is necessary to provide greater assurrance that neither the darkblotched rockfish OY nor the OY of any other groundfish species is exceeded.

5. As discussed in Chapter 4.4 of the EA, because of unpredictable weather and sea conditions, it is not known how providing a limited trawl opportunity during winter months will affect the safety of the groundfish fleet, groundfish observers, and enforcement personnel, however, the effects are not expected to be significant.

6. The proposed action is not expected to have any precedent/principle setting effects.

7. As discussed in Chapter 4.5 of the EA, the proposed action is not expected to result in significant cumulative effects on either the physical, biological, or socio-economic environment of the Pacific Coast groundfish fishery.

8. The proposed action is not anticipated to have any historical/culture effects.

9. As discussed in Chapter 4.3 of the EA, the proposed action is not expected have a significant effect on endangered, threatened, or depleted species.

10. As discussed in Chapter 4.2 of the EA, the proposed action may affect fishing in areas designated as EFH by Amendment 11 to the FMP. This action will be an increase in the bottom trawling effort that was previously scheduled for the September - December periods, but because bottom trawling is prohibited within the DBCA during September - December and inshore of the DBCA during September, this action will be a decrease in bottom trawling effort from that permitted during August 2002. The potential effects of this action are not currently quantifiable, but this action is expected to have no adverse effects on EHF and may positively affect EFH with a reduction in historical bottom trawl fishing effort.

5.0 CONSISTENCY WITH THE FMP AND OTHER APPLICABLE LAW

5.1 Magnuson-Stevens Conservation and Management Act

The Magnuson-Stevens Act provides parameters and guidance for Federal fisheries management, requiring that the Councils and NMFS adhere to a broad array of policy ideals. Overarching principles for fisheries management are found in the Act's National Standards. In crafting fisheries management regimes, the Councils and NMFS must balance their recommendations to meet these different national standards.

National Standard	Effect of Proposed Action
NS1: "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis the optimum yield from each fishery..."	The proposed alternative is intended to prevent overfishing of darkblotched rockfish while also providing groundfish fisheries with access to the harvest allocations of other groundfish species. None of the alternatives considered in this EA would have permitted overfishing of any groundfish species.
NS2: "Conservation and management measures shall be based upon the best scientific information available"	The proposed action closes waters between 100 and 250 fathoms to bottom trawling to protect darkblotched rockfish, a depth range that is based upon research survey and landings data. Catch and landings estimates for darkblotched rockfish and associated species were based on the most recently available information at the June 2002 Council meeting.
NS3: "...[A]n individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination."	All of the alternative considered in this EA are specifically designed to manage darkblotched rockfish and stocks that co-occur with that species throughout their ranges within U.S. waters.
NS4: "Conservation and management measures shall not discriminate between residents of different states..."	Neither the proposed alternative nor any of the other alternatives considered discriminates between the residents of different states.
NS5: "Conservation and management measures, shall, where practicable, consider efficiency in the utilization of fishery resources..."	This action has no effect upon efficiency in the utilization of fishery resources. This EA includes a discussion of the effects of the action on fishers and on processor operations in Chapter 4.
NS6: "Conservation and management measures shall take into account and allow for variations among and contingencies in fisheries, fishery resources, and catches."	The proposed alternative is specifically designed to account for the particular catch composition of bottom trawling vessels operating off the West Coast during the months of September - December. Non-trawl fisheries would not be affected by this action.

National Standard	Effect of Proposed Action
NS7: "Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication."	The proposed action is more costly to the agency than Alternative 1 (no action) or Alternative 4 (2-meeting process followed by an inseason action) because it requires preparation of this NEPA analysis and publication of an emergency rule, both of which documents carry a notable workload. While Alternative 4 is not cost-free, implementing depth-based management measures through the FMP's abbreviated rulemaking process would have resulted in a considerably lowered workload for agency staff.
NS8: "Conservation and management measures shall, consistent with conservation requirements...take into account the importance of fishery resources to fishing communities..."	Of all of the alternatives, Alternative 2 is the most consistent with National Standard 8. This alternative allows the longest continued open period for bottom trawling for groundfish, providing fishery participants and the processing sector with continued access to groundfish harvest allocations.
NS9: "Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B)...minimize the morality of such bycatch."	The proposed action is intended to minimize bycatch of darkblotched rockfish in the bottom trawl fishery while still allowing that fishery access to other groundfish species in areas where darkblotched rockfish is not typically found. To the extent that other overfished species also occur within the 100 to 250 fathom depth range, those species will also be protected from bycatch mortality.
NS10: "Conservation and management measures shall, to the extent practicable, promote the safety of life at sea"	The proposed action could increase safety risks for vessels that decide to participate in the deepwater (offshore of 250 fathoms) fishery that would otherwise not have participated in that fishery. Such vessels may be less equipped to operate in deeper waters.

This action will not alter the amount of groundfish expected that was anticipated to be taken when the 2002 specifications and management measures were originally developed. Through this action, bottom trawling for groundfish would be prohibited within waters between 100 and 250 fathoms. To the extent that bottom topography at depths between 100 and 250 fathoms is affected by bottom trawling, this action would eliminate those effects for the months of September - December 2002. However, this action is expected to displace trawling activity that would have occurred within 100 - 250 fathoms from that area to areas inshore of 100 fathoms and offshore of 250 fathoms. Thus, while this action is not expected to increase the overall effects of fishing activities on essential fish habitat (EFH,) it is expected to shift where those effects occur for the months of September - December 2002.

5.2 Consistency with the FMP

Similar to the Magnuson-Stevens Act National Standard guidelines, the goals and objectives of the FMP are intended to provide a philosophical framework to guide the Council's decisions. The proposed action is consistent with the FMP's three major management goals:

FMP Management Goal	Effect of Proposed Action
Goal 1 - Conservation: "Prevent overfishing by managing for appropriate harvest levels and prevent any net loss of the habitat of living marine resources"	As discussed above under Magnuson-Stevens National Standard 1, the proposed action and all of the alternatives considered are each intended to prevent overfishing of darkblotched rockfish. As also discussed above, the proposed action is expected to reduce the effects of bottom trawling gear on EFH for the months of September - December 2002.
Goal 2 - Economics: "Maximize the value of the groundfish resource as a whole"	The proposed action is specifically intended to maximize the economic returns from the groundfish resource, within the constraints of Federal conservation requirements for overfished species.
Goal 3 - Utilization: "Achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities"	The proposed action is intended to allow the fisheries to achieve as much of the biological yield of the overall groundfish fishery as possible, within the constraints of Federal conservation requirements for overfished species. Further, the action is intended to keep the fishery open through the months of September - December, thereby maintaining year-round availability of groundfish seafood products. Recreational fishing opportunities are not affected by this action.

In addition to these major management goals, the FMP includes a number of objectives for groundfish management that are intended to manage the fishery for accomplishment of the major goals. Many of the objectives would not be affected by or are irrelevant to this action. The following objectives could be considered relevant to the proposed action.

FMP Management Objective	Effect of Proposed Action
Objective 2: "Adopt harvest specifications and management measures consistent with resource stewardship responsibilities for each groundfish species or species group"	The proposed action would be consistent with overfished species rebuilding requirements for darkblotched rockfish and would allow the harvest, to the extent practicable within conservation requirements, of the OYs of healthy deepwater groundfish and nearshore flatfish stocks.
Objective 6: "Attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries"	See discussion of FMP Goal 2, above.
Objective 7: "Identify those sectors of the groundfish fishery for which it is beneficial to promote year-round marketing opportunities and establish management policies that extend those sectors fishing and marketing opportunities as long as practicable during the fishing year"	See discussion of FMP Goal 3, above. The proposed action is identifies the bottom trawl fisheries for deepwater groundfish and nearshore flatfish species and the processing companies that process those species as sectors of the groundfish fishery for which it is beneficial to promote year-round fishing and marketing opportunities.
Objective 10: "Recognizing [sic] the multispecies nature of the fishery and establish a concept of managing by species and gear or by groups of interrelated species"	See discussion of National Standard 3, above.

FMP Management Objective	Effect of Proposed Action
Objective 11: "Strive to reduce the economic incentives and regulatory measures that lead to wastage of fish. Also, develop management measures that minimize bycatch to the extent practicable and, to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch..."	See discussion of National Standard 8, above.
Objective 13: "When conservation actions are necessary to protect a stock or stock assemblage, attempt to develop management measures that will affect users equitably"	Only the groundfish bottom trawl fishery and the processing plants that rely on deliveries from that fishery would be affected by the proposed action. The proposed action would apply equally to all participants in that fishery.
Objective 15: "...[C]hoose [management] measures that best accomplishes [needed] changes with the least disruption of current domestic fishing practices, marketing procedures, and the environment"	The proposed action is specifically intended to allow the fishery to continue operating as similarly as possible to the manner in which it has operated in past years, within the constraints of Federal conservation requirements.
Objective 16: "Avoid unnecessary adverse impacts on small entities"	The proposed action is specifically intended to reduce the adverse effects of necessary conservation measures on small entities participating in the bottom trawl groundfish fishery and receiving deliveries of groundfish caught in the bottom trawl groundfish fishery for processing. Compared to status quo, fishing opportunities for small entities would increase. Within the class of small entities affected by this action, larger vessels that are better able to fish offshore may benefit more from this action than smaller vessels that would not normally fish offshore of 250 fathoms.
Objective 17: "Consider the importance of groundfish resources to fishing communities, provide for the sustained participation of fishing communities, and minimize adverse economic impacts on fishing communities to the extent practicable"	See discussion of National Standard 8, above.
Objective 18: "Promote the safety of human life at sea"	See discussion of National Standard 10, above.

5.3 Paperwork Reduction Act

None of the alternatives require collection-of-information subject to the PRA.

5.4 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972 is the principle Federal legislation that guides marine mammal species protection and conservation policy in the United States. Under the MMPA, NMFS is responsible for the management and conservation of 153 stocks of whales, dolphins, porpoise, as well as seals, sea lions, and fur seals while the FWS is responsible for walrus, sea otters, and the West Indian manatee.

Off the West Coast, the Steller sea lion (*Eumetopias jubatus*) Eastern stock, Guadalupe fur seal (*Arctocephalus townsendi*), and Southern sea otter (*Enhydra lutris*) California stock are listed as threatened under the ESA and the sperm whale (*Physeter macrocephalus*) Washington, Oregon, and California (WOC) Stock, humpback whale (*Megaptera novaeangliae*) WOC - Mexico Stock, blue whale (*Balaenoptera musculus*) Eastern north Pacific stock, and Fin whale (*Balaenoptera physalus*) WOC Stock are listed as depleted under the MMPA. Any species listed as endangered or threatened under the ESA is automatically considered depleted under the MMPA.

The West Coast groundfish fisheries are considered a Category III fishery, indicating a remote likelihood of or no known serious injuries or mortalities to marine mammals, in the annual list of fisheries published in the Federal Register. Based on its Category III status, the incidental take of marine mammals in the West Coast groundfish fisheries does not significantly impact marine mammal stocks.

None of the proposed management alternatives are likely to affect the incidental mortality levels of species protected by the MMPA.

5.5 Executive Order 12866

None of the alternatives considered in this EA/RIR would be a significant action according to E.O. 12866. This action will not have a cumulative effect on the economy of $100 million or more nor will it result in a major increase in costs to consumers, industries, government agencies, or geographical regions. No significant adverse impacts are anticipated on competition, employment, investments, productivity, innovation, or competitiveness of U.S.-based enterprises.

5.6 Endangered Species Act

NMFS issued Biological Opinions (BOs) under the ESA on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999 pertaining to the effects of the groundfish fishery on chinook salmon (Puget Sound, Snake River spring/summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley spring, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal), chum salmon (Hood Canal summer, Columbia River), sockeye salmon (Snake River, Ozette Lake), and steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south-central California, northern California, southern California). During the 2000 Pacific whiting season, the whiting fisheries exceeded the chinook bycatch amount specified in the Pacific whiting fishery BO's (December 19, 1999) incidental take statement estimate of 11,000 fish, by approximately 500 fish. In the 2001 whiting season, however, the whiting fishery's chinook bycatch was about 7,000 fish, which approximates the long-term average. After reviewing data from, and management of, the 2000 and 2001 whiting fisheries (including industry bycatch minimization measures), the status of the affected listed chinook, environmental baseline information, and the incidental take statement from the 1999 whiting BO, NMFS determined in April 2002 that a re-initiation of the 1999 whiting BO was not required. NMFS has concluded that implementation of the FMP for the Pacific Coast groundfish fishery is not expected to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS, or result in the destruction or adverse modification of critical habitat. This action is within the scope of these consultations.

5.7 Coastal Zone Management Act

Section 307(c)(1) of the Federal Coastal Zone Management Act (CZMA) of 1972 requires all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. NMFS has determined that this proposed action is not expected to affect the coastal zone of any state. On September 5, 2002, this determination was submitted to the responsible state agencies under Section 307(c)(1) of the CZMA informing them that this emergency will not allow NMFS sufficient time to consult with the affected states. The relationship of the groundfish FMP with the CZMA is discussed in Section 11.7.3 of the groundfish FMP. The groundfish FMP has been found to be consistent with the Washington, Oregon, and California coastal zone management programs. The recommended action is consistent and within the scope of the actions contemplated under the framework FMP.

5.8 Executive Order 13175

Executive Order 13175 is intended to ensure regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

The Secretary of Commerce recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. At Section 302(b)(5), the Magnuson-Stevens Act reserves a seat on the Council for a representative of an Indian tribe with Federally recognized fishing rights from California, Oregon, Washington, or Idaho.

The U.S. government formally recognizes that the four Washington Coastal Tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish. In general terms, the quantification of those rights is 50 percent of the harvestable surplus of groundfish available in the tribes' usual and accustomed (U and A) fishing areas (described at 50 CFR 660.324). Each of the treaty tribes has the discretion to administer their fisheries and to establish their own policies to achieve program objectives. Accordingly, tribal allocations and regulations have been developed in consultation with the affected tribe(s) and, insofar as possible, with tribal consensus. None of the alternatives considered in this EA/RIR would affect tribal groundfish allocations or the 2002 tribal groundfish fishery.

5.9 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 was designed to end the commercial trade of migratory birds and their feathers that, by the early years of the 20th century, had diminished populations of many native bird species. The Act states that it is unlawful to take, kill, or possess migratory birds and their parts (including eggs, nests, and feathers) and is a shared agreement between the

United States, Canada, Japan, Mexico, and Russia to protect a common migratory bird resource. The Migratory Bird Treaty Act prohibits the directed take of seabirds, but the incidental take of seabirds in the Pacific Coast groundfish fishery does occur. None of the proposed management alternatives are likely to affect the incidental take of seabirds protected by the Migratory Bird Treaty Act.

5.10 Executive Order 13186

Executive Order 13186 is intended to ensure that each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations develop and implement a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service that shall promote the conservation of migratory bird populations. NMFS is planning to develop and implement a MOU with the U.S. Fish and Wildlife Service. None of the proposed management alternatives are likely to have a measurable negative effect on migratory bird populations.

5.11 Executive Order 12898 (Environmental Justice) and 13132 (Federalism)

There is no specific guidance on application of EO 12898 to fishery management actions. The EO states that environmental justice should be part of an agency's mission "by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority or low-income populations." Any adverse impacts of the proposed action will be in proportion to the level of catch that participants take limited entry trawl fishery. There is no known minority or low income group participating in the fishery.

These recommendations would not have federalism implications subject to E.O. 13132. State representatives on the Council have been fully consulted in the development of this policy recommendation.

5.12 National Environmental Policy Act

The specific purpose of this EA is to analyze the timing by which the NMFS could implement new depth-based management measures in the Pacific Coast groundfish fishery during 2002. If the action is determined not to be significant, then the EA will result in a finding of no significant impact (FONSI), and the EA will be the final environmental document required by NEPA. If, however, a FONSI cannot be made, then a more detailed environmental impact statement (EIS) must be prepared.

The discussion of the need for action, alternatives, and their environmental impacts are contained in Chapters 1, 2, and 4 of this document, respectively. A description of the affected environment is contained in Chapter 3. These sections provide descriptions and analyses required of an EA. The following conclusions are based on the results of this analysis.

Because of the incidental take of darkblotched rockfish, an overfished species, limited entry bottom trawl north of 40°10' N. lat. was scheduled to be closed during the September - December 2002 periods. Implementing new depth-based management measures in the Pacific Coast groundfish fishery during 2002 would create the Darkblotched Rockfish Conservation Area (DBCA), a closed area to minimize the incidental take of darkblotched rockfish, and allow limited entry trawl access inshore and offshore of the DBCA. Not implementing new depth-based management measures during 2002 would likely have a significant socio-economic effect on persons and communities relying on limited entry trawl groundfish harvest for a portion of their annual income, as the revenue associated with the limited entry trawl deepwater and nearshore flatfish species for September - December is estimated to be between about 10 million dollars. Implementing new depth-based management measures is not expected to have a significant negative effect on the physical, biological, or the socio-economic environment of the Pacific Coast groundfish fishery.

Section 1508.27 of the CEQ Regulations lists ten points to be considered in determining whether or not impacts are significant. Those points are as follows: (1) beneficial and adverse impacts, (2) public health or safety, (3) unique characteristics, (4) controversial effects, (5) uncertainty or unique/unknown risks, (6) precedent/principle setting, (7) relationship/cumulative impact, (8) historical/cultural impacts, (9) endangered/threatened species impacts, and (10) interaction with existing laws for habitat protection. These points have been considered as appropriate in the analysis of effects in Chapter 4.6. Not implementing new depth-based management measures was the only issue identified as having a significant effect on the physical, biological, and socio-economic environment.

5.13 Finding of No Significant Impact

The Northwest Regional Office of NMFS has prepared an EA to analyze the timing by which NMFS could implement new depth-based management measures in the Pacific Coast groundfish fishery during 2002. Because of higher than expected incidental take of darkblotched rockfish, an overfished species, during the first few months of 2002, limited entry bottom trawl north of 40°10' N. lat. was scheduled to be closed during the September - December periods. Implementing new depth-based management measures in the Pacific Coast groundfish fishery during 2002 would create the DBCA, a closed area to minimize the incidental take of darkblotched rockfish, and allow limited entry trawl access inshore and offshore of the DBCA. The alternatives included in the EA represent the range of timelines by which new depth-based management measures could be implemented during September - October of 2002.

NMFS considered and analyzed the following alternatives, all of which are discussed in detail in the EA.

> Alternative 1 (No Action Alternative): No additional depth-based management measures would be implemented during 2002 to control the incidental take of darkblotched rockfish, therefore, there would be no limited entry trawl access to healthy deepwater or nearshore flatfish stocks from September 1 - December 31, 2002.
>
> Alternative 2 (Council Preferred Alternative): Establish new depth-based management measures for the September - December periods, via emergency rulemaking. These depth-based management measures would create a geographic zone (U.S./Canada border to 40°10' N. lat. and from 100 - 250 fathoms) to protect darkblotched rockfish while allowing limited entry trawl access to healthy deepwater and nearshore flatfish stocks offshore of the closed area. There would be limited entry trawl access to healthy deepwater and nearshore flatfish stocks from September - December.

Alternative 3 (NMFS Preferred Alternative/Proposed Action): Proposed action to establish new depth-based management measures for the September - December and October - December periods, via emergency rulemaking. These depth-based management measures would create a geographic zone (U.S./Canada border to 40°10' N. lat. and from 100 - 250 fathoms) to protect darkblotched rockfish while allowing limited entry trawl access to healthy deepwater stocks during September - December and to nearshore flatfish stocks during October - December. There would be no limited entry trawl access to nearshore flatfish stocks from September 1 - October 1, 2002, because allowing trawling in all areas in the month of September would likely result in the fishery exceeding the darkblotched rockfish OY.

Alternative 4: Establish new depth-based management measures for the October - December periods, via the two-meeting process and abbreviated rulemaking. These depth-based management measures would create a geographic zone (U.S./Canada border to 40°10' N. lat. and from 100 - 250 fathoms) to protect darkblotched rockfish while allowing limited entry trawl access to healthy deepwater and nearshore flatfish stocks outside the closed area. There would be no limited entry trawl access to healthy deepwater and nearshore flatfish stocks from September 1 - October 1, 2002, because via the two-meeting process and abbreviated rulemaking October 1, 2002 is the soonest new depth-based management measures could be implemented.

Initially, Alternative 2 (Council Preferred Alternative) was selected as the preferred alternative/proposed action because it will provide the best and most equitable economic scenario for harvesters and processors in the Pacific Coast groundfish fishery. However, on the 20th of August 2002, NMFS selected the more conservative Alternative 3 as the NMFS Preferred Alternative/Proposed Action. This decision was based on the amount of estimated incidental take of darkblotched rockfish that would be caught inshore of the DBCA with nearshore flatfish during September and October. Given the uncertainties in estimating the catch of darkblotched rockfish, particularly inshore of 100 fathoms, NMFS believes a more conservative alternative than that proposed by the Council is necessary to ensure the darkblotched rockfish OY is not exceeded. Therefore, NMFS will continue to prohibit limited entry trawl fishing inshore of the DBCA during September, but re-open that area during October - December with reduced flatfish trip limits during October. Limited entry trawl access offshore of the DBCA would be re-opened for September - December. This modification of the Council's request to implement new depth-based management measures during September is expected to reduce the incidental catch of darkblotched rockfish with nearshore flatfish during the months of September and October and provide greater assurance that neither the darkblotched rockfish OY, nor the OY of any other groundfish species will be exceeded.

In the EA, NMFS considered the context and intensity of the factors identified in NOAA Administrative Order NAO 216-6 section 6.01b, Environmental Review Procedures for Implementing NEPA. Based on the analysis in the EA, NMFS finds that:

1. As discussed in Chapter 4.3 of the EA, the NMFS Preferred Alternative is not expected to cause the 2002 OY of any overfished species to be exceeded nor is it expected to cause the 2002 OY of any groundfish species to be exceeded. Therefore, the NMFS Preferred Alternative is not

expected to jeopardize the sustainability of any groundfish species affected by this action.

2. As discussed in Chapter 4.2 of the EA, the NMFS Preferred Alternative may affect fishing in areas designated as EFH by Amendment 11 to the FMP. This action will be an increase in the bottom trawling effort that was previously scheduled for the September - December periods, but because bottom trawling is prohibited within the DBCA, this action will be a decrease in bottom trawling effort that was permitted during January - August 2002. The potential effects of this action are not currently quantifiable, but this action is expected to have no adverse effects on EHF and may positively affect EFH with a reduction in historical bottom trawl fishing effort.

3. As discussed in Chapter 4.4 of the EA, the NMFS Preferred Alternative is not expected to significantly affect public health or safety.

4. As discussed in Chapter 4.3 of the EA, the NMFS Preferred Alternative is not expected have a significant effect on endangered, threatened, or depleted species.

5. As discussed in Chapter 4.5 of the EA, the NMFS Preferred Alternative is not expected to result in cumulative adverse effects that have a significant effect on target and non-target species.

6. As discussed in Chapter 4.3 of the EA, the NMFS Preferred Alternative is not expected to jeopardize the sustainability of any non-target species. The bycatch of non-target species in not expected to be significant.

7. As discussed in Chapter 4.3 of the EA, the NMFS Preferred Alternative is not expected to have a significant effect on biodiversity and ecosystem function.

8. As discussed in Chapter 4.4 of the EA, the NMFS Preferred Alternative is not expected to have significant physical, biological, or socio-economic effects. However, not implementing the proposed action is expected to have significant socio-economic effects on the limited entry trawl fleet, groundfish processing facilities, and fishing communities.

9. The NMFS Preferred Alternative has controversial aspects since it modifies the Council's Preferred Alternative with a more conservative action. Continuing to prohibit trawling inshore of the DBCA during September and re-opening that area during October - December will decrease landings of nearshore flatfish species and the associated revenue, but it is necessary to provide greater assurance that neither the darkblotched rockfish OY nor the OY of any other groundfish species is exceeded.

Based on the analysis in the EA, I conclude that the NMFS Preferred Alternative for implementing new depth-based management measures in the Pacific Coast groundfish fishery during 2002 is not expected to significantly affect the quality of the human environment, with specific reference to the criteria contained in Section 6.02 of NOAA Administrative Order NAO 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act (NEPA). Accordingly, the preparation of a Supplemental Environmental Impact Statement for the proposed action is not necessary.

William T. Hogarth, Ph.D.
Assistant Administrator for Fisheries
National Oceanic and Atmospheric Administration

Date

6.0 REGULATORY IMPACT REVIEW (RIR)

The RIR analyses has many aspects in common with the EA. Much of the information required for the RIR has been provided above in the EA. Table 6.1.1 identifies where previous discussions relevant to the EA can be found in this document. In addition to the information provided in the EA, above, a basic economic profile of the fishery is provided annually in the Council's SAFE document.

Table 6.1.1 Regulatory Impact Review and Regulatory Flexibility Analysis

RIR Elements of Analysis	Corresponding Sections in EA
Description of management objectives	1.1
Description of the Fishery	3.4
Statement of the Problem	1.1
Description of each selected alternative	2.2
An economic analysis of the expected effects of alternatives relative to the no action alternative	4.4

Regulatory Impact Review

The RIR is designed to comply with most of the requirements of E.O. 12866. E.O. 12866 uses the following test requirements to assess whether or not an action would be a "significant regulatory action", and identifies the expected outcomes of the proposed management alternatives: 1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; 2) Create a serious inconsistency or otherwise interfere with action taken or planned by another agency; 3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or 4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive Order. Based on the analysis in Section 4.4 of this document the proposed alternatives are expected to be significant for the purposes of E.O. 12866.

- As discussed in Section 4.4., none of the alternatives are expected to have an effect on the economy that is greater than $11 million, notably less than E.O. 12866's $100 million test requirement. Alternative 1 (No Action Alternative) could adversely affect in a material way coastal communities dependent on groundfish trawl fishery income. Alternative 2 (Council Preferred Alternative) is estimated to generate about $11 million, Alternative 3 (NMFS Preferred Alternative/Proposed Action) is estimated to generate about $10.5 million, and Alternative 3 is estimated to generate about $10.6 million.

- State, tribal, and Federal agencies were consulted during the analysis of and planning for this action. None of the alternatives would interfere with or be inconsistent with actions taken by any other Federal, state, or tribal agency.
- None of the alternatives considered would have any budgetary impact of entitlements, grants, user fees, or loan programs.
- None of the alternatives would raise novel legal or policy issues arising out of legal mandates, the President's priorities, or principles set forth in E.O.12866.

7.0 REFERENCE MATERIAL

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7.2 List of Public Meetings, Agencies and Persons Consulted

The proposed action was discussed at the Council's June 17 - 21, 2002 meeting in Foster City, CA. The action would modify management measures developed by the Council at its September 2001 and October through November 2001 meetings. During these meetings, NMFS consulted with the Council, the Washington Department of Fish and Wildlife, the Oregon Department of Fish and Wildlife, the California Department of Fish and Game, and with fisheries managers from and representatives of the West Coast Treaty Tribes (Makah, Quileute, Hoh, Quinault). The agency additionally consulted with the commercial and recreational fishing public, the fish processing industry, the environmental advocacy community, and with academic representatives from the a variety of West Coast universities. Consultations with the listed agencies and persons occurred at all three meetings and extended into meetings or person-to-person conferences during the periods between the meetings.

7.3 List of Federal Register Notices Published in Connection with this Action

67 FR 1555, January 11, 2002: Proposed Rule to Implement the 2002 Pacific Coast Groundfish Fishery Specifications and Management Measures

67 FR 10490, March 7, 2002: Final Rule to Implement the 2002 Pacific Coast Groundfish Fishery Specifications and Management Measures

67 FR 38474, June 4, 2002: Announcement of June 17-21, 2002 meeting of the Pacific Fishery Management Council

67 FR 44778, July 5, 2002: Inseason action to modify Pacific Coast groundfish fishery management measures

7.4 List of Preparers

Groundfish Staff, Northwest Region, National Marine Fisheries Service
Brian Culver, Washington Department of Fish and Wildlife
Greg Lippert, Washington Department of Fish and Wildlife
Jim Hastie, Northwest Fisheries Science Center
David Cleary, Oregon State Police
Brian Corrigan, United States Coast Guard
Gregg Casad, United States Coast Guard
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Steve Springer, National Marine Fisheries Service

State of California - The Resources Agency
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
1416 Ninth Street
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Exhibit C.5.b
Supplemental CDFG Proposal
September 2002

RECEIVED
AUG 2 6
PFMC

August 26, 2002

Mr. Bill Robinson
Assistant Regional Administrator
National Marine Fisheries Service-Northwest Region
7600 Sand Point Way NE, BIN C15700
Seattle, Washington 98115-0070

Dear Mr. Robinson:

Enclosed please find our application for an Exempted Fishing Permit (EFP) to measure the bycatch of overfished rockfish associated with trawling for shelf rockfish using small footrope, including Scottish Seine. As you may recall, the need for this EFP was discussed at the last meeting of the Pacific Fishery Management Council (Council), which resulted in approval of my motion to proceed with the request.

The application was prepared by Department of Fish and Game staff in consultation with the National Marine Fishery Services staff and Mr. Pete Leipzig, Fishermen's Marketing Association. You have also received industry correspondence in support of the proposed EFP.

If you have any questions about the request, you can contact me at the above letterhead address and telephone number. I will also be available at the September Council meeting to discuss it with you.

Sincerely,

LB Boydstun

LB Boydstun
Intergovernmental Affairs Representative

enclosure

cc: Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
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Disaster Relief Response Committee (enclosed)

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APPLICATION FOR ISSUANCE OF AN EXEMPTED FISHING PERMIT FOR THE HARVEST OF SHELF FLATFISH USING SMALL FOOTROPE TRAWLS (INCLUDING SCOTTISH SEINE)[1]

A. Date of application: August 21, 2002

B. Applicants' names, mailing addresses, and telephone numbers:

California Department of Fish and Game
1416 9th Street
Sacramento, CA 95814

Contact: LB Boydstun (916) 653-6281

C. A statement of the purpose and goals of the experiment, for which an EFP is needed, including a general description of the arrangements for the disposition of all species harvested under the EFP.

Pacific Coast groundfish are managed by the Pacific Fishery Management Council (PFMC) under a federal fishery management plan (FMP). The management goals of the FMP are to:

- Prevent overfishing by managing for appropriate harvest levels and prevent any net loss of the habitat of living marine resources.

- Maximize the value of the groundfish resource as a whole.

- Achieve the maximum biological yield of the overall groundfish fishery, promote year- round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

The purpose of the experiment is to assist the PFMC in achieving the goals of the FMP while collecting bycatch data on overfished stocks. This information will allow for informed management decisions in setting appropriate trip limits, area closures, and other management measures to maximize safe harvest levels of healthy stocks.

The specific goals of the experiment are:

- To measure bycatch rates of bocaccio and other rockfish species that may be associated with the small footrope trawl (including Scottish seine) shelf flatfish fishery between the three-mile limit and 70 fathoms through an at-sea observer program.

---

[1] Prepared by Intergovernmental Affairs Office, Department of Fish and Game, August 22, 2002

- To provide fishermen using small footrope trawl with an incentive to participate in the observer program by giving them the opportunity to take shelf flatfish in areas that are otherwise closed.

- Augment the National Marine Fisheries Service groundfish observer program.

With regard to the disposition of the species harvested under the EFP:

- The vessel must land all rockfish. All shelf rockfish will be forfeited to the State consistent with the current process for forfeiture of overages in the shoreside-whiting fishery.

- The vessel may retain and sell all other species, including nearshore rockfish caught within trip limits in place prior to the July 1 closure.

D. Valid justification explaining why issuance of an EFP is warranted.

Since 1998, the PFMC has initiated rebuilding plans for several species, including bocaccio rockfish. Critical to these rebuilding plans and to the overall improvement of groundfish management, is the need for more and better scientific data. There are 82 species covered under the FMP, and at present, there is little or no data on a large number of these species. There is a need for comprehensive, timely, and credible data for priority species to aid in the conservation and rebuilding efforts for these stocks.

The shelf flatfish are an extremely important group of groundfish in the California groundfish fisheries. These stocks are believed to be healthy and California fishers and processors have worked aggressively to develop strong markets for these species. A component of the California trawl fleet and processors, are heavily dependent upon these flatfish. Vessels using small footrope trawl gear have been prohibited from landing shelf flatfish since July 1.

Fishers using small footrope trawl gear to catch shelf flatfish prior to the July 1 closure have indicated they are not impacting bocaccio. These fishermen believe that they can prosecute the shelf flatfish fishery with little or no bocaccio bycatch.

E. A statement of whether the proposed experimental fishing has broader significance than the applicant's individual goals.

The applicant of this EFP believes that the information collected during this experiment will have broader significance than the applicant's individual goals by:

- Producing data on the amount and location of any bocaccio and other depleted rockfish bycatch in the shelf flatfish fishery and providing valuable and accurate data on the species composition of the targeted small footrope trawl shelf flatfish fishery off the California coast.

- These data could allow the Council to establish trip limits, area closures and other regulations in the future that maximize fishing opportunities on healthy flatfish stocks while meeting conservation goals for depleted rockfish stocks.

F. Vessels covered under the EFP:

Vessels covered under the EFP will include those which have historically participated in the targeted shelf flatfish fishery off California. These vessels must have:

- Landed into California ports at least 10,000 lbs of shelf flatfish (California halibut, Pacific sanddab, English sole, sand and rock sole, starry flounder and unspecified flatfishes) taken with trawl gear in each of two years during 1998-2000.

- A valid California delivery permit.

A list of 20 vessels that meet these criteria is attached (Appendix A).

Letters were sent to the owners of each of the 20 qualifying vessels requesting a statement of interest to be returned by August 16, 2002. A list of respondents is attached (Appendix B).

No more than six (6) permits will be issued overall with two (2) initially reserved for vessels using Scottish seine. The first 6 vessels to apply will be given first priority for final permit issuance with no more than 2 permits issued per California port group:
1) Crescent City/Eureka/Fort Bragg; 2) Bodega Bay/San Francisco/Halfmoon Bay;
3) Monterey/Moss Landing; 4) Morro Bay/Avila).

Any EFP may be canceled and made available to another vessel if the permitted vessel: 1) does not follow the terms and conditions of the permit; 2) fails to follow federal or State fishing regulations; 3) does not prosecute shelf flatfish using small footrope trawl gear as provided in the EFP; or 4) does not reasonably accommodate the observer or cooperate with the applicant.

A permitted vessel can withdraw once from the EFP program.

G. A description of the species (target and incidental) to be harvested under the EFP and the amount(s) of such harvest necessary to conduct the experiment:

- The targeted species are collectively referred to as shelf flatfish and includes California halibut, Pacific sanddab, English sole, rock and sand sole, and unspecified flatfish.

- The allowable trip limit for shelf flatfish before July 1 was 70,000 pounds per month of which no more than 40,000 pounds may be species other than Pacific sanddab. Of the 40,000 pounds, no more than 15,000 pounds may be petrale sole.

- Each vessel will be allowed to take a maximum of 100 pounds each of bocaccio, cowcod, canary rockfish and yelloweye rockfish per month. If the that amount is exceeded for <u>any of the four species</u> then all fishing by that vessel will be terminated for the balance of the month.

- If the vessels participating in the program exceed 600 pounds cumulatively in a month for any of the four species the program will terminate for the balance of the month.

- Catches of all shelf rockfish species taken while targeting shelf flatfish with small footrope trawl gear during the EFP period must be retained and will be forfeited to the state.

H. For each vessel covered by the EFP, the approximate time(s) and place(s) fishing will take place, and the type, size, and amount of gear to be used:

- The EFP will be valid in those Pacific Ocean waters adjacent to California south of 40°- 10' N (near Cape Mendocino) and outside 3 miles.

- Approximate time for the fishery is September – October of 2002, and May – October 2003.

I. All vessels fishing under the authority of the EFP must:

- Carry a National Marine Fisheries Service-approved observer onboard all shelf flatfish trips when small footrope trawl gear is being used and give the observer reasonable notice of impending fishing trips.

- Land all fish caught under the authority of the EFP into the State of California.

- Employ legal small footrope trawl gear as defined in current federal regulation. Vessels fishing under the EFP may experiment with selective gears as long as such gears comply with current footrope restrictions.

J. The signature of the applicant:

LB Boydstun

California Department of Fish and Gam

Appendix A
List of 20 vessels that meet the qualifying criteria.

	Vessel Name	Doc. No.	Calif. Reg. No.	Home Port
1.	Mr. Morgan	594919	41134	Halfmoon Bay
2.	Deborah Ann	629368	35903	Halfmoon Bay
3.	Anna Marie	573944	41724	San Francisco
4.	Vito C	969329	46966	Monterey
5.	Relentless	533883	20238	Halfmoon Bay
6.	Phyllis J	594641	31853	Halfmoon Bay
7.	Irene's Way	629033	42963	Monterey
8.	Kincheloe	240804	13302	Morro Bay
9.	Helen Ruth	250246	07969	Halfmoon Bay
10.	Don Pasquali	593695	49577	San Francisco
11.	Verona	205318	07246	Halfmoon Bay
12.	CC & Gloria	505269	16272	Moss Landing
13.	Day Dream	505277	16244	San Francisco
14.	Linda Noelle	627808	35525	San Francisco
15.	Suzanne	584521	32486	Morro Bay
16.	Carleen N	515298	38998	Ventura
17.	Two Sisters	572657	28939	Crescent City
18.	Point Loma	515298	36900	Morro Bay
19.	Moriah Lee	531323	20026	Halfmoon Bay
20.	Sea Breeze II	247779	09442	San Francisco

Appendix B
List of 9 vessels that indicated an interest in participating.

	Vessel Name	Doc. No.	Calif. Reg. No.	Home Port
1.	Mr. Morgan	594919	41134	Halfmoon Bay
2.	Anna Marie	573944	41724	San Francisco
3.	Phyllis J	594641	31853	Halfmoon Bay
4.	Kincheloe	240804	13302	Morro Bay
5.	Helen Ruth	250246	07969	Halfmoon Bay
6.	Verona	205318	07246	Halfmoon Bay
7.	Moriah Lee	531323	20026	Halfmoon Bay
8.	Pioneer (Vito C)*	603897	40244	Moss Landing
9.	Two Sisters	572657	28939	Crescent City

* Giuseppe Pennisi qualified with the Vito C but now owns the Pioneer

Oregon

John A. Kitzhaber, M.D., Governor

Department of Fish and Wildlife
Marine Resources Program
2040 SE Marine Science Drive
Newport, OR 97365
(541) 867-4741
FAX (541) 867-0311

August 30, 2002

Dr. Elizabeth Clarke, Director
Fisheries Resources and Analysis Division
Northwest Fisheries Science Center
National Marine Fisheries Service
2725 Montlake Blvd. East
Seattle, WA 98112

Dear Dr. Clarke,

We have completed the scoping meetings on the EFP for the Selective Flatfish Trawl, have developed an approach and prepared an EFP proposal as you suggested.

There were a number of common perspectives from fishermen in Charleston, Newport, and Astoria that we incorporated into the proposal. First, there was consensus that all the fishermen wanted to build their own trawl instead of lease a trawl from the government. They would submit a net plan for approval and own the net when done. Government owned nets had problems of inappropriate scale for the vessel, liability for net condition, and the government owning the nets when the fishery test is completed. They also all felt that once they built a net, then a single trip limit period test was too short, and wanted to be able to use the net from March through October, which would provide a good fishery estimate of bycatch including seasonal variation.

They all thought that providing enough additional flatfish catch to cover the cost of building a net, observer costs, and additional vessel operation expenses would be enough incentive to participate. No one had any issue with having an observer on board. The proposal specifies that rockfish mortality levels will be held to 2002 levels for overfished species. It also requires that all overfished species of rockfish will be retained and landed for biological sampling. We gave a draft to Jon Cusick to make sure the observer component of the EFP was feasible, which he said was fine. The rest of the details are explained in the EFP proposal itself.

Two or three vessels in each port (more in Astoria) were interested in participating in the EFP test next year. However, almost all the fishermen we spoke with (about 30) were supportive of the research, the EFP idea, and the approach. There appears to be growing national interest in developing selective gear solutions for to address of the bycatch problems we face. We have been getting significant media attention concerning this research from reporters attending our public meetings, and we were interviewed by National Geographic last week about how our trawl research may help the West Coast fishing industry deal with this crisis. There was also great interest from deepwater fishermen in modifying the trawl and testing it on the slope to exclude darkblotched rockfish and maintain access to the DTS complex.

The EFP application is written as an ODFW proposal to run the program in Oregon with Oregon vessels. This was done to have a consistent perspective in preparation. However, it is our hope that NMFS will take over administration of the EFP and expand it to a regional level as a NMFS project. ODFW does not have the funds to hire the necessary EFP coordinator to administer this program. We would be happy to provide technical advice on net designs and other help as needed.

The EFP announcement is on the council agenda for an announcement of intent and to solicit comment on Wednesday afternoon (11^{th}). Do you plan to present this at the PFMC meeting as a NMFS proposal? Please let us know ASAP how you wish to proceed with this proposal. We look forward to working with you on this. Please don't hesitate to contact me with questions or suggestions. Thank you for your consideration.

Sincerely,

Patricia M. Burke
Marine Resources Program
541 – 867- 0300 x226

Application for Exempted Fishing Permit to Test a Selective Flatfish Trawl

A. Application Date
September 01, 2002

B. Applicant Contact

Oregon Department of Fish and Wildlife
Marine Resources Program
Hatfield Marine Science Center
Newport, OR 97365

Phone: 541 867-4741
FAX: 541 876-0311
Contacts: Steve Parker, Bob Hannah, or Patty Burke

C. Statement of Purpose and Goal

The purpose of this Exempted Fishing Permit (EFP) is to enable a fishery-scale test of a new experimental trawl developed to reduce the bycatch of rockfish and other "roundfishes" while maintaining catch of more productive flatfishes. This experiment will assist the Pacific Fishery Management Council in achieving the goals set forth in the federal fishery management plan for the west coast.

This trawl was tested experimentally using a statistically-blocked alternate haul design off the central Oregon coast in 2001 and 2002, and showed significant reductions in catch of several overfished species while increasing flatfish catch. General use of a trawl with this configuration could provide sustainable access to productive flatfish stocks while avoiding the capture and mortality of constraining shelf species such as canary rockfish.

The next phase in transferring this technology to the fishing industry as a management option is to measure the levels of bycatch reduction that would occur in the shelf flatfish fishery over a broad geographic range and by a number of vessels. Although technically, the trawl is already a legal fishing gear, the EFP is necessary for two reasons.

1) The trawl needs to be tested and bycatch documented in the shelf flatfish fishery, which is included in the current No Trawl Zone (NTZ). An EFP would allow fishing to occur within this zone, but with reduced bycatch, which preserves the original bycatch reduction purpose of the NTZ.
2) An incentive is needed for fishermen to construct the trawl (costing approximately $10,000), carry an observer, and test the new gear. The incentive provided would be increased flatfish trip limits while fishing with the experimental gear.

Although fishing will occur on traditional shelf flatfish grounds (50-150 fathoms), the relative species composition of the catch when using this trawl will be dramatically different from current information collected by the federal observer program on vessels using standard trawls. Vessels, with the aid of a federal observer, will be able to track their bycatch levels in real time and operate under the current estimated bycatch rates.

Disposition of species harvested under the EFP will be as follows:

- Species caught within the normal current trip limits may be retained and sold by the vessel.
- Species caught in excess of normal current trip limits, but permitted under the enhanced trip limits of the EFP (*i.e.* Dover sole, petrale sole, English sole, rex sole, arrowtooth flounder) will be retained and sold by the vessel up to the EFP-permitted trip limits.
- Selected rockfish species (*e.g.* canary rockfish, yelloweye rockfish, darkblotched rockfish, widow rockfish) caught in excess of normal current trip limits, but required to be landed under the EFP, will be retained until offloading. Overages will be surrendered and proceeds from these species in excess of trip limits will be forfeited to the state of landing as a normal landing overage.

D. Justification

Current bottom trawl gear configurations were designed to catch both rockfishes and flatfishes, as both had been desired catch. However, the declines in stock status of some of these roundfishes has resulted not only in landing restrictions for those roundfishes, but in constraints on fishing for flatfishes too because of the associated bycatch mortality of those roundfishes. One method to reduce the bycatch mortality of roundfishes associated with targeting flatfish is to change the gear configuration to avoid capture of the sensitive species. Tests of this trawl compared to a typical flatfish trawl showed that this new trawl configuration dramatically reduces bycatch of several roundfishes and also Pacific halibut.

Flatfish stocks on the west coast appear to have high productivities and fishery access is currently limited by estimated bycatch rates of sensitive species. If the reduced bycatch rates associated with using this net in shelf flatfish fisheries can be documented through a small but representative test fishery, then access to those flatfish stocks may be allowed while protecting sensitive species. This is especially important given the management decision to close large areas of the shelf to trawling in order to protect rockfish species. Trawls configured like this experimental trawl may serve the same function of the NTZ by reducing bycatch, but would allow selective flatfish harvest to continue in this area. The selective flatfish trawl would be the only trawl gear allowed in the NTZ under this EFP. This test fishery is necessary to document the bycatch rates of this trawl under real fishing conditions and on several vessels off Washington and Oregon.

This test cannot occur in the NTZ without an EFP to remove the fishing area restriction. In addition, the cost to a vessel for participating in the test would be recuperated by the ability to land more flatfish through enhanced trip limits. Once documented for this flatfish fishery, this trawl could provide an additional selective harvest management option.

E. Significance of Results

The information collected will have a broad and timely significance for management on the west coast, and potentially in other regions because it will provide information on gear configuration concepts that can be used to behaviorally separate species as they encounter a trawl. Documenting the bycatch rates from using this trawl will provide additional management options that may help to maintain sustainable access to segments of the shelf's fish stocks while other segments are rebuilt. Information from this EFP fishery will be compiled, summarized and made available to fishery managers.

F. Participating Vessels and EFP Structure

Vessels will be identified through an application process beginning in February 2003. At least six vessels from major flatfish-landing ports will be chosen in order of their landings of petrale sole and English sole from 2000 and 2001 combined. The number of observers available in each port will limit the total number of participants. This will focus the experiment on vessels that traditionally participated in that fishery. The maximum number of participating vessels will be 12, throughout the EFP fishing period, in order to cap maximum catch and maximum estimated bycatch. The test fishery will be conducted from March 1st through October 31, 2003. If more vessels apply than can be accommodated by observers, the appropriate number of vessels will be chosen at random.

All participating vessels will carry a federal observer during all trips using the selective flatfish net in the NTZ. A federal observer must be on board if the vessel trawls in the NTZ, lands rockfishes in excess of trip limits, or desires to land flatfish in excess of the normal trip limits.

The maximum expected catch per vessel for all species will be the normal trip limits plus 1,500 pounds per month additional flatfish complex and petrale sole, and 7,000 pounds per month additional Dover sole to allow vessels to recuperate costs of constructing an appropriate net, vessel operations, changing gears, and carrying an observer. Total additional harvest for the EFP fishery will therefore be constrained to 12 vessels, for 8 months totaling 305 mt Dover sole, and 65 mt petrale sole or "other flatfish."

All catch of overfished rockfish species will be landed to enhance biological sampling efforts and document actual rockfish mortality. Our estimates of total rockfish catch using the selective flatfish trawl based on our comparative fishing experiments are much lower than the current allowed landings plus 16% discard. The expected catch of canary rockfish is 93 lbs bycatch while harvesting 8,500 lbs of flatfish, and only 72 lbs for small darkblotched rockfish. There were no widow rockfish captured and few yelloweye rockfish captured during the experiment. Even though we targeted areas where rockfish bycatch was probable, the expected bycatch for these species is low. However, some bycatch is likely to occur. Rockfish mortality from this EFP fishery is not in addition to rockfish mortality imposed by the normal fishery because these vessels will be fishing with the selective flatfish trawl instead of normal trawl gear. In addition, with a NTZ in effect, no other vessels will be trawling and discarding in the area, resulting in much lower rockfish bycatch for the shelf flatfish fishery as a whole. The total estimated bycatch for overfished rockfishes using the selective flatfish trawl is as follows:

Species	Estimated catch+10% (lbs)	Vessels*months	Total estimated catch (mt)
Canary rockfish	93	12*8 = 96	4.0
Widow rockfish	No data	12*8 = 96	1.0
Yelloweye rockfish	40	12*8 = 96	1.7
Darkblotched rockfish	72	12*8 = 96	3.1

Although expected bycatch levels will be low, we will implement an extra precaution to control vessel-specific bycatch. Each vessel will be constrained to 300 lbs per month for canary rockfish, yelloweye rockfish and darkblotched rockfish, and 1,000 lbs per month for widow rockfish. If these catch levels are exceeded, the vessel will not be allowed to fish under the EFP for the remainder of the trip limit period. If a vessel exceeds the catch limit more than once, the EFP will be revoked.

Vessels operating under this EFP would be allowed to have more than one type of legal gear on board (*e.g.* midwater, large footrope). On observed trips, all selected species of rockfish captured while using any gear will be landed and counted towards the species-specific bycatch caps for that trip period, regardless of the trawl used to catch them. Rockfish captured using any gear may be landed in excess of trip limits only if an EFP observer is on board. This will allow port samplers to obtain biological samples from all rockfish bycatch, not just bycatch from the selective flatfish trawl. Rockfish landed as a stipulation of the EFP exceeding trip limits will be forfeited to the state of landing. For example, if 400 lbs of canary is captured using a midwater net while an observer is on board, the rockfish will be landed and sampled, but the all fish in excess of normal canary trip limits will be forfeited to the state of landing. The observer will track which net the fish were captured with. The 348-pound cap is associated with the use of the selective flatfish trawl only, so in this example, the vessel would still be allowed to operate under the 348 lb cap, but all subsequent canary will be forfeited to the state.

To participate, a vessel owner will apply and submit a net plan for approval. The trawl must have a headrope to footrope ratio of at least 1.30. The trawl must have a maximum rise of 5 ft at the center of the headrope. There must be no floats along the middle 50% of the headrope. The trawl must have a legal "small footrope" (discs less than 8" in diameter). Fishing may take place coastwide out to a maximum depth of 150 fathoms.

Each participating vessel will have a contract with the State of Oregon detailing the vessel's responsibilities for the EFP fishery. Failure to abide by the conditions in the contract or to follow provisions in the EFP will result in revocation of the contract and of the EFP for the year.

G. Signature of Applicant

____
Oregon Department of Fish and Wildlife

Exhibit C.5.b
Supplemental WDFW Report
September 2002

Washington Department of Fish and Wildlife (WDFW)
Exempted Fishery Permit (EFP) Proposals for 2003

Longline Dogfish

- Objective - To measure bycatch rates for yelloweye and canary rockfish and estimate all groundfish discards in the targeted longline dogfish fishery
- 3 vessels for 3-4 months
- 100% observer coverage funded by State Disaster Relief funds
- Mandatory rockfish retention; rockfish above trip limits forfeited to the State
- Bycatch caps of 100 lbs each of yelloweye and canary rockfish per vessel, per month, with a cumulative cap of 1 mt of each species for the EFP
- Estimated landings:
  Dogfish - 700,000 lbs
  Yelloweye RF - 1 mt
  Canary RF - 1 mt

Trawl Arrowtooth Flounder/Petrale

- Objective - To measure bycatch rates for canary rockfish in the targeted arrowtooth flounder/petrale sole trawl fishery with gear modifications
- 6-7 vessels for 4 months
- 100% observer coverage funded by participating vessels
- Mandatory rockfish retention; rockfish above trip limits forfeited to the State
- Bycatch caps of a portion of the current canary rockfish trip limit, per month, with a cumulative cap of 1 mt of canary for the EFP
- Estimated landings:
  Arrowtooth flounder - 455 mt
  Petrale - 36 mt
  Canary RF - 1 mt

Midwater Trawl Yellowtail Rockfish

- Objective - To measure bycatch rates for canary and widow rockfish in the targeted midwater yellowtail rockfish fishery
- 15 vessels for 2 months
- 100% observer coverage funded by participating vessels
- Mandatory rockfish retention; rockfish above trip limits forfeited to the State
- Bycatch caps of a portion of the current canary rockfish trip limit, per month, with a cumulative cap of 1 mt of canary for the EFP
- Estimated landings:
  Yellowtail RF - 100 mt
  Widow RF - 12 mt
  Canary RF - 1 mt

Midwater Trawl Pollock

- Objective - To measure bycatch rates for whiting and rockfish in the targeted midwater pollock fishery and to allow pollock fishers to land unsorted catches which may include groundfish species that would otherwise be prohibited (e.g., whiting and rockfish)
- 3 vessels for 3-4 months
- Observer coverage funded by participating vessels
- Mandatory rockfish and whiting retention; groundfish above trip limits forfeited to the State
- No bycatch allowance for canary rockfish; bycatch cumulative cap of 1 mt of widow for the EFP
- Estimated landings:
  Pollock - 9,000 mt
  Whiting - 50 mt
  Yellowtail RF - 200 lbs

GROUNDFISH MANAGEMENT TEAM COMMENTS ON PROPOSED EXEMPTED FISHING PERMITS UPDATE AND NEW PROPOSALS

The Groundfish Management Team (GMT) reviewed seven requests for exempted fishing permits (EFPs) during 2003. These requests varied from nearly complete draft applications for new permits to conceptual proposals for extensions of existing 2002 permits, and some new permits for 2003. Three guiding principles were established early on in the review of these proposals. First, if all of these EFPs were approved there would likely not be enough remaining OY (after establishing expected catches for 2003 fisheries and bycatch) of overfished species to accommodated implementation of all of these permits. Second, the permits should be prioritized with approval given first to those permits that are most likely to result in a positive long-term change in gear or management rules. Finally, all permits should be reviewed for the possibility of conducting a successful project under a somewhat lower cap for overfished species.

Details of these applications are given in supplemental C.5 reports from WDFW, ODFW, and CDFG. A summary of the maximum anticipated bycatch (imposed as a cap on the permit) is provided in the attached table. These catches were assembled from the applications and/or discussion of the permits by state GMT members. No additional set asides for anticipated bycatch of overfished species were identified. The GMT supports implementing EFPs that meet the above objectives and can be accommodated under the harvest levels for overfished species.

The GMT is forwarding the following list for Council consideration:

- Oregon Selective Flatfish Trawl
- Washington Dogfish Longline Permit
- Washington Pollock Midwater Trawl
- Washington Arrowtooth Flounder Bottom Trawl
- Washington Yellowtail Midwater Trawl
- California Nearshore Flatfish Trawl
- California Hook-and-Line

As noted in the Groundfish Advisory Subpanel statement, Oregon industry expressed interest in participating under similar arrowtooth flounder bottom trawl, and midwater yellowtail permits; however, expected bycatch for an Oregon permit was not calculated.

Anticipated EFP bycatch caps

EFP	bocaccio	canary	cowcod	darkblotched	widow	yelloweye
CA: NS FF trawl	1.6	1.5	1.5	NA	NA	1.5
CA: NS H&L	NA	1	NA	NA	NA	?
OR: selective FF trawl	NA	4	NA	3.1	1	1.7
WA: AT trawl	NA	1	NA	3	NA	0
WA: MW YT trawl	NA	1	NA	0	12	0
WA: dogfish LL	NA	1	NA	0	0	1
WA: pollock	NA	0	NA	0	1	0
Total	1.6	9.5	1.5	6.1	14	>4.2

Exhibit C.5.c
Supplemental GAP Report
September 2002

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON EXEMPTED FISHING PERMITS: UPDATE AND NEW PROPOSALS

The Groundfish Advisory Subpanel (GAP) briefly discussed exempted fishing permit (EFP) applications being reviewed by the Council.

The GAP supports the EFPs submitted by California (shelf flatfish using small footrope trawl); Oregon (cut back headrope); and Washington (arrowtooth and midwater trawl pollock).

The EFP for arrowtooth should be expanded to Oregon as soon as possible.

The GAP supports the concepts of EFPs for fixed gear dogfish and midwater yellowtail, but would like to see some additional information before commenting further.

The Gap also believes that the Council needs to prioritize EFPs in some fashion. One suggested way is to determine the economic benefit that would derive from the EFPs, as measured against the “cost” in bycatch used

The GAP is also very concerned about the length of time and the bureaucratic hurdles involved in processing EFP applications at both the state and federal levels. The GAP received testimony from several individuals on approval "horror stories."

PFMC
09/12/02

Exhibit C.5.d
Public Comment
September 2002

Southwest Office
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Tel: 415/561-FISH
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THE INSTITUTE FOR FISHERIES RESOURCES

www.ifrfish.org

Northwest Office
P.O. Box 11170
Eugene, OR
97440-3370 USA
Tel: 541/689-2000
Fax: 541/689-2500

RECEIVED
AUG 2 2 2002
PFMC

21 August 2002
Dr. Hans Radtke
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220

RE: 2003 Pacific Groundfish Management Measures

Dear Mr. Radtke,

The Institute for Fisheries Resources (IFR) is a nonprofit organization affiliated with the Pacific Coast Federation of Fishermen's Associations (PCFFA). IFR works as a public service research and conservation organization to help protect marine and anadromous fishery resources.

While we are not commenting on the current management alternatives before the council, we are obviously concerned about their impacts on fishermen and the coastal communities they support. In response to this current crisis we would like to respectfully encourage the Council to use this opportunity to increase the amount of scientific study and knowledge of our marine resources.

Specifically, we propose that the Council increase the amount of experimental fishing permits (EFP), such as the EFP proposed for Steve Fitz at the June 2002 Council meeting for research using Scottish Seine gear. These permits, as long as they are carefully observed and well researched, enable fishermen, researchers, and managers to accurately assess different fishing methods and their impacts on fisheries resources.

In correlation with this we also would encourage the Council to help foster more cooperative research using fishermen's knowledge. Collaborative research

projects between fishermen and scientists can benefit all involved. Fishermen will be more likely to validate scientific studies in which their knowledge and expertise has played a part in shaping. Likewise, scientists can benefit from fishermen's knowledge of accessible areas, and be more likely to get a complete picture of what is happening in the ocean when collaborating with those individuals who are in the water the most. These research projects should also be enlarged to include representative samples from the entire area over which the Council has jurisdiction. It will be increasingly difficult to justify basing management decisions for the Pacific Coast on surveys that do not include samples from the entire Pacific Coast.

Lastly, we encourage the Council to increase stock assessments to an annual or semi-annual timeline. It is obvious from the current situation that the tri-annual approach is not satisfactory. There is too much time for a situation to escalate to a crisis when there is so much time between assessments. When using fishermen to help collect data and encouraging cooperative studies, there could be a continual presence of data collection throughout the year, allowing for this type of innovative methodology.

We encourage the Council to form and enhance a collaborative research committee that can help to foster these types of activities. We at IFR would be happy to help with this, as we are connected with both scientists and fishermen through our current work.

Thank you for this opportunity to comment. We appreciate all of the work that you are doing and understand the tough decisions you will be forced to make in the coming weeks. We hope that you will be able to create a model for increasing science and research collaborations to help our fisheries and the overall marine environment.

Thank you,

Ky Russell

Ky Russell
Sustainable Fisheries Coordinator
Institute for Fisheries Resources
kr_ifr@pacbell.net

EXEMPTED FISHING PERMITS (EFPs): UPDATE AND NEW PROPOSALS

Situation: Exempted fishing permits (EFPs) provide a process for testing novel fishing gears and strategies to substantiate methods for prosecuting sustainable and risk-averse fishing opportunities. Anticipating a dramatic restructuring of the West Coast groundfish fishery next year to conform to conservation mandates for overfished species, the Council signaled its intent to make greater use of EFPs. Preliminary discussions revealed potential drawbacks to the concept of EFP proliferation, including impacts to the current NOAA Fisheries Groundfish Observer Program. The Council should take this opportunity to discuss these issues and start a constructive dialogue with NOAA Fisheries and the public on how best to restructure the current EFP program to meet Council and Magnuson-Stevens Act objectives of providing healthy and sustainable fishing opportunities.

This agendum also provides the opportunity for Council, state, and agency representatives to discuss plans and applications for 2003 EFPs. These discussions could serve to refine and coordinate contemplated EFPs prior to final approval at the October Council meeting.

Progress updates from ongoing EFPs may help the Council in their consideration of fishing strategies and opportunities for next year's fishery. The Washington Department of Fish and Wildlife (WDFW) will update the Council with preliminary results from two of their sponsored EFPs. EFPs designed to test trawl strategies for targeting abundant arrowtooth flounder and yellowtail rockfish while minimizing bycatch of overfished species, such as canary rockfish, have been conducted by WDFW personnel and Washington limited entry trawl fishermen. Results from these activities could benefit deliberations for structuring the 2003 trawl fishery to access healthy and abundant target species without impacting overfished shelf and slope rockfish. Other state representatives may discuss their progress towards implementing other approved EFPs, such as the Scottish seine EFP sponsored by the California Department of Fish and Game to test the efficiency of that gear to cleanly target Pacific sanddabs.

Additional EFP applications may be considered at this time if any are submitted for Council consideration.

Council Action:

1. **Consideration and discussion of proposals and recommendations to NOAA Fisheries.**

Reference Materials:

1. None available at the time of the briefing book mailing. over→

Agenda Order:

a. Agendum Overview — John DeVore
b. Agency and Tribal Proposals — State and Agency Representatives
c. Reports and Comments of Advisory Bodies
d. Public Comment
e. **Council Action:** Preliminary Consideration of Proposals and Recommendations to NMFS

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

The GFSP supports bycatch reduction efforts and development of selective fishing techniques. Council-approved EFPs are designed to gather information on methods to selectively harvest abundant species and determine bycatch rates of overfished and other groundfish species of concern. Any additional EFP applications will need to be reviewed for consistency with overall GFSP objectives.

PFMC
08/20/02

Supplemental Reference Materials

1. Exhibit C.5.b, Supplemental CDFG proposal.
2. Exhibit C.5.b, Supplemental WDFW proposal,
3. Exhibit C.5.b, Supplemental ODFW proposal,
4. Exhibit C.5.c, Revised supplemental GMT Report.
5. Exhibit C.5.c. Supplemental GAP Report.

Exhibit C.6.c
Supplemental GAP Report
September 2002

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON GROUNDFISH PROGRAMMATIC AND ESSENTIAL FISH HABITAT FISHERY MANAGEMENT PLAN ENVIRONMENTAL IMPACT STATEMENTS

The Groundfish Advisory Subpanel (GAP) met with Mr. Jim Glock, who provided an update of progress on environmental impact statements (EISs) for the Pacific groundfish fishery management plan (FMP).

The GAP recommends the Council reconvene the Ad Hoc Groundfish FMP EIS Oversight Committee to assist Mr. Glock and Mr. Steve Copps with their work on scoping and revision of alternatives. As before, the GAP will recommend one of its members to be appointed to the Committee.

PFMC
09/11/02

GROUNDFISH PROGRAMMATIC ESSENTIAL FISH HABITAT FISHERY MANAGEMENT PLAN ENVIRONMENTAL IMPACT STATEMENT

Situation: NOAA Fisheries, in consultation with the Council, is preparing a Programmatic EIS (PEIS) that will review the current status of the federal groundfish management program and offer a range of alternative management strategies at a broad programmatic or policy level. This PEIS was initiated with a scoping process early in 2001 and was intended in part to continue the development and implementation of Council's strategic plan for groundfish. Since the strategic plan was adopted, and the EIS scoping period held, groundfish management has changed substantially, with the focus towards how to allow fishing while achieving the stock rebuilding mandate. At the June 2002 meeting, NOAA Fisheries recommended the Council delay adoption of the alternatives due to concerns they may no longer provide a range of realistic and reasonable alternatives; the Council agreed.

NOAA Fisheries would like to discuss this situation with the Council and develop a plan for moving forward. Some of the specific topics might include the role of the PEIS in the strategic planning process, whether to reopen the public scoping process, review and possible revision of the current programmatic alternatives, preparation of an FMP amendment to accompany the PEIS, and coordination with other agency activities and priorities.

The Ad Hoc Groundfish FMP EIS Oversight Committee met in May 2002 and developed five programmatic alternatives, each focusing on different policy goals. The Council could direct the EIS Oversight Committee to assist in scoping and the revision of the PSEIS alternatives.

Council Task:

1. **Discuss and provide guidance to NOAA Fisheries on a process and schedule for revising PSEIS alternatives.**

Reference Materials:

~~1. None.~~

Agenda Order:

a. Agendum Overview	Kit Dahl
b. NMFS Report	Jim Glock/Steve Copps
c. Reports and Comments of Advisory Bodies	
d. Public Comment	
e. Council Guidance on EIS Process	

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

The GFSP broadly supports effective public involvement during and beyond the transition to sustainable groundfish fishery management. The GFSP also specifically seeks to update the goals and objectives in the current groundfish FMP to incorporate GFSP visions and goals (Sec. II.C.(d)3). The Programmatic SEIS will provide a public forum vehicle for assessing and incorporating GFSP visions and goals into the Groundfish FMP.

1. Exhibit C.6.c, Supplemental GAP Report.

PFMC
08/21/02

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON AMENDMENT 16 - REBUILDING PLANS

The Groundfish Advisory Subpanel (GAP) received an update on Amendment 16 to the Pacific Groundfish Fishery Management Plan from Mr. Jim Seger of the Council staff.

The GAP has previously provided extensive comments on the draft of Amendment 16 and will not repeat most of them here. However, the GAP will emphasize the need to allow rebuilding plans to be as flexible as possible. As seen with the problems we are having establishing optimum yields for rebuilding species for the 2003 season, flexibility is a virtue, not a vice.

PFMC
09/11/02

Exhibit C.7.b
Supplemental SSC Report
September 2002

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
UPDATE ON AMENDMENT 16 – REBUILDING PLANS

Mr. Kit Dahl updated the Scientific and Statistical Committee (SSC) on the current status of Amendment 16, which incorporates rebuilding plans into the groundfish fishery management plan (FMP). Three options addressing "The Form and Required Elements of Rebuilding Plans" were advanced from the June Council meeting (options 1a, 1b, and 1c). Options 1b and 1c are inflexible as to accommodating new science or new data and may require significant administrative effort to implement, because they require numerical values for specified rebuilding parameters. The SSC emphasizes that the Council should expect numerical details of rebuilding plans (e.g., B_{MSY} or B_0) to change over time – whether due to improved estimates of these parameters from updated stock assessments, the development of new models, or due to technical errors that were not discovered in the previous stock assessment review. For example, the recent changes to the estimate of the 1999 year class for bocaccio and the biomass estimate for yelloweye rockfish have led to changes to virtually all of the biological rebuilding parameters. The use of hard numbers in the rebuilding amendment should be minimized in order to avoid the need to repeatedly amend the FMP with each stock assessment cycle. The SSC suggests that consideration be given to specifying only the formulae or algorithms for the biological parameters that govern the rebuilding process in the FMP amendment.

PFMC
09/12/02

UPDATE ON AMENDMENT 16 - REBUILDING PLANS

Situation: There are nine overfished groundfish species on the West Coast, eight of which are being managed under Council interim rebuilding measures. Rebuilding plans for all nine species are required to be formally adopted by the Council and NOAA Fisheries. As a result of refined content requirements, changed rebuilding analyses, and litigation requiring a different implementation form, no final rebuilding plans are currently in place.

The Council was briefed in April 2002 on the intent to incorporate rebuilding plans for overfished groundfish species into the groundfish fishery management plan (FMP) as Amendment 16. The amendment includes the process and standards for developing and implementing rebuilding plans and several individual species' rebuilding plans. The Council considered adopting a draft of Amendment 16 for public review. However, the Council deferred adoption at the June 2002 meeting in order to provide further guidance on process and standards options and alternatives. At this meeting the Council will review and discuss a schedule for completion of Amendment 16 components.

Before a public review draft can be finalized additional work is needed on both the process and standards and individual rebuilding plans. Council staff have revised the options and alternatives for the process and standards part of Amendment 16, reflecting Council guidance from the June meeting. However, further Council guidance is needed before options and alternatives can be finalized. In addition, the (draft) rebuilding plans need modifying to include information not provided in the original rebuilding analyses, many individual rebuilding plan alternatives require further analysis, and the final contents of individual rebuilding plans also depend on the preferred alternative chosen by the Council for the process and standards.

At the November 2002 Council meeting, the Council will have to consider revisions and additions in the draft presented at the June meeting, finalize sets of options and alternatives, provide direction to Council staff as to any further analytical components, and consider a public review period.

Council Task:

1. **Provide direction to Council staff as to any further analytical components, and consider a public review period.**

Agenda Order:

a. Agendum Overview — Kit Dahl
b. Reports and Comments of Advisory Bodies
c. Public Comment
d. Council Discussion

References Materials:

~~1. None.~~ Over

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

Rebuilding overfished species, as mandated by the Magnuson-Stevens Fishery Conservation and Management Act, was a primary motive for developing and implementing the GFSP. Many sections of the GFSP describe how rebuilding plans factor into short- and long-term Council priorities for conducting groundfish conservation and management. GFSP objectives such as developing sustainable and effective harvest policies (Sec. II.A.2), achieving fleet capacity reduction (Sec. II.A.3.(b)), allocating groundfish resources (Sec. II.A.4), developing an effective Observer Program (Sec. II.A.5), and development of marine reserves as a groundfish management tool (Sec. II.A.6) are grounded by the need to accomplish the goal of rebuilding overfished groundfish stocks.

PFMC
08/21/02

1. Exhibit C.7.b, Supplemental SSC Report.
2. Exhibit C.7.b, Supplemental GAP Report,

Exhibit C.8.b
Supplemental NMFS Report
September 2002

STOCK ASSESSMENTS FOR 2003

SPECIES	AGENCIES	LEAD AUTHOR	LAST ASSESSMENT	FULL OR UPDATE
WHITING	NMFS	METHOT - NW	2002	FULL
LINGCOD	NMFS & WDFW	TBA	2000	FULL
BOCACCIO	NMFS	MACCALL - SW	2002	FULL
CABEZON	NMFS & CDFG	TBA	NEW	FULL
BLACK	NMFS	RALSTON - SW	1999	FULL
WIDOW	NMFS	XI HE - SW	2000	FULL ?
P.O.P.	NMFS	HAMEL - NW	2000	UPDATE
DARK-	NMFS	ROGERS - NW	2000	UPDATE
COWCOD	NMFS & CDFG	SCHIRRIPA - NW	1999	UPDATE
YELLOWTAIL	NMFS & WDFW	LAI - NW	2000	UPDATE

STAR PANELS

SPECIES	DATE	LOCATION
WHITING - US/CANADA	~ FEBRUARY	SEATTLE
BOCACCIO/LINGCOD	APRIL	TBA
CABEZON/BLACK/WIDOW	APRIL	TBA

Plus 2-day Meeting in Late April to Review Assessment Updates

Exhibit C.8.c
Supplemental GAP Report
September 2002

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON STOCK ASSESSMENT PRIORITIES FOR 2003

The Groundfish Advisory Subpanel (GAP) met with Dr. Richard Methot of the Northwest Fisheries Science Center (NWFSC) to review proposals for 2003 stock assessments. The GAP also had a lengthy discussion with Dr. Methot on survey methodology.

The GAP agrees with the NWFSC proposal to conduct full assessments on Pacific whiting, lingcod, bocaccio rockfish, cabezon, and black rockfish in 2003. The GAP also generally agrees with the proposal to conduct abbreviated assessments on Pacific ocean perch, darkblotched rockfish, cowcod, and yellowtail rockfish. However, the GAP believes that given the large number of abbreviated assessments that are being combined, at least one outside reviewer should participate in the review panel. As usual, the GAP expects one of its representatives and a representative of the Groundfish Management Team will serve on the full and abbreviated review panels as advisors.

The GAP strongly disagrees with the proposal that widow rockfish be treated under the abbreviated assessment procedure and instead recommends it be treated to a full review. The GAP notes that several of the data sets and indices that were used for past widow rockfish assessments will no longer be available due to substantial changes in management, such as the conscious effort of the whiting fleet to avoid widow rockfish. Given the need to more closely examine other data sets without the additional data being available, the GAP believes a full assessment and review is warranted.

In regard to data sets in general, the GAP notes there appear to be state data collection and analysis efforts which have not been made known to assessment authors. For example, several GAP members reported that extensive hook-and-line catch sampling has been conducted in California ports, but the data seems not to be available. The GAP suggests the Council strongly recommend to the states that data be collected, analyzed, and distributed in a way that it can be useful to assessment authors. Similarly, state and federal data collection efforts on other species, including salmon, should be coordinated with the groundfish research program to determine whether fisheries independent or environmental data can be collected to enhance our understanding of groundfish.

PFMC
09/11/02

Exhibit C.8.c
Supplemental SSC Report
September 2002

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
GROUNDFISH STOCK ASSESSMENT PRIORITIES FOR 2003

Dr. Rick Methot briefed the Scientific and Statistical Committee (SSC) on the working list of species planned for stock assessment review in 2003. The list is similar to that considered in June, with the omission of yelloweye rockfish, which was already fully reviewed in August 2002. Species identified for full assessment include whiting, lingcod, bocaccio, cabezon, and black rockfish. Updated assessments are planned for Pacific ocean perch (POP), darkblotched, widow, cowcod, and yellowtail rockfish. Dr. Ralston commented that Dr. Xi He would be willing and able to conduct a full assessment of widow rockfish rather than an update. Dr. Methot noted that lead authors have yet to be identified for the lingcod, cabezon, and cowcod assessments. The cabezon assessment will be new, so the authors will need more lead time than other assessment teams if data are to be gathered and a new assessment model is to be developed.

The current list of groundfish assessment candidates is an ambitious one, even given the opportunity for holding expedited reviews. The longer list is a direct outcome of the multi-year management process, and may present challenges in finding an adequate number of assessment authors and independent experts for review. In the event that assessment authors cannot be identified, the long-term management consequences of postponement should be considered.

The SSC questions the practicality of holding four concurrent expedited reviews within a two-day panel. All assessments, full or expedited, can present unexpected problems and each review panel will be unique in composition and perspectives. It may be wise to have contingency plans for assessments which cannot be resolved in the expedited review process.

PFMC
09/12/02

RECEIVED

AUG 6 2002

PFMC

Exhibit C.8
Attachment 1
September 2002

State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N • Olympia, WA 98501-1091 • (360) 902-2200, TDD (360) 902-2207
Main Office Location: Natural Resources Building • 1111 Washington Street SE • Olympia, WA

August 2, 2002

Dr. Donald McIsaac, Executive Director
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

Dear Don:

As you know, Council planning for groundfish stock assessments in 2003 anticipated updates of the black rockfish, yellowtail rockfish, yelloweye rockfish, and lingcod stocks. Washington Department of Fish and Wildlife (WDFW) scientists have historically undertaken each of these assessments. However, our staff scientists are actively involved in two critical yelloweye rockfish tasks, both occurring this summer: 1) update the yelloweye stock status and rebuilding schedule for the September 9 Council meeting; and 2) estimate yelloweye abundance in habitats designated as untrawlable by National Marine Fisheries Service (NMFS) along the north Washington coast using a new application of video survey techniques. Therefore, in June, I advised the Council that we were evaluating our workload and may not be able to provide the traditional assessments as planned.

Since the June Council meeting, I have had discussions with our Marine Fish Science staff. Our three stock assessment scientists are each involved in the 18-day August yelloweye rockfish survey. The combination of sea-time and over-time accrued during the survey will consume six weeks of work time alone. Moreover, all of these scientists serve as technical advisors to the Pacific or North Pacific Councils. There are three North Pacific and two Pacific Council meetings between August 2002 (when the video survey is conducted) and March 2003. The video survey results are scheduled for delivery to the Council at the March meeting. Stock assessment results are similarly timed to be available for STAR panel review after mid-March. Given the known workload commitments of our assessment staff, we estimate that between August and March they will have 70-80 uncommitted working days to complete the analysis of the summer survey data, and address other contingency requests for their time.

The video survey is a "first of its kind" application and, as such, requires considerable attention of our science staff. There are high hopes in many quarters that the survey will successfully determine yelloweye abundance and provide the Council with improved information on stock status in Washington. So we do not violate the public trust, we need to make sure that we have our scientific "ducks in a row." Accordingly, the staff advises me that they will need all the "uncommitted" work-day time they have between now and March to deliver the survey results. Therefore, we have the following proposal: 1) We recommend that the black rockfish and lingcod stock assessments be postponed until 2004. WDFW staff will form a Stock Assessment Team (STAT) to complete these analyses for the 2004-05 assessment cycle. 2) We recommend that NMFS assume responsibility for the yellowtail rockfish stock assessment. Dependent on NMFS scientists' workload, you may also want to postpone the yellowtail assessment until 2004.

I understand there are issues associated with this proposal concerning lingcod and the required update for stocks managed under a rebuilding plan. I would like to discuss this with NMFS officials to determine how we can meet the requirements with the minimum amount of staff time.

In my view, this proposal will best serve the public interest, and it is my hope that you will agree. A discussion between yourself, NMFS, and myself prior to the September Council meeting would be useful so that we can solidify our work plans and meet the Council's needs. I would appreciate having a discussion with you about this proposal at your earliest convenience.

Sincerely,

Philip Anderson
Special Assistant
Intergovernmental Resource Management

PA:dak

cc: Dr. Elizabeth Clarke, NMFS/NWFSC
Mr. Bill Robinson, NMFS
Jack Tagart

Exhibit C.8
Situation Summary
September 2002

GROUNDFISH STOCK ASSESSMENT PRIORITIES FOR 2003

Situation: As per the Council's stock assessment and review procedures, stock assessment priorities are to be set in September to allow sufficient time for assessment authors to obtain relevant data for next year's assessments. Preliminary consideration of a list of proposed species and discussion of priorities occurred at the June Council meeting. Dr. Elizabeth Clarke will present a list of proposed species for assessment in 2003 and issues to consider in setting assessment priorities for 2003.

Council Task:

1. Discussion and guidance.

Reference Materials:

1. Washington Department of Fish and Wildlife letter from Mr. Phil Anderson to Dr. Donald McIsaac dated August 2, 2002 (Exhibit C.8, Attachment 1).

Agenda Order:

a. Agendum Overview	John DeVore
b. NMFS Northwest Fisheries Science Center Report	Elizabeth Clarke
c. Reports and Comments of Advisory Bodies	
d. Public Comment	
e. Council Discussion	

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

This agenda item is consistent with GFSP goals for science, data collection, monitoring, and analysis (Sec. II.B).

PFMC
08/20/02

TRANSITION TO MULTI-YEAR MANAGEMENT UNDER ALTERNATIVE 3 (COUNCIL PREFERRED WITH TWO-MEETING '04 TRANSITION)

<table>
<tr><th></th><th>Jan '03</th><th>April '03</th><th>June '03</th><th>Sept '03</th><th>Nov '03</th><th>Jan '04</th><th>Mar/Apr 04</th><th>June '04</th><th>Sept '04</th><th>Nov '04</th><th>Jan '05</th></tr>
<tr><td rowspan="2">Stock Assessments</td><td colspan="4">Assessments and STAR for '04 due 5/03</td><td rowspan="2"></td><td colspan="5" rowspan="2">"Off" year for stock assessments. Advanced model development and stock assessment model refinement year.</td><td rowspan="2">"On" yea[r] begins</td></tr>
<tr><td colspan="4">Assessments and STAR for '05-'06 due 10/03</td></tr>
<tr><td>Council Process</td><td colspan="2"></td><td>Proposed '04 Specs</td><td>Final '04 Specs</td><td>Proposed '05-'06 ABC/OY</td><td></td><td>Proposed '05-'06 manage measures</td><td>Final '05-'06 Specs & measures</td><td colspan="3">First "off" year for Council begins 9/04 and ends 11/05. In 11/05, proposed ABC/OY for '07-'08</td></tr>
<tr><td rowspan="2">NMFS Regulatory Process</td><td colspan="2" rowspan="2">Public review and NOAA implementation of Amendment 17</td><td rowspan="2"></td><td colspan="3">'04 Specs via emergency for Jan-Feb or carry-over if '03 conservative enough</td><td colspan="2" rowspan="2"></td><td colspan="3" rowspan="2">NMFS sends '05-'06 out for public review via proposed rule and implements via final rule by 01/05</td></tr>
<tr><td colspan="3">'04 Specs proposed rule, public review; final rule due 3/04</td></tr>
</table>

TRANSITION TO MULTI-YEAR MANAGEMENT UNDER ALTERNATIVE 3 (WITH THREE-MEETING '04 TRANSITION)

<table>
<tr><th></th><th>Jan '03</th><th>April '03</th><th>June '03</th><th>Sept '03</th><th>Nov '03</th><th>Jan '04</th><th>Mar/Apr 04</th><th>June '04</th><th>Sept '04</th><th>Nov '04</th><th>Jan '05</th></tr>
<tr><td rowspan="2">Stock Assessments</td><td colspan="4">Assessments and STAR for '04 due 5/03</td><td rowspan="2"></td><td colspan="5" rowspan="2">"Off" year for stock assessments. Advanced model development and stock assessment model refinement year.</td><td rowspan="2">"On" yea[r] begins</td></tr>
<tr><td colspan="4">Assessments and STAR for '05-'06 due 10/03</td></tr>
<tr><td>Council Process</td><td colspan="2"></td><td>Proposed '04 Specs</td><td>include 04 discussion</td><td>Final '04 Specs Proposed '05-'06 ABC/OY</td><td></td><td>Proposed '05-'06 manage measures</td><td>Final '05-'06 Specs & measures</td><td colspan="3">First "off" year for Council begins 9/04 and ends 11/05. In 11/05, proposed ABC/OY for '07-'08</td></tr>
<tr><td rowspan="2">NMFS Regulatory Process</td><td colspan="2" rowspan="2">Public review and NOAA implementation of Amendment 17</td><td colspan="2" rowspan="2"></td><td colspan="3">'04 Specs via emergency for Jan-Apr or carry-over if '03 conservative enough</td><td rowspan="2"></td><td colspan="3" rowspan="2">NMFS sends '05-'06 out for public review via proposed rule and implements via final rule by 01/05</td></tr>
<tr><td colspan="3">'04 Specs proposed rule, public review; final rule due 3/04</td></tr>
</table>

TRANSITION TO MULTI-YEAR MANAGEMENT UNDER ALTERNATIVE 5 (SSC SUPPORTED, WITH TWO-MEETING TRANSITION)
****NO THREE-MEETING TRANSITION EXAMPLE PROVIDED AS ALTERNATIVE 5 IS TWO-MEETING PROCESS**

<table>
<tr><th></th><th>Jan '03</th><th>April '03</th><th>June '03</th><th>Sept '03</th><th>Nov '03</th><th>Jan '04</th><th>Mar/Apr 04</th><th>June '04</th><th>Sept '04</th><th>Nov '04</th><th>Jan '05</th></tr>
<tr><td>Stock Assessments</td><td colspan="3">Assessments and STAR for '04-'05 due 5/03.</td><td colspan="2"></td><td colspan="5">"Off" year for stock assessments. Advanced model development and stock assessment model refinement year.</td><td>"On" year begins</td></tr>
<tr><td rowspan="2">Council Process</td><td colspan="2" rowspan="2"></td><td>Proposed '04-'05 Specs</td><td>Final '04-'05 Specs</td><td colspan="2" rowspan="2"></td><td colspan="5" rowspan="2">First "off" year for Council begins 3/04 and ends 6/05. In 6/05, proposed ABC/OY for '06-'07</td></tr>
<tr><td colspan="2">Transitional OYs needed for Jan-Feb -04</td></tr>
<tr><td rowspan="2">NMFS Regulatory Process</td><td colspan="2" rowspan="2">Public review and NOAA implementation of Amendment 17</td><td rowspan="2"></td><td colspan="2">Emergency rule for Jan-Feb '04 specs may be needed even if Jan-Feb '03 used for carry-over because of transition to 3/1 start date</td><td colspan="3"></td><td colspan="3" rowspan="2"></td></tr>
<tr><td colspan="3">'04-'05 Specs proposed rule, public review; final rule due 3/04</td><td colspan="2"></td></tr>
</table>

Exhibit C.9.c
Supplemental GAP Report
September 2002

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON
AMENDMENT 17 - MULTI-YEAR MANAGEMENT

The Groundfish Advisory Subpanel (GAP) received an update from Ms. Yvonne de Reynier on the status of Amendment 17 to the Pacific groundfish fishery management plan.

The GAP has previously endorsed proposed Alternative 3 as the most reasonable alternative and continues to do so. Since the GAP has provided more extensive comments at earlier meetings, they will not repeat them here.

PFMC
09/11/02

Exhibit C.9
Attachment 1
September 2002

AMENDMENT 17
TO THE PACIFIC COAST GROUNDFISH FISHERY MANAGEMENT PLAN

(MULTI-YEAR MANAGEMENT AND THE SPECIFICATIONS AND MANAGEMENT MEASURES PROCESS)

DRAFT

INCLUDING DRAFT ENVIRONMENTAL ASSESSMENT

Prepared by the National Marine Fisheries Service for the Pacific Fishery Management Council

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384
(503) 820-2280

SEPTEMBER 2002

TABLE OF CONTENTS

1.0 PURPOSE AND NEED FOR ACTION

1.1 How this Document is Organized

This document is an Environmental Assessment and Regulatory Impact Review (EA/RIR) for Amendment 17 to the Pacific Coast Groundfish Fishery management Plan (FMP.) Amendment 17 primarily addresses the Council process of setting groundfish specifications and management measures and revisions to that process.

- Chapter 1 provides the "Purpose and Need" for the Council's action and is intended to provide the public with an explanation of why the Council is considering an FMP amendment.
- Chapter 2 describes the alternatives that the Council has considered for revising the groundfish specifications and management measures process.
- Chapter 3 describes the physical, biological, and socio-economic environment of the groundfish and groundfish fisheries that could be affected by Amendment 17.
- Chapter 4 is an analysis of the potential effects of the alternatives considered in Amendment 17 on the human environment.
- Chapter 5 addresses the consistency of Amendment 17 alternatives with the FMP and other applicable law.
- Chapter 6 contains the Regulatory Impact Review.
- Chapter 7 provides a bibliographic reference for this document and lists the documents preparers.
- Appendix A excerpts the portions of the FMP that would be amended by this action and provides alternative amendatory language.
- Appendix B shows sample timelines for making the transition from the status quo annual management process to alternative biennial management processes.

1.2 Purpose and Need

The FMP provides guidance for the Council's groundfish fishery management policies. This FMP covers over 80 species of groundfish (listed in Section 3.0 of the FMP) taken in multi-user fisheries occurring within the Exclusive Economic Zone (EEZ, 3-200 nautical miles offshore) off the coasts of Washington, Oregon, and California. Many of the FMP's guiding policies have been implemented through long-term federal regulations at 50 CFR 660.301-.360. These regulations cover issues ranging from allocations of particular species between different user groups to gear marking requirements to licensing and observer requirements.

In addition to deliberating on long-term groundfish fishery regulations, the Council sets groundfish harvest levels through an annual regulatory process. This annual process establishes harvest "specifications", which are harvest levels or limits such as Acceptable Biological Catches (ABCs,) optimum yields (OYs,) or allocations for different user groups. Management measures, such as trip limits, closed times and areas, and gear restrictions are also set in the annual regulatory process. Management measures are partnered with the specifications in the annual process because these measures are specifically designed to allow the fisheries to achieve, but not to exceed, the specifications harvest levels.

Annual development of specifications and management measures, with regulatory review and implementation by NMFS, is authorized in Section 5.6 of the FMP. Under this section of the FMP, certain management measures have been designated as routine for many of the groundfish species managed under the FMP. The Council annually publishes a list of those management measures designated as routine in its Stock Assessment and Fishery Evaluation (SAFE) Report.

Reconsidering the process by which new management measures are designated as routine is not part of the purpose of the actions analyzed in this document. Instead, the actions analyzed in this document will focus on the larger framework for developing and implementing specifications and management measures.

Since 1990, the Council has annually developed its recommendations for specifications and management measures in a two-meeting process (usually its September and November meetings) followed by a NMFS final action published in the Federal Register and made available for public comment and correction after the effective date of the action. In 2001, NMFS was challenged on this process in Natural Resources Defense Council, Inc. v. Evans, 2001 168 F.Supp. 2d 1149 (N.D. Cal. 2001) and the court ordered NMFS to provide prior public notice and allow public comment on the annual specifications. Because of this court order, the Council needs to amend the FMP's framework for developing annual specifications and management measures to incorporate NMFS publication of a proposed rule for the specifications and management measures, followed by a public comment period and a final rule.

In addition to needing to revise the notice and comment procedure associated with the specifications and management measures, the Council wished to take a new look at efficiency in the annual management process. Groundfish management workload levels have grown in recent years, particularly those associated with setting annual harvest levels for both depleted and healthy stocks. Because of the increasing workload associated with developing specifications and management measures, the Council and NMFS have had less time for addressing many other important groundfish fishery management issues. NMFS has recently asked all of the fishery management councils to consider how they might streamline their processes for developing regulatory recommendations. To meet this NMFS request, the Council has decided that it needs to consider whether specifications and management measures could be published for multi-year, rather than single year, periods.

The Council's purposes in and needs for considering the actions analyzed in this document are to:

- Comply with a court order to provide more opportunity for public comment in the NMFS rule publication process;
- Streamline the process of and reduce the workload associated with developing specifications and management measures so that more Council and NMFS time may be devoted to issues other than specifications and management measures development.

1.3 Public Participation

The court's order in Natural Resources Defense Council, Inc. v. Evans, 2001 168 F.Supp. 2d 1149 (N.D.Cal. 2001) required that NMFS provide prior public notice comment on the annual specifications was issued in August 2001. NMFS also began discussions about streamlining regulatory development and implementation processes with all of the fishery management councils in summer 2001. Because several NMFS Regions and councils use annual specifications and management measures development processes, the efficiency of those processes was an important part of the regulatory streamlining discussions. One suggestion to come out of those discussions was that some councils might consider whether their specifications and management measures could be developed for multi-year periods.

At its November 2001 meeting, the Council discussed the need to incorporate a NMFS public notice and comment period into the specifications and management measures process before implementation of the final rule. The Council decided that it could combine its investigations into how to modify the notice and comment period and into the applicability of multi-year management to groundfish fishery management. To initially scope out these issues, the Council created the Ad-Hoc Groundfish Multi-Year Management Committee (hereinafter, "Committee.") The Committee included representatives from the fishing industry, the conservation community, the three states and NMFS.

The Committee held public meetings in Portland, OR over December 13-14, 2001, and over January 31 - February 1, 2002. During those meetings, the Committee discussed a suite of issues associated with changing the specifications and management measures notice and comment process and with the possibility of making a transition to multi-year management (detailed in Section 3.3.1 of this document.) During these meetings, the Committee developed a suite of options to address the issues discussed in the

Purpose and Need section of this document, above. In March 2002, the Council made these options available for more broad public comment. At its April 2002 meeting, the Council then chose five alternatives for analysis, with the expectation that a draft analysis of these options would be available for public consideration at its June 2002 meeting in Foster City, CA. These alternatives are presented in Section 2.0 of this document. In June, the Council requested an additional analysis of whether and how multi-year management options would make use of multi-year optimum yields (OYs).

1.4 Related NEPA Analyses

1.4.1 Environmental Impact Statement (EIS) for Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2003 Pacific Coast Groundfish Fishery. (In development)

This EIS for the 2003 specifications and management measures will provide an analysis of the effects of implementing the complete package of management measures for 2003. The EIS will provide an example of the type of NEPA analysis needed in developing annual specifications and management measrues. The Council's annual SAFE document will serve as an appendix to this EIS, with information on the history of the fishery's management, stock status for recently assessed species, economic analyses, and other information.

1.4.2 EIS on Overfished Species Rebuilding Plans. (In development.)

The Council is preparing an EIS for what will become Amendment 16 to the FMP, which will set overall guidelines for the contents of overfished species rebuilding plans and which will incorporate rebuilding plans for several species in the FMP. The Amendment 16 EIS is scheduled for concurrent consideration with the specifications and management measures issues discussed in this EA. During discussions on each of these issues, the Council will need to ensure that processes analyzed herein for developing specifications and management measures are compatible with processes for developing and implementing overfished species rebuilding plans.

1.4.3 Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) for Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2002 Pacific Coast Groundfish Fishery. December 2001.

This EA/RIR/IRFA was prepared for the 2002 specifications and management measures and provides an example of the type of NEPA analysis used for developing the annual specifications and management measures. Similar to the 2003 EIS, the Council's SAFE document serves as an appendix to this EA/RIR/IRFA. This EA/RIR/IRFA was intended to address the effects of the 2002 specifications and management measures on the environment, not the effects of the rulemaking development process on the environment.

1.4.4 EA/RIR for Amendment 13 to the Pacific Coast Groundfish FMP. December 2000.

Among other issues, Amendment 13 provided new flexibility in setting annual management measures, so that those measures could better address the rebuilding needs of overfished species. This NEPA analysis addressed the process by which new management measures are designated as routine. These routine management measures are the management measures developed in the annual specifications process. As mentioned above, the process by which new management measures are designated as routine is not part of the purpose of the Council's current discussions. Nonetheless, the Amendment 13 NEPA analysis may provide relevant additional background on the annual process of developing specifications and management measures.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Development of the Alternatives and How the Alternatives are Structured

As discussed above in Section 1.3, the alternatives for revising the specifications and management measures development process were initially discussed in December 2001 and January/February 2002 meetings of the Groundfish Multi-Year Management Committee. The Committee developed six alternatives intended to represent a reasonable range of alternative management regimes for addressing the issues discussed under Section 1.0, Purpose and Need. At its April 2002 meeting, the Council eliminated one alternative from consideration and made the five remaining alternatives available for public review. That eliminated alternative and other alternatives not considered in this document are briefly detailed in Section 2.3 of this document. At its June 2002 meeting, the Council asked for an analysis of a secondary issue relevant to each of the multi-year management alternatives – whether and how multi-year management options would make use of multi-year OYs.

2.2 Issue 1 – Process Alternatives

Each of the five following process alternatives provides the following components:

- Either an annual or biennial framework for setting specifications and management measures.
- The number of Council meetings used in developing specifications and management measures and the months in which those meetings would be held.
- The start date of the fishing year.
- A schedule for conducting new and updated groundfish stock assessments.

Table 2.1.1 Summary of Process Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Annual or Biennial	Annual	Biennial	Biennial	Biennial	Biennial
Council Meetings	September November	April June September	November March/April June	June September November	June September
Fishing Year Start Date	January1	March 1	January 1	May 1	March 1
Stock Assessments	one-third assessed each year	Two-year science schedule: one year to develop and refine models, second year to update all assessments and add new assessments.			

Process Alternative 1 (No Action)

The theme of Process Alternative 1 is to continue with the current annual management cycle, giving priority to the specifications and management measures process over other Council activities.

- Specifications and management measures set annually for a one-year period.
- Two Council meetings, with proposed specifications and management available at Meeting 1 and Council final action at Meeting 2.

  **This two-meeting process (usually September and November meetings) was standard for the 1990-2001 specifications and management measures. For the 2002 specifications, the Council adopted a three-meeting process, with proposed specifications available in June, proposed management measures available in September, and final Council action on all items in November. For 2003, the Council has had to revert to a two-meeting process (June, September) to allow a public notice and comment period prior to an expected March 1, 2003 finalization. For the purposes of this analysis, the two-meeting process will be considered the No Action alternative. **

- January 1 fishing year start date.
- Stock assessments for each assessed species are conducted once every three years. In other words, one-third of all assessed stocks receive assessment updates each year

Table 2.1.2 Alternative 1, status quo/no action

1st third of all assessed stocks			2nd third of all assessed stocks			3rd third of all assessed stocks		
Survey	*Assessed*	*Harvest*	*Survey*	*Assessed*	*Harvest*	*Survey*	*Assessed*	*Harvest*
Year 1	Year 2	Year 3						
Year 1	Year 2	Year 4	Years 1-2	Year 3	Year 4			
Year 1	Year 2	Year 5	Years 1-2	Year 3	Year 5	Years 1-3	Year 4	Year 5
Years 2-4	Year 5	Year 6	Years 1-2	Year 3	Year 6	Years 1-3	Year 4	Year 6
Years 2-4	Year 5	Year 7	Years 2-5	Year 6	Year 7	Years 1-3	Year 4	Year 7
Years 2-4	Year 5	Year 8	Years 2-5	Year 6	Year 8	Years 4-6	Year 7	Year 8
Years 5-7	Year 8	Year 9	Years 2-5	Year 6	Year 9	Years 4-6	Year 7	Year 9

Process Alternative 2 (biennial, three-meeting, March 1 start)

The theme of Process Alternative 2 is to maximize time for stock assessment scientists, Council staff, and NMFS staff to prepare documentation needed to implement specifications and management measures. Additionally, biennial management is intended to allow the Council time to focus its work in alternate years on issues other than specifications and management measures.

- Specifications and management measures set biennially for a two-year period.
- Three Council meetings, with proposed specifications available in April (Meeting 1,) proposed management measures available in June (Meeting 2,) and Council final action in September (Meeting 3.)
- March 1 fishing year start date.
- Stock assessments for each assessed species are conducted every year.

Table 2.1.3 Alternative 2

Years in which stock surveys are conducted	Year All Stocks Assessed	Years harvest limits are based on that assessment
Year 1	Years 2-3	Years 4-5
Year 2	Years 4-5	Years 6-7
Year 3	Years 4-5	Years 6-7
Year 4	Years 6-7	Years 8-9
Year 5	Years 6-7	Years 8-9

Process Alternative 3 (biennial, three-meeting, January 1 start)

The theme of Process Alternative 3 is to maximize time for stock assessment scientists, Council staff, and NMFS staff to prepare documentation needed to implement specifications and management measures ***without disrupting historic January 1 season start date.*** *Additionally, biennial management is intended to allow the Council time to focus its work in alternate years on issues other than specifications and management measures.*

- Specifications and management measures set biennially for a two-year period.
- Three Council meetings, with proposed specifications available in November (Meeting 1,) proposed management measures available in March/April (Meeting 2,) and Council final action in June (Meeting 3.)
- January 1 fishing year start date.
- Stock assessments for each assessed species are conducted every other year.

Table 2.1.4 Alternative 3

Years in which stock surveys are conducted	Year All Stocks Assessed	Years harvest limits are based on that assessment
Year 1	Year 2	Years 4-5
Year 2	Year 4	Years 6-7
Year 3	Year 4	Years 6-7
Year 4	Year 6	Years 8-9
Year 5	Year 6	Years 8-9

Process Alternative 4 (biennial, three-meeting, May 1 start)

The theme of Process Alternative 4 is to minimize the time between stock surveys and the years in which those surveys are used in setting harvest limits, ***while also maximizing time for Council staff and NMFS staff to prepare documentation*** *needed to implement specifications and management measures. Additionally, biennial management is intended to allow the Council time to focus its work in alternate years on issues other than specifications and management measures.*

- Specifications and management measures set biennially for a two-year period.
- Three Council meetings, with proposed specifications available in June (Meeting 1,) proposed management measures available in September (Meeting 2,) and Council final action in November (Meeting 3.)
- May 1 fishing year start date.
- Stock assessments for each assessed species are conducted every other year.

Table 2.1.5 Alternative 4

Years in which stock surveys are conducted	Year All Stocks Assessed	Years harvest limits are based on that assessment
Year 1	Year 2	Years 3-4
Year 2	Year 4	Years 5-6
Year 3	Year 4	Years 5-6
Year 4	Year 6	Years 7-8
Year 5	Year 6	Years 7-8

Process Alternative 5 (biennial, two-meeting, March 1 start)

The theme of Process Alternative 5 is to minimize the time between stock surveys and the years in which those surveys are used in setting harvest limits. Additionally, biennial management is intended to allow the Council time to focus its work in alternate years on issues other than specifications and management measures.

- Specifications and management measures set biennially for a two-year period.
- Two Council meetings, with proposed specifications and management measures available in June (Meeting 1) and Council final action in September (Meeting 2.)
- March 1 fishing year start date.
- Stock assessments for each assessed species are conducted every other year.

Table 2.1.6 Alternative 5

Years in which stock surveys are conducted	Year All Stocks Assessed	Years harvest limits are based on that assessment
Year 1	Year 2	Years 3-4
Year 2	Year 4	Years 5-6
Year 3	Year 4	Years 5-6
Year 4	Year 6	Years 7-8
Year 5	Year 6	Years 7-8

Table 2.1.7 Groundfish Multi-Year Management Process Alternatives – Summary of Policy Considerations

Process Alternative	**Science Process** *Stock assessments occur Jan-May needed for all options. Different schedule indicated when more time available.*	**Data/Stock Assessment Use** *May not survey all stocks in all years. Y1 survey data used in Y2 assessment process.*	**Council Process** *Council process and workload more or less burdensome depending on whether 2- or 3-meeting process*	**NMFS Process** * 5 months minimum needed for proposed rule, comment period and response time*	**Industry Needs/Effects** *Where process is 2-years, discipline is needed in 1st fishing year to not push limits higher in Council process – otherwise fewer fish available for 2nd year, possible early closures
1. Status quo, 2-meeting annual process, 1/1 start. Annual process PFMC meets Sept. (proposed) and Nov. (final), Fishing Year starts Jan 1.	• 1/3 of stocks each year (labelled as groups A, B, and C in next box →) • STAR process for all assessed species, each year	• Year 1 survey info used in Y3 fishing for stock group A • Y1-2 survey info used in Y4 fishing for stock group B • Y1-3 survey info used in Y5 fishing for stock group C	• 7 months for Council staff and committees work on NEPA/RFA, SAFE documents • Less overall Council time for issues other than specifications	• 2 months for implementation, inadequate • Less overall NMFS time for issues other than specifications	• Start date the same, process same, so little/no industry adjustment • Less Council/NMFS time to work on other industry issues
2. 3-meeting, biennial process, 3/1 start. PFMC meets April (proposed ABC/OY), June (final ABC/OY, proposed management), and Sept (final management) Fishing year starts March 1	• Stock assessments could occur Jan- Mar of following Y • All stocks assessed every other year with STAR or STAR-lite review • Intervening years have STAR process for models, new overfished spp.	• Year 1 survey info used in Y4-5 fishing for all stocks • Y2 survey info used in Y6-7 fishing • Y3 survey info used in Y6-7 fishing	• 11-19 months for Council staff and committees work on NEPA/RFA, SAFE documents • More time for issues other than specifications • Inseason adjustments for last 3 months made at Nov meeting. • Conflict with salmon management schedule	• 5.5 months for implementation, adequate • More NMFS time for issues other than specifications	• Change in fishing year requires business planning changes for industry • 2-year process, possible early closures if limits not controlled • More Council/ NMFS time to work on other industry issues • Fishing based on older data than all other alternatives
3. 3-meeting, biennial process, 1/1 start. PFMC meets Nov (proposed ABC/OY), March/April (final ABC/OY, proposed management), and June (final management) Fishing year starts Jan 1	• Stock assessments occur Jan-Oct • All stocks assessed every other year with STAR or STAR-lite review • Intervening years have STAR process for models, new overfished spp.	• Year 1 survey info used in Y4-5 fishing for all stocks • Y2 survey info used in Y6-7 fishing • Y3 survey info used in Y6-7 fishing	• 14 months for Council staff and committees work on NEPA/RFA, SAFE documents • More time for issues other than specifications • Conflict with salmon management schedule	• 6.5 months for implementation, adequate time • More NMFS time for issues other than specifications	• Start date the same • 2-year process, possible early closures if limits not controlled • Fishing based on older data than Alternatives 1, 4, 5 • More Council/ NMFS time to work on other industry issues

Process Alternative	Science Process *Stock assessments occur Jan-May needed for all options. Different schedule indicated when more time available.*	Data/Stock Assessment Use *May not survey all stocks in all years. Y1 survey data used in Y2 assessment process.*	Council Process *Council process and workload more or less burdensome depending on whether 2- or 3-meeting process*	NMFS Process * 5 months minimum needed for proposed rule, comment period and response time*	Industry Needs/Effects *Where process is 2-years, discipline is needed in 1st fishing year to not push limits higher in Council process – otherwise fewer fish available for 2nd year, possible early closures
4. 3-meeting, biennial process, 5/1 start. PFMC meets June (proposed ABC/OY), Sept. (final ABC/OY, proposed management), and Nov. (final management) Fishing year starts May 1	• All stocks assessed every other year with STAR or STAR-lite review • Intervening years have STAR process for models, new overfished spp. • Database adjusting for change in fishing year	• Year 1 survey info used in Y3-4 fishing for all stocks • Y2 survey info used in Y5-6 fishing • Y3 survey info used in Y5-6 fishing	• 9 months for Council staff and committees work on NEPA/RFA, SAFE documents • More time for issues other than specifications • Inseason adjustments in Nov. and March possibly ill-timed for May 1 fishery start • Re-evaluation of whiting and fixed gear sablefish season management required	• 6 months for implementation, adequate • More NMFS time for issues other than specifications	• Change in fishing year requires business planning changes for industry • 2-year process, possible early closures if limits not controlled • 5/1 fishery start conflicts with current whiting and fixed gear sablefish seasons, tribal groundfish fishery management • More Council/ NMFS time to work on other industry issues
5. 2-meeting, biennial process, 3/1 start. PFMC meets June (proposed) and Sept (final), Fishing Year starts March 1	• All stocks assessed every other year with STAR-lite • Intervening years have STAR process for models, new overfished spp. • Database adjusting for change in fishing year	• Year 1 survey info used in Y3-4 fishing for all stocks • Y2 survey info used in Y5-6 fishing • Y3 survey info used in Y5-6 fishing	• 9 months for Council staff and committees work on NEPA/RFA, SAFE documents • More time for issues other than specifications • Inseason adjustments for last 2-3 months made at Nov meeting	• 5.5 months for implementation, adequate • More NMFS time for issues other than specifications	• Change in fishing year requires business planning changes for industry • 2-year process, possible early closures if limits not controlled • More Council/ NMFS time to work on other industry issues

2.3 Issue 2 – Optimum Yield (OY) Duration Alternatives

Process Alternatives 2-5 feature biennial specifications and management measures processes. The Council has been operating with an annual specifications process (Process Alternative 1) since 1990. In that process, OYs have been set for one year periods. Within a biennial specifications and management measures process, the Council could use two one-year OYs or one two-year OY for each species or species group, or a mix of those alternatives for different species or species groups.

Optimum Yield Duration Alternative 1 (status quo/no action)

All OYs for all species or species group would be set for one-year periods. In biennial management process, each fishing year the Council would manage each species or species group to achieve but not exceed its one-year OY. At the beginning of each fishing year, fishing would begin on new one-year OYs, with no adjustments made for underages or overages in the prior year.

Optimum Yield Duration Alternative 2 (two-year OYs)

All OYs for all species would be set for two-year periods. In biennial management process, the Council would manage each species to achieve but not exceed the biennial OY for that species. At the end of the first year of the fishing cycle, any OY underage or overage from that year would carry over into the second year, affecting the amount of each species that could be taken in that second year. Under this alternative, the Council may wish to develop harvest checkpoints to articulate the percent of each species' OY that could be expected to be taken at different points during the two-year cycle. These harvest checkpoints would be based on historic fishing cycles, would integrate groundfish landings with landings of other species coastwide, and could be used to monitor progress through the two-year period to ensure that no severe underages or overages occur.

Optimum Yield Duration Alternative 3 (mix of one-year and two-year OYs)

OYs for some species would be set for one-year periods, for others OYs would be set for two-year periods. The Council could choose during the development of each new management cycle which species would be managed for one-year OYs and two-year OYs. One-year OYs would allow single year targets for some species within the biennial cycle, which might be appropriate for species that require particularly conservative management, such as overfished species.

2.4 Alternatives Eliminated from Detailed Study

During its initial meetings, the Multi-Year Management Committee discussed several variations on the options listed above:

Multi-Year Management for Periods Longer Than Two Years. Of the five process alternatives listed above, one would continue the annual management cycle and four would move the Council to biennial specifications and management measures. The Committee discussed management cycles ranging from one to five years in duration. These discussions revealed that setting the length of the management cycle would be a delicate balance between ensuring the use of the best and most recently available scientific information and allowing management process participants adequate time to discuss and absorb this scientific information and its implications for management. Under the current annual cycle, processing and review of data must occur at a fairly swift pace, using scientific personnel time and resources that might otherwise be dedicated to stock assessments and advanced modeling. Thus, the annual cycle tends to allow participating scientists to assess about one-third of all assessed stocks in any one year. As a result, each year's management cycle uses the most recently available information for one-third of assessed stocks. Discussions between the Committee and stock assessment scientists about timing of assessments and data availability led the Committee to conclude that a two-year management cycle would allow participating scientists more time to process and review data from the stock surveys and then more time to complete stock assessments for setting specifications and management measures. Three- to five- year cycles would have lengthened the scientific process further, but the longer cycles would have also resulted in managers using "older" data in setting harvest levels. The Committee determined that the benefits of a longer assessment and analysis period were outweighed by the need to use the best available scientific information in support of the management process.

Changing Council Meeting Dates. During its initial discussions, the Committee looked at different ways of addressing the scheduling needs of the scientific process (processing and reviewing data from resource surveys through to completed assessments) and the public notice and comment process (NMFS publication of proposed and final rules in the Federal Register). In addition to considering changing the duration of the management cycle, the fishing year start date, and the Council meetings at which discussion and decision occur, the Committee also looked at changing the dates of Council meetings to better incorporate the scientific process and the notice and comment process. For example, the Committee considered whether the process could be better served by moving the June Council meeting to July, or by moving the September and November meetings to early August and October. Ultimately, the Committee set aside these considerations for two logistical reasons. First, the current Council meeting schedule of five meetings per year held in March, April, June, September, and November is based on the management needs of a variety of fisheries (groundfish, salmon, coastal pelagic species, highly migratory species, halibut). Historically, the September and November meetings have been dominated by groundfish issues, thus the timing of those meetings could have been more flexible with changes to groundfish management needs. March and April meetings, however, are strictly timed with salmon season management and timing for those meetings could not be made flexible to accommodate groundfish management needs. The Committee was uncomfortable with the potential ripple effects of changing Council meeting dates on the management of species other than groundfish. Second, Council meeting dates must be set several years in advance to ensure meeting location reservations adequate for the large number of Council meeting participants. Even if the Committee had wanted to forward an alternative meeting schedule for public consideration, the Council and NMFS would not have been able to fully implement such an alternative for three to four years. The Committee felt that there were sufficient alternatives for addressing their goals in taking a new look at the management process without having to also address the complications of meeting logistics.

3.0 AFFECTED ENVIRONMENT

This section of the document describes the existing fishery and the resources that would be affected by this action. The physical environment is discussed in Section 3.1, the biological characteristics of the groundfish stocks and non-groundfish stocks interacting with the groundfish fishery are discussed in Section 3.2, and the socio-economic environment is discussed in Section 3.3.

3.1 PHYSICAL ENVIRONMENT

California Current System. In the North Pacific Ocean, the large, clockwise-moving North Pacific Gyre circulates cold, sub-arctic surface water eastward across the North Pacific, splitting at the North American continent into the northward-moving Alaska Current and the southward-moving California Current. Along the U.S. West Coast, the surface California Current flows southward through the U.S. West Coast EEZ, the management area for the groundfish FMP. The California Current is known as an eastern boundary current, meaning that it draws ocean water along the eastern edge of an oceanic current gyre. Along the continental margin and beneath the California Current flows the northward-moving California Undercurrent. Influenced by the California Current system and coastal winds, waters off the U.S. West Coast are subject to major nutrient upwelling, particularly off Cape Mendocino (Bakun, 1996). Shoreline topographic features such as Cape Blanco, Point Conception and bathymetric features such as banks, canyons, and other submerged features, often create large-scale current patterns like eddies, jets, and squirts. Currents off Cape Blanco, for example, are known for a current "jet" that drives surface water offshore to be replaced by upwelling sub-surface water (Barth, et al, 2000). One of the better-known current eddies off the West Coast occurs in the Southern California Bight, between Point Conception and Baja California (Longhurst, 1998), wherein the current circles back on itself by moving in a northward and counterclockwise direction just within the Bight. The influence of these lesser current patterns and of the California Current on the physical and biological environment varies seasonally (Lynn, 1987) and through larger-scale climate variation, such as El Niño-La Niña or Pacific Decadal Oscillation (Longhurst, 1998).

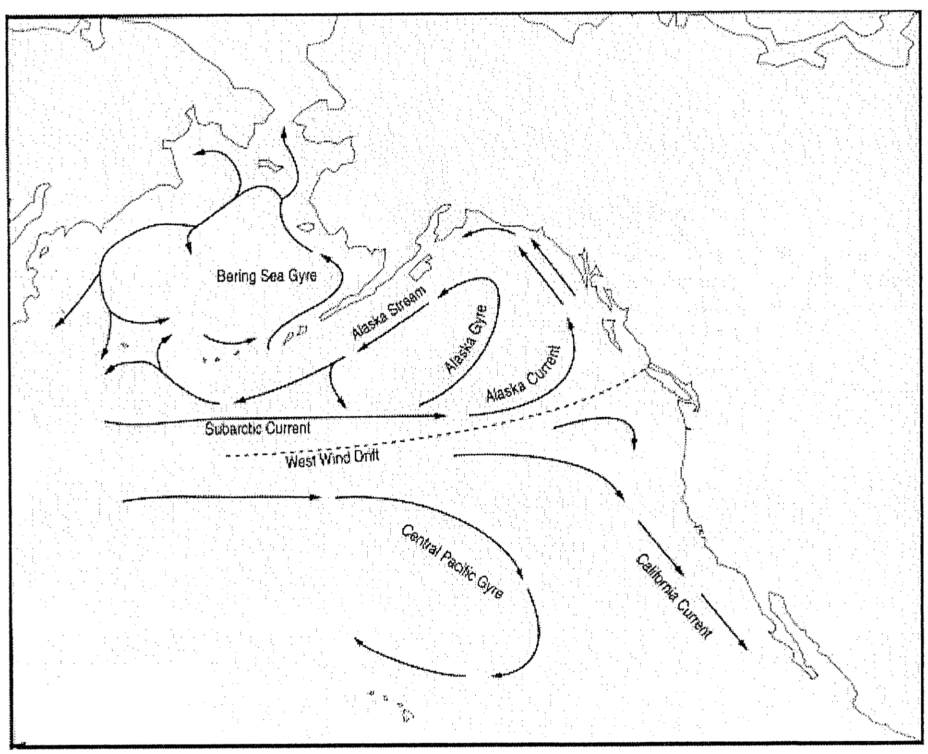
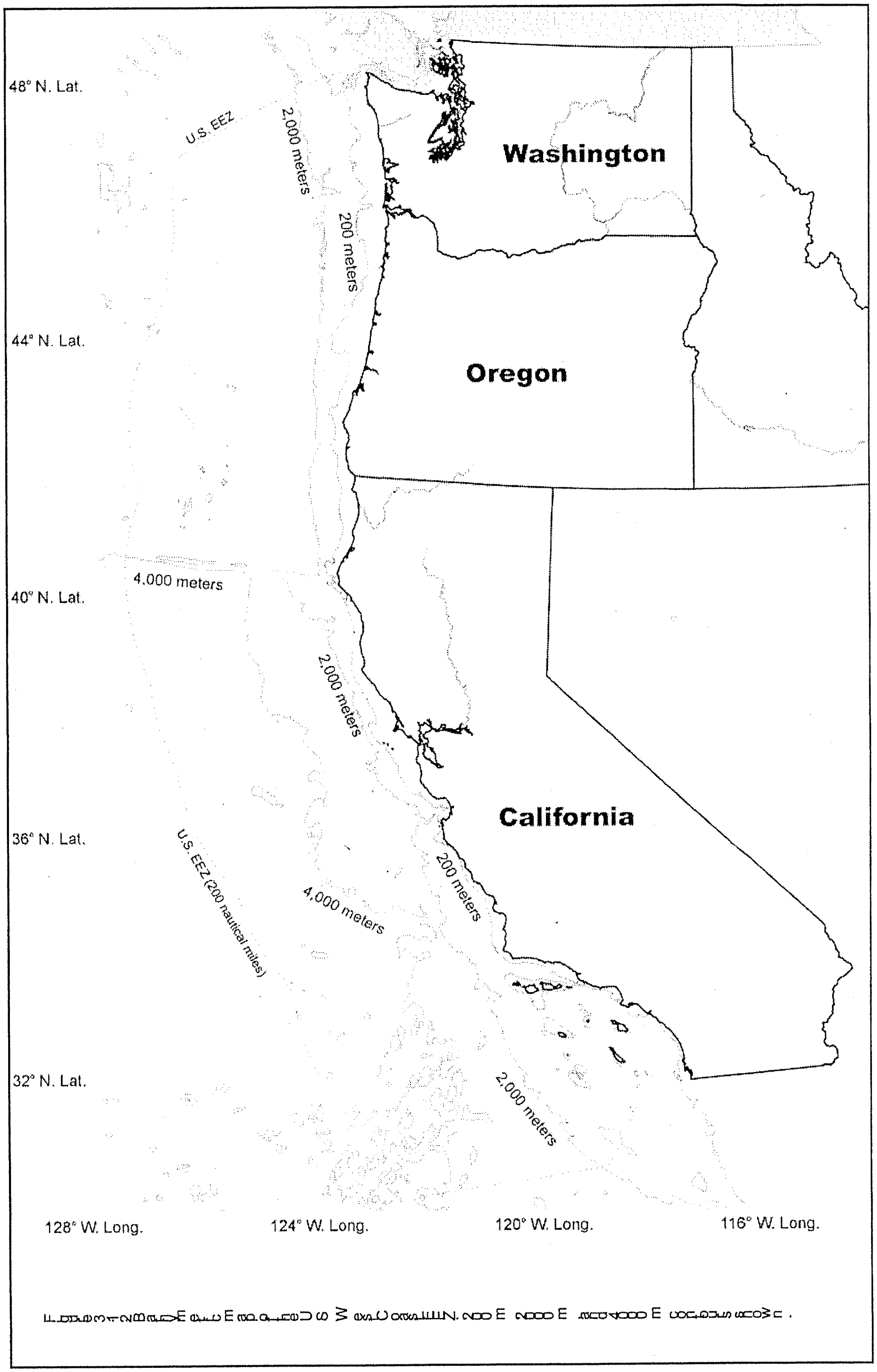


Figure 3.1. General circulation and major current systems of the North Pacific Ocean. Source: NMFS

Topography. Physical topography off the U.S. West Coast is characterized by a relatively narrow continental shelf. The 200 m depth contour shows a shelf break closest to the shoreline off Cape Mendocino, Point Sur, and in the Southern California Bight and widest from central Oregon north to the Canadian border as well as off Monterey Bay. Deep submarine canyons pocket the EEZ, with depths greater than 4,000 m are common south of Cape Mendocino. See Figure 3.1.2.



Climate Shifts. The physical dynamics and biological productivity of the California Current ecosystem have shown a variety of responses to both short- and long-scale changes in climate. For some groundfish species, these climate shifts may affect recruitment and abundance. El Niños and La Niñas are examples of short-scale climate change, six-month to two-year disruptions in oceanic and atmospheric conditions in the Pacific region. An El Niño is a climate event with trends like a slowing in Pacific Ocean equatorial circulation, resulting in warmer sea surface conditions and decreased coastal upwelling. Conversely, La Niñas are short-scale climate events characterized by cooler ocean temperatures (NOAA, 2002.) Long-scale Pacific Ocean climate shifts of two to three decades in duration are often called "Pacific (inter)Decadal Oscillation" or "PDO" in scientific literature. These long-scale climate shift events tend to show relatively cooler ocean temperatures in the Gulf of Alaska and Bering Sea ecosystems and relatively warmer temperatures in the California Current ecosystem, or a reverse trend of relatively warm temperatures in the north and cooler temperatures in the south (Mantua et al., 1997.)

Periods of warmer or cooler ocean conditions and the event of shifting from warm to cool or vice versa can all have a wide array of effects marine species abundance. Ocean circulation varies during these different climate events, affecting the degree to which nutrients from the ocean floor mix with surface waters. Periods of higher nutrient mixing tend to have higher phytoplankton (primary) productivity, which can have positive ripple effects throughout the food web. In addition to changes in primary production, climate shifts may affect zooplankton (secondary) production in terms of increasing or decreasing abundance of the zooplankton biomass as a whole or of particular zooplankton species. Again, these changes in secondary production ripple in effect through the food web (Francis et al., 1998.) Upper trophic level species depend on different lower order species for their diets, so a shift in abundance of one type of prey species will often result in a similar shift in an associated predator species. This shifting interdependency affects higher order species like groundfish in different ways at different life stages. In other words, some climate conditions may be beneficial to the survival of larvae of a particular species but may have no effect on an adult of that same species.

Population data on some species seems to show a link between climate and recruitment. Pacific whiting, for example, tends to have stronger year classes following an El Niño event than in other years (Hollowed et al., 2001.) There is also some evidence that sablefish recruitment may be affected by PDOs in that stronger year classes of sablefish tend to occur off British Columbia during decade-scale periods when ocean temperatures are relatively warm (King et al., 2000.) Although there are fewer analyses about the effects of climate on rockfish abundance coastwide, localized larval rockfish populations have shown lower survival rates in years when coastal upwelling and plankton production has been reduced by El Niño events (Yoklavich et al., 1996.)

Most of the scientific analysis on long-scale climate shift events has taken place within the past ten years. Recent public awareness of climate events like PDO, coupled with the relatively dramatic El Niño of 1997-1998 may create the perception that climate is the most significant contributor to marine species abundance. In an analysis of marine fish productivity in the Northeast Pacific Ocean, Hollowed, Hare, and Wooster found that links between marine fish recruitment and climate shifts were more clear for conservatively managed species (Hollowed, et al., 2001). For many of the depleted West Coast groundfish species, adult population levels may have a greater effect on the spawning productivity of the overall stock than climate shift events of either the short- or long-scale.

Essential Fish Habitat. The 80+ groundfish species managed by the FMP occur throughout the EEZ and occupy diverse habitats at all stages in their life histories. Some species are widely dispersed during certain life stages, particularly those with pelagic eggs and larvae; the essential fish habitat (EFH) for these species/stages is correspondingly large. On the other hand, the EFH of some species/stages may be comparatively small, such as that of adults of many nearshore rockfishes which show strong affinities to a particular location or type of substrate.

EFH for Pacific coast groundfish is defined as the aquatic habitat necessary to allow for groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem. Descriptions of groundfish fishery EFH for each of the 80+ groundfish species and their life stages result in over 400 EFH identifications. When these EFHs are taken together, the groundfish fishery EFH includes all waters from the mean higher high water line, and the upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon, and California seaward to the boundary of the U.S. EEZ.

The FMP groups the various EFH descriptions into seven major habitat types called "composite" EFHs. This approach focuses on ecological relationships among species and between the species and their habitat, reflecting an ecosystem approach in defining EFH. The seven "composite" EFH identifications are as follows:

1. Estuarine - Those waters, substrates and associated biological communities within bays and estuaries of the EEZ, from mean higher high water level (MHHW, which is the high tide line) or extent of upriver saltwater intrusion to the respective outer boundaries for each bay or estuary as defined in 33 CFR 80.1 (Coast Guard lines of demarcation).

2. Rocky Shelf - Those waters, substrates, and associated biological communities living on or within ten meters (5.5 fathoms) overlying rocky areas, including reefs, pinnacles, boulders and cobble, along the continental shelf, excluding canyons, from the high tide line MHHW to the shelf break (~200 meters or 109 fathoms).

3. Nonrocky Shelf - Those waters, substrates, and associated biological communities living on or within ten meters (5.5 fathoms) overlying the substrates of the continental shelf, excluding the rocky shelf and canyon composites, from the high tide line MHHW to the shelf break (~200 meters or 109 fathoms).

4. Canyon - Those waters, substrates, and associated biological communities living within submarine canyons, including the walls, beds, seafloor, and any outcrops or landslide morphology, such as slump scarps and debris fields.

5. Continental Slope/Basin - Those waters, substrates, and biological communities living on or within 20 meters (11 fathoms) overlying the substrates of the continental slope and basin below the shelf break (~200 meters or 109 fathoms) and extending to the westward boundary of the EEZ.

6. Neritic Zone - Those waters and biological communities living in the water column more than ten meters (5.5 fathoms) above the continental shelf.

7. Oceanic Zone - Those waters and biological communities living in the water column more than 20 meters (11 fathoms) above the continental slope and abyssal plain, extending to the westward boundary of the EEZ.

Life history and habitat needs for the 82 species managed under the FMP are described in the EFH appendix to Amendment 11, which is available online at http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Groundfish Stock Assessments; Resource Surveys and Biology of the stocks

Data from resource surveys are combined with information derived from life-history studies and commercial landing statistics to calibrate models of groundfish population dynamics. These models are used to generate estimates of current abundance and fishing mortality levels, identify trends in abundance, and predict sustainable annual harvest levels for groundfish populations (Figure 3.2.2). The

Council considers output from the models when it establishes ABCs and setting annual harvest levels.

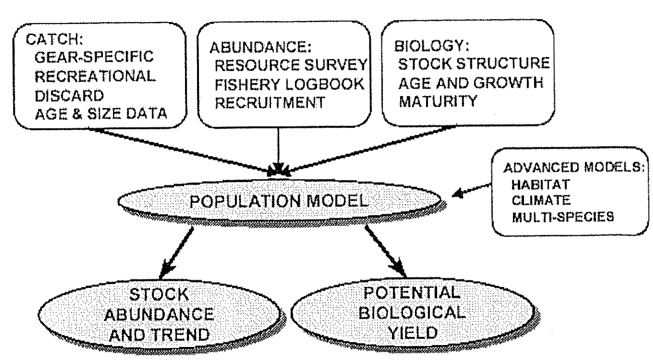
Stock Assessments Stock assessments for Pacific Coast groundfish are generally conducted by staff scientists of the California Department of Fish and Game (CDFG), Oregon Department of fish and Wildlife (ODFW), Washington Department of Fish and Wildlife (WDFW), Oregon State University (OSU), University of Washington (UW) and the Southwest, Northwest, and Alaska Fisheries Science Centers of NMFS. The purpose of groundfish stock assessments is to describe the condition or status of a particular stock. The result of a stock assessment is typically a report on the health of the stock, a forecast of biologically sustainable harvest levels, and/or other recommendations that would maintain or restore the stock. If a stock is determined to be in an overfished condition (less than 25% of its unfished biomass), a rebuilding analysis and a rebuilding plan are developed.

Over the past 20+ years, groundfish assessments have primarily been concentrated on important commercial and recreational species. These species account for most of the historical catch and have been the targets of fishery monitoring and resource survey programs that provide basic information for quantitative stock assessments. However, not all groundfish assessments have the same level of information and precision.

Quantitative and non-quantitative assessments are used for groundfish stocks. The stocks with quantitative assessments are those for which there are sufficient data. These stock assessments are conducted by using the life history data to build a biologically realistic model of the fish stock, and calibrating this model so that it reproduces the observed fishery and survey data as closely as possible. During the 1990s, most West Coast groundfish assessments were conducted using the stock synthesis model. Recently there has been development of similar, but more powerful, models using state-of-the-art software tools. Assessment models and results are independently reviewed by the Council's Stock Assessment Review (STAR) panels. It is the responsibility of the STAR panels to review draft stock assessment documents and relevant information to determine if they use the available scientific data effectively to provide a good quality assessment of the condition of the stock. In addition, the STAR panels review the assessment documents to see that they are sufficiently complete and that the research needed to improve assessments in the future is identified. (Table 3.2.1) The STAR process is a key element in an overall process designed to make timely use of new fishery and survey data, to analyze and understand these data as completely as possible, to provide opportunity for public comment, and to assure that the assessment results are as accurate and error-free as possible.

Following review of assessment models by the STAR panels and subsequently the Groundfish Management Team (GMT) and Scientific and Statistical Committee (SSC), the GMT uses the reviewed assessments to recommend preliminary ABCs and OYs to the Council. The SSC comments on the STAR review results and the GMT recommendations. Biomass estimates from an assessment may be for a single year or they may be the average of the present and several future years. In general, an ABC will be calculated by applying the appropriate harvest policy (MSY proxy) to the best estimate of current biomass. ABCs based on quantitative assessments remain in effect until revised by either a full or partial assessment.

STOCK ASSESSMENT PROCESS



Full assessments provide information on the abundance of the stock relative to historical and target levels, and provide information on current potential yield. Partial assessments do not have enough data to provide for a full assessment. Within the range of full assessments, there is a wide range of data availability and resulting assessment certainty. Approximately ## three to six full assessments ## are conducted each year; ##26## species have been assessed (with varying degrees of completeness and precision). Several species are assessed approximately every three to four years, however some have been assessed only once, and only Pacific whiting is examined annually (both partial and full assessments are used for whiting) .

Stocks with ABCs set by non-quantitative assessments typically do not have a recent, quantitative assessment, but there may be a previous assessment or some indicators of the status of the stock. Detailed biological information is not routinely available for these stocks, and ABC levels have typically been established on the basis of average historical landings. Typically, the spawning biomass, level of recruitment, or the current fishing mortality rates are unknown.

Many species have never been assessed and lack the data necessary to conduct even a qualitative assessment (i.e., is trend up, down or stable?). ABC values have been established for only about ##26 stocks##. The remaining species are incidentally landed and usually are not listed separately on fish landing receipts. Information from fishery independent surveys are often lacking for these stocks, because of their low abundance or they are not vulnerable to survey sampling gear. Precautionary measures continue to be taken when setting harvest levels (the OYs) for species that have no or only rudimentary assessments. Since implementation of the 2000 specifications, ABCs have been reduced by 25 percent to set OYs for species with less rigorous stock assessments, and by 50 percent to set OYs for those species with no stock assessment. At-sea observer data is expected to be available for use in the near future to upgrade the assessment capability or evaluate their overfishing potential for these stocks. Interim ABC values may be established for these stocks based on qualitative information.

The accuracy and reliability of various data used in assessments as well as on the scientific assumptions that the assessments are based on, need to be further analyzed to improve the quality of forecasts. Further analysis of issues such as uncertainty associated with fishery logbook data, calibration of surveys, and accuracy of aging techniques are also needed. In addition, information on ecosystem change and its influence on groundfish abundance is needed. Specific stock assessment areas that have been identified as needing improvement include: develop models to better quantify uncertainty and aid communication/ implementation of precautionary approach; develop models to specifically aid in the assessment of species with limited data; improve standardization of assessment methods and conduct a formal review of these methods so that the subsequent review of each species' assessment can be shortened, which could allow more assessments to be reviewed each year; develop models to better represent spatially-structured populations, e.g., populations with low rates of internal mixing or populations with ontogenetic patterns spanning a range of habitats. ##ecosystem modeling##

Table 3.2.1 Research Needs Identified by Pacific Coast Groundfish Assessment Scientists		
Species	**Assemblage**	**Data needs identified by assessment scientists**
Roundfish		
Lingcod	Shelf	* Improve age structure sample size in all areas *More frequent fishery independent surveys
Pacific Cod	Shelf	
Pacific whiting	Mid-water	* Would benefit from increased survey observations
Sablefish	Deep slope	* Would benefit from increased survey observations * Need understanding of survey gear selectivity and catchability * May benefit from ichthyoplankton surveys * Would benefit from additional tagging surveys * Discard data needed * More biological samples from commercial catches
Flatfish		
Dover sole	Deep slope	* Additional research on age and growth to reduce variability * Need to examine depth strata data * Discard data needed
English sole	Nearshore	* Need more age, maturity and length data * Need recent fecundity data * Additional research on aging needed *More biological samples from commercial catches * Shelf survey designed for rockfish, not flatfish
Petrale sole	Nearshore	* Genetic identity of stock * More biological samples from commercial catches * Need otoliths from juvenile fish take in survey catches * Discard data needed * Need understanding of survey gear selectivity and catchability
Arrowtooth flounder	Shelf, Slope	* Discard data needed * Need reliable measure of abundance * Shelf survey designed for rockfish, not flatfish * Need to validate aging methods
Other flatfish	Nearshore, Shelf, Slope	
Rockfish		
POP	Slope	* Further age analysis * Need further analysis of unfished biomass
Shortbelly	Shelf	* Further work on year class strength and life history needed
Widow	Shelf	* Need reliable measure of abundance * Discard data needed * Genetic identity of stock needed * Need more age, maturity, and length data
Canary	Shelf	* Determine why there is an absence of older females in survey data * Better understanding of survey gear selectivity and catchability * Evaluate spawner-recruit relationships * At-sea observer data needed * Identify habitat and distribution * Expand assessment area to include Canada * Need pre-recruit surveys
Chilipepper	Shelf	* Would benefit from increased survey observations

Table 3.2.1 Research Needs Identified by Pacific Coast Groundfish Assessment Scientists		
Species	**Assemblage**	**Data needs identified by assessment scientists**
Bocaccio	Shelf	* Review natural mortality assumptions * Examine geographic relationships
Splitnose	Slope	* Need more age, maturity and length data * Need at-sea discard data * Commercial fishery landings by species needed
Yellowtail	Shelf	* Age and maturity data need to be updated * Better understanding of survey gear selectivity and catchability * Genetic identity of stocks needed
Shortspine thornyhead	Deep slope	* XXXXXXXX
Longspine thornyhead	Deep slope	* XXXXXXXX
Darkblotched	Slope	* Better commercial fishery landings by species * Discard data needed * Need more age, maturity and length data *Genetic identity of stocks needed * Better understanding of survey gear selectivity and catchability
Yelloweye	Shelf	* Need more age, maturity and length data * Identify habitat and distribution * Develop fishery independent indices * Need reliable method to measure abundance
Cowcod	Shelf	* Need to validate aging methods *Identify habitat and distribution
Remaining Rockfish	All	* XXXXXXXX
Bank	Slope (mid-water)	* Commercial fishery landings by species needed * More commercial fishery age and length data * Need discard data * Better documentation of recreational catch * Need reliable index of recruitment
Black	Nearshore	* XXXXXXXX
Blackgill	Slope	* XXXXXXXX
Other fish	All	

Resource Surveys Normally a resource survey is implemented as a long-term, ongoing index to track natural and anthropogenic changes in fish abundance. In some cases, a single survey or a short time series can be directly calibrated to absolute abundance. An annual survey will most closely track natural biological fluctuations and smooth out apparent fluctuations caused by environmental effects on catchability.

For the purpose of conducting resource surveys, the groundfish species can be roughly broken into six assemblages based upon their adult habitat and co-occurrence in the fishery. _Midwater species_ are semipelagic schooling species such as Pacific whiting and shortbelly rockfish. These species can be surveyed with acoustic methods. _Deep slope species_ primarily includes sablefish, Dover sole, shortspine thornyhead, longspine thornyhead, and Pacific grenadier. They are found mostly on trawlable habitat on the shelf break and continental slope extending out to at least 1500 m bottom depth. Most of these species recruit on the shelf and gradually move into deeper water as they age. _Shelf species_ include 30 rockfish species, lingcod, and Pacific cod. These species occur on the continental shelf. Many species are found over rocky habitat, and some species have significant off-bottom tendencies. _Slope rockfish species_ includes nine rockfish species found on the upper continental slope. _Nearshore rockfish species_ include13 rockfish species and a few non-rockfish species. These are mostly found in high relief habitat. _Nearshore flatfish species_ include 11 flatfish species that are found on trawlable, sand-mud habitat on the continental shelf.

Long term groundfish survey efforts include: 1) _Acoustic and midwater trawl survey_ - a coastwide survey that is conducted triennially (1977-2001) for Pacific whiting. Recent surveys have been coordinated with the Canadian acoustic survey to assure adequate coverage in northern areas. 2) _Shelf survey_ - a bottom trawl survey conducted triennially (1977-1998#) in midsummer, sufficient coastwide coverage for most target species but did not cover south of Point Conception until ##2000##; survey covers the 30-275 fathoms range of bottom depths using two large (125 foot) chartered vessels. 3) _Slope survey_ - a bottom trawl survey conducted annually in mid-autumn, covers 100-700 fathom range of bottom depth. Survey was started in 1998 and 1999. 4) _Nearshore survey_ - these are SCUBA and hook-and-line surveys for various nearshore rockfish off California and are conducted by CDFG. 5) _Mark-recapture survey_ for black rockfish and lingcod by WDFW. 6) _Shelf rockfish recruitment survey_ - midwater trawl survey off Central California by Southwest Fisheries Science Center (SWFSC) for age 0 rockfish. 7) _Multi-speices - multi-disciplinary oceanographic and egg and larvae survey_ off southern California (California Cooperative Oceanographic Fisheries Investigation (CalCOFI)) which is currently conducted quarterly. NWFSC has indicated that further development of resource surveys is needed to provide an index of spawning biomass. Increasing the number of surveys and geographic scope would provide information about distribution, abundance, and age structure of many groundfish populations. ##double-check on these with Science Centers##

The West Coast Groundfish Research Plan identifies the following areas where further resources could be used to improve the accuracy and precision of stock assessments: development of survey methods for each of the groundfish assemblages and for each region of the coast; determine potential improvement in survey accuracy by stratifying survey effort on finer habitat features; evaluate alternative survey methodologies including egg and larval, mark recapture, hook-and-line, and visual; improve tracking of natural fluctuations in Pacific whiting abundance and US-Canada distribution by increasing frequency of whiting acoustic survey (currently triennial); improve time series data, and egg and larval surveys may have useful information for some groundfish; direct calibration of surveys; direct observation of fish density using visual and laser methods; investigate catchability characteristics of sampling methods, in particular fish behavior in response to sampling gear, and environmental effects on fish-gear interactions.

Life history and stock distribution Biological data is necessary for accurate stock assessments and other fishery evaluations. This includes basic biological information such as stock structure, age compositions, growth, and reproduction. Currently, stock distribution and movement information for egg, larval, juvenile, and adult life stages is determined from plankton surveys, fishery resource assessment surveys, fishery logbooks, and tagging studies. Genetic characteristics and species' population structure has been investigated for a few major groundfish species using mapping, genetics, morphology, parasites, micro-constituents and other methods. "Production aging" of fishery and survey specimens for major species is done to determine patterns in recruitment and to enable age-based assessment methods. Validation of aging methods include radiometric, tag-recapture, and other techniques.

To further improve the base biological data used in assessments, scientists at the NWFSC have identified the following areas where resources are needed for improvement: age-specific growth and reproduction (maturity and fecundity) for more species; new methods to estimate natural mortality rates; genetic examination of stock structure for more species with high probabilities of having separate distinct populations; degree of mixing between and within populations; temporal and spatial trends in growth and maturation; life-history data on fish health and fitness (e.g., disease, parasite loads, bioenergetic indicators such as lipid and protein content).

Fishery mortality Total fishery catch is needed so that stock assessment models can correctly separate fishing from natural causes or changes in fish abundance, and so that the effectiveness of current regulations may be determined. Data needed on an ongoing basis includes: timely estimates of total commercial and recreational catch for each gear, location and time stratum; information on bycatch, discards, and mortality of discarded bycatch; biological characteristics (age and size composition) of the catch; standardized measurement of fishing effort and catch-per-effort to complement; fishery-independent resource survey data; geographic distribution of catch and effort.

Currently landed commercial catch is monitored shoreside by the states and PSMFC with coastwide data access through the PacFIN data system. The basic program is based upon comprehensive mandatory commercial landings receipts to determine landed catch, and biological samples by port biologists to determine species composition of each market category, and to collect size and age data. The growing nearshore commercial groundfish fisheries, including the live rockfish fishery, are monitored by state programs. Recreational fishery catch is estimated from interviews and other statistical sampling methods. There are state programs and the federal Marine Recreational Fisheries Statistics (MRFSS) program to estimate recreational catch. The catch made by or delivered to the at-sea whiting processors is monitored by observers on commercial vessels to monitor discarded catch, sample for catch composition, and collect biological data.

Trawl logbooks have been used to collect tow-by-tow data on trawl fishing effort and retained catch. Data from the three state programs are now mirrored in PacFIN. Statistical analyses to standardize fishing effort over time and between vessels have been conducted by NMFS and academic researchers. Commercial Passenger Fishing Vessels (head boats) have a logbook program in California that has been used in some stock assessments. Logbooks exist for some nontrawl commercial gears in some states, but there is no computerized database or concentrated effort at standardization or compliance.

3.3.2 Stock Status for Pacific Coast Groundfish Species

Each fishing year, the Council uses the best available stock assessment data to evaluate the biological condition of the Pacific Coast groundfish fishery and to develop estimates of ABCs for major groundfish stocks. The ABCs are biologically based estimates of the amount of fish that may be harvested from the fishery each year without jeopardizing the resource. The ABC may be modified to incorporate biological safety factors and risk assessment due to uncertainty.

The ABC for a species or species group is generally derived by multiplying the harvest rate proxy (F_{MSY} proxy) by the exploitable biomass. When setting the 2002 ABCs, the Council maintained a policy of using a default harvest rate as a proxy for the fishing mortality rate (F_{MSY} proxy) that is expected to achieve the maximum sustainable yield. Harvest rate policies must account for several complicating factors, including the age and size at which individuals in a stock reach maturity, the relative fecundity of mature individuals over time, and the optimal stock size for the highest level of productivity within that stock. Default harvest rate proxies were recommended by the Council's Scientific and Statistical Committee (SSC) in 2001 (66 FR 2338, January 11, 2001) continued to be used in 2002. These recommended harvest rate proxies are: $F_{40\%}$ for flatfish and whting, $F_{50\%}$ for rockfish (including thornyheads,) and $F_{45\%}$ for other groundfish such as sablefish and lingcod.

Harvest levels or OYs are established each year for the species or species groups that the Council proposes to manage. Groundfish species and species groups with OYs include bocaccio, canary rockfish, chilipepper rockfish, cowcod, darkblotched rockfish, Dover sole, lingcod, longspine thornyhead, the minor rockfish complexes (northern and southern for nearshore, continental shelf, and continental slope species,) Pacific cod, Pacific ocean perch, Pacific whiting, sablefish, shortbelly rockfish, shortspine thornyhead, splitnose rockfish, widow rockfish, yelloweye rockfish, and yellowtail rockfish. Numerical OYs are not set for every stock, especially where harvest has been less than ABC.

The Magnuson-Stevens Act requires an FMP to prevent overfishing. Overfishing is defined in the National

Standards Guidelines (63 FR 24212, May 1, 1998) as exceeding the fishing mortality rate needed to produce maximum sustainable yield. The OY harvest levels are set at levels that are expected to prevent overfishing, equal to or less than the ABCs. The term "overfished" describes a stock whose abundance is below its overfished/rebuilding threshold. Overfished/rebuilding thresholds are generally linked to the same productivity assumptions that determine the ABC levels. The default value of this threshold is 25% of the estimated unfished biomass level or 50% of B_{MSY}, if known. Nine groundfish species are below the overfished threshold in 2002: bocaccio, canary rockfish, cowcod (south of Point Conception,) darkblotched rockfish, lingcod, Pacific whiting, Pacific ocean perch, widow rockfish, and yelloweye rockfish.

Table 3.2.1 , Summary of Stock Status for Pacific Coast Groundfish Species, summarizes the biological condition of the Pacific Coast groundfish stocks. More detailed information on the status of each of these species or species groups is available in the stock assessments associated with the annual SAFE report, as well as in the Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Proposed Groundfish ABC and OY specifications and management measures for the 2002 Pacific Coast Groundfish Fishery. These documents are available from the Council office.

Table 3.2.2 Summary of Stock Status for Pacific Coast Groundfish Species

Species	Year of Most Recent Stock Assessment	Biomass Estimate (Percent of Unfished)	Did overfishing Occur in 2001? Was the fishing mortality above the MSST[1]?	Is the stock overfished in 2001? Was the Biomass below the MSST threshold?
Roundfish				
Lingcod	2001 revision	15%	No	Yes
Pacific Cod			Unknown	Unknown
Pacific whiting	2002	24%	Yes	Yes
Sablefish	2001	27%-38%	No	No
Flatfish				
Dover sole	2001	29%	No	No
English sole	1993		Unknown	Unknown
Petrale sole	1999	42%	Unknown	Unknown
Arrowtooth flounder	1993		No	No
Other flatfish			Unknown	Unknown
Rockfish				
POP	2000	xxx ? xxx	No	Yes
Shortbelly	1989	>43%	No	No
Widow	2000	24%	No	Yes
Canary	1999	22% North 8% South	No	Yes
Chilipepper	1998	46%-61%	No	No
Bocaccio	1999	2% South	No	Yes
Splitnose	1994		Unknown	Unknown
Yellowtail	2000	63%	No	No

Table 3.2.2 Summary of Stock Status for Pacific Coast Groundfish Species				
Species	Year of Most Recent Stock Assessment	Biomass Estimate (Percent of Unfished)	Did overfishing Occur in 2001? Was the fishing mortality above the MSST[1]?	Is the stock overfished in 2001? Was the Biomass below the MSST threshold?
Shortspine thornyhead	2001	25%-50%	No	No
Longspine thornyhead	1998	>40%	No	No
Darkblotched	2000	12%	No	Yes
Yelloweye	2001	7%	No	Yes
Cowcod	1999	4%-11%	No	Yes
Bank	xxx ? xxx		No	No
Black	1999 & 2001[2]	35%[2]	No	No
Blackgill	1998	51%	Unknown	Unknown
Redstripe			Unknown	Unknown
Sharpchin			Unknown	Unknown
Silvergrey			No	Unknown
Yellowmouth			Unknown	Unknown
Other rockfish			Unknown	Unknown
Other fish			Unknown	Unknown

1) MSST – The minimum stock size threshold (overfished/rebuilding threshold) is the default value of 25% of the estimated unfished biomass level or 50% of B_{MSY}, if known.
2) 2001 update completed for Oregon only.

3.2.3 Groundfish Resources

The Pacific Coast groundfish FMP manages over 80 species which are divided by type as follows: roundfish, flatfish, rockfish, sharks, skates, ratfish, morids, and grenadiers. These species, occur throughout the EEZ and occupy diverse habitats at all stages in their life history. Information on the interactions between the various groundfish species and between groundfish and non-groundfish species varies in completeness. While a few species have been intensely studied, there is relatively little information on most groundfish species

Roundfish

Lingcod (*Ophiodon elongatus*), a top order predator of the family Hexagrammidae, ranges from Baja California to Kodiak Island in the Gulf of Alaska. Lingcod is demersal at all life stages (Allen & Smith 1988, NOAA 1990, Shaw & Hassler 1989). Adult lingcod prefer two main habitat types: slopes of submerged banks 10-70 m below the surface with seaweed, kelp and eelgrass beds and channels with swift currents that flow around rocky reefs (Emmett et al. 1991, Giorgi & Congleton 1984, NOAA 1990, Shaw & Hassler 1989). Juveniles prefer sandy substrates in estuaries and shallow subtidal zones (Emmett et al. 1991, Forrester 1969, Hart 1973, NOAA 1990, Shaw & Hassler 1989). As the juveniles grow they move to deeper waters. Adult lingcod are considered a relatively sedentary species, but there are reports of migrations of greater than 100 km by sexually immature fish (Jagielo 1990, Mathews & LaRiviere 1987, Mathews 1992, Smith et al. 1990).

Mature females live in deeper water than males and move from deep water to shallow water in the winter to spawn (Forrester 1969, Hart 1973, Jagielo 1990, LaRiviere et al. 1980, Mathews & LaRiviere 1987, Mathews 1992, Smith et al. 1990). Mature males may live their whole lives associated with a single rock reef, possibly out of fidelity to a prime spawning or feeding area (Allen & Smith 1988, 298, Shaw & Hassler 1989). Spawning generally occurs over rocky reefs in areas of swift current (Adams 1986, Adams & Hardwick 1992, Giorgi 1981, Giorgi & Congleton 1984, LaRiviere et al. 1980). After the females leave the spawning grounds, the males remain in nearshore areas to guard the nests until the eggs hatch. Hatching occurs in April off Washington but as early as January and as late as June at the geographic extremes of the lingcod range. Males begin maturing at about 2 years (50 cm), whereas females mature at 3+ years (76 cm). In the northern extent of their range, fish mature at an older age and larger size (Emmett et al. 1991, Hart 1973, Mathews & LaRiviere 1987, Miller & Geibel 1973, Shaw & Hassler 1989). The maximum age for lingcod is about 20 years (Adams & Hardwick 1992).

Lingcod are a visual predator, feeding primarily by day. Larvae are zooplanktivores (NOAA 1990). Small demersal juveniles prey upon copepods, shrimps and other small crustaceans. Larger juveniles shift to clupeids and other small fishes (Emmett et al. 1991, NOAA 1990). Adults feed primarily on demersal fishes (including smaller lingcod), squids, octopi and crabs (Hart 1973, Miller & Geibel 1973, Shaw & Hassler 1989). Lingcod eggs are eaten by gastropods, crabs, echinoderms, spiny dogfish, and cabezon. Juveniles and adults are eaten by marine mammals, sharks, and larger lingcod (Miller & Geibel 1973, NOAA 1990)

Pacific Cod (*Gadus macrocephalus*) are widely distributed in the coastal north Pacific, from the Bering Sea to southern California in the east, and to the Sea of Japan in the west. Adult Pacific cod occur as deep as 875 m (Allen & Smith 1988), but the vast majority occurs between 50 and 300 m (Allen & Smith 1988, Hart 1973, Love 1991, NOAA 1990). Along the West Coast, Pacific cod prefer shallow, soft-bottom habitats in marine and estuarine environments (Garrison & Miller 1982), although adults have been found associated with coarse sand and gravel substrates (Palsson 1990, Garrison & Miller 1982). Larvae and small juveniles are pelagic; large juveniles and adults are parademersal (Dunn & Matarese 1987, NOAA 1990). Adult Pacific cod are not considered to be a migratory species. There is however a seasonal bathymetric movement from deep spawning areas of the outer shelf and upper slope in fall and winter to shallow middle-upper shelf feeding grounds in the spring (Dunn & Matarese 1987, Hart 1973, NOAA 1990, Shimada & Kimura 1994).

Pacific cod have external fertilization (Hart 1973, NOAA 1990) and spawning from late fall to early spring. Their eggs are demersal. Larvae may be transported to nursery areas by tidal currents (Garrison & Miller 1982). Half of females are mature by 3 years (55 cm), and half of males are mature by 2 years (45 cm) (Dunn & Matarese 1987, Hart 1973). Juveniles and adults are carnivorous, and feed at night (Allen & Smith 1988, Palsson 1990) with the main part of the adult Pacific cod diet being whatever prey species is most abundant (Kihara & Shimada 1988,Klovach et al. 1995). Larval feeding is poorly understood. Pelagic fish and sea birds eat Pacific cod larvae, while juveniles are eaten by larger demersal fishes, including Pacific cod. Adults are preyed upon by toothed whales, Pacific halibut, salmon shark, and larger Pacific cod (Hart 1973, Love 1991, NOAA 1990, Palsson 1990). The closest competitor of the Pacific cod for resources is the sablefish (Allen 1982).

Pacific Whiting (*Merluccius productus*), also known as Pacific hake, is a semi-pelagic merlucciid (a cod-like fish species) that range from Sanak Island in the western Gulf of Alaska to Magdalena Bay, Baja California Sur. They are most abundant in the California Current System (Bailey 1982, Hart 1973, Love 1991, NOAA 1990). Smaller populations of Pacific whiting occur in several of the larger semi-enclosed inlets of the northeast Pacific Ocean, including the Strait of Georgia, Puget Sound, and the Gulf of California (Bailey et al. 1982, Stauffer 1985). The highest densities of Pacific hake are usually between 50 and 500 m, but adults occur as deep as 920 m and as far offshore as 400 km (Bailey 1982, Bailey et al. 1982, Dark & Wilkins 1994, Dorn 1995, Hart 1973, NOAA 1990, Stauffer 1985). Hake school at depth during the day, then move to the surface and disband at night for feeding (McFarlane & Beamish 1986, Sumida & Moser 1984, Tanasich et al. 1991). Coastal stocks spawn off Baja California in the winter, then the mature adults begin moving northward and inshore, following food supply and Davidson currents (NOAA 1990). Hake reach as far north as southern British Columbia by fall. They then begin the southern migration to spawning grounds and further offshore (Bailey et al. 1982, Dorn 1995, Smith 1995, Stauffer 1985).

Spawning occurs from December through March, peaking in late January (Smith 1995). Pacific hake are oviparous with external fertilization. Eggs of the Pacific hake are neritic and float to neutral buoyancy (Baily 1981, Bailey et al. 1982, NOAA 1990). Hatching occurs in 5-6 days and within 3-4 months juveniles are typically 35 mm (Hollowed 1992). Juveniles move to deeper water as they get older (NOAA 1990). Females off mature at 3-4 years (34-40 cm,) and nearly all males are mature by 3 years (28 cm). Females grow more rapidly than males after four years; growth ceases for both sexes at 10-13 years (Bailey et al. 1982).

All life stages feed near the surface late at night and early in the morning (Sumida & Moser 1984). Larvae eat calanoid copepods, as well as their eggs and nauplii (McFarlane & Beamish 1986, Sumida & Moser 1984). Juveniles and small adults feed chiefly on euphausiids (NOAA 1990). Large adults also eat amphipods, squid, herring, smelt, crabs, and sometimes juvenile hake (Bailey 1982, Dark & Wilkins 1994, McFarlane & Beamish 1986, NOAA 1990). Eggs and larvae of Pacific hake are eaten by pollock, herring, invertebrates, and sometimes hake. Juveniles are eaten by lingcod, Pacific cod and rockfish species. Adults are preyed on by sablefish, albacore, pollock, Pacific cod, marine mammals, soupfin sharks and spiny dogfish (Fiscus 1979, McFarlane & Beamish 1986, NOAA 1990).

Sablefish (*Anoplopoma fimbria*) are abundant in the north Pacific, from Honshu Island, Japan, north to the Bering Sea, and southeast to Cedros Island, Baja California. There are at least three genetically distinct populations off the West Coast of North America: one south of Monterey characterized by slower growth rates and smaller average size, one that ranges from Monterey to the U.S./Canada border that is characterized by moderate growth rates and size, and one ranging off British Columbia and Alaska characterized by fast growth rates and large size. Large adults are uncommon south of Point Conception (Hart 1973, Love 1991, McFarlane & Beamish 1983a, McFarlane & Beamish 1983b, NOAA 1990). Adults are found as deep as 1,900 m, but are most abundant between 200 and 1,000 m (Beamish & McFarlane 1988, Kendall & Matarese 1987, Mason et al. 1983). Off southern California, sablefish were abundant to depths of 1500 m (MBC 1987). Adults and large juveniles commonly occur over sand and mud (McFarlane & Beamish 1983a, NOAA 1990) in deep marine waters. They were also reported on hard-packed mud and clay bottoms in the vicinity of submarine canyons (MBC 1987).

Spawning occurs annually in the late fall through winter in waters greater than 300 m (Hart 1973, NOAA 1990). Sablefish are oviparous with external fertilization (NOAA 1990). Eggs hatch in about 15 days (Mason et al. 1983, NOAA 1990) and are demersal until the yolk sac is absorbed (Mason et al. 1983). After yolk sac is absorbed, the age-0 juveniles become pelagic. Older juveniles and adults are benthopelagic. Larvae and small juveniles move inshore after spawning and may rear for up to four years (Boehlert & Yoklavich 1985, Mason et al. 1983). Older juveniles and adults inhabit progressively deeper waters. The best estimates indicate that 50% of females are mature at 5-6 years (24 inches), and 50% of males are mature at 5 years (20 inches).

Sablefish larvae prey on copepods and copepod nauplii. Pelagic juveniles feed on small fishes and cephalopods, mainly squids (Hart 1973, Mason et al. 1983). Demersal juveniles eat small demersal fishes, amphipods and krill (NOAA 1990). Adult sablefish feed on fishes like rockfishes and octopus (Hart 1973, McFarlane & Beamish 1983a). Larvae and pelagic juvenile sablefish are heavily preyed upon by sea birds and pelagic fishes. Juveniles are eaten by Pacific cod, Pacific halibut, lingcod, spiny dogfish, and marine mammals, such as Orca whales (Cailliet et al. 1988, Hart 1973, Love 1991, Mason et al. 1983, NOAA 1990). Sablefish compete with many other co-occurring species for food, mainly Pacific cod and spiny dogfish (Allen 1982).

Flatfish

Dover Sole (*Microstomus pacificus*) are distributed from the Navarin Canyon in the northwest Bering Sea and westernmost Aleutian Islands to San Cristobal Bay, Baja California (Hagerman 1952, Hart 1973, NOAA 1990). Dover sole are a dominant flatfish on the continental shelf and slope from Washington to southern California. Adults are demersal and are found from 9-1,450 m, with highest abundance below 200-300 m (Allen & Smith 1988). Adults and juveniles, show a high affinity toward soft bottoms of fine sand and mud. Juveniles are often found in deep nearshore waters. Dover sole are considered to be a migratory species. In the summer and fall, mature adults and juveniles can be found in shallow feeding grounds, as shallow as 55 m off British Columbia (Westrheim & Morgan 1963). By late fall, the Dover sole begin moving offshore into deep waters (400 m or more) to spawn. Although there is an inshore-offshore seasonal migration, little north-south coastal migration occurs (Westrheim & Morgan 1963)

Spawning occurs from November-April off Oregon and California (Hart 1973, NOAA 1990, Pearcy et al. 1977) in waters 80-550 m depth at or near the bottom (Hagerman 1952, Hart 1973, Pearcy et al. 1977). Dover sole are oviparous; fertilization is external. Larvae are planktonic, being transported offshore and to nursery areas by ocean currents and winds for up to two years. Settlement to benthic living occurs mid-autumn to early spring off Oregon, and February-July off California (Markle et al 1992). Juvenile fish move into deeper water with age, and begin seasonal spawning-feeding migrations upon reaching maturity.

Dover sole larvae eat copepods, eggs and nauplii, as well as other plankton. Juveniles and adults eat polychaetes, bivalves, brittlestars and small benthic crustaceans. Dover sole feed diurnally by sight and smell (Dark & Wilkins 1994, Gabriel & Pearcy 1981, Hart 1973, NOAA 1990). Dover sole larvae are eaten by pelagic fishes like albacore, jack mackerel and tuna, as well as sea birds. Juveniles and adults are preyed upon by sharks, demersally feeding marine mammals, and to some extent by sablefish (NOAA 1990). Dover sole compete with various eelpout species, rex sole, English sole, and other fishes of the mixed species flatfish assemblage (NOAA 1990).

English Sole (*Parophrys vetulus*) are found from Nunivak Island in the southeast Bering Sea and Agattu Island in the Aleutian Islands, to San Cristobal Bay, Baja California Sur (Allen & Smith 1988). In research survey data, nearly all occurred at depths <250 m (Allen & Smith 1988). Adults and juveniles prefer soft bottoms composed of fine sands and mud (Ketchen 1956), but also occur in eelgrass habitats (Pearson & Owen 1992). English sole uses nearshore coastal and estuarine waters as nursery areas (Krygier & Pearcy 1986, Rogers et al. 1988). Adults make limited migrations. Those off Washington show a northward post-spawning migration in the spring on their way to summer feeding grounds, and a southerly movement in the fall (Garrison & Miller 1982). Tagging studies have identified separate stocks based on this species' limited movements and meristic characteristics (Jow 1969).

Spawning occurs over soft-bottom mud substrates (Ketchen 1956) from winter to early spring depending on the stock. Eggs are neritic and buoyant, but sink just before hatching (Hart 1973), juveniles and adults are demersal (Garrison & Miller 1982). Small juveniles settle in the estuarine and shallow nearshore areas all along the coast, but are less common in southerly areas, particularly south of Point Conception. Large juveniles commonly occur up to depths of 150 m. Although many postlarvae may settle outside of estuaries, most will enter estuaries during some part of their first year of life (Gunderson et al. 1990). Some females mature as 3-year-olds (26 cm), but all females over 35 cm long are mature. Males mature at 2 years (21 cm).

Larvae are planktivorous. Juveniles and adults are carnivorous, eating copepods, amphipods, cumaceans, mysids, polychaetes, small bivalves, clam siphons, and other benthic invertebrates (Allen 1982, Becker 1984, Hogue & Carey 1982, Simenstad et al. 1079) . English sole feed primarily by day, using sight and smell,and sometimes dig for prey (Allen 1982, Hulberg & Oliver 1979). A juvenile English sole's main predators are probably piscivorous birds such as great blue heron (Ardia herodias), larger fishes and marine mammals. Adults may be eaten by marine mammals, sharks, and other large fishes.

Petrale Sole (*Eopsetta jordani*) are found form Cape St. Elias, Alaska to Coronado Island, Baja California. The range may possibly extend into the Bering Sea, but the species is rare north and west of southeast Alaska and in the inside waters of British Columbia (Garrison & Miller 1982, Hart 1973). Nine separate breeding stocks have been identified, although stocks intermingle on summer feeding grounds (Hart 1973, NOAA 1990). Of these nine, one occurs off British Columbia, two off Washington, two off Oregon and four off California (NOAA 1990). Adults are found from the surf line to 550 m, but their highest abundance is <300 m (NOAA 1990). Adults migrate seasonally between deepwater, winter spawning areas to shallower, spring feeding grounds (NOAA 1990). They show an affinity to sand, sandy mud and occasionally muddy substrates (NOAA 1990).

Spawning occurs over the continental shelf and continental slope to as deep as 550 m. Eggs are pelagic and juveniles and adults are demersal (Garrison & Miller 1982). Eggs and larvae are transported from offshore spawning areas to nearshore nursery areas by oceanic currents and wind. Larvae metamorphose into juveniles at six months (22 cm) and settle to the bottom of the inner continental shelf (Pearcy et al. 1977). Petrale sole tend to move into deeper water with increased age and size. Petrale sole begin maturing at three years. Half of males mature by seven years (29-43 cm) and half of the females are mature by eight years (>44 cm) (Pedersen 1975a, Pedersen 1975b). Near the Columbia River, petrale sole mature one to two years earlier (Pedersen 1975a, Pedersen 1975b).

Larvae are planktivorous. Small juveniles eat mysids, sculpins and other juvenile flatfishes. Large juveniles and adults eat shrimps and other decapod crustaceans, as well as euphausiids, pelagic fishes, ophiuroids and juvenile petrale sole (Garrison & Miller 1982, Hart 1973, 162, NOAA 1990, Pearcy et al. 1977, Pedersen 1975a, Pedersen 1975b). Petrale sole eggs and larvae are eaten by planktivorous invertebrates and pelagic fishes. Juveniles are preyed upon (sometimes heavily) by adult petrale sole, as well as other large flatfishes. Adults are preyed upon by sharks, demersally feeding marine mammals, and larger flatfishes and pelagic fishes (NOAA 1990). Petrale sole competes with other large flatfishes. It has the same summer feeding grounds as lingcod, English sole, rex sole and Dover sole (NOAA 1990).

Arrowtooth Flounder (*Atheresthes stomias*) range from the southern coast of Kamchatka to the northwest Bering Sea and Aleutian Islands to San Simeon, California. Arrowtooth flounder is the dominant flounder species on the outer continental shelf from the western Gulf of Alaska to Oregon. Eggs and larvae are pelagic; juveniles and adults are demersal (Garrison & Miller 1982, NOAA 1990). Juveniles and adults are most commonly found on sand or sandy gravel substrates, but occasionally occur over low-relief rock-sponge bottoms Arrowtooth flounder exhibit a strong migration from shallow water summer feeding grounds on the continental shelf to deep water spawning grounds over the continental slope (NOAA 1990). Depth distribution may vary from as little as 50 m in summer to more than 500 m in the winter (NOAA 1990, Rickey 1995).

Arrowtooth flounder are oviparous with external fertilization (Barry 1996). Spawning may occur deeper than 500 m off Washington (Rickey 1995). Larvae eat copepods, their eggs and copepod nauplii (Yang 1995; Yang & Livingston 1985). Juveniles and adults feed on crustaceans (mainly ocean pink shrimp and krill) and fish (mainly gadids, herring and pollock) (Hart 1973, NOAA 1990). Arrowtooth flounder exhibit two feeding peaks, at noon and midnight

"Other Flatfish" are those species that do not have individual ABC/OYs and include butter sole, curlfin sole, flathead sole, Pacific sand dab, rex sole, rock sole, sand sole, and starry flounder. Life history descriptions of these species may be found in the Essential Fish Habitat West Coast Groundfish which was prepared for amendment 11 to the FMP. This document may be requested from the Council office and is available http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html

Rockfish

Pacific ocean perch (*Sebastes alutus*) are found from La Jolla (southern California) to the western boundary of the Aleutian Archipelago (Eschmeyer et al 1983, Gunderson 1971, Ito 1986, Miller & Lea 1972), but are common from Oregon northward (Eschmeyer et al 1983). Pacific ocean perch primarily inhabit waters of the upper continental slope (Dark & Wilkins 1994) and are found along the edge of the continental shelf (Archibald et al. 1983). Pacific ocean perch occur as deep as 825 m, but usually are at 100-450 m and along submarine canyons and depressions (NOAA 1990). Larvae and juveniles are pelagic; subadults and adults are benthopelagic. Adults form large schools 30 m wide, to 80 m deep, and as much as 1,300 m long (NOAA 1990). They also form spawning schools (Gunderson 1971). Juvenile Pacific ocean perch form ball-shaped schools near the surface or hide in rocks (NOAA 1990). Throughout its range, Pacific ocean perch is generally associated with gravel, rocky or boulder type substrate found in and along gullies, canyons, and submarine depressions of the upper continental slope (Ito 1986).

Pacific ocean perch winter and spawn in deeper water (>275 m), then move to feeding grounds in shallower water (180-220 m) in the summer (June-August) to allow gonads to ripen (Archibald et al. 1983, Gunderson 1971, NOAA 1990). Pacific ocean perch are slow-growing and long-lived. The maximum age has been estimated at about 90 years (ODFW, personal communication). Largest size is about 54 cm and 2 kg (Archibald et al. 1983, Beamish 1979, Eschmeyer et al. 1983, Ito 1986, Mulligan & Leaman 1992, NOAA 1990, Richards 1994). Pacific ocean perch are carnivorous. Larvae eat small zooplankton. Small juveniles eat copepods, and larger juveniles feed on euphausiids. Adults eat euphausiids, shrimps, squids, and small fishes. Immature fish feed throughout the year, but adults feed only seasonally, mostly April-August (NOAA 1990). Predators of Pacific ocean perch include sablefish and Pacific halibut.

Shortbelly rockfish (*Sebastes jordani*) are found from San Benito Islands, Baja California, Mexico to La Perouse Bank, British Columbia (Eschmeyer et al 1983, Lenarz 1980). The habitat of the shortbelly rockfish is wide ranging (Eschmeyer et al 1983). Shortbelly rockfish inhabit waters from 50-350 m in depth (Allen & Smith 1988) on the continental shelf (Chess et al. 1988) and upper-slope (Stull & Tang 1996). Adults commonly form very large schools over smooth bottom near the shelf break (Lenarz 1992). Shortbelly rockfish have also been observed along the Monterey Canyon ledge (Sullivan 1995). During the day shortbelly rockfish are found near the bottom in dense aggregations. At night they are more dispersed. (Chess et al 1988). During the summer shortbelly rockfish tend to move into deeper waters and to the north as they grow, but they do not make long return migrations to the south in the winter to spawn (Lenarz 1980).

Shortbelly rockfish are viviparous, bearing advanced yolk-sac larvae (Ralston et al 1996). Shortbelly rockfish spawn off California during January through April (Lenarz 1992). Larvae metamorphose to juveniles at 27 mm and appear to begin forming schools at the surface at that time (Laidig et al. 1991, Lenarz 1980). A few shortbelly rockfish mature at age 2, while 50% are mature at age 3 and nearly all are mature by age 4 (Lenarz 1992). They live to be about 10 years old (Lenarz 1980, MacGregor 1986) with the maximum recorded age being 22 years (Lenarz 1992).

Shortbelly rockfish feed primarily on various life stages of euphausiids and calanoid copepods both during the day and night (Chess et al. 1988, Lenarz et al. 1991). Shortbelly rockfish play a key role in the food chain, as they are preyed upon by chinook and coho salmon, lingcod, black rockfish, hake, bocaccio, chilipepper, pigeon guillemots, western gull, marine mammals, and others (Chess et al. 1988, Eschmeyer et al. 1983, Hobson & Howard 1989, Lenarz 1980).

Widow rockfish (*Sebastes entomelas*) range from Albatross Bank of Kodiak Island to Todos Santos Bay, Baja California (Eschmeyer et al. 1983, 176, Miller & Lea 1972, NOAA 1990). Widow rockfish occur over hard bottoms along the continental shelf (NOAA 1990) Widow rockfish prefer rocky banks, seamounts, ridges near canyons, headlands, and muddy bottoms near rocks. Large widow rockfish concentrations occur off headlands such as Cape Blanco, Cape Mendocino, Pt. Reyes, and Pt. Sur. Adults form dense, irregular, midwater and semi-demersal schools deeper than 100 m at night and disperse during the day

(Eschmeyer et al. 1983, NOAA 1990, Wilkins 1986). All life stages are pelagic, but older juveniles and adults are often associated with the bottom (NOAA 1990). All life stages are fairly common from Washington to California (NOAA 1990). Pelagic larvae and juveniles co-occur with yellowtail rockfish, chilipepper, shortbelly rockfish, and bocaccio larvae and juveniles off central California (Reilly et al 1992).

Widow rockfish are viviparous, have internal fertilization, and brood their eggs until released as larvae (NOAA 1990, Ralston et al 1996, Reilly et al 1992). Mating occurs from late fall-early winter. Larval release occurs from December-February off California, and from February-March off Oregon. Juveniles are 21-31 mm at metamorphosis, and they grow to 25-26 cm over 3 years. Age and size at sexual maturity varies by region and sex, generally increasing northward and at older ages and larger sizes for females. Some mature in 3 years (25-26 cm), 50% are mature by 4-5 years (25-35 cm), and most are mature in 8 years (39-40 cm) (28, NOAA 1990). The maximum age of widow rockfish is 28 years, but rarely over 20 years for females and 15 years for males (NOAA 1990). The largest size is 53 cm, about 2.1 kg (Eschmeyer et al. 1983, NOAA 1990).

Widow rockfish are carnivorous. Adults feed on small pelagic crustaceans, midwater fishes (such as age-1 or younger Pacific hake), salps, caridean shrimp, and small squids (Adams 1987, NOAA 1990). During spring, the most important prey item is salps, during the fall fish are more important, and during the winter widow rockfish primarily eat sergestid shrimp (Adams 1987). Feeding is most intense in the spring after spawning (NOAA 1990). Pelagic juveniles are opportunistic feeders and their prey consists of various life stages of calanoid copepods, and euphausiids (Reilly et al. 1992).

Canary Rockfish (*Sebastes pinniger*) are found between Cape Colnett, Baja California, and southeastern Alaska (Boehlert 1980, Boehlert & Kappenman 1980, Hart 1973, Love 1991,Miller & Lea 1972, Richardson & Laroche 1979). There is a major population concentration of canary rockfish off Oregon (Richardson & Laroche 1979). Canary primarily inhabit waters 91-183 m deep (Boehlert & Kappenman 1980). In general, canary rockfish inhabit shallow water when they are young and deep water as adults (Mason 1995). Adult canary rockfish are associated with pinnacles and sharp drop-offs (Love 1991). Canary rockfish are most abundant above hard bottoms (Boehlert & Kappenman 1980). In the southern part of its range, the canary rockfish appears to be a reef-associated species (Boehlert 1980). In central California, newly settled canary rockfish are first observed at the seaward, sand-rock interface and farther seaward in deeper water (18-24 m).

Canary rockfish are ovoviviparous and have internal fertilization (Boehlert & Kappenman 1980, Richardson & Laroche 1979). Off California, canary rockfish spawn from November-March and from January-March off Oregon and, Washington, (Hart 1973, Love 1991, Richardson & Laroche 1979). The age of 50% maturity of canary rockfish is 9 years; nearly all are mature by age 13 . The maximum length canary rockfish grow to is 76 cm (Boehlert & Kappenman 1980, Hart 1973, Love 1991). Canary rockfish primarily prey on planktonic creatures, such as krill, and occasionally on fish (Love 1991). Canary rockfish feeding increases during the spring-summer upwelling period when euphausiids are the dominant prey and the frequency of empty stomachs is lower (Boehlert et al. 1989).

Chilipepper rockfish (*Sebastes goodei*) are found from Magdalena Bay, Baja California, to as far north as the northwest coast of Vancouver Island, British Columbia (Allen & Smith 1988, Hart 1973, Miller & Lea 1972). Chilipepper have been taken as deep as 425 m, but nearly all in survey catches were taken between 50 and 350 m (Allen & Smith 1988). Adults and older juveniles usually occur over the shelf and slope; larvae and small juveniles are generally found near the surface. In California, chilipepper are most commonly found associated with deep, high relief rocky areas and along cliff drop-offs (Love et al. 1990), as well as on sand and mud bottoms (MBC 1987). They are occasionally found over flat, hard substrates (Love et al. 1990). Love (Love 1981) does not consider this to be a migratory species. Chilipepper may migrate as far as 45 m off the bottom during the day to feed (Love 1981).

Chilipeppers are ovoviviparous, and eggs are fertilized internally (Reilly et al. 1992). Chilipepper school by sex just prior to spawning (MBC 1987). In California, fertilization of eggs begins in October ands spawning occurs from September to April (Oda 1992) with the peak being December to January (Love et al. 1990). Chilipepper may spawn multiple broods in a single season (Love et al. 1990). Females of the species are significantly larger, reaching lengths of up to 56 cm (Hart 1973). Males are usually smaller than 40 cm (Dark & Wilkins 1994). Males mature at 2 to 6 years of age and 50% are mature at 3 to 4 years. Females mature at 2 to 5 years with 50% mature at 3 to 4 years (MBC 1987). Females may attain an age of about 27 years whereas the maximum age for males is about 12 years (MBC 1987).

Larval and juvenile chilipepper eat all life stages of copepods and euphausiids, and are considered to be somewhat opportunistic feeders (Reilly et al. 1992). In California, adults prey on large euphausiids, squid, and small fishes such as anchovies, lanternfish and young hake (Hart 1973, Love et al. 1990). Chilipepper are found with widow rockfish, greenspotted rockfish, and swordspine rockfish (Love et al. 1990). Juvenile chilipepper compete for food with bocaccio, yellowtail rockfish, and shortbelly rockfish (Reilly et al. 1992).

<u>Bocaccio rockfish</u> (*Sebastes paucispinis*) are found in the Gulf of Alaska off Krozoff and Kodiak Islands, south as far as Sacramento Reef, Baja California (Hart 1973, Miller & Lea 1972). In survey catches, Allen and Smith (1988) found bocaccio to be most common at 100-150 m over the outer continental shelf. Sakuma and Ralston (1995) categorized bocaccio as both a nearshore and offshore species. Larvae and small juveniles are pelagic (Garrison & Miller 1982) and are commonly found in the upper 100 m of the water column, often far from shore (MBC 1987). Large juveniles and adults are semi-demersal and are most often found in shallow coastal waters over rocky bottoms associated with algae (Sakuma & Ralston). Adults are commonly found in eelgrass beds, or congregated around floating kelp beds (Love et al. 1990, Sakuma & Ralston). Young and adult bocaccio also occur around artificial structures, such as piers and oil platforms (MBC 1987). Although juveniles and adults are usually found around vertical relief, adult aggregations also occur over firm sand-mud bottoms (MBC 1987). Bocaccio move into shallow waters during their first year of life (Hart 1973), then move into deeper water with increased size and age (Garrison & Miller 1982).

Bocaccio are ovoviviparous (Garrison & Miller 1982, Hart 1973). Love et al. (1990) reported the spawning season to be protracted and last almost year-round (>10 months). Parturition occurs during January to April off Washington, November to March off northern and central California, and October to March off southern California (MBC 1987). Two or more broods may be born in a year in California (Love et al. 1990). The spawning season is not well known in northern waters. Males mature at 3 to 7 years with 50% mature in 4 to 5 years. Females mature at 3 to 8 years with 50% mature in 4 to 6 years(MBC 1987).

Larval bocaccio often eat diatoms, dinoflagellates, tintinnids, and cladocerans (Sumida & Moser 1984). Copepods and euphausiids of all life stages (adults, nauplii and egg masses) are common prey for juveniles (Sumida & Moser 1984). Adults eat small fishes associated with kelp beds, including other species of rockfishes, and occasionally small amounts of shellfish (Sumida & Moser 1984). Bocaccio are eaten by sharks, salmon, other rockfishes, lingcod and albacore, as well as sea lions, porpoises, and whales (MBC 1987). Bocaccio directly compete with chilipepper and widow, yellowtail, and shortbelly rockfishes for both food and habitat resources (Reilly et al. 1992).

<u>Splitnose rockfish</u> (*Sebastes diploproa*) occur from Prince William Sound, Alaska to San Martin Island, Baja California (Miller & Lea 1972). Splitnose rockfish occur from 0-800 m, with most of survey catches occurring in depths of 100-450 m (Allen & Smith 1988). The relative abundance of juveniles (<21 cm) is quite high in the 91-272 m depth zone and then decreases sharply in the 274-475 m depth zone (Boehlert 1980). Splitnose rockfish have a pelagic larval stage and prejuvenile stage, and a benthic juvenile stage (Boehlert 1977). Benthic splitnose rockfish associate with mud habitats (Boehlert 1980). Young occur in shallow water, often at the surface under drifting kelp (Eschmeyer et al. 1983). The major types of vegetation juveniles are found under are Fucus sp. (dominant), eelgrass, and bull kelp (Schaffer et al 1995). Juvenile splitnose rockfish off southern California are the dominant rockfish species found under drifting kelp (Boehlert 1977).

Splitnose are ovoviviparous and release yolk sac larvae (Boehlert 1977). They may have two parturition seasons, or may possibly release larvae throughout the year (Boehlert 1977). In general, the main parturition season get progressively shorter and later toward the north (Boehlert 1977). Splitnose rockfish growth rates vary with latitude, being generally faster in the north. Splitnose mean sizes increase with depth in a given latitudinal area. Mean lengths of females are generally greater than males (Boehlert 1980). Off California, 50% maturity occurs at 21 cm, or 5 years of age, whereas off British Columbia 50% of males and females are mature at 27 cm (Hart 1973). Adults can achieve a maximum size of 46 cm (Boehlert 1980, Eschmeyer et al. 1983, Hart 1973). Females have surface ages to 55 years and section ages to 81 years.

Adult splitnose rockfish off southern California feed on midwater plankton, primarily euphausiids (Allen 1982). Juveniles feed mainly on planktonic organisms, including copepods and cladocerans during June and August. In October, their diets shift to larger epiphytic prey and are dominated by a single amphipod species. Juvenile splitnose rockfish actively select prey (Schaffer et al. 1995) and are probably diurnally active (Allen 1982). Adults are probably nocturnally active, at least in part (Allen 1982).

Yellowtail rockfish (*Sebastes flavidus*) range from San Diego, California, to Kodiak Island, Alaska (Fraidenburg 1980, Gotshall 1981, Lorz et al. 1983, Love 1991, Miller & Lea 1972, Norton & MacFarlane 1995). The center of yellowtail rockfish abundance is from Oregon to British Columbia (Fraidenburg 1980). Yellowtail rockfish are a common, demersal species abundant over the middle shelf (Carlson 1972, Fraidenburg 1980, Tagert 1991, Weinberg 1994). Yellowtail rockfish are most common near the bottom, but not on the bottom (Love 1991, Stanely et al. 1994). Yellowtail adults are considered semi-pelagic (Stanely et al. 1994, Stein et al. 1992) or pelagic which allows them to range over wider areas than benthic rockfish (Pearcy 1992). Adult yellowtail rockfish occur along steeply sloping shores or above rocky reefs (Hart 1973). They can be found above mud with cobble, boulder and rock ridges, and sand habitats; they are not, however, found on mud, mud with boulder, or flat rock (Love 1991, Stein et al. 1992). Yellowtail rockfish form large (sometimes greater than 1,000 fish) schools and can be found alone or in association with other rockfishes (Love 1991, Pearcy 1992, Rosenthal et al. 1982, Stein et al. 1992, Tagert 1991). These schools may persist at the same location for many years (Pearcy 1992).

Yellowtail rockfish are viviparous (Norton & MacFarlane 1995) and mate from October to December. Parturition peaks in February and March and from November-March off California (Westrheim 1975). Young-of-the-year pelagic juveniles often appear in kelp beds beginning in April and live in and around kelp, in midwater during the day, descending to the bottom at night (Love 1991, Tagert 1991). Male yellowtail rockfish are 34-41 cm in length (5-9 years) at 50% maturity, females are 37-45 cm (6-10 years) (Tagert 1991). Yellowtail rockfish are long-lived and slow-growing; the oldest recorded was 64 years old (Fraidenburg 1981, Tagert 1991). Even though they are slow growing, like other rockfish, they have a high growth rate when compared to other rockfish (Tagert 1991). They reach a maximum size of about 55 cm in approximately 15 years (Tagert 1991). Yellowtail rockfish feed mainly on pelagic animals, but are opportunistic, occasionally eating benthic animals as well (Lorz et al. 1983). Large juveniles and adults eat fish (small hake, Pacific herring, smelt, anchovies, lanternfishes, and others), along with squid, krill, and other planktonic organisms (euphausiids, salps, and pyrosomes) (Love 1991, Phillips 1964, Rosenthal et al. 1982, Tagert 1991).

Shortspine Thornyhead (*Sebastolobus alascanus*) are found from northern Baja California to the Bering Sea and occasionally to the Commander Islands north of Japan (Jacobson & Vetter 1996). They are common from southern California northward (Love 1991). Shortspine thornyhead inhabit areas over the continental shelf and slope (Erickson & Pikitch 1993, Wakefield & Smith 1990). Although they can occur as shallow as 26 m (Eschmeyer et al. 1983), shortspine thornyhead mainly occur between 100 and 1400 m off Oregon and California, most commonly between 100-1000 m (Jacobson & Vetter 1996).

Spawning occurs in February and March off California (Wakefield & Smith 1990). Shortspine thornyhead are thought to be oviparous (Wakefield & Smith 1990), although there is no clear evidence to substantiate this (Erickson & Pikitch 1993). Eggs rise to the surface to develop and hatch. Larvae are pelagic for about

12-15 months. During January to June, juveniles settle onto the continental shelf and then move into deeper water as they become adults (Jacobson & Vetter 1996). Off California, they begin to mature at 5 years; 50% are mature by 12-13 years; and all are mature by 28 years (Owen & Jacobson 1992). Although it is difficult to determine the age of older individuals, Owen and Jacobson (Owen & Jacobson 1992) report that off California, they may live to over 100 years of age. The mean size of shortspine thornyhead increases with depth and is greatest at 1000-1400 m (Jacobson & Vetter 1996).

Benthic individuals are sit-and-wait predators that rest on the bottom and remain motionless for extended periods of time (Jacobson & Vetter 1996). Off Alaska, shortspine thornyhead eat a variety of invertebrates such as shrimps, crabs, and amphipods, as well as fishes and worms (Owen & Jacobson 1992)._ Longspine thornyhead are a common item found in the stomachs of shortspine thornyhead. Cannibalism of newly settled juveniles is important in the life history of thornyheads (Jacobson & Vetter 1996).

<u>*Longspine Thornyhead*</u> (*Sebastolobus altivelis*) are found from the southern tip of Baja California to the Aleutian Islands (Eschmeyer et al. 1983, Jacobson & Vetter 1996, Love 1991, Miller & Lea 1972, Smith & Brown 1983) but are abundant from southern California northward (Love 1991). Juvenile and adult longspine thornyhead are demersal and occupy the sediment surface (Smith & Brown 1983). Off Oregon and California, longspine thornyhead mainly occur at depths of 400-1400+ m, most between 600 and 1000 m in the oxygen minimum zone (Jacobson & Vetter 1996). Thornyhead larvae (Sebastolobus spp.) have been taken in research surveys up to 560 km off the California coast (Cross 1987, Moser et al. 1993). Juveniles settle on the continental slope at about 600-1200 m (Jacobson & Vetter 1996). Longspine thornyhead live on soft bottoms, preferably sand or mud (Eschmeyer et al. 1983, Jacobson & Vetter 1996, Love 1991). Longspine thornyheads neither school nor aggregate (Jacobson & Vetter 1996).

Spawning occurs spawn in February and March at 600-1000 m (Jacobson & Vetter 1996, Wakefield & Smith 1990). Longspine thornyhead are oviparous and are multiple spawners, spawning 2-4 batches per season (Love 1991, Wakefield & Smith 1990). Eggs rise to the surface to develop and hatch. Floating egg masses can be seen at the surface in March, April, and May (Wakefield & Smith 1990). Juveniles (<5.1 cm long) occur in midwater (Eschmeyer et al. 1983). After settling, longspine thornyhead are completely benthic (Jacobson & Vetter 1996). Longspine thornyhead can grow to 38 cm (Eschmeyer et al. 1983, Jacobson & Vetter 1996, Miller & Lea 1972) and live more than 40 years (Jacobson & Vetter 1996). Longspine thornyhead reach the onset of sexual maturity at 17-19 cm TL (10% of females mature) and 90% are mature by 25-27 cm (Jacobson & Vetter 1996).

Longspine thornyhead are sit-and-wait predators (Jacobson & Vetter 1996). They consume fish fragments, crustaceans, bivalves, and polychaetes and occupy a tertiary consumer level in the food web. Pelagic juveniles prey largely on herbivorous euphausiids and occupy a secondary consumer level in the food web (Love 1991, Smith & Brown 1983). Longspine thornyhead are commonly seen in shortspine thornyhead stomachs. Cannibalism in newly settled longspine thornyhead may occur because juveniles settle directly onto adult habitat (Jacobson & Vetter 1996). Sablefish commonly prey on longspine thornyhead.

<u>*Darkblotched rockfish*</u> *(Sebastes crameri)* are found from Santa Catalina Island off southern California to the Bering Sea (Miller & Lea 1972, Richardson & Laroche 1979). Off Oregon, Washington, and British Columbia it is primarily an outer shelf/upper slope species (Richardson & Laroche 1979). Distinct population groups have been found off the Oregon coast between lat. 44 30' and 45 20'N (Richardson & Laroche 1979). Adults occur in depths of 25-600 m and 95% are between 50 and 400 m (Allen & Smith 1988). Off central California, young darkblotched rockfish recruit to soft substrate and low (<1 m) relief reefs (Love et al. 1991). Darkblotched rockfish make limited migrations after they have recruited to the adult stock (Gunderson 1997).

Darkblotched rockfish are viviparous (Nichol & Pickitch 1994). Insemination of female darkblotched rockfish occurs from August to December, fertilization and parturition occurs from December to March off Oregon and California, primarily in February off Oregon and Washington (Hart 1973, Nichol & Pickitch 1994, Richardson & Laroche 1979). Females attain 50% maturity at a greater size (36.5 cm) and age (8.4

years) than males (29.6 cm and 5.1 years) (Nichol & Pickitch 1994). Adults can grow to 57 cm (Hart 1973). Pelagic young are food for albacore (Hart 1973).

Yelloweye rockfish (*Sebastes ruberrimus*) range from the Aleutian Islands, Alaska to northern Baja California; they are common from central California northward to the Gulf of Alaska (Eschmeyer et al. 1983, Hart 1973, Love 1991, Miller & Lea 1972, O'Connell & Funk 1986). Yelloweye rockfish occur in water 25-550 m deep; 95% of survey catches occurred from 50 to 400 m (Allen & Smith 1988). Yelloweye rockfish are bottom dwelling, generally solitary, rocky reef fish, found either on or just over reefs (Eschmeyer et al. 1983, Love 1991, O'Connell & Funk 1986). Boulder areas in deep water (>180 m) are the most densely-populated habitat type and juveniles prefer shallow-zone broken-rock habitat (O'Connell & Carlile 1993). They also reportedly occur around steep cliffs and offshore pinnacles (Rosenthal et al. 1982). The presence of refuge spaces is an important factor affecting their occurrence (O'Connell & Carlile 1993).

Yelloweye rockfish are ovoviviparous and give birth to live young in June off Washington (Hart 1973). The age of first maturity is estimated at 6 years and all are estimated to be mature by 8 years (Echeverria 1987). Yelloweye rockfish can grow to 91 cm (Eschmeyer et al. 1983, Hart 1973). Males and females probably grow at the same rates (Love 1991, O'Connell & Funk 1986). The growth rate of yelloweye rockfish levels off at approximately 30 years of age (O'Connell & Funk 1986). Yelloweye rockfish can live to be 114 years old (Love 1991, O'Connell & Funk 1986). Yelloweye rockfish are a large predatory reef fish that usually feeds close to the bottom (Rosenthal et al. 1988). They have a widely varied diet, including fish, crabs, shrimps and snails, rockfish, cods, sand lances and herring (Love 1991). Yelloweyes have been observed underwater capturing smaller rockfish with rapid bursts of speed and agility. Off Oregon the major food items of the yelloweye rockfish include cancroid crabs, cottids, righteye flounders, adult rockfishes, and pandalid shrimps (Steiner 1978). Quillback and yelloweye rockfish have many trophic features in common (Rosenthal et al. 1988).

Cowcod (*Sebastes levis*) occur from Ranger Bank and Guadalupe Island, Baja California to Usal, Mendocino County, California (Miller & Lea 1972). Cowcod range from 21 to 366 m (Miller & Lea 1972) and is considered to be parademersal (transitional between a midwater pelagic and benthic species). Adults are commonly found at depths of 180-235 m and juveniles are most often found in 30-149 m of water (Love et al. 1990). MacGregor (MacGregor 1986) found that larval cowcod are almost exclusively found in southern California and may occur many miles offshore. Adult cowcod are primarily found over high relief rocky areas (Allen 1982); they are generally solitary, but occasionally aggregate (Love et al. 1990). Solitary subadult cowcod have been found in association with large white sea anemones on outfall pipes in Santa Monica Bay (Allen 1982). Juveniles occur over sandy bottom and solitary ones have been observed resting within a few centimeters of soft-bottom areas where gravel or other low relief was found (Allen 1982). Although the cowcod is generally not migratory; it may move to some extent to follow food (Love 1980). Cowcod are ovoviviparous, and large females may produce up to three broods per season (Love et al. 1990). Spawning peaks in January in the Southern California Bight (MacGregor 1986). Cowcod grow to 94 cm (Allen 1982). Larvae are extruded at about 5.0 mm (MacGregor 1986). Juveniles eat shrimp and crabs and adults eat fish, octopus, and squid (Allen 1982).

Bank rockfish (*Sebastes rufus*) are found from Newport, Oregon, to central Baja California, most commonly from Fort Bragg southward (Love 1992). Bank rockfish occur offshore (Eschmeyer et al. 1983) from depths of 31 to 247 m (Love 1992), although adults prefer depths over 210 m (Love et al. 1990). Observations of commercial catches indicate juveniles occupy the shallower part of the species range (Love et al. 1990). Bank rockfish are a midwater, aggregating species that is found over hard bottom (Love 1992), over high relief or on bank edges (Love et al. 1990), and along the ledge of Monterey Canyon (Sullivan 1995). It also frequents deep water over muddy or sandy bottom (Miller & Lea 1972). Spawning ranges from December to May (Love et al. 1990). Peak spawning in the Southern California Bight is January, in central and northern California it is February. Off California, bank rockfish are multiple brooders (Love et al. 1990). Females grow to a larger maximum size (50 cm) than males (44 cm), but grow at a slightly slower rate (Cailliet et al. 1996). Males reach first maturity at 28 cm, 50% maturity at 31 cm, and 100% at 38 cm. Females reach first maturity at 31 cm, 50% at 36 cm, and 100% maturity at 39 cm (Love et al. 1990). Bank rockfish are midwater feeders, eating mostly gelatinous planktonic organisms such as tunicates, but also preying on small fishes and krill (Love 1992).

Black rockfish (*Sebastes melanops*) are found from southern California (San Miguel Island) to the Aleutian Islands (Amchitka Island), and they occur most commonly from San Francisco northward (Hart 1973, Miller & Lea 1972, Phillips 1957, Stein & Hassler 1989). Black rockfish occur from the surface to greater than 366 m, however they are most abundant at depths less than 54 m (Stein & Hassler 1989). Off California, black rockfish are found along with the blue, olive, kelp, black-and-yellow, and gopher rockfishes (Hallacher & Roberts 1985) Adults are usually observed well up in the water column (Hallacher & Roberts 1985). The abundance of black rockfish in shallow water declines in the winter and increases in the summer (Stein & Hassler 1989). Densities of black rockfish decrease with depth during both the upwelling and non-upwelling seasons (Hallacher & Roberts 1985, PFMC 1996). Off Oregon larger fish seem to be found in deeper water (20-50 m) (Stein & Hassler 1989). Black rockfish off the northern Washington coast and outer Strait of Juan de Fuca exhibit no significant movement. However, fish appear to move from the central Washington coast southward to the Columbia River, but not into waters off Oregon. Movement displayed by black rockfish off the northern Oregon coast is primarily northward to the Columbia River (Culver 1986). Black rockfish form mixed sex, midwater schools, especially in shallow water (Hart 1973, Stein & Hassler 1989). Black rockfish larvae and young juveniles (<40-50 mm) are pelagic but are benthic at larger sizes (Laroche & Richardson 1980).

Black rockfish have internal fertilization and annual spawning (Stein & Hassler 1989). Parturition occurs from February-April off British Columbia, January-March off Oregon, and January-May off California (Stein & Hassler 1989). Spawning areas are unknown, but spawning may occur in offshore waters because gravid females have been caught well offshore (Dunn & Hitz 1969, Hart 1973, Stein & Hassler 1989). Black rockfish can live to be more than 20 years in age. The maximum length attained by the black rockfish is 60 cm (Hart 1973, Stein & Hassler 1989). Off Oregon, black rockfish primarily prey on pelagic nekton (anchovies and smelt) and zooplankton such as salps, mysids, and crab megalops. Off central California, juveniles eat copepods and zoea, while adults prey on juvenile rockfish, euphausiids, and amphipods during upwelling periods; during periods without upwelling they primarily consume invertebrates. Black rockfish feed almost exclusively in the water column (Culver 1986). Black rockfish are known to be eaten by lingcod and yelloweye rockfish (Stein & Hassler 1989).

Blackgill rockfish *(Sebastes melanostomus)* are distributed from Washington to Punta Abreojos (Love 1991, Moser & Ahlstom 1978). Adult blackgill rockfish are found offshore at depths of 219-768 m (Eschmeyer et al. 1983). Blackgill rockfish usually inhabit rocky or hard bottom habitats, along steep drop-offs, such as the edges of submarine canyons and over seamounts (Love 1991). However, they may also occur over soft-bottoms (Eschmeyer et al. 1983). Blackgill rockfish are a transitional species, occupying both midwater and benthic habitats (Love et al. 1990), although they are rarely taken at more than 9 m above the bottom (Love 1991). Blackgill are considered an aggregating species (Love 1991).

Blackgill rockfish spawn from January-June (peaking in February) off southern California, and in February off central and northern California (Love 1991, Love et al. 1990, Moser & Ahlstom 1978). The largest blackgill rockfish on record is 61 cm (Eschmeyer et al. 1983, Love 1991, Love et al. 1990). Blackgill rockfish primarily prey on such planktonic prey as euphausids and pelagic tunicates, as well as small fishes (e.g., juvenile rockfishes and hake, anchovies and lantern fishes) and squid (Love et al. 1990).

Redstripe rockfish *(Sebastes proriger)* occur from San Diego, California to the Bering Sea (Allen & Smith 1988, Hart 1973, Miller & Lea 1972). Redstripe rockfish inhabits the outer shelf and upper slope and are most common between 100 and 350 m (Allen & Smith 1988). Adults are semi-demersal, while larvae and juveniles are pelagic to semi-demersal (Garrison & Miller 1982). Young redstripe rockfish can occur in estuaries (Kendall & Lenarz 1986). Redstripe rockfish are generally found slightly off the bottom over both high and low relief rocky areas (Starr et al. 1996). Redstripe rockfish are very sedentary, exhibiting little or no movement from a home habitat or range (Matthes et al. 1986).

Redstripe rockfish are ovoviviparous (Garrison & Miller 1982). Off Oregon, larvae are released between April and July, but later off northern and central California, during July through September (Kendall & Lenarz 1986). Redstripe rockfish may grow to reach 61 cm (Hart 1973). Larvae and juveniles of this species were found to feed primarily on copepods, their eggs, and copepod nauplii, as well as all stages of euphausiids (Kendall & Lenarz 1986). Food of adult redstripe rockfish consists of small fish such as anchovies, herring and early stages of other groundfish, as well as squid (Starr et al. 1996). Redstripe rockfish may compete for food and habitat resources with widow, squarespot , shortbelly, and canary rockfishes, as well as lingcod and spiny dogfish (Erickson et al. 1991).

Sharpchin rockfish *(Sebastes zacentrus)* occur from San Diego, California, to the Aleutian Islands, Alaska (Allen & Smith 1988). Sharpchin rockfish occur from 25 to 475 m, but about 96% occur from 100 to 350 m (Allen & Smith 1988). Sharpchin rockfish can occur over soft bottoms (Eschmeyer et al. 1983), but they apparently prefer mud and cobble substrate and are associated with boulder and cobble fields (Stein et al. 1992)._ Parturition occurs from March through July off Oregon and from May through June off northern and central California (Echeverria 1987). Shortratker rockfish can grow to 33 cm (Miller & Lea 1972).

Silvergrey Rockfish *(Sebastes brevispinis)* are found from Santa Barbara Island, southern California, to the Bering Sea (Allen & Smith 1988, Hart 1973). Silvergray rockfish are included in the shelf rockfish assemblage (Hart 1973, Nagtegaal 1983) and inhabit the outer shelf-mesobenthal zone (Allen & Smith 1988)._ They occur in depths from 0 to 375 m with 95% of survey catches taken in depths of 100 to 300 m (Allen & Smith 1988)._ Off Oregon young are probably released in late spring or summer (Hart 1973, Allen & Smith 1988)._ Off Washington young are released in June (Hart 1973). They achieve a maximum size of 71 cm (Hart 1973).

Yellowmouth rockfish (Sebastes reedi) occur from Sitka, Alaska to Point Arena, California. Yellowmouth rockfish occupy a depth range from 137-366 m (Miller & Lea 1972)) usually 275-366 m over rough bottom (Kramer et al. 1995). Off Oregon, yellowmouth rockfish release their young from February through June (150). Yellowmouth females mature at 33 cm or larger (9 years old), and males mature at lengths greater than 31 cm (9 years old). They grow to 54 cm and can live to 34 years of age (Hart 1973).

"Other Rockfish" are those rockfish species that do not have individual ABC/OYs. Life history descriptions of these species may be found in the Essential Fish Habitat West Coast Groundfish which was prepared for amendment 11 to the FMP. This document may be requested from the Council office and is available http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html

"OTHER FISH" are those groundfish species that do not have individual ABC/OYs. Life history descriptions of these species may be found in the Essential Fish Habitat West Coast Groundfish which was prepared for amendment 11 to the FMP. This document may be requested from the Council office and is available http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html

3.2.4 Endangered Species

West Coast marine species listed as endangered or threatened under the Endangered Species Act (ESA) are discussed below in sections 3.2.5 (Marine Mammals,) 3.2.6 (Seabirds,) 3.2.7 (Sea Turtles,) and 3.2.8 (Salmon). Under the ESA, a species is listed as "endangered" if it is in danger of extinction throughout a significant portion of its range and "threatened" if it is likely to become an endangered species within the foreseeable future throughout all, or a significant portion, of its range. The following species are subject to the conservation and management requirements of the ESA:

Table 3.2.3 West Coast Endangered Species
Marine Mammals
Threatened: • Steller sea lion (*Eumetopias jubatus*) Eastern Stock, • Guadalupe fur seal (*Arctocephalus townsendi*), and • Southern sea otter (*Enhydra lutris*) California Stock.
Seabirds
Endangered: • Short-tail albatross (*Phoebastria (=Diomedea) albatrus*), • California brown pelican (*Pelecanus occidentalis*), and • California least tern (*Sterna antillarum browni*). Threatened: • Marbled murrelet (*Brachyramphs marmoratus*).
Sea Turtles
Endangered: • Green turtle (*Chelonia mydas*) • Leatherback turtle (*Dermochelys coriacea*) • Olive ridly turtle (*Lepidochelys olivacea*) Threatened: • Loggerhead turtle (*Caretta caretta*)
Salmon
Endangered: • Chinook salmon (*Oncorhynchus tshawytscha)* Sacramento River Winter; Upper Columbia Spring • Sockeye salmon (*Oncorhynchus nerka)* Snake River • Steelhead trout (*Oncorhynchus mykiss)* Southern California; Upper Columbia Threatened: • Coho salmon (*Oncorhynchus kisutch)* Central California, Southern Oregon, and Northern California Coasts • Chinook salmon (*Oncorhynchus tshawytscha*) Snake River Fall, Spring, and Summer; Puget Sound; Lower Columbia; Upper Willamette; Central Valley Spring; California Coastal • Chum salmon (*Oncorhynchus keta)* Hood Canal Summer; Columbia River • Sockeye salmon (*Oncorhynchus nerka)* Ozette Lake • Steelhead trout (*Oncorhynchus mykiss)* South-Central California, Central California Coast, Snake River Basin, Lower Columbia, California Central Valley, Upper Willamette, Middle Columbia, Northern California

3.2.5 Marine Mammals

The waters off Washington, Oregon, and California (WOC) support a wide variety of marine mammals. Approximately thirty species, including seals and sea lions, sea otters, and whales, dolphins, and porpoise, occur within the EEZ. Many marine mammal species seasonally migrate through West Coast waters, while others are year round residents.

There is limited information documenting the interactions of groundfish fisheries and marine mammals, but marine mammals are probably affected by many aspects of groundfish fisheries. The incidental take of marine mammals, defined as any serious injury or mortality resulting from commercial fishing operations, is reported to NMFS by vessel operators. In the West Coast groundfish fisheries, incidental take is infrequent and primarily occurs in trawl fisheries (Forney *et al.* 2000). Indirect effects of groundfish fisheries on marine mammals are more difficult to quantify due to a lack of behavioral and ecological information about marine mammals. However, marine mammals may be affected by increased noise in the oceans, change in prey availability, habitat changes due to fishing gear, vessel traffic in and around important habitat (i.e., areas used for foraging, breeding, raising offspring, or hauling-out), at-sea garbage dumping, and diesel or oil discharged into the water associated with commercial fisheries.

The Marine Mammal Protection Act (MMPA) and the ESA are the federal legislation that guide marine mammal species protection and conservation policy. Under the MMPA on the West Coast, NMFS is responsible for the management of cetaceans and pinnipeds, while the U.S. Fish and Wildlife Service (FWS) manages sea otters. Stock assessment reports review new information every year for strategic stocks (those whose human-caused mortality and injury exceeds the potential biological removal [PBR]) and every three years for non-strategic stocks. Marine mammals whose abundance falls below the optimum sustainable population (OSP) are listed as "depleted" according to the MMPA.

Fisheries that interact with species listed as depleted, threatened, or endangered may be subject to management restrictions under the MMPA and ESA. NMFS publishes an annual list of fisheries in the Federal Register separating commercial fisheries into one of three categories, based on the level of serious injury and mortality of marine mammals occurring incidentally in that fishery. The categorization of a fishery in the list of fisheries determines whether participants in that fishery are subject to certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. The WOC groundfish fisheries are in Category III, indicating a remote likelihood of, or no known serious injuries or mortalities, to marine mammals.

Of the marine mammal species incidentally caught in WOC groundfish fisheries, the Steller sea lion is listed as threatened under the ESA, the northern elephant seal may be within their OSP range, and there is insufficient data to determine the status of the harbor seal, California sea lion, Dall's porpoise, and Pacific white-sided dolphin relative to their OSP. None of these species are classified as strategic stocks under the MMPA. Based on its Category III status, the incidental take of marine mammals in the WOC groundfish fisheries does not significantly impact marine mammal stocks.

3.2.6 Seabirds

Over sixty species of seabirds occur in waters off the coast of WOC within the EEZ. These species include: loons, grebes, albatross, fulmars, petrels, shearwaters, storm-petrels, pelicans, cormorants, frigate birds, phalaropes, skuas, jaegers, gulls, kittiwakes, skimmers, terns, guillemots, murrelets, auklets, and puffins. The migratory range of these species includes commercial fishing areas; fishing also occurs near the breeding colonies of many of these species.

Interactions between seabirds and fishing operations are wide-spread and have led to conservation concerns in many fisheries throughout the world. Abundant food in the form of offal (discarded fish and fish processing waste) and bait attract birds to fishing vessels. Of the gear used in the groundfish fisheries on the West Coast, seabirds are occasionally taken incidentally by trawl and pot gear, but they are most often taken by longline gear. Around longline vessels, seabirds forage for offal and bait that has fallen off hooks at or near the water's surface and are attracted to baited hooks near the water's surface during the setting of gear. If a bird becomes hooked while feeding on bait or offal, it can be dragged underwater and drowned. Of the incidental catch of seabirds by longline groundfish fisheries in Alaska, northern fulmars represented about 66% of the total estimated catch of all bird species, gulls contributed 18%, Laysan albatross 5%, and black-footed albatross about 4% (Stehn *et al.* 2001). Longline gear and fishing strategies in Alaska are similar to some, but not all, of those used in WOC longline fisheries.

Besides entanglement in fishing gear, seabirds may be indirectly affected by commercial fisheries in various ways. Change in prey availability may be linked to directed fishing and the discarding of fish and offal. Vessel traffic may affect seabirds when it occurs in and around important foraging and breeding habitat and increases the likelihood of bird storms. In addition, seabirds may be exposed to at-sea garbage dumping and the diesel and oil discharged into the water associated with commercial fisheries. The FWS is the primary federal agency responsible for seabird conservation and management. Under the Magnuson-Stevens Act, NMFS is required to ensure fishery management actions comply with other laws designed to protect seabirds. NMFS is also required to consult with FWS if fishery management plan actions may affect seabird species listed as endangered or threatened.

3.2.7 Sea Turtles

Sea turtles are highly migratory; four of the six species found in U.S. waters have been sighted off the West Coast. Little is known about the interactions between sea turtles and West Coast commercial fisheries. The directed fishing for sea turtles in WOC groundfish fisheries is prohibited, because of their ESA listings, but the incidental take of sea turtles by longline or trawl gear may occur. Sea turtles are known to be taken incidentally by the California-based pelagic longline fleet and the California halibut gillnet fishery. Because of differences in gear and fishing strategies between those fisheries and the WOC groundfish fisheries, the expected take of sea turtles by groundfish gear is minimal. The management and conservation of sea turtles is shared between NMFS and FWS.

Sea turtles may be also indirectly affected by commercial fisheries. Sea turtles are vulnerable to collisions with vessels and can be killed or injured when struck, especially if struck with an engaged propeller. Entanglement in abandoned fishing gear can also cause death or injury to sea turtles by drowning or loss of a limb. The discard of garbage at sea can be harmful for sea turtles, because the ingestion of such garbage may choke or poison them. Sea turtles have ingested plastic bags, beverage six-pack rings, styrofoam, and other items commonly found aboard fishing vessels. The accidental discharge of diesel and oil from fishing vessels may also put sea turtles at risk, as they are sensitive to chemical contaminates in the water.

3.2.8 Salmon

Salmon caught in the U.S. West Coast fishery have life cycle ranges that include coastal streams and river systems from central California to Alaska and oceanic waters along the U.S. and Canada seaward into the north central Pacific Ocean, including Canadian territorial waters and the high seas. Some of the more critical portions of these ranges are the freshwater spawning grounds and migration routes.

Chinook or king salmon (*Oncorhynchus tshawytscha*) and coho or silver salmon (*O. kisutch*) are the main species caught in Council-managed ocean salmon fisheries. In odd-numbered years, catches of pink salmon (*O. gorbuscha*) can also be significant, primarily off Washington and Oregon. Ocean salmon are caught with commercial and recreational troll gear. No other gears are allowed to take and retain salmon in the ocean fisheries. Small amounts of rockfish and other groundfish are taken as incidental catch in salmon troll fisheries.

NMFS issued Biological Opinions under the ESA on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999 pertaining to the effects of the groundfish fishery on chinook salmon (Puget Sound, Snake River spring/summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal, Oregon coastal), chum salmon (Hood Canal, Columbia River), sockeye salmon (Snake River, Ozette Lake), and steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south-central California, northern California, southern California).

3.2.9 Nongroundfish Species Interactions

Coastal Pelagic Species (CPS) CPS are schooling fish, not associated with the ocean bottom, that migrate in coastal waters. These species include: northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific (chub) mackerel (*Scomber japonicus*), jack mackerel (*Trachurus symmetricus*) and market squid (*Loligo opalescens*). These species are managed under the Coastal Pelagic Species Fishery Management Plan.

Sardines inhabit coastal subtropical and temperate waters and at times have been the most abundant fish species in the California current. During times of high abundance, Pacific sardine range from the tip of Baja California to southeastern Alaska. When abundance is low, Pacific sardine do not occur in large quantities north of Point Conception, California. Pacific (chub) mackerel in the northeastern Pacific range from Banderas Bay, Mexico to southeastern Alaska. They are common from Monterey Bay, California to Cabo San Lucas, Baja California, and most abundant south of Point Conception, California. The central subpopulation of northern anchovy ranges from San Francisco, California to Punta Baja, Mexico. Jack mackerel are a pelagic schooling fish that range widely throughout the northeastern Pacific, however much of their range lies outside the U.S. EEZ. Adult and juvenile market squid are distributed throughout the Alaska and California current systems, but are most abundant between Punta Eugenio, Baja California and Monterey Bay, Central California.

CPS are taken incidentally in the groundfish fishery. Incidental take is well documented in the at-sea and shore-based whiting fishery. Preliminary data for 2001 indicates approximately 321mt of jack mackerel, 469 mt of Pacific mackerel, and 55 mt of squid was incidentally taken in the at-sea whiting fishery. There is little information on the incidental take of CPS by the other segments of the fishery, however given CPS are not associated with the ocean bottom, the interaction is expected to be minimal.

Dungeness Crab The Dungeness crab (*Cancer magister*) is distributed from the Aleutian Islands, Alaska, to Monterey Bay, California. They live in bays, inlets, around estuaries, and on the continental shelf . Dungeness crab are found to a depth of about 180 m. Although it is found at times on mud and gravel, this crab is most abundant on sand bottoms; frequently it occurs among eelgrass. The Dungeness crab, which are typically harvested using traps (crab pots), ring nets, by hand (scuba divers) or dip nets, are incidentally taken or harmed unintentionally by groundfish gears.

Pacific Pink Shrimp Pacific pink shrimp (*Pandalus jordani*) are found from Unalaska in the Aleutian Islands to San Diego, California, at depths of 25 to 200 fm (46 to 366 m). Off the U.S. West Coast these shrimp are harvested with trawl gear from northern Washington to central California between 60 and 100 fm (110 to 180 m). The majority of the catch is taken off the coast of Oregon. Concentrations of pink shrimp are associated with well-defined areas of green mud and muddy-sand bottom. Shrimp trawl nets are usually constructed with net mesh sizes smaller than the net mesh sizes for legal groundfish trawl gear. Thus, it is shrimp trawlers that commonly take groundfish in association with shrimp, rather than the reverse.

Pacific Halibut Halibut (*Hippoglossus stenolepis*) belong to a family of flounders called Pleuronectidae. Halibut are usually found in deep water (40 to 200 m). The International Pacific Halibut Commission (IPHC) report, "Incidental Catch and Mortality of Pacific Halibut, 1962-2000" contains estimates of the incidental catches of halibut in the coastal trawl fisheries (groundfish and shrimp trawls). Estimates of incidental catches of halibut, based on the at-sea observer data collected in the Enhanced Data Collection Program conducted from 1995 through 1998, results in an estimated mortality level of legal-sized halibut incidentally taken in shrimp and groundfish trawl fisheries will be 254 mt (560,000 pounds) in 2002.

Forage Fish Forage fish are small, schooling fish which serve as an important source of food for other fish species, birds and marine mammals. Examples of forage fish species are herring (*Clupea harengus pallasi*), smelt (*Osmeridae*), anchovies, and sardine. Many species of fish feed on forage fish. Major predators of herring include Pacific cod (42% of diet), whiting (32%), lingcod (71%), halibut (53%), coho (58%), and chinook salmon (58%) (Environment Canada 1994). Many species of seabirds depend heavily on forage fish for food as well. Marine mammals consuming forage fish include: harbor seals, California sea lions, Stellar sea lions, harbor porpoises, Dall's porpoises, and Minke whales (Calambokidis and Baird 1994). Forage fish are most commonly found in nearshore waters and within bays and estuaries, although some do spend of their lives in the open ocean where they may be incidentally taken by groundfish gears, particularly in trawls. Preliminary data from the 2001 at-sea whiting fishery indicates the fishery encounters very minor amounts of forage fish species (Pacific herring less than 5 mt and less than 1 mt of smelt and sardines combined). There is little information on the incidental take of forage fish by the other segments of the fishery, however given they are not associated with the ocean bottom, the interaction is expected to be minimal.

Miscellaneous Species Little information is available on nongroundfish species incidentally captured in the groundfish fishery. Other than those species mentioned above, documentation from the whiting fishery indicates species such as American shad and walleye pollock are taken incidentally. American shad, introduced in 1885, have flourished throughout the lower Columbia River, producing a record run of 2.2 million fish in 1988 (ODFW and WDFW 1989). American shad was also taken in the shore-based whiting fishery. Walleye pollock are found in the waters of the Northeastern Pacific Ocean from the Sea of Japan, north to the Sea of Okhotsk, east in the Bering Sea and Gulf of Alaska, and south in the Northwestern Pacific Ocean along the Canadian and U.S. West Coast to Carmel, California.

3.3 HUMAN ENVIRONMENT

3.3.1 History of Management Via Annual Specifications and Management Measures

Washington, Oregon, and California have been managing groundfish fisheries off of their coasts since the early 20th century. Then, as now, many fisheries straddled state borders, with vessels operating offshore of their home states and offshore of neighboring states. Congress recognized the West Coast need for a coordinating body that would ensure compatible management and regulation between states in 1947 by forming the Pacific States Marine Fisheries Commission (PSMFC). Since then, PSMFC has served in a coordinating role for fisheries management issues in common between the three West Coast states, Alaska, and Idaho. The Fishery Conservation and Management Act (now amended and renamed as the Magnuson-Stevens Fishery Conservation and Management Act) went into effect in 1977, extending exclusive economic zones (EEZs) out to 200 nautical miles offshore and forming fishery management councils to manage the fisheries occurring within EEZ waters. From 1977 through 1982, the three states coordinated groundfish management through the Pacific Fishery Management Council (Council,) during which time the Council also developed its initial FMP for groundfish. (Council, March 1998)

In September 1982, the groundfish FMP went into effect. Under the FMP, the Council was authorized to set annual optimum yields (OYs) for Pacific whiting, Pacific ocean perch (POP,) shortbelly rockfish, widow rockfish, and sablefish. These particular species were the first chosen for OY harvest limitations due to their contributions to foreign catch (Pacific whiting and shortbelly rockfish) or to their importance to domestic harvest (sablefish and widow rockfish.) In the case of POP, which had been overfished by the foreign fisheries in the 1960s and 1970s, an OY was needed to set the species on a rebuilding schedule. Federal groundfish fishery regulations intended to keep the harvest of these species within their OYs and of other groundfish within their Acceptable Biological Catches (ABCs) were relatively brief and simple. These regulations were published in the *Federal Register*, to be modified if and when the fisheries approached an ABC or OY for a managed species.

By 1987, the Council had realized that its relatively simple and straightforward FMP was too inflexible to allow regular adjustments to harvest levels and regulatory restrictions. For example, the FMP had to be amended each time the Council wished to set an OY for a species that had not previously been managed with OYs. Amendment 4 to the FMP was intended to address some of the inefficiencies of the initial FMP by creating processes by which the Council would discuss and make decisions on long-term permanent changes to regulations, on annual specifications of ABCs and OYs and management measures to implement those specifications, and on inseason actions to change the annual management measures.

Amendment 4 gave the FMP a new procedure for developing and implementing annual specifications and their allocations between different fishery sectors:

> "The Council will develop preliminary recommendations at the first of two meetings (usually in September) based upon the best stock assessment information available to the Council at the time and consideration of public comment. After the first meeting, the Council will provide a summary of its preliminary recommendations and their basis to the public through its mailing list as well as providing copies of the information at the Council office and to the public upon request. The Council will notify the public of its intent to develop final recommendations at its second meeting (usually November) and solicit public comment both before and at its second meeting.
>
> At its second meeting, the Council will again consider the best available stock assessment information which should be contained in the recently completed SAFE (Stock Assessment and Fishery Evaluation) report and consider public testimony before adopting final recommendations to the Secretary (of Commerce.) Following the second meeting, the Council will submit its recommendations along with the rationale and supporting information to the Secretary for review and implementation.
>
> Upon receipt of the Council's recommendations, supporting rationale and information, the Secretary will review the submission and, if approved, publish a notice in the *Federal Register* making the Council's recommendations effective January 1 of the upcoming fishing year." (Council, August 1990)

The Council used this "two-meeting process" followed by the publication of a single *Federal Register* notice to implement the Council's recommendations from 1991-2001. Through that process, the Council could set harvest levels (such as ABCs and OYs) for managed species and management measures intended to allow the fisheries to achieve those harvest levels (trip limits or bag limits, size limits, etc.) Overall federal regulations were amended to include a list of species that could be managed via the annual process and the particular management measures that could be used with those species, called the "routine" management measures. Over time, the Council added new species and new management measures to this list by amending federal regulations when new routine measures were needed.

For both commercial and recreational fisheries, routine management measures have been intended to keep groundfish landings within annual harvest levels. In the commercial fisheries, trip landing and frequency limits were applied as routine management measures for the following reasons: to extend the fishing season; to minimize disruption of traditional fishing and marketing patterns; to reduce discards; to discourage target fishing while allowing small incidental catches to be landed; to allow small fisheries to operate outside the normal season; and, for the open access fishery only, to keep landings at the historical proportions of the 1984-88 window period. Size limits could also be applied as routine management measures in the commercial fisheries, either to protect juvenile fish or to extend the fishing season. For the recreational fisheries, bag limits have been applied as routine management measures to spread the available catch over a large number of anglers, to avoid waste, or for consistency with state regulations. Size limits could also be applied as routine management measures in the recreational fisheries, either to protect juvenile fish, to enhance the quality of the recreational fishing experience, or for consistency with state regulations. (FMP at 6.2.1)

With Amendment 13 to the FMP, the Council set up a two-meeting process for designating new routine management measures that set publication of the routine management measures in its annual SAFE document, rather than in federal regulations. The Council built this additional flexibility into the FMP so that it could act more swiftly on new information about management changes needed to protect overfished species. Under the Amendment 13 revisions to the FMP, routine management measures could be added or changed, "in cases where protection of an overfished or depleted stock is required..." (FMP at 6.2) Amendment 13 also added to the types of routine management measures available to the Council, "In cases where protection of an overfished or depleted stock is required, the Council may impose limits that differ by gear type, or establish closed areas or seasons."

Table 3.3.1 Management Measures Classified as Routine, as of 2002

Commercial fisheries:	Recreational fisheries:
• Differential limits by gear type may be set for overfished species or for fisheries in which overfished species are caught incidentally. • For all FMP-managed rockfish species, whether individually or within a species group/complex, trip landing and frequency limits may be set. Off California, time/area closures may be set. • For all FMP-managed flatfish species, whether individually or within a species group/complex, trip landing and frequency limits may be set. • For cowcod, time/area closures may be set. • For sablefish and lingcod, trip landing and and frequency limits and size limits may be set. And, for lingcod, time/area closures may be set. • For whiting, trip landing and frequency limits may be set for the offseason. Directed whiting season start dates may be set. • For all groundfish species, separately or in any combination, trip landing and frequency limits may be set for any open access fishery, including exempted trawl fisheries.	• For lingcod off Washington, and Oregon, bag limits, size limits, and closed seasons may be set. For lingcod, cabezon, and kelp greenling off California, bag limits, size limits, boat limits, hook limits, closed areas, and dressing/fileting requirements may be set. • For rockfish off Washington and Oregon, bag limits and size limits may be set. For rockfish off California, bag limits, size limits, boat limits, hook limits, closed areas, and dressing/fileting requirements may be set.

In 2001, NMFS was challenged on the two-meeting annual specifications and management measures process in Natural Resources Defense Council, Inc. v. Evans, 2001 168 F.Supp. 2d 1149 (N.D. Cal. 2001) Part of the court's ruling in that case required NMFS to provide a *Federal Register* notice-and-comment period as part of the annual specifications and management measures process. To meet the court's requirement for the 2002 specifications and management measures, NMFS published a proposed (67 FR 1555, January 11, 2002) and final rule (67 FR 10490, March 7, 2001) for the overall 2002 specifications and management measures, and an emergency rule to implement management measures for January-February 2002 (67 FR 1540, January 11, 2002). If the agency had not published January-February management measures for 2002, the management measures from January-February 2001 would have remained in effect for that period. NMFS published the emergency rule for the first two months of 2002 because some of the management measures from January-February 2001 were not conservative enough to adequately address rebuilding needs of overfished species. For the 2003 specifications and management measures, the Council will develop its initial specifications and management measures recommendations at its June 2002 meeting, with final recommendations at its September 2002 meeting, to be followed by a NMFS proposed and final rule for the 2003 season.

Protecting Overfished Species Within the Specifications and Management Measures Process
The major goal of management of the groundfish fishery throughout the 1990's was to prevent overfishing while achieving the OYs and providing year-round fisheries for the major species or species groups. One of the primary goals of the Pacific coast groundfish FMP is to keep the fishery open throughout the entire year for most segments of the fishery (See FMP goals and objectives at section 2.0). Harvest rates are constrained by annual harvest guidelines, two-month or one-month cumulative period landings limits, individual trip limits, size limits, species-to-species ratio restrictions, bag limits in the recreational fisheries and other measures, all designed to control effort so that the allowable catch is taken at a slow rate that will stretch the season out to a full year. Cumulative period catch limits are set by comparing current or previous landings rates with the year's total available catch. Landings limits have been used to slow the pace of the fishery and stretch the fishing season out over as many months as possible, so that the overall harvest target is not reached until the end of the year.

By 2000, lower OYs and growing awareness of reduced productivity of the groundfish resource had made it apparent that the goal of a year-round fishery was no longer achievable for a number of species. In addition, new legislative mandates under the Magnuson-Stevens Act gave highest priority to preventing overfishing and rebuilding overfished stocks to their MSY levels. The National Standard Guidelines at 50 CFR 600.310 interpreted this as "weak stock management," which means that harvest of healthier stocks must be curtailed to prevent overfishing or to rebuild overfished stocks. To meet initial rebuilding requirements for the three species declared overfished in 1999, bocaccio, lingcod, POP, the Council developed a new management strategy that diverts effort off the sea floor of the continental shelf, where many of the overfished species are found. Overfished species protection measures initially applied in 2000 included more restrictive trip limits for continental shelf species, reduced seasons for commercial hook-and-line gear and recreational fisheries off central and southern California, and trawl gear restrictions limiting the species and quantities of groundfish that could be taken with trawl nets using footropes of greater than 8 inches in diameter.

These 2000 restrictions were relatively severe when compared against allowable landings limits in the 1990s. At the urging of their coastal communities, the governors of the three West Coast states asked the Secretary of Commerce, through NMFS, to declare the West Coast groundfish fishery a commercial fishery failure. At the time, NMFS estimated that allowable landings limits in 2000 would reduce the commercial harvest value of West Coast groundfish by 25% from 1999 harvest levels. NMFS did declare the groundfish fisheries to be a commercial fishery failure in January 2000 (Dalton, 2000). In its declaration, NMFS cited the potential causes of the fishery resource disaster to be declining productivity in groundfish stocks associated with recently discovered oceanic regime shifts, advancements in scientific information about West Coast rockfish productivity that showed West Coast rockfish stocks to be generally less productive than many similar rockfish species worldwide.

Since 2000, management measures intended to eliminate directed catch and minimize incidental catch of overfished species have increased in number and in restrictiveness. Although year-round groundfish landings opportunities continue to be available to some gears in some areas, fishing opportunities have been eliminated for many vessels.

Table 3.3.2: Timetable of management measures implemented to protect overfished species through the annual specifications and management measures process

Year	Species Declared Overfished	Management Measures to Protect Overfished Species
1999	lingcod, bocaccio, POP	• These three species were declared overfished in March 1999, after the specifications and management measures had been set for that year.
2000	canary rockfish, cowcod (Management measures to protect lingcod, bocaccio, POP continue.)	• Targeting opportunities for overfished stocks eliminated • Shelf rockfish targeting reduced for hook-and-line gear and for large and small footrope trawl, particularly for healthy stocks closely associated with overfished species (e.g. chilipepper rockfish with bocaccio) • Commercial hook-and-line and recreational fisheries off central and southern California closed 4 months for nearshore and shelf rockfish with rockfish recreational bag limits also reduced • All commercial fisheries closed 6 months coastwide for lingcod with recreational season closures and reduced bag limits for lingcod varying by state.
2001	widow rockfish, darkblotched rockfish (Management measures to protect lingcod, bocaccio, POP, canary rockfish, cowcod continue.)	• Targeting opportunities for overfished stocks eliminated • Shelf rockfish targeting further reduced for hook-and-line gear and for large and small footrope trawl with minimal targeting allowed for midwater trawl gear • Flatfish landings restricted to reduce incidental catch of protected rockfish • Commercial hook-and-line and fisheries off California closed or depth restricted 7 months (central CA) or 5 months (southern CA) for nearshore and shelf rockfish • Recreational fisheries off California closed or depth restricted 6 months (central CA) or 4 months (southern CA) for nearshore and shelf rockfish with overall rockfish recreational bag limits same as in 2000 but species-specific limits reduced for overfished species • All commercial fisheries closed 6 months, except that central CA hook-and-line closed 8 months, for lingcod • Recreational season closures and continued reduced bag limits for lingcod varying by state • Cowcod Conservation Areas introduced to Southern California Bight waters, closed to all fishing for groundfish • Cowcod retention prohibited in all fisheries • Pink shrimp trawlers using fish excluder devices (state-managed fishery)
2002	yelloweye rockfish, whiting (Management measures to protect lingcod, bocaccio, POP, canary rockfish, cowcod, widow rockfish, darkblotched rockfish continue.)	• Targeting opportunities for all overfished stocks except whiting eliminated. Whiting OY reduced by 20% from 2001 • New bycatch analysis used to determine co-occurrence ratios between healthy species and overfished species, allowing more precise setting of healthy species limits to better reduce incidental catch of overfished species • Shelf rockfish targeting further reduced for hook-and-line gear and for all trawl gears • Flatfish landings further restricted to reduce incidental catch of protected rockfish • Commercial hook-and-line and recreational fisheries off California closed or depth restricted10 months (central CA) or 4 months (southern CA) for nearshore and shelf rockfish Commercial hook-and-line and recreational fisheries off central and southern California closed 4 months for nearshore and shelf rockfish with rockfish recreational bag limits also reduced • Commercial hook-and-line fisheries closed 6 months, except that central CA hook-and-line closed or depth restricted 8 months, for lingcod • Recreational season closures and continued reduced bag limits for lingcod varying by state • Cowcod Conservation Areas continue, cowcod retention continues to be prohibited • Yelloweye rockfish and canary rockfish retention prohibited in commercial hook-and-line fisheries, reduced or prohibited in recreational fisheries, reduced in trawl fisheries. • Pink shrimp trawlers using fish excluder devices (state-managed fishery) • Pacific halibut sport fishery closed area expanded to protect co-occurring yelloweye rockfish (state-managed fishery)

Figure 3.3.1

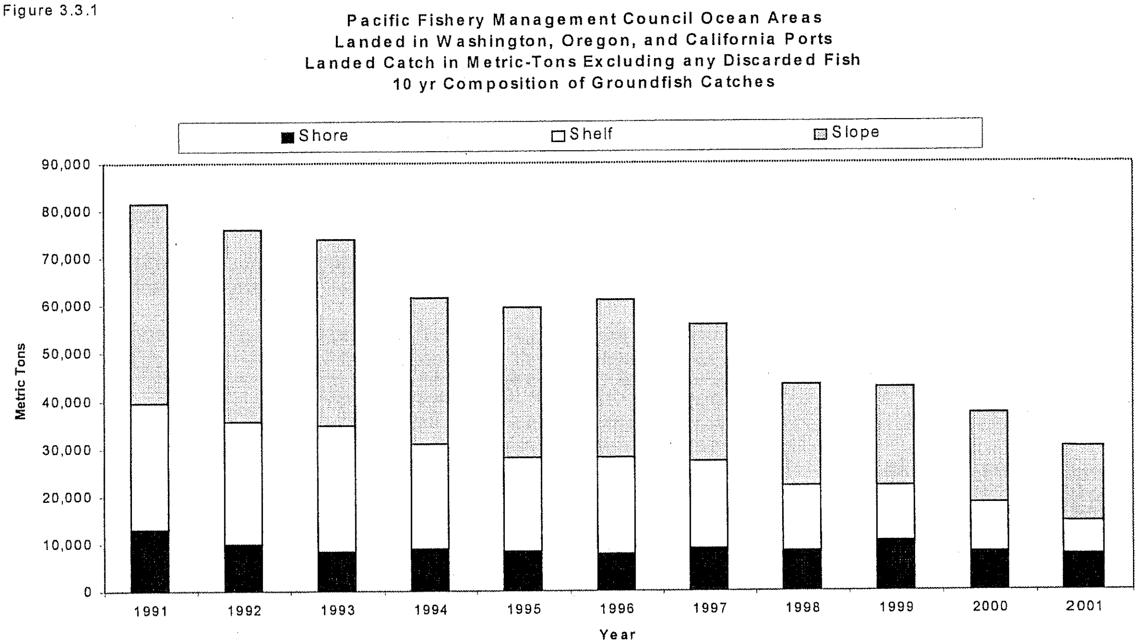
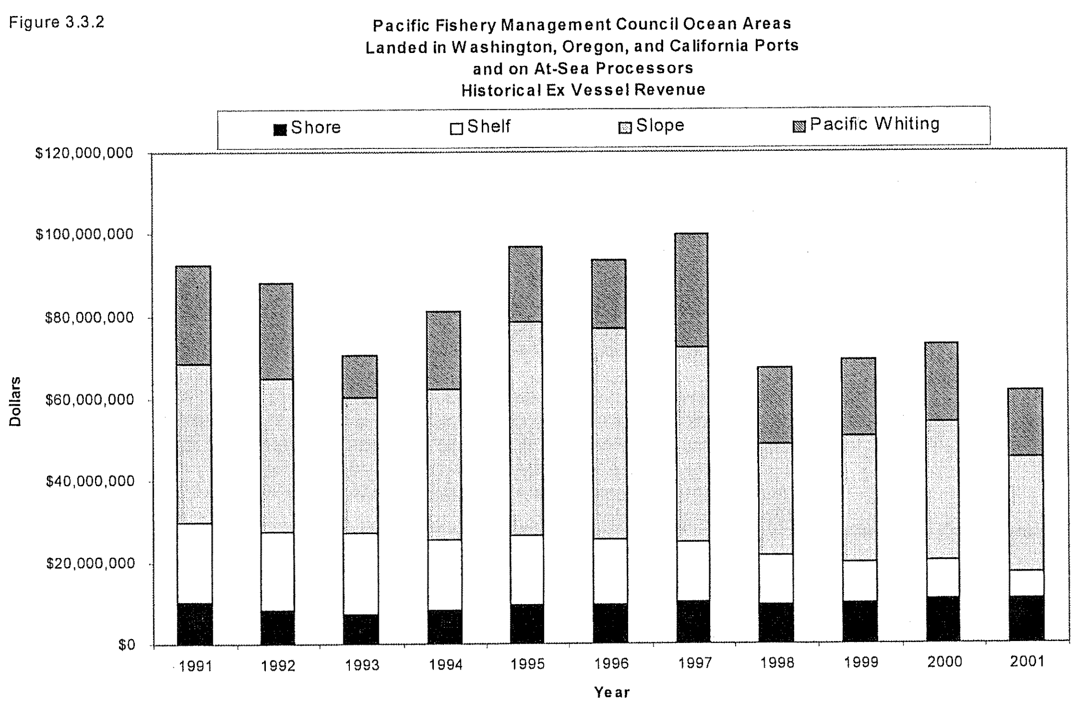


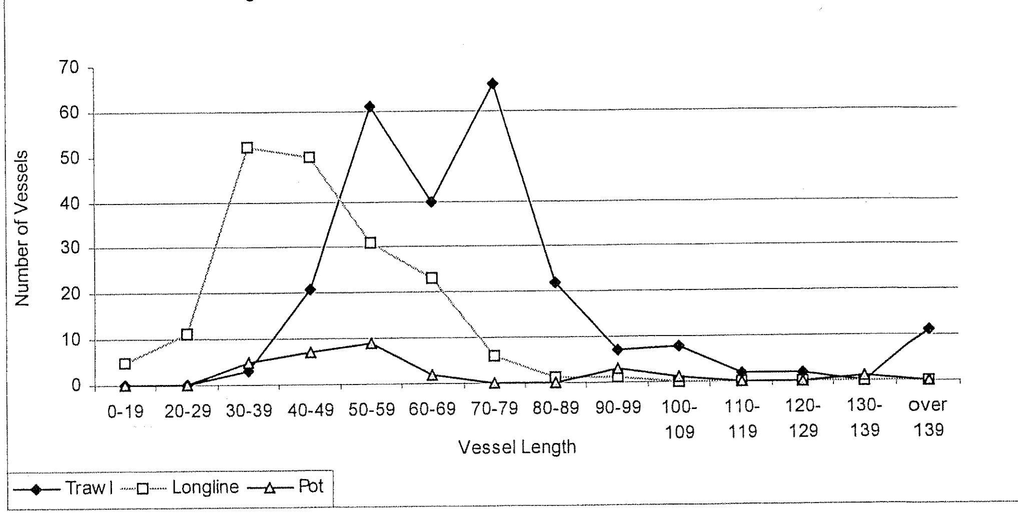
Figure 3.3.2



3.3.2 Profile of the Commercial Limited Entry (Non-Tribal) Groundfish Fisheries

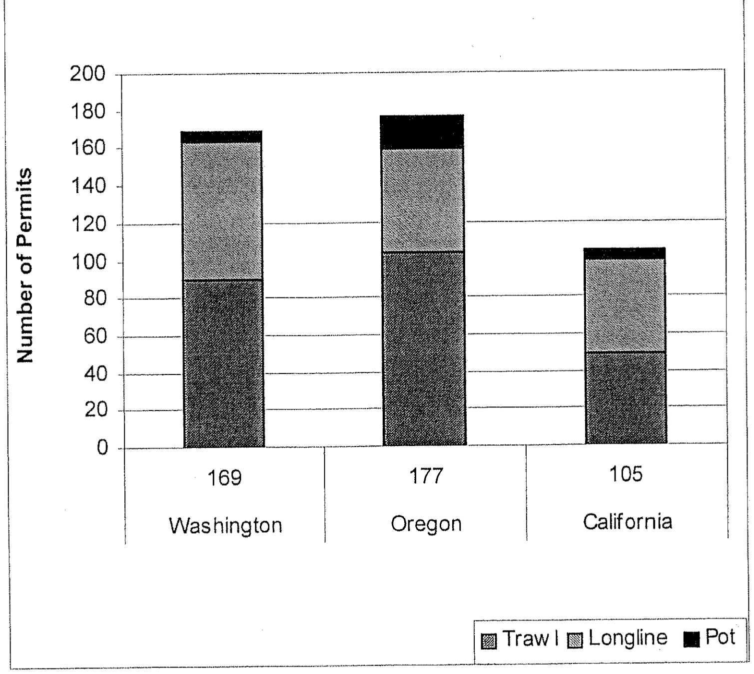
The Pacific coast groundfish fishery is a year-round, multi-species fishery that takes place off the coasts of Washington, Oregon, and California. Most of the Pacific coast non-tribal, commercial groundfish harvest is taken by the limited entry fleet. The groundfish limited entry program was established in 1994 for trawl, longline, and trap (or pot) gears. There are also several open access fisheries that take groundfish incidentally or in small amounts; participants in those fisheries may use, but are not limited to longline, vertical hook-and-line, troll, pot, setnet, trammel net, shrimp and prawn trawl, California halibut trawl, and sea cucumber trawl. Open access fisheries are described below at Section 3.3.3. In addition to these non-tribal commercial fisheries, members of the Makah, Quileute, Hoh, and Quinault tribes participate in commercial, and ceremonial and subsistence fisheries for groundfish off the Washington coast. Tribal groundfish fisheries are described below at Section 3.3.4.

Figure 3.3.3 Limited Entry Vessel Lengths, By Gear Type



In 1994, NMFS implemented Amendment 6 to the FMP, a license limitation program intended to restrict vessel participation in the directed commercial groundfish fisheries off Washington, Oregon, and California. The limited entry permits that were created through that program specify the gear type that a permitted vessel may use to participate in the limited entry fishery, and the vessel length associated with the permit. A vessel may only participate in the fishery with the gear designated on its permit(s) and may only be registered to a permit appropriate to the vessel's length. Since 1994, the Council has created further license restrictions for the limited entry fixed gear (longline and fishpot gear) fleet that restrict the number of permits useable in the primary sablefish fishery (Amendment 9) and that allow up to three

Figure 3.3.4 Limited Entry Permits, by State and Gear

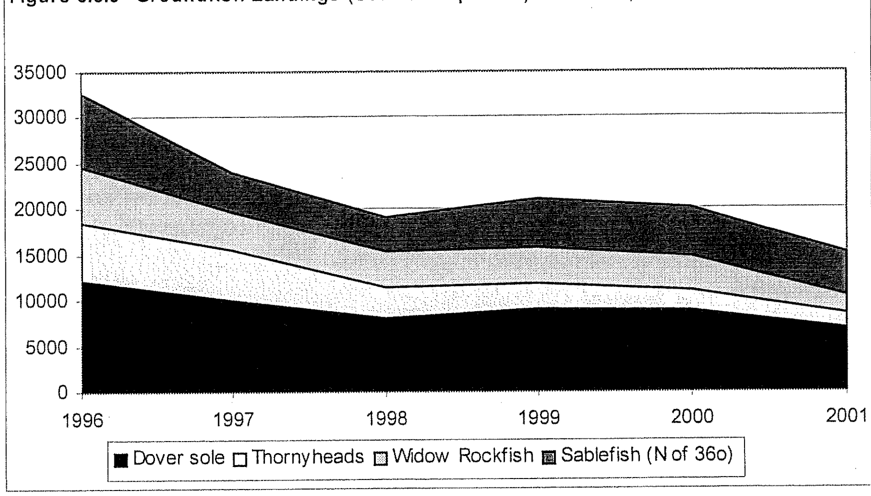


sablefish-endorsed permits to be used per vessel (Amendment 14.)

As of March, 2002, there were 450 vessels with Pacific Coast groundfish limited entry permits, of which approximately 54 percent were trawl vessels, 40 percent were longline vessels, 6 percent were trap vessels. The number of vessels registered for use with limited entry permits has decreased since the 2001 implementation of the permit stacking program for sablefish-endorsed limited entry fixed gear permits. Of the approximately 164 sablefish-endorsed permits, 83 are held by vessels registered with more than one sablefish-endorsed permit. Of the vessels that are registered with multiple sablefish-endorsed permits, 25 are registered with two permits and 11 are registered with three permits.

Limited entry permits may be sold and leased out by their owners, so the distribution of permits between the three states often shifts. In 2002, roughly 23 percent of the limited entry permits were assigned to vessels making landings in California, 39 percent to vessels making landings in Oregon, and 37 percent to vessels making landings in Washington. In 1999, this division of permits was approximately 41 percent for California, 37 percent for Oregon, and 21 percent for Washington. This change in state distribution of limited entry permits may also be due to the implementation of the permit stacking program. Vessels operating from northern ports may have purchased or leased sablefish-endorsed permits from vessels that had been operating out of California ports.

Figure 3.3.5 Groundfish Landings (Selected Species) 1996-2001, in metric tons



Limited entry fishers focus their efforts on many different species, with the largest landings by volume (other than Pacific whiting) from the following species: Dover sole, arrowtooth flounder, petrale sole, sablefish, thornyheads, and yellowtail rockfish. There are 55+ rockfish species managed by the Pacific coast groundfish FMP, of which seven species have been declared overfished in the past four years. Protective fisheries regulations intended to reduce the directed and incidental catch of overfished rockfish and other depleted species have significantly reduced the harvest of rockfish in recent years.

By weight, Pacific whiting represents the vast majority of West Coast groundfish landings. The whiting mid-water trawl fishery is a distinct component from the trawl groundfish trip limit fisheries. In 2001, whiting accounted for about 85 percent, by weight, of all commercial shore-based groundfish landings. Whiting is taken by treaty tribe catcher vessels delivering to a mothership (17.5% of total OY in 2002,) by non-tribal catcher vessels delivering to shore-based processing plants (42% of non-tribal OY,) by non-tribal catcher-vessels delivering to motherships (24% of non-tribal OY,) and by non-tribal catcher-processor vessels (34% of the non-tribal OY.) In 2001, 29 catcher vessels delivered whiting to shore-based processing plants. This number is down from previous years, when the number of participating vessels was in the mid- to upper-30s. Some vessels move between the West Coast and Alaska fisheries; some remain entirely off Washington, oregon, and California. In 2001, the v ast majority of whiting (about 73%) was landed in Oregon; Washington landigns represented 24% of the total and California landings represented about 3.1%. Approximately 20 catcher vessels delivered to five motherships in 2001, and seven catcher-processor vessels participated in the whiting fishery. Also in 2001, four tribal catcher vessels delivered whiting to one mothership.

Figure 3.3.6a Groundfish Trawl Vessel Participation in Non-Groundfish Fisheries

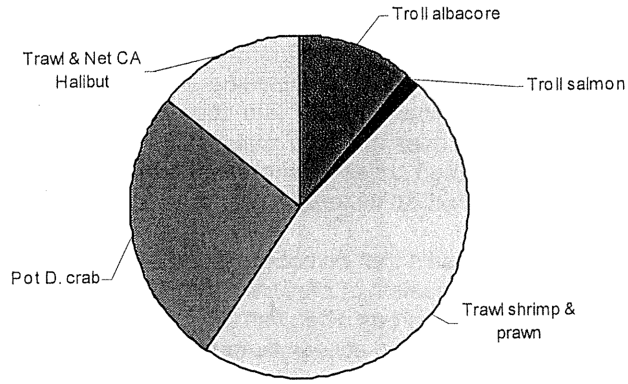


Figure 3.3.6b Groundfish Hook-and-Line (Includes Open Access) Vessel Participation in Non-Groundfish Fisheries

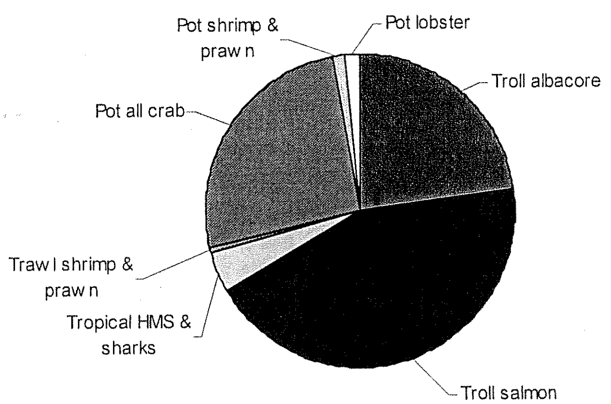
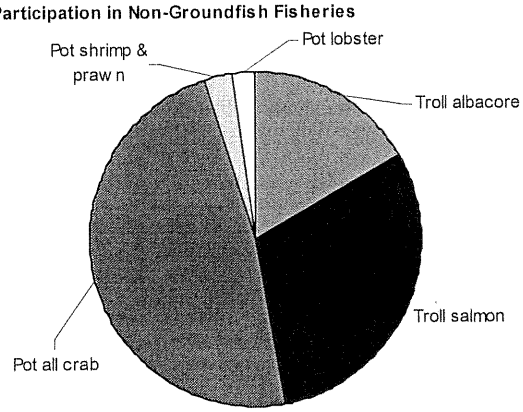


Figure 3.3.6c Groundfish Pot (Including Open Access) Vessel Participation in Non-Groundfish Fisheries



Catcher vessel owners and captains employ a variety of strategies to fill out a year of fishing. Fishers from the northern ports may fish in waters off of Alaska, as well as in the West Coast groundfish fishery. Others may change their operations throughout the year, targeting on salmon, shrimp, crab, or albacore, in addition to various high-value groundfish species, so as to spend more time in waters close to their communities. Factory trawlers and motherships fishing for or processing Pacific whiting off of the West Coast usually also participate in the Alaska pollock seasons, allowing the vessels and crews to spend a greater percentage of the year at work on the ocean. Commercial fisheries landings for species other than groundfish vary along the length of the coast. Dungeness crab landings are particularly high in Washington state, squid, anchovies, and other coastal pelagics figure heavily in California commercial landings, with salmon, shrimp, and highly migratory species like albacore more widely distributed, and varying from year to year.

Figures 3.3.6a-c show the approximate concentration of groundfish vessels in fisheries for non-groundfish West Coast species, 1994-1998. These pie charts exclude some non-groundfish fisheries where participation by groundfish vessels was so minimal that a viewer could not reasonably see the corresponding portion of the pie chart. Data for these charts came from an ongoing Council staff project to create a socio-economic profile of groundfish fishery participants.

It is clear from these three charts that there is some degree of gear loyalty for groundfish vessels participating in non-groundfish fisheries. For example, a notable proportion of the non-groundfish fishery participation by groundfish trawl vessels occurs in the shrimp and prawn trawl fisheries. Similarly, the hook-and-line groundfish fisheries show high participation in the troll albacore and troll salmon fisheries. And, while all three gear groups participate in pot fisheries for crab, groundfish pot vessels show the greatest percentage of gear group participation in pot fisheries for crab and other crustaceans.

3.3.3 Profile of the Commercial Open Access (Non-Tribal) Groundfish Fisheries, Directed and Incidental

Unlike the limited entry sector, the open access fishery has unrestricted participation and is comprised of vessels targeting or incidentally catching groundfish with a variety of gears, excluding groundfish trawl gear. While the open access groundfish fishery is under federal management and does not have participation restrictions, some state and federally managed fisheries that land groundfish in the open access fishery have implemented their own limited entry (restricted access) fisheries or enacted management provisions that have affected participation in groundfish fisheries.

The commercial open access groundfish fishery consists of vessels that do not necessarily depend on revenue from the fishery as a major source of income. Many vessels that predominately fish for other species inadvertently catch and land groundfish. Or, in times and areas when fisheries for other species are not profitable, some vessels will transition into the groundfish open access fishery for short periods. The commercial open access fishery for groundfish is split between vessels targeting groundfish (*directed fishery*) and vessels targeting other species (*incidental fishery*). The number of unique vessels targeting groundfish in the open access fishery between 1995-1998 coastwide was 2,723, while 2,024 unique vessels landed groundfish as incidental catch (1,231 of these vessels participated in both) (SSC's Economic Subcommittee, 2000).

In the directed open access fishery, fishers target groundfish in the "dead" and/or "live" fish fishery using a variety of gears. The terms dead and live fish fisheries refers to the state of the fish when they are landed. The dead fish fishery has historically been the most common way to land fish. The dead fish fishery made up 80% of the directed open access landings by weight coastwide in 2001. More recently, the market value for live fish has increased landings of live groundfish. The other component of the open access fishery is the incidental catch of groundfish in fisheries targeting other species (e.g., shrimp, salmon, highly migratory species, squid). Combining both the directed and incidental fisheries, the commercial groundfish open access fishery is potentially very large and includes a variety of gear types.

Landings, Revenue, and Participation by State Fisheries are generally distributed along the coast in patterns governed by factors such as location of target species, location of ports with supporting marine supplies and services, and restrictions/regulations of various state and federal governments. For the open access directed groundfish fishery, the majority of landings by weight that target groundfish occur off California. Oregon's directed groundfish open access fishery has the next highest landings, followed by Washington's. In the incidental groundfish fisheries, Oregon and California both have similar landings in their open access fisheries. Washington again has the lowest landings by weight of incidental groundfish (PFMC 2001e). Participation in "both directed and bycatch components of the open access fishery is much greater in California than in Oregon and Washington combined. For instance, in 1998, 779 California boats, 232 Oregon boats and 50 Washington boats participated in the directed fishery. In that same year, 520 California boats, 305 Oregon boats and 40 Washington boats participated in the bycatch fishery" (SSC's Economic Subcommittee, 2000).

Open access fisheries have been examined for their landings in the years 1996 and 2001, two randomly chosen years following the implementation of the limited entry program. Overall and in each individual state, open access landings decreased between 1996 and 2001. Federally, open access landings limits were sharply reduced between 1996 and 2001. Ex-vessel value for open access groundfish fisheries also decreased coastwide between 1996 and 2001. The directed fishery decreased from over $7 million in 1996 to under $5 million in 2001 and the incidental fishery decreased by half, from roughly $800,000 in 1996 to roughly $400,000 in 2001. (##Hastie 2001 tables, cite somehow)

Table 3.3.3: Estimated Open Access Fishery Landings in 1996 and 2001, by state, weight and value		
Open Access Sector	*1996 landings by weight*	*2001 landings by weight*
Coastwide Directed	3,291 mt	1,086 mt
Coastwide Incidental	802 mt	197 mt
Washington Directed	225 mt	66 mt
Washington Incidental	296 mt	28 mt
Oregon Directed	458 mt	237 mt
Oregon Incidental	384 mt	98 mt
California Directed	2,608 mt	776 mt
California Incidental	122 mt	70 mt

Directed Fishery The directed open access fishery for groundfish primarily targets rockfish, sablefish, lingcod, cabezon and flatfish. A vessel is considered to target groundfish in the open access fishery during a fishing trip if it is fishing with any gear other than groundfish trawl and if over 50% of the revenue from landings in that trip were from groundfish species. Participation in the directed fishery has decreased from 1,357 vessels in 1994 to 1,032 in 1999 (##PFMC 2001d). Reasons for this trend could include movement from the groundfish open access sector into other more profitable fisheries, or movement out of fishing all together.

As previously mentioned, the open access directed groundfish fishery consists of landings in both the dead and live fish categories. In the directed fishery, gears used to target and land dead groundfish include: vertical hook and line, rod/reel, pot, longline, troll/dinglebar, jig, sculpin trawl, setnet, and drifted (fly gear). Essentially all of the groundfish species managed under the FMP are targeted by various gears in the directed open access dead fishery. Increasingly, the live fish trade is gaining landings, due to a growing market value for live fish. In 2001, the live fish directed open access fishery accounted for 20% of the coastwide directed open access landings by weight, compared to only 6% in 1996. Gear used to target live groundfish include: pot, stick, and rod/reel. While Washington has prohibited live fish landings since 1999, both Oregon and California have live fish fisheries targeting groundfish. Currently, Oregon and California are drafting nearshore fishery management plans (FMPs) that could transition some species of groundfish landed in the live fish fishery from federal to state management.

In the directed open access fishery, certain gears are used to target specific species. Hook-and-line gear, the most common gear type, is generally used to target sablefish, rockfish and lingcod, while pot gear generally targets sablefish and some thornyheads and rockfish. In southern and central California, setnet gear targets rockfish, including chilipepper, widow, bocaccio, yellowtail and olive rockfish, and to a lesser extent vermillion rockfish.

Incidental Fisheries Fisheries that catch and land groundfish incidentally include: pink shrimp, spot prawn, ridgeback prawn, California and Pacific halibut, Dungeness crab, salmon, sea cucumber, coastal pelagic species, California sheephead, highly migratory species and the gillnet complex. Some of the gears in the incidental groundfish fishery include: non-groundfish trawl, pot, pole/line, longline, round haul, setnet, driftnet, purse seine, harpoon, gillnet, and troll. Not all of these fisheries have significant incidental groundfish catch. Open access fisheries with greater incidental groundfish catch are reviewed herein. For further information see ##Goen.##

Pink Shrimp Pink shrimp, also known as ocean shrimp, range from the Aleutian Islands in Alaska to San Diego, California, at depths from 150 to 1200 feet. They are targeted with shrimp trawl gear off

Washington, Oregon, and California. The pink shrimp fishery is managed by the states, with incidental catch limits imposed as trip limits in the federal open access groundfish fishery under "exempted trawl." Vessels targeting pink shrimp also land groundfish species, including rockfish, lingcod, sablefish, thornyheads, and flatfish. Between 1990 and 2001, coastwide landings of groundfish in the pink shrimp fishery reached a high in 1993 of 896 metric tons, 8 % of the total landing with shrimp (Hastie, Table NGF1). Many groundfish species are caught incidentally in the pink shrimp fishery due in part to the indiscriminate nature of trawl gear. Efforts are underway to reduce the incidence of groundfish bycatch, by requiring bycatch reduction devices (BRDs) and no-fishing buffer zones above the seafloor. In 2001, Washington and Oregon instituted mandatory BRDs in pink shrimp trawl nets, effective August 1, 2001, to reduce finfish take, including canary rockfish, an overfished species. Historically, about 71% of the canary rockfish landed annually by Pacific Coast shrimpers was landed in Oregon (ODFW 2002). For 2002, Washington and Oregon are not requiring BRDs unless implemented through temporary emergency rule if canary rockfish landings reach a certain level, similar to 2001. California requires BRDs for all vessels landing shrimp in California ports.

In Washington, 15 vessels participated in the pink shrimp fishery in 1998 and 14 on a regular basis in 1999. In Oregon, only 84 vessels landed shrimp in 2001 (74 double-rig; 10 single-rig) compared to 108 in 2000, 121 in 1999 and 109 vessels in 1998 (ODFW 2002, PSMFC 1997). Despite lower landings in recent years, Oregon generally has the largest volume by weight of landings. In 1999, Oregon landed more pink shrimp than California, Washington, British Columbia and Alaska combined. In California, an average of 88 vessels participated per season from 1983 through 1999 (Collier and Hannah 2001).

Pacific Halibut Pacific halibut range from the Hokkaido, Japan to the Gulf of Anadyr, Russia on the Asiatic Coast and from Nome, Alaska to Santa Barbara, California on the North American (Pacific) Coast. The Pacific halibut fishery is managed by the International Pacific Halibut Commission (IPHC) with implementing regulations set by the federal governments of Canada and the United States (US) in their respective waters. A license from the IPHC is required to participate in the non-treaty commercial Pacific halibut fishery. The commercial sector off the Pacific Coast, IPHC Area 2A, has both a treaty and non-treaty sector. For the non-treaty commercial sector, harvest is divided between the directed halibut fishery and the incidental catch of halibut in the salmon troll fishery. When the Area 2A total allowable catch is above 900,000 lbs, as it has been in recent years, halibut may be retained in the limited entry primary sablefish fishery north of Point Chehalis, Washington (46°53'18" N. lat.).

The non-treaty directed commercial fishery in Area 2A is confined to south of Point Chehalis, Washington, Oregon, and California. Area 2A licenses, issued for the directed commercial fishery, have decreased from 428 in 1997 to 320 in 2001. For 2001, the directed commercial licenses also allow longline vessels to retain halibut caught incidentally north of Point Chehalis during the primary sablefish season. Area 2A licenses issued for the incidental salmon troll fishery increased from 275 in 1997 to 345 in 2001. In Area 2A, the incidental salmon troll fishery was allowed to retain 1 halibut per 5 chinook, plus 1 extra halibut, with a maximum of 35 incidental halibut landed. Groundfish are caught in the Pacific halibut fishery coastwide. Rockfish and sablefish are commonly intercepted, as they are found in similar habitat to Pacific halibut and are easily caught with longline gear. The recent overfished species designation of yelloweye rockfish, which is commonly caught with Pacific halibut, has caused the Council some concern about the effects of Pacific halibut fisheries on overfished rockfish species.

Salmon Salmon are targeted with troll gear off all three West Coast states. The ocean commercial salmon fishery, both non-treaty and treaty, is under federal management with a suite of seasons and total allowable harvest. The Council manages commercial fisheries in the Exclusive Economic Zone (3-200 miles offshore), while the states manage commercial fisheries in state waters (0-3 miles). Beside troll gear, salmon are also targeted with gillnets and/or tanglenets in the mouths of rivers. Although the gillnet/tanglenet fishery does not technically occur in Council-managed waters, it may have some impact on groundfish that migrate through that area during part of their life cycle.

The majority of chinook and coho were landed in California in 1999 with Washington and Oregon both having significantly fewer landings. The salmon troll fishery does have an incidental catch of Pacific halibut and groundfish, including yellowtail rockfish. Halibut are caught incidentally off Washington and Oregon, while groundfish are caught off all three states. The California salmon fisheries primarily harvest chinook or king salmon. Coho or silver salmon are observed in small numbers but are presently under a no-retention catch policy. Occasionally in odd-numbered years, pink salmon are landed. In 1983, California implemented a limited entry program that capped the fishery at just over 4,600 commercial salmon vessels. ##need info on gf inc. catch##

Gillnet Complex ##more from CDFG?## The gillnet or driftnet complex is managed by the state of California and made up of California halibut, white seabass, white croaker and sharks. These species are targeted solely with driftnet gear off California, since the setnet fishery for white seabass was prohibited in 1994. White seabass may also be caught with commercial hook-and-line gear in the early spring, when large seabass are available. White croaker, an abundant nearshore species, is predominately caught off central California in the driftnet fishery, although they range from Vancouver Island, British Columbia to Magdalena Bay, Baja California (but are not abundant north of Point Reyes, California). The entrance of Southeast Asian refugees (mainly Vietnamese) into this fishery, in part caused a shift in fishing effort from southern to central California (Moore and Wild 2001, p.234).

3.3.4 Profile of the Tribal Groundfish Fisheries, Directed and Incidental

In 1994, the U.S. government formally recognized that the four Washington Coastal Tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish, and concluded that, in general terms, the quantification of those rights is 50 percent of the harvestable surplus of groundfish available in the tribes' usual and accustomed (U and A) fishing areas (described at 60 CFR 660.324). West Coast treaty tribes have formal allocations for sablefish, black rockfish, and Pacific whiting. Members of the four coastal treaty tribes participate in commercial, ceremonial, and subsistence fisheries for groundfish off the Washington coast. Participants in the tribal commercial fisheries operate off Washington and use similar gear to non-tribal fishers. Groundfish caught in the tribal commercial fishery pass through the same markets as non-tribal commercial groundfish catch.

In 2002, tribal sablefish longline fisheries were allocated 10% of the total catch OY (436.7 mt) and then were discounted 3% of that allocation for discard mortality, for a landed catch allocation of 424 mt. For the commercial harvest of black rockfish off Washington State, the treaty tribes have a harvest guideline of: 20,000 lb (9,072 kg) north of Cape Alava (48°09'30" N. lat.) and 10,000 lb (4,536 kg) between Destruction Island (47°40'00" N. lat.) and Leadbetter Point (46°38'10" N. lat.). In 1999 and 2000 32,500 mt of whiting was set aside for treaty Indian tribes on the coast of Washington state, resulting in a commercial OY of 199,500 mt for 2000. In 2001 and 2002 the landed catch OY declined to 190,400 mt and 129,600 mt, respectively, and the tribal allocations for those years were also reduced to 27,500 mt and 22,680 mt, respectively.

There are several groundfish species taken in tribal fisheries for which the tribes have no formal allocations. For some species on which the tribes have a modest harvest, no specific allocation has been determined. Rather than try to reserve specific allocations of these species, the tribes annually recommend trip limits for these species to the Council that accommodate modest tribal fisheries. Tribal trip limits for groundfish species without tribal allocations are usually intended to constrain direct catch and incidental retention of overfished species in the tribal groundfish fisheries.

The bulk of tribal groundfish landings occur during the March-April halibut and sablefish fisheries. Most continental shelf species taken in the tribal groundfish fisheries are taken during the halibut fisheries and most slope similarly taken during the tribal sablefish fisheries. Approximately one-third of the tribal sablefish allocation is taken during an open competition fishery, in which member vessels from the sablefish tribes all have access to this portion of the overall tribal sablefish allocation. The open competition portion tends to be taken during the same period as the major tribal commercial halibut fisheries in March and April. The remaining two-thirds of the tribal sablefish allocation are split between the sablefish tribes according to a mutually agreed-upon allocation scheme. Tribe-specific sablefish allocations are managed by the individual sablefish tribes, beginning in March and lasting into the autumn, depending on vessel participation management measures used. Participants in the halibut and sablefish fisheries tend to use hook-and-line gear, as required by the International Pacific Halibut Commission.

In addition to these hook-and-line fisheries, the Makah tribe annually harvests a whiting allocation using mid-water trawl gear. Since 1996, a portion of the U.S. whiting OY has been allocated to the Pacific Coast treaty tribes. The tribal allocation is subtracted from the whiting OY before allocation to the nontribal sectors. Since 1999, the tribal allocation has been based on a framework that is a sliding scale related to the U.S. whiting OY. To date, only the Makah tribe has fished on the tribal whiting allocation.

Table 3.3.4 Tribal Framework for Whiting Allocation, Adopted in 1999

U.S. Optimum Yield	Tribal Allocation
Up to 145,000 mt	17.5% of the U.S. OY
145,001 mt to 175,000 mt	25,000 mt
175,001 mt to 200,000 mt	27,500 mt
200,001 mt to 225,000 mt	30,000 mt
225,001 mt to 250,000 mt	32,500 mt
Over 250,000 mt	35,000 mt

Makah vessels fit with mid-water trawl gear have also been targeting widow and yellowtail rockfish with mid-water gear in recent years.

Table 3.3.5 Treaty Tribe Groundfish Landings, 1995-2001. In pounds, except for whiting, which is in mt.

Species	1995	1996	1997	1998	1999	2000	2001
Lingcod	2,162	1,616	1,555	3,477	4,086	4,054	6,757
Rockfish (general)	110,673	38,105	48,969	54,638	41,379	32,827	131
Rockfish (red)	211	137	87	619	1,067	431	2,141
Widow Rockfish					73	2,012	8,445
Yellowtail Rockfish	734	1,087	2,528	10,370	29,281	71,124	150,254
Shortspine thornyhead	15,476	7,408	12,483	4,916	7,984	8,705	11,008
Sablefish	1,177,704	1,128,795	1,078,875	634,512	812,511	958,490	907,399
Whiting (in metric tons)		15,000	24,840	24,509	25,844	6,251	6,080

Twelve western Washington tribes possess and exercise treaty fishing rights to halibut, including the four tribes that possess treaty fishing rights to groundfish. Specific halibut allocations for the treaty Indian tribes began in 1986. The tribes did not harvest their full allocation until 1989, when the tribal fleet had developed to the point that it could harvest the entire Area 2A TAC. In 1993, judicial confirmation of treaty halibut rights occurred and treaty entitlement was established at 50 percent of the harvestable surplus of halibut in the tribes' combined U&A fishing grounds. In 2000, the courts ordered an adjustment to the halibut allocation for 2000-2007, to account for reductions in the tribal halibut allocation from 1989-1993. For 2000 through 2007, the non-tribal fisheries will be transferring at least 25,000 lb per year to the tribal fisheries, for a total of 200,000 lb to be transferred to the tribal fisheries over that period. Tribal allocations are divided into a tribal commercial component and the year-round ceremonial and subsistence (C&S) component.

Tribal commercial halibut fisheries have historically started at the same time as Alaskan and Canadian commercial halibut fisheries, generally in mid-March. The tribal halibut allocation is divided so that approximately 80–85% of allocation is taken in brief open competition derbies, in which vessels from all halibut tribes compete against each other for landings. In 2002, three of these "unrestricted" openings were held in the spring: a 48-hour opening on March 18th, a 24-hour opening on April 2nd, and a 36-hour opening on April 30th. In addition to these unrestricted openings, 15-20% of the tribal halibut allocation is reserved for "restricted" fisheries, in which participating vessels are restricted to a per trip and per day poundage limit for halibut. Two restricted opening opportunities were available in 2002, from March 20th through April 19th and from May 5th through 9th. Similar to the unrestricted openings, these restricted openings are available for vessels from all halibut tribes.

Table 3.3.6 Treaty Tribe Halibut Allocations and Catches, Dressed Weight, 1992-2001

Year	Commercial Allocation	Commercial Catch	C & S Allocation	C & S Catch
1992	152,500	154,200	10,000	14,200
1993	136,000	136,200	14,000	15,800
1994	176,500	187,700	16,000	10,900
1995	171,000	176,400	11,000	14,200
1996	168,000	166,200	14,000	15,000
1997	230,000	228,500	15,000	14,800
1998	272,000	296,600	15,000	10,500
1999	256,000	271,500	10,000	10,500
2000	305,000	300,100	10,500	17,500
2001	406,500	411,600	17,500	16,000

3.3.5 Profile of the Recreational Fisheries

Seger information for 2003 specifications EIS## Data on where seasons strongest and when for effects on recreational fisheries of closures at different times of years? Participation in salmon charter industry as indicator of potential groundfish participants, possibly more data on salmon sector? Discuss halibut recreational fishery, particularly as it affects yelloweye rockfish?##

3.3.6 Profile of the Processing Sector

Shorebased Sector. # Seger information for 2003 specifications EIS## Estimates of # of processors (shorebased and at-sea,) where located. Processors that have closed in recent years? What spp. (groundfish and non-groundfish) processed at what times of year? Davis & Radtke on OR, sources for CA and WA? Connections with processors off AK and BC?##

Whiting has been processed into surimi, sold in headed and gutted form, filleted, and converted to meal and oil. Other, higher quality fish like Petrale sole are dressed and rushed to fresh, local markets as quickly as possible, while most sablefish is frozen and sent to foreign markets. The quantity of groundfish caught off of the West Coast is just a small percent of the amount of groundfish caught in federal waters off Alaska, so West Coast groundfish moves through many of the same markets as Alaska groundfish, taking prices set by the northern fleet.

With the exception of the portion of Pacific whiting catch that is processed at sea, all other Pacific coast groundfish catch is processed in shore-based processing plants along the Pacific coast. By weight, 1998 commercial groundfish landings were distributed among the three states as follows: Washington, 13%; Oregon, 69%; California, 18%. By value, commercial groundfish landings are distributed among the three states as follows: Washington, 15%; Oregon, 43%; California, 41% (PFMC, October 1999.) The discrepancies between the Oregon and California portions of the landings are expected because Oregon processors handle a relatively high percent of the shore-based whiting landings, a high volume, low value fishery. Conversely, California fishers land more of the low volume, high value species as a proportion of the total state-wide catch than Oregon fishers.

At-Sea Sector. There are two classes of vessels in the at-sea processing sector of the whiting fishery, catcher-processors that harvest and process their own catch, and mothership vessels that process unsorted catch received from smaller catcher vessels. The processing vessels are large (>250 ft in length) and carry crews of 65-200, who mostly work in shifts to keep the factories operating day and night.

The first year of implementation of a license limitation program in the Pacific groundfish fishery was 1994. Vessels that did not initially qualify for a permit had to buy or lease one from qualifying vessels to gain access to the fishery. To harvest whiting, all at-sea catcher-processors had to purchase or lease permits. This changed the composition of the at-sea processing fleet considerably, increasing the number of motherships, because permits are not required for vessels that only process (PFMC 1998). Unlike catcher/processors and catcher vessels, motherships do not have permits to harvest groundfish in the WOC.

In 2001, 20 catcher vessels delivered whiting to 5 non-tribal mothership processors and 4 tribal catcher vessels delivered whiting to a single tribal mothership. Some vessels may deliver catch exclusively to motherships off Alaska and the West Coast, but in recent years, about half of the non-tribal vessels also delivered whiting to shore-based processing facilities in Washington, Oregon and California. Similarly, the tribal mothership also processes whiting in the non-tribal sector before the start of the tribal fishery. In 2001, 7 catcher/processors participated in the whiting fishery.

Since May 1997, when the Department of Justice approved allocation of whiting shares among the members of the Whiting Conservation Cooperative, the catcher-processor fishery has operated as a voluntary quota share program where each of the catcher-processor companies has agreed to take a specific share of the harvest. With harvests assured, the catcher-processors are able to operate more cautiously to avoid areas of salmon and rockfish abundance. The motherships, however, operate under more competitive conditions (first come first served) for their sector's allocation. The U.S. whiting allocation has been fully utilized by domestic processors since 1992.

Whiting is a high volume species, but it commands a relatively low price per pound. The at-sea processing vessels have onboard surimi production capacity and were initially designed to fish for pollock in the groundfish fisheries off Alaska. Because whiting is a similar species to pollock, harvesting and processing technology and equipment used in the Alaskan fisheries is also used for whiting. In addition, to surimi, most of these vessels have the capacity to produce frozen fillet blocks and have fish meal plants to process small whiting, incidentally caught groundfish species and fish offal.

4.0 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

How This Section is Organized

This Section examines the environmental consequences that could be expected to result from adoption of each of the alternatives to both the specifications and management measures process issue and to the optimum yield duration issue. As discussed in Section 1.0, Purpose and Need for Action, the purposes in and needs for considering these alternatives are to:

- Comply with a court order to provide more opportunity for public comment in the NMFS rule publication process
- Streamline the process of and reduce the workload associated with developing specifications and management measures so that more Council and NMFS time may be devoted to issues other than specifications and management measures development.

Therefore, this section will consider the environmental effects of the specifications and management measures process and of the potential alternatives to that process, as well as considering the environmental effects of alternative OY durations. The specific effects of the specifications and management measures adopted for 2002 were analyzed in the EA/RIR/IRFA for the 2002 ABC and OY specifications and management measures (Council 2001.) Concurrent to this FMP amendment, the Council is also considering Amendment 16, an FMP amendment on rebuilding overfished species. The NEPA analysis for Amendment 16 and for the overfished species rebuilding plans associated with Amendment 16 will evaluate the alternatives for rebuilding overfished species and how rebuilding measures that are part of the specifications and management measures process affect the human environment.

This section forms the analytic basis for the comparison of issues across alternative specifications and management measures processes and alternative OY durations. The potential of each alternative to affect one or more components of the human environment is discussed in this section; direct and indirect effects of the alternatives are discussed in this analysis. Direct effects are caused by an action and occur at the same time and place as the action, while indirect effects occur later in time and/or further removed in distance from the direct effects (40 CFR 1508.27). Direct effects of some of the alternatives include the effects of a potential change in the start date of the fishery management period on the Council's management process. Indirect effects from a change in fishery start date could include increased or decreased fishing pressure on particular groundfish stocks at different times of the year.

4.1 Physical Impacts of the Alternatives

Physical impacts generally associated with fishery management actions are effects resulting from changes in the physical structure of the benthic environment as a result of fishing practices (e.g. gear effects and fish processing discards). Although groundfish fishing activity affects the physical environment, the process of implementing specifications and management measures does not have an effect on the physical environment. Discussions of the effects on the physical environment of the specifications and management measures for a particular year are found within the appropriate NEPA analyses for that year's specifications and management measures. Concurrent to this Amendment 17, NMFS is also drafting an Environmental Impact Statement on the effects of groundfish fishing on EFH. The effects on the physical environment of the full suite of groundfish management measures and policies will be considered within that EIS.

4.2 Biological Impacts of the Alternatives

The biological impacts generally associated with fishery management actions are effects resulting from: 1) harvest of fish stocks that may result in changes in food availability to predators, changes in population structure of target fish stocks, and changes in community structure; 2) entanglement and/or entrapment of non-target organisms in active or inactive fishing gear; 3) major shifts in the abundance and composition of the marine community as a result of fishing pressure.

In this section, alternative specifications and management measures processes and alternative OY durations are examined for their potential effects on the biological environment. The primary areas where the process itself could affect the environment are: 1) the effect of potential fishing effort shifts caused by changes to the fishing season start date on target and non-target species; 2) the effect of the management process on the age of the resource surveys and assessments used in setting harvest specifications; and 3) the effect of the management process on the ability of the scientific process to describe and analyze the status of groundfish stocks and to estimate the harvestable surpluses of those stocks. Amendment 17 is administrative in nature and is not expected to have significant effects on the biological environment. If, at the beginning of a fishery management cycle, the Council sets suitably conservative harvest management measures, the season start date would not have any effect on the biological environment. In 2000 and 2001, however, management measures set at the beginning of the management cycle (January 1) were not conservative enough to maintain a year-round fishery for all species and all fishing sectors. If the fishery closures in the latter halves of these two years are indicative of future management challenges, the fishery season start date may have an effect on the biological environment, discussed below. Amendment 17 would also effect the scientific process for developing stock assessments that supports the Council's management process. The timing of the scientific process may have indirect effects on the quality of data and scientific analyses used in setting specifications and management measures. Table 4.2 provides these effects in a matrix format.

Table 4.2.1 Summary of the Potential Biological Impacts of Alternative Specifications and Management Measures Processes and Alternative OY Durations

BIOLOGICAL ISSUES	Effects on marine communities from fishing effort shifts due to season changes	Effects on the age of the resource surveys and assessments used in setting harvest specifications	Effects on data availability (Fishery and mortality data, age, size, growth & recruitment data, resource surveys)	Effects on advanced models (Stock assessments, multi-species interactions, habitat, climate)
Threshold	If this specifications and management measures process results in a time-shift in fishing effort, how might it affect when specific stocks and stock mixes are taken?	"Best available data" and "most recently available data" are two different concepts. How would this specifications and management measures process affect the use of the most recently available data?	Could this specifications and management measures process result in more and better catch, abundance, and biological data being available to stock assessment modelers and the public?	Could this specifications and management measures process provide more opportunities to develop, review and refine scientific models to improve the "best available science?"
Process Alternative 1, status quo, no action: 2-meeting annual process (Sept & Nov,) Jan 1 start date	Status quo/no action alternative tends to result in early attainment of harvest allocations and fishing closures during Oct-Dec. Although this schedule decreases fishing pressure during early winter flatfish spawning aggregation months of Nov-Dec, fishing pressure is heavy again during later flatfish spawning aggregation months of Jan-March. Bycatch of protected rockfish species in flatfish fisheries tends to be lower during winter flatfish spawning aggregation periods. This schedule also leaves open fishing opportunities during summer months, when flatfish tend to move to more shallow depths and when bycatch of protected slope rockfish species is higher in fisheries targeting healthier slope rockfish and DTS stocks. Because Alternative 1 is an annual process, all OYs are one-year OYs, although a particular species may have the same one-year OY for several years at a time, depending upon stock assessment timing.	Under status quo/no action, resource surveys are conducted annually. Stock assessments are conducted triennially, with one-third of all assessed stocks receiving assessment updates each year. For some species, data from a resource survey in Year 1 is assessed in Year 2 and fishing occurs on that assessment in Year 3. At the other extreme, data from a resource survey in Year 1 is not assessed until Year 4, with fishing occurring on that assessment in Year 5. For all alternatives, resource surveys occur in summer/autumn months. Assessments based on those surveys are generally not available until May 1 of the following year. Duration of OYs, whether one-year, two-year, or mixed would not affect data availability.	No measurable effect on data gathering and availability. Availability of data used to assess stock status and potential biological yields tends to be most dependent on financial commitments that agencies & other interested parties make to data gathering. Catch data needed for inseason monitoring least available/ reliable early in fishing year. Jan 1 fishing year start could result in more in-year management fluctuations for species with heavier fishing pressure during Jan-Apr (DTS complex, flatfish.) Duration of OYs, whether one-year, two-year, or mixed would not affect data availability.	Status quo/no action alternative uses annual updates of one-third of all assessed stocks, with STAR processes that review both models used and data sources that contribute to models. Status quo STAR process increases workload for stock assessment authors who are annually preparing both models and data sources used in models for STAR review. Duration of OYs, whether one-year, two-year, or mixed would not affect advanced modelling.
Process Alternative 2: 3-meeting biennial process (April, June & Sept,) Mar 1start date	Given closure trends under status quo, March 1 start date would likely result in early allocation attainment and closures during Dec-Feb. Alternative 2 could thus reduce fishing pressure on flatfish during winter spawning aggregation months, but could also result in greater fishing pressure on healthy flatfish stocks in periods when bycatch of protected rockfish stocks is higher. Like Alternative 1, summer fishing months would continue open. If this alternative were implemented with some or all species managed with two-year OYs, as opposed to one-year OYs, early attainment and closure period could lengthen, possibly to Oct-Feb of second year in two-year fishing period. With two-year OYs, management measures would need to be more conservative at the start of the two-year fishing period to hedge against early closures during the second year in the fishing period.	Biennial management process would allow a biennial scientific process. Additional financial resources devoted to groundfish resource surveys should allow for biennial or annual surveys. Under this 3-meeting process, a resource survey would occur in Year 1, stock assessments in Year 2, management deliberations in Year 3, and fishing based on the Year 2 stock assessments would occur in Years 4 and 5. This alternative allows roughly the same newness of data use as the status quo alternative for two-thirds of assessed stocks, with *later* data use for one-third of assessed stocks. Duration of OYs, whether one-year, two-year, or mixed would not affect data availability.	No measurable change in data gathering and availability over Alternative 1. Alternative 2 has March 1 start date, which could result in more in-year management fluctuations for species with heavier fishing pressure during Mar-Jun (DTS complex & flatfish for Mar/ Apr; widow & yellowtail rockfish taken in pelagic trawls, all species taken in small boat hook-and-line fisheries during warmer May/June period.) Duration of OYs, whether one-year, two-year, or mixed would not affect data availability.	Improvement in model development and data use over Alternative 1. Biennial management process would allow biennial scientific process, with model development and review occurring in one year, then stock assessments that plug data into developed models occurring in alternate years. Biennial process could be expected to improve quality & variety of models used, to improve use of already-collected data on unassessed stocks, and to allow more time for exploring habitat and ecosystem modeling. Duration of OYs, whether one-year, two-year, or mixed would not affect advanced modelling.

BIOLOGICAL ISSUES	Effects on marine communities from fishing effort shifts due to season changes	Effects on the age of the resource surveys and assessments used in setting harvest specifications	Effects on data availability (Fishery and mortality data, age, size, growth & recruitment data, resource surveys)	Effects on advanced models (Stock assessments, multi-species interactions, habitat, climate)
Process Alternative 3: 3-meeting, biennial process (Nov, March/April & June,) Jan 1 start date	If biennial process sets annual harvest allocations against biennial OYs, this alternative should have no measurable changes over Alternative 1. If this alternative were implemented with some or all species managed with two-year OYs, as opposed to one-year OYs,early attainment and closure period could lengthen over Alternative 1, possibly to Aug-Dec of second year in two-year fishing period. With two-year OYs, management measures would need to be more conservative at the start of the two-year fishing period to hedge against early closures during the second year in the fishing period.	Same as Alternative 2 with respect to both annual specifications process and OY duration issues.	No measurable change over Alternative 1 with respect to either annual specifications process or OY duration issues.	Same as Alternative 2 with respect to both annual specifications process and OY duration issues.
Process Alternative 4: 3-meeting, biennial process (June, Sept & Nov,) May 1 start date	Given closure trends under status quo, May 1 start date would likely result in early allocation attainment and closures during Feb-Apr period. Alternative 4 would thus allow fishing pressure on flatfish during winter spawning aggregation months, when bycatch of protected rockfish stocks is lower. The major biological disadvantage of this alternative is that fishery data availability would be lowest during summer months of first year of the two-year fishing period. Pleasant weather summer months tend to have greater vessel participation and tend to show higher bycatch of protected rockfish stocks in fisheries targeting healthier stocks. If this alternative were implemented with some or all species managed with two-year OYs, as opposed to one-year OYs,early attainment and closure period could lengthen over Alternative 1, possibly to Dec-Apr of second year in two-year fishing period. With two-year OYs, management measures would need to be more conservative at the start of the two-year fishing period to hedge against early closures during the second year in the fishing period.	Biennial management process would allow a biennial scientific process. Additional financial resources devoted to groundfish resource surveys should allow for biennial or annual surveys. Under this 3-meeting process, a resource survey would occur in Year 1, stock assessments and management deliberations in Year 2, and fishing based on those assessments would occur in Years 3 and 4. This combination of a 3-meeting process with Years 3 and 4 use of data is possible because of the May 1 fishing period start date. This alternative allows roughly the same newness of data use as the status quo alternative for two-thirds of assessed stocks, with *earlier* data use for one-third of assessed stocks. Duration of OYs, whether one-year, two-year, or mixed would not affect data availability.	No measurable change in data gathering and availability over Alternative 1 with respect to both annual specifications process and OY duration issues. Alternative 4 has May 1 start date, which could result in more in-year management fluctuations for species with heavier fishing pressure during May-Aug (widow & yellowtail rockfish taken in pelagic trawls; all species taken in small boat hook-and-line fisheries in warm months.)	Same as Alternative 2 with respect to both annual specifications process and OY duration issues.
Process Alternative 5: 2-meeting, biennial process (June & Sept,) March 1 start date	Same as Alternative 2 with respect to both annual specifications process and OY duration issues..	Same as Alternative 4 with respect to both annual specifications process and OY duration issues. However, earlier use of data is possible with this alternative because it is a 2-meeting process. Of the four biennial alternatives, this alternative provides the shortest time between resource survey and fishing activity.	Same as Alternative 2 with respect to both annual specifications process and OY duration issues..	Same as Alternative 2 with respect to both annual specifications process and OY duration issues..

4.2.1 Biological Effects of Changing the Fishing Season Start Date and of Differing OY Durations

With the specifications and management measures process, fishery managers set annual harvestable amounts for each groundfish species or species group and try to construct trip limits for those species that will allow the harvest of the OYs of healthy stocks without allowing total catch of overfished and depleted stocks to exceed their OYs. Setting a year of trip limits is a delicate balancing act that requires consideration of when groundfish stocks and non-groundfish stocks are most available, when healthy and depleted stocks mix in a way that makes clean harvesting of healthy stocks more likely, and when different sectors of the fishing fleet are most likely to fish with which type of gear and in what waters. Ideally, managers would like to set a trip limit structure at the beginning of the fishing year that perfectly predicts all of these variables. In reality, however, fish stocks and the fishing fleet often behave in ways that are not predicted by the harvest models used in setting the year's management measures. As fishery scientists and managers track the fishery through the year, landings levels may be higher or lower than predicted at the beginning of the year. At within-year analyses of landings levels, usually at the Council's April, June, and September meetings, managers will make inseason adjustments to trip limit levels to either accelerate or decelerate landings rates. Under the current management structure (status quo/no action alternative,) managers have historically allowed more fishing during the warm weather months, with the expectation that landings of some species may be restricted or shut down toward the end of the calendar/fishing year.

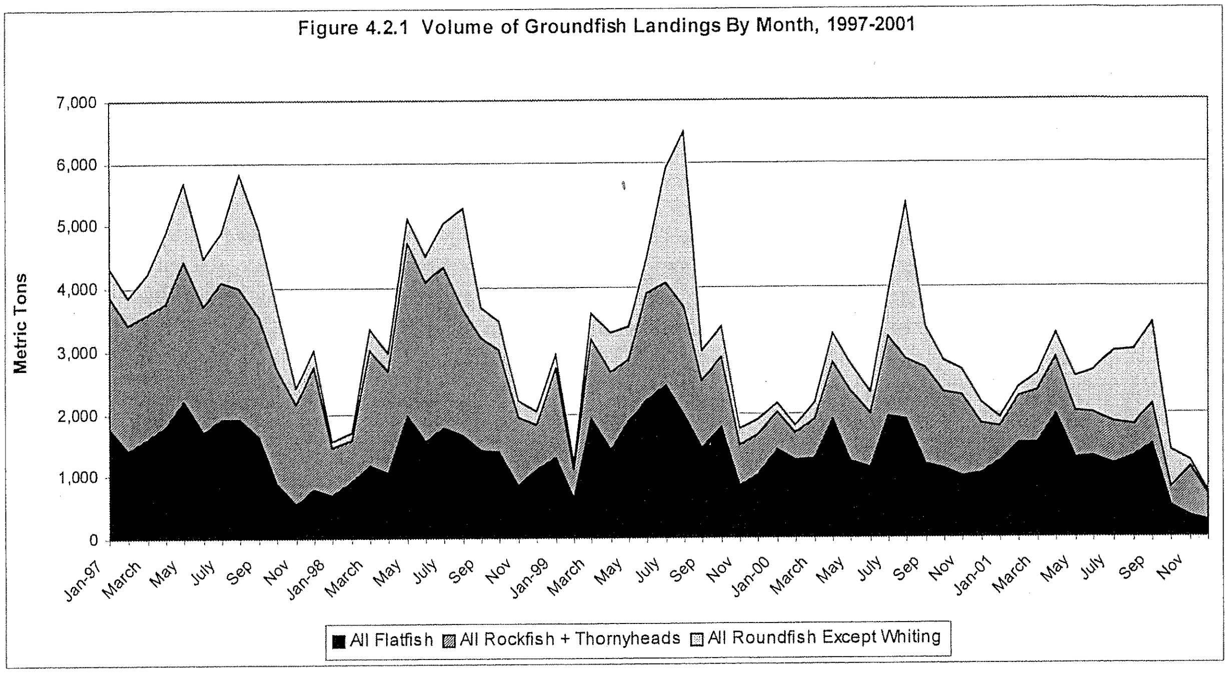
For many years, the Council has managed the groundfish fishery with the aim of maintaining a year round fishery, as articulated in Goal 3 and Objective 7 of the FMP:

> Goal 3: "Achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities"
>
> Objective 7: "Identify those sectors of the groundfish fishery for which it is beneficial to promote year-round marketing opportunities and establish management policies that extend those sectors fishing and marketing opportunities as long as practicable during the fishing year."

The Council has historically interpreted Goal 3 and Objective 7 to mean that all sectors of the fishery should be open year round, with the exception of the primary whiting and primary sablefish seasons. Maintaining a year round fishery has become more difficult in recent years, due to the need to reduce the effects of the different sectors of the fishery on overfished species. Commercial and recreational hook-and-line fisheries off California south of 40°10' N. lat., for example, have had shortened seasons in 2001 and 2002. In both of these years, many groundfish fishery sectors have been also shut down or notably reduced in the latter half of the year. These fishery closures and reductions were needed largely because managers had set management measures underestimating the level of fishery participation in the first half of the year.

Amendment 17 contemplates changing the process for setting specifications and management measures, not the standards by which they are set or the goals for managing the fishery. Whether the majority of fishery sectors continue to operate year round is a factor of management measures developed at the beginning of the fishing period, not a factor of when that fishing period begins. Because the fishing period start date will not affect the overall amount of each target species taken within the fishing period, there is no discernable difference between the effects of the different fishing period start dates on targeted groundfish stocks. If fishery managers were able to perfectly predict fishing effort for all sectors at all times during the year, the different fishing period start dates would also have no effect on the bycatch of overfished and depleted stocks. If, however, the pattern of late-season closures continues, the effect of the fishery on incidentally taken overfished and depleted species will vary according to the times of year when fishing effort is strongest. These effects could be even stronger if the Council should decide to use two-year OYs for some (Issue 2, Alternative 3) or all (Alternative 2) managed species. Without adequately conservative initial management measures, the closure period could become a 6-7 month closure at the end of the second fishing year, rather than two 3-4 month closures at the end of each fishing year.

Figure 4.2.1 shows groundfish landings by month, for 1997-2001. Over this five year period, there has



been a notable decline in overall groundfish landings, particularly for rockfish species. In each year, roundfish landings spiked during the summer sablefish seasons. In all years, landings of all groundfish were higher in the March-September period than in the winter months. This same trend was also evident in 2001, although the year-end decline in 2001 was due to regulatory restrictions rather than to either market restrictions or fisher disinclination to operate during winter weather. Each year also shows a spike of higher landings in January, at the new opening of the fishing years. Although the year-round fishery policy is evident in that groundfish landings are being made in every month, the greatest volume of groundfish landings has occurred during the summer months.

Figures 4.2.2-5, below, show the estimated bycatch rates of overfished species taken incidentally in DTS complex (Dover sole, thornyheads, sablefish) and flatfish trawl fisheries north and south of 40°10' N. lat. [Note: Figures 4.3.2 and 4.3.3, for north of 40°10', show a bycatch rate percentage scale of up to 5% of target landings amounts. Figures 4.3.4 and 4.3.5, for south of 40°10', show a bycatch rate percentage scale of up to 2% of target landings amounts.] For most of the overfished species, these figures show higher bycatch rates in bimonthly periods 3 (May-June) and 4 (July-August). These estimated bycatch rates were provided by James Hastie of the NMFS Northwest Fisheries Science Center and will be used in the Environmental Impact Statement for the 2003 specifications and management measures and by the Council in its deliberations concerning that management action.

Under Process Alternative 1 (status quo/no action,) harvest allocations tend to be attained by late fall, with restrictions or closures occurring in the October through December period. This schedule tends to reduce pressure on flatfish stocks during the early part of their spawning season; however, spawning is usually still occurring when the fishery re-opens January 1. The advantage of allowing heavier fishing pressure on flatfish stocks during their spawning season is that they tend to be most aggregated then, less mixed with other groundfish stocks like rockfish. The disadvantage of allowing fishing on spawning aggregations that occur during the early part of the management period is that the fish are so readily available for harvest that a significant proportion of the year's harvestable surplus for a particular species may be taken in the first few months of the fishery. In a fishery managed by an FMP that puts a priority on year-round harvest availability, a significant harvest of healthy flatfish stocks early in the year could jeopardize the availability of flatfish or co-occurring protected stocks later in the year. A January 1 fishing period start date also usually ensures that the fishery will be open during the summer months. Hook-and-line fisheries do not tend to target flatfish stocks, but do pursue sablefish and rockfish during the summer. Status quo fixed gear sablefish management allows a small daily or weekly trip limit fishery for the limited entry and open access fisheries throughout the year and the larger limited entry tiered sablefish fishery. Sablefish stock health is more likely affected by possible discard in the daily/weekly trip limit fisheries and possible highgrading discard in the tiered fisheries than by any particular overall fishing period start date.

Figure 4.2.2 Flatfish Fishery North of 40°10', Bycatch Rates of Overfished Species

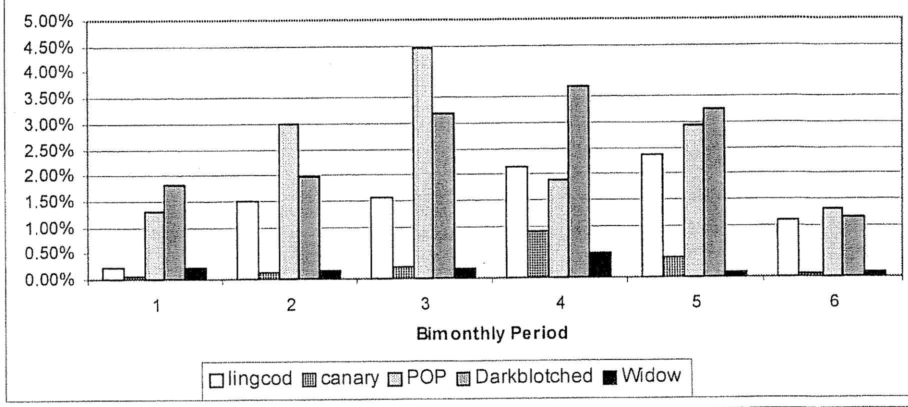
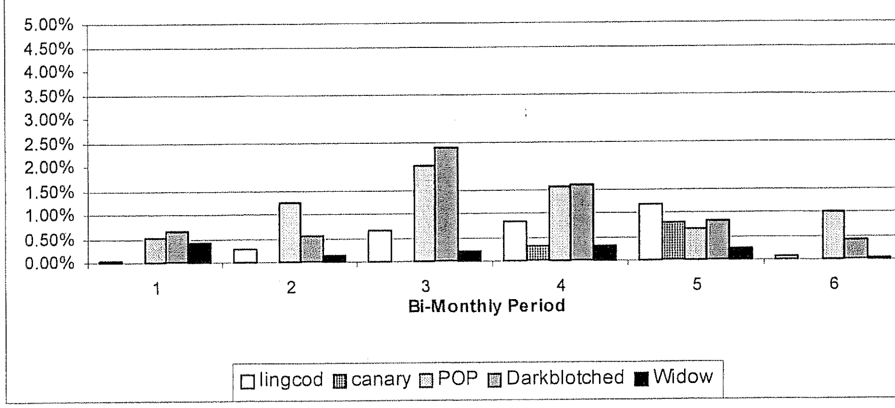


Figure 4.2.3 DTS Fishery North of 40°10', Bycatch Rates of Overfished Species



Like the status quo alternative, Process Alternative 3 also has a January 1 fishing period start date. Process Alternative 3, however, is a biennial process. This process alternative allows consideration of the OY duration alternatives (Issue 2). Specifications, such as ABCs, could be set for two years without affecting fishery participation. If harvest allocations or OYs are set in two-year increments, fishing pressure could be fairly consistent for the first 18 months of the two-year period, with significant restrictions and closures in the final six months of the period. To protect against this possibility, the Council would have to set particularly conservative management measures during the early part of the first fishing year in the period.

For both Process Alternative 1 and Process Alternative 3, the October-December slow period tends to fall in months when bycatch of overfished species occurs at relatively lower rates. The Council first analyzed the bycatch rates of overfished species in particular target fisheries for its 2002 specifications and management measures. That analysis was used to concentrate fisheries targeting healthy stocks in the months when bycatch of overfished species tends to be lower. Unanticipated landings of darkblotched rockfish south of 40°10' in the commercial fishery and unexpectedly high bocaccio landings in the recreational fishery south of 40°10' led to early closures of fisheries affecting both of these stocks. The start date of the fishery does not affect the bycatch rates of overfished species taken in fisheries targeting healthier stocks. However, if fishery landings have outcomes that were unexpected when management measures were set, as happened in 2002, fishery slowings and closures would occur toward the end of the management period. If Process Alternative 3 were combined with two-year OYs (OY Duration Alternatives 2 or 3,) fishery slowings and closures would likely occur during the second half of the second year of the management period.

Figure 4.2.4 Flatfish Fishery South of 40°10', Bycatch Rates of Overfished Species

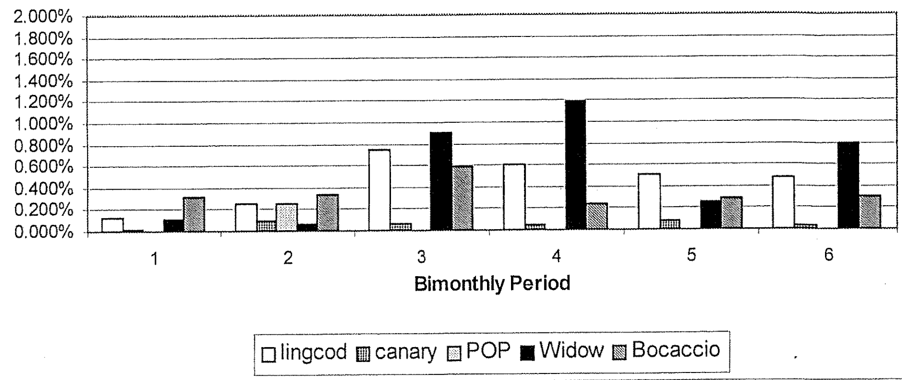
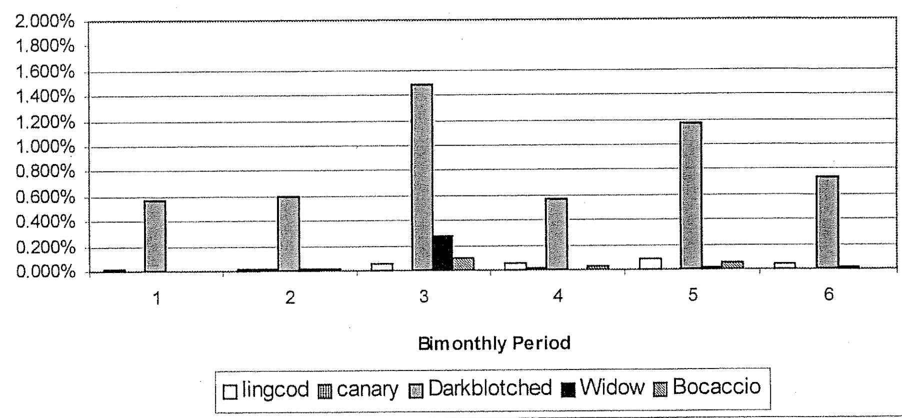


Figure 4.2.5 DTS Fishery South of 40°10', Bycatch Rates of Overfished Species



For some fisheries, landings data may not be available for use in data analysis until several months after the landings have been made. In general, the states of Oregon and Washington have fairly swift commercial fishery data availability, while the commercial landings made in California may not be available in a coastwide database until 3-5 months after the landings have been made. Recreational fisheries data, primarily the Recreational Fisheries Information Network (RecFIN) database, is usually not considered an accurate picture of landings until a full year of fishing has occurred and data from that year has been analyzed. Given these commercial and recreational fisheries data delay situations, a January 1 fishing period start date may not allow stock assessment authors working in January-April to use all of the data from the prior fishing year in their assessments.

Process Alternatives 2 and 5 are biennial processes with March 1 fishing period start dates. A March 1 start date, with a corresponding February 28/29 ending date could push the restriction and closure period from the status quo October-December to a new December-February. For flatfish fishing on spawning aggregations, this change in slow periods may or may not affect incidental catch rates of overfished species. Vessels that have traditionally targeted flatfish during the January-February period could instead target flatfish during November-December, although that strategy change could mean forgoing Dungeness crab fishing opportunities. Similar to Process Alternatives 1 and 3, Process Alternatives 2 and 5 would ensure open fisheries during the summer months, which have traditionally been stronger for hook-and-line fisheries. Also like Process Alternative 3, these two biennial processes could have the management challenge of stronger effort in the first year and a half of the two-year management period with restrictions and closures for possibly 4-6 months of the second year. These longer closures during the second year of the management period would be more likely if the Council were to use two-year OYs (OY Duration Alternatives 2 and 3) instead of one-year OYs (OY Duration Alternative 1.) Changing the fishing period start date to March 1 from January 1 would not change the amounts of either targeted or incidentally taken stocks that are harvested in the groundfish fishery. As discussed above for Process Alternatives 1 and 3, however, the fishing period start date could affect the months of the period-end fishery slowings and closures. Under Process Alternatives 2 and 5, the expected slow months of October-February tend to have the lowest incidental catch rates of overfished species. Regardless of which fishing period start date is chosen, annual landings of targeted healthy stocks could be increased if landings levels were concentrated during the winter months to take advantage of the lower overfished species bycatch rates during those months. With a March 1 fishing year start date and the typical January-April stock assessment schedule, commercial and recreational fishery data used in stock assessments would be less up to date than it would be under Process Alternatives 1 and 3. Stock assessment scientists would be working with data from about two-thirds of the prior fishing year, whereas the January 1 start date would allow data use from about three-quarters of the prior fishing year.

Process Alternative 4 is a biennial process with a May 1 start date. A May 1 start date, with a corresponding April 30 ending date could push the restriction and closure period from the status quo October-December to a new February-April. The advantage of this start date is that it would leave open some of the stronger months for targeting healthy stocks with lower incidental catch of overfished species. Unfortunately, the notable biological disadvantage of a May 1 start date is that fishery data availability would be lowest during the summer months of the first year of the two-year fishing period. Summer weather tends to allow greater fishery participation and the summer months tend to show higher incidental catch rates for overfished stocks taken in fisheries targeting healthy stocks. In order to protect against unpredictable harvest spikes, managers would have to severely restrict early summer fishing in at least the first year of the two-year fishing period. Without those restrictions, landings in those early months could quickly eat up allocations of both healthy and protected stocks. With respect to bycatch of overfished species, this process alternative is similar to all of the others in that it could result in fishery slowings and closures occurring during months when the bycatch rates of overfished species tend to be lower. And, as with all other process alternatives, choosing an OY duration alternative that would allow two-year OYs could result in a longer slowing and closure period at the end of the two-year cycle if the management measures set at the start of the cycle are not adequately conservative. With a May 1 fishing year start date and the typical January-April stock assessment schedule, commercial and recreational fishery data used in stock assessments would be less up to date than it would be under all other alternatives. Stock assessment scientists would be working with data from about one-half of the prior fishing year under this alternative.

Many of the potential biological effects of shifting the fishing year start date and of setting two-year OYs should more properly be considered effects of the Council's year-round fishery policy, rather than effects of the start date of a management period. If, for example, the trawl flatfish fisheries were managed with a four month season of November through February, allocations of those flatfish stocks could be taken entirely during periods when bycatch of overfished stocks is relatively low.

4.2.2 Biological Effects of Changing to the Management Process on "Best Available Science" and Stock Assessment Timeliness

At National Standard 2, the Magnuson-Stevens Act requires that conservation and management measures be based on the best available scientific information (16 U.S.C. 1826). Table 4.2.1, above, briefly analyzes the effects of changing the specifications and management measures process on the:

- Age of the resource survey and stock assessments used in setting harvest specifications
- Availability and quality of more and better catch, abundance, and biological data
- Availability and quality of advanced scientific models used to assess stock and ecosystem health

Section 3.2.1 discusses the scientific process and the types of information and tools needed for that process. In considering the biological effects of the management process on the environment, we must look at the quality of the scientific information that we use in that management process. The Magnuson-Stevens Act and other legislation commonly call for the use of the "best available science," but that concept is often confused with "most recently available science." For example, data from a resource survey conducted in 2002 may be the most recently available data for informing the harvestable surplus of a particular species in 2003, but without a stock assessment for that species, using that data for the 2003 fishing season could not be considered using the best available science.

Data availability from resource surveys and other sources is generally dependent upon the financial resources that scientific agencies devote to gathering data. For many years, NMFS has conducted triennial West Coast groundfish resource surveys. A recent strengthening of Congressional interest in scientific information about West Coast groundfish has provided the agency with the resources to conduct biennial or annual resource surveys. These increased data gathering resources would be available under any of the process alternatives. Therefore, this document discusses the effect of all of the process alternatives on best available science with the assumption that all alternatives, including status quo, include annual or biennial resource surveys. While the specifications and management measures process should not affect the availability and quality of data used as the basis for stock assessments and other scientific analyses, that process can affect when the data is used and the scientific process by which it is used. Resource survey timing and use of data from those surveys would be affected by the process alternatives as follows:

Table 4.2.2 Data Availability and Use in the Management Process

	Alternative 1			Alternative 2	Alternative 3	Alternative 4	Alternative 5
Resource Survey Conducted	Year 1			Year 1	Year 1	Year 1	Year 1
Stock Assessment Conducted	1st/3rd stocks, Year 2, using Year 1 data	2nd/3rd stocks, Year 3, using Years 1-2 data	3rd/3rd stocks, Year 4, using Years 1-3 data	Year 2	Year 2	Year 2	Year 2
Management Process Occurs	1st/3rd stocks, Year 2	2nd/3rd stocks, Year 3	3rd/3rd stocks, Year 4	Year 3	Year 3	Year 2	Year 2
Fishing on Year 1 Resource Survey Occurs	1st/3rd stocks, Years 3-5 on Year 1 data	2nd/3rd stocks, Years 4-6 on Years 1-2 data	3rd/3rd stocks, Years 5-7 on Years 1-3 data	Years 4/ 5*	Years 4/ 5	Years 3/4*	Years 3/4*
Time Gain/Loss of "Most Recently Available Data" Over Other Alternatives	Data is used sooner than all other alternatives for at least 1/3rd of assessed stocks each year. However, assessments for all stocks occur on less frequent basis than all biennial alternatives, which means that data is also used for the *longest* period under this alternative.			Data use oldest in this alt., as fishing occurs in Years 4/5 and fishing year begins March 1.	Data use older than Alts. 4 and 5, but slightly more recent than Alt. 2 due to January 1 start.	Data use newer than Alt. 2 by 10 months and newer than Alt. 3 by 8 months.	Data use newest in this alt. Newer than Alt. 2 by a year, than Alt. 3 by 10 months, and than Alt. 4 by 2 months.

*For Process Alternatives 2 and 5, the "year" in which fishing would occur would be March 1 through February 28/29. For Process Alternative 4, the "year" would be May 1 through April 30.

In addition to affecting the timing of resource survey data use, the management process can also affect the quality and type of scientific analysis conducted on that data. An annual specifications and management measures process does not allow contributing scientific agencies enough time to conduct stock assessments on all assessed species each year. As a result, the status quo stock assessment process is to update stock assessments for one-third of all assessed species each year. Stock assessment authors will also try to add new stocks to the list of assessed species every year, although the addition of new species sometimes results in the delay of stock assessments for other species (See Section 3.2.1). Under a biennial management process (Process Alternatives 2-5,) the scientific process would also become biennial, with one year spent on developing and evaluating stock assessment models and the second year spent on analyzing resource survey and other data. The major benefits of allowing more time for model exploration and development would be more rigorously analyzed stock assessments and overfished species rebuilding models for currently assessed stocks, new assessment models for unassessed stocks for which data already exists, and new modeling efforts on multi-species interactions, habitat use, or ecosystem/climate models.

Stock assessments are conducted to determine the abundance of fish stocks and to project the level of future catch that will achieve the target harvest policy. These determinations cannot be made with absolute accuracy and the further they are used to project into the future, the greater the confidence intervals on the projection. When an assessment is conducted, it will use accumulated historical data as well as data that is as current as possible. Thus, assessments gradually should become more accurate as they incorporate longer time series and "learn" from past assessments. However, several factors contribute to inaccuracy in the projections. Projections may be inaccurate if: the assessment itself is inaccurate, future recruitments are different than projected in the assessment, or future catch differs from the level forecast in the assessment. Although there is much research devoted to prediction of recruitment levels, substantial improvement in this area is years away. Therefore, it is necessary to frequently update assessments to track true changes in stock abundance and adjust for past inaccuracies in stock estimates.

Over the past 15 years, the timeliness of the transition from survey to assessment to management action has varied greatly. The most timely has been that for Pacific whiting. Summer whiting surveys have been analyzed the following winter and used to adjust the fishery level less than a year after the survey is conducted. But this survey is only conducted triennially so this high timeliness has occurred only every third year. For most other species, the most recent survey data has already been one to several years old when it is used in the assessments, and the assessment results are used to set an ABC level that is kept constant for about three years until another assessment is conducted. During the stock declines of the 1990's, this low timeliness meant that downward adjustments in ABC lagged substantially behind the stock declines, thus contributed to the decline itself.

There are insufficient data, funds and staff to update every assessment every year for immediate adjustment of harvest levels. However, status quo ABC and OY calculations are best estimates and do not incorporate any consideration for the timeliness of implementation. The level of inaccuracy of the projection may cause either underachievement of optimum yield or overfishing. If projected catches are to have no more than a 50% probability of exceeding the overfishing level, then future harvest rates may need to be reduced to adjust for the increased inaccuracy of long projections. If a higher degree of avoiding overfishing is desired, then it would be even more important to progressively reduce the harvest level as the interval between assessments increases.

As shown in Table 4.2.2, the status quo/no action alternative tends to allow the use of the most recently available data for at least one-third of all assessed stocks. This use of most recently available data, however, should not be confused with the use of the best available science. Process Alternatives 2-5 would tend to provide the management process with better science than the annual stock assessment and management process of Process Alternative 1. These biennial alternatives provide stock assessment scientists with a greater opportunity to review and improve overall stock assessment methods and models, as they provide a two year cycle of stock assessments and model review. Of the four biennial alternatives, Process Alternative 5 makes the most timely use of stock assessments and provides the best insurance that fishing activities conducted against those stock assessments will reflect the pictures of stock health and abundance drawn by those assessments. Process Alternative 2 allows the longest time lag between resource surveys and fishing activities conducted against the stock assessments that fall out of the surveys. Thus, under Process Alternative 2, the Council would likely have to set more conservative harvest levels than under Process Alternative 5 in order to ensure that a retrospective analysis of fishing activities does not show that overfishing has occurred. Process Alternatives 3 and 4 fall between Alternatives 2 and 5 in terms of their timeliness of stock assessment use, with Alternative 3 being less timely than Alternatives 4 and 5, and Alternative 4 being more timely than Alternatives 2 and 3.

4.3 Socio-Economic Impacts of the Alternatives

The socio-economic impacts generally associated with fishery management actions are effects resulting from: 1) changes in harvest (whether directed commercial or indirected as recreational charter) availability and processing opportunities that may result in unstable income opportunities; 2) changes to access privileges associated with license limitation and individual quota systems; 3) fishing season timing or structure restrictions that may improve or reduce the safety of fishing activity; 4) fishing season timing or structure restrictions that may or may not take into account the social and cultural needs of fishery participants. Of these elements, the specifications and management measures process would not affect access privileges. The Council is currently discussing license limitation in the open access fisheries and trawl permit stacking. If the Council decides to move forward with either of these programs, the effects of changing fishery access privileges would be analyzed in the appropriate NEPA documents for those programs.

In this section, alternative specifications and management measures processes are examined for their potential socio-economic effects. The primary areas where the process itself could affect fishing industries and communities are: 1) the effect of changes to the fishing season start date on harvest availability and processing opportunity; 2) the effect of changes to the fishing season start date on fishery structure and safety; 3) the effect of changes to the fishing season start date on social and cultural needs of fishery participants. In addition to these direct effects on fishery management actions on fishing industries and communities, changing the specifications and management measures process or may affect the fishing public, general public, and participants in the fishery management process in: 1) the amount of management and science time devoted to developing annual specifications and management measures and the resultant staff resources for actions outside of that process; 2) the number and timing of Council meetings used to develop specifications and management measures; 3) the time available for public participation in the NMFS publication and evaluation of Council specifications and management measures recommendations. Table 4.3.1 provides these effects in a matrix format.

Table 4.3.1 Summary of Potential Socio-Economic Impacts of Alternative Specifications and Management Measures Processes and Alternative OY Durations

SOCIO-ECONOMIC ISSUES	Effects of changing season start date on harvest availability and processing opportunity	Effects of changing season start date on safety and social/cultural needs of fishing communities	Effects of management time and public review and analysis devoted to specifications and management measures process
Threshold	How would this specifications and management measures process affect harvest availability and processing opportunity for fishery participants? Would participation in fisheries other than groundfish fisheries be affected by a change in season start date?	How would this specifications and management measures process affect the safety of fishery participants? Would changing the start of the fishing season affect the social/cultural needs of fishing communities?	Does this specifications and management measures process allow more or less management time for other, non-specifications activities? How does this particular process affect public review and comment opportunities?
Process Alternative 1, status quo, no action: 2-meeting annual process (Sept & Nov,) Jan 1 start date	Status quo/no action alternative tends to result in early attainment of harvest allocations and fishing closures during Oct-Dec. For fishers wishing to operate during winter months and for processing plants, this slow groundfish period coincides with the Dungeness crab fishing and processing season. Just as Dungeness crab opportunities are decreasing in January-February, groundfish are again available for harvesting and processing. Recreational fishing tends to be slow during this period for most of the West Coast, except perhaps south of Point Conception, CA.	The specifications and management measures process itself does not tend to affect the safety of fishery participants, although the fishing period start date could have some effect on safety. Under status quo, fishing opportunities tend to slow down or close entirely during early winter months when offshore conditions are less navigable (Oct-Dec.) Cultural groups that might be most affected by a possible Oct-Dec closure could include individual fishers and processors wanting to increase their pre-holiday incomes and gain access to seasonal markets.	Status quo/no action alternative tends to devote the most management time to specifications and management measures because it is an annual process. The status quo schedule has a 2-meeting (Sept/Nov) process of Council proposals and final recommendations, followed by a Jan 1 publication of NMFS final rule implementing those regulations. In this process, public comment is received by the Council during the Sept/Nov period and by NMFS following publication of the final rule. Of the five alternatives, this schedule is the most compressed for management staff. For 2002, the Council held a 3-meeting process (June/Sept/Nov) followed by a Jan 1 NMFS proposed and emergency rule publication and public comment period and a Mar 1 final rule publication. While this 2002 variation lengthened staff time for the Council process, it increased staff workload for the NMFS process without increasing available work time. Duration of OYs, whether one-year, two-year, or mixed would not affect management time and public review and analysis devoted to specifications and management measures.
Process Alternative 2: 3-meeting biennial process (April, June & Sept,) Mar 1start date	Given closure trends under status quo, March 1 start date would likely result in early allocation attainment and closures during Dec-Feb. Similar to Alternative 1, this alternative would result in slower groundfish landings or closures during a period of higher Dungeness crab landings. With this potential closure period, however, fishers and processors might have less access to the stronger flatfish spawning aggregations of the mid-winter period. As with Alternative 1, recreational fishing tends to be slow during the winter months. If this alternative were implemented with some or all species managed with two-year OYs, as opposed to one-year OYs, early attainment and closure period could lengthen, possibly to Oct-Feb of second year in two-year fishing period. With two-year OYs, management measures would need to be more conservative at the start of the two-year fishing period to hedge against early closures during the second year in the fishing period.	This alternative would tend to result in declining landings and closures during the Dec-Feb period, which like the slow months of Alternative 1 include rougher winter weather months. Cultural groups that might be most affected by a possible Dec-Feb closure could include individual fishers and processors wanting to increase their pre-holiday incomes or gain access to seasonal markets. Under two-year OY duration alternatives, the slowing and closure period could lengthen, possibly to Oct-Feb, in which case groups affected by this period under both Process Alternatives 1 and 2 would be affected by the longer slow period in the second fishing year of the two year period.	Like all of the biennial alternatives, Alternative 2 would decrease overall time spent on developing specifications and management measures because the process would take place every two years instead of every year. Public review and comment would occur in Apr/Sept period for the Council process and following a Jan 1 publication of a NMFS proposed rule. Of the five alternatives, this schedule allows the most lengthy period for Council staff work time (11-19 months,) as it relies on stock assessments conducted in the prior year. NMFS staff work time = 5.5 months. This alternative relies on an April meeting for proposing specifications, which have historically been final meetings for salmon management process, leaving little Council time and energy for groundfish issues. March 1 start date would mean that inseason adjustments for final 3 months of year (Dec-Feb) would be made at a Nov meeting. Duration of OYs, whether one-year, two-year, or mixed would not affect management time and public review and analysis devoted to specifications and management measures.

SOCIO-ECONOMIC ISSUES	Effects of changing season start date on harvest availability and processing opportunity	Effects of changing season start date on safety and social/cultural needs of fishing communities	Effects of management time and public review and analysis devoted to specifications and management measures process
Process Alternative 3: 3-meeting, biennial process (Nov, March/April & June,) Jan 1 start date	Same as Alternative 1. If this alternative were implemented with some or all species managed with two-year OYs, as opposed to one-year OYs, early attainment and closure period could lengthen, possibly to Aug-Dec of second year in two-year fishing period. With two-year OYs, management measures would need to be more conservative at the start of the two-year fishing period to hedge against early closures during the second year in the fishing period.	Same as Alternative 1. Under two-year OY duration alternatives, the slowing and closure period could lengthen, possibly to Aug-Dec, in which case groups affected by this period under both Process Alternative 1 as well as vessels and processors that tend to not have groundfish alternatives in early autumn would be affected by the longer slow period in the second fishing year of the two year period.	Alternative 3 would be similar to Alternative 2 in benefits derived from Council time devoted to issues other than the groundfish specifications and management measures. Depending on when stock assessments are complete, this alternative could provide Council staff 14 months work time and NMFS staff 6.5 months work time. This alternative includes an April (salmon) meeting. Jan 1 start date would mean that inseason adjustments for final 3 months of year (Oct-Dec) would be made at Sept meeting, with final check for Dec at the Nov meeting. Duration of OYs, whether one-year, two-year, or mixed would not affect management time and public review and analysis devoted to specifications and management measures.
Process Alternative 4: 3-meeting, biennial process (June, Sept & Nov,) May 1 start date	Given closure trends under status quo, May 1 start date would likely result in early allocation attainment and closures during Feb-Apr period. This schedule would keep the fisheries open through stronger flatfish months and allow participants to switch between flatfish and Dungeness crab at will. A Feb-Apr groundfish closure could also have the negative effect of a very lean 3-month period between Dungeness crab fishing/processing season and the shrimp, salmon and albacore seasons. For some of the small boat fishers, this alternative could also mean a lack of fishing opportunity in their traditional start-up fishing months. Early spring recreational fishing opportunities could also be curtailed under this schedule. If this alternative were implemented with some or all species managed with two-year OYs, as opposed to one-year OYs, early attainment and closure period could lengthen, possibly to Dec-Apr of second year in two-year fishing period. With two-year OYs, management measures would need to be more conservative at the start of the two-year fishing period to hedge against early closures during the second year in the fishing period.	This alternative would tend to result in declining landings and closures during the Feb-Apr period, which could mean increased fishing during the preceding rough winter weather months. Treaty tribe subsistence fishing for groundfish could be most affected by May 1 start date, as a notable proportion of tribal groundfish landings occur in March-April, concurrent with the tribal halibut season start. Although tribal groundfish landings opportunities could not be restricted based on non-tribal use of all available resources, management between tribal and non-tribal fishing opportunities would have to be monitored more closely to ensure groundfish availability for tribal fishing seasons. Under two-year OY duration alternatives, the slowing and closure period could lengthen, possibly to Dec-Apr, in which case groups affected by this period under both Process Alternatives 2 and 4 would be affected by the longer slow period in the second fishing year of the two year period.	Alternative 4 would be similar to Alternative 2 in benefits derived from Council time devoted to issues other than the groundfish specifications and management measures. This alternative could provide Council staff 9 months work time and NMFS staff 6 months work time. May 1 start date would mean that inseason adjustments for final 5 months of year (Dec-Apr) would be made at a Nov meeting, with final check for Apr at the March meeting. May 1 fishing period start date would require restructuring of the non-tribal whiting and fixed gear primary sablefish season management processes, as both seasons currently begin in April. May 1 fishing period start date could also require change to tribal sablefish management process, as treaty tribes' sablefish season currently begins in March. This alternative would not interfere with a salmon-focused Council meeting. Duration of OYs, whether one-year, two-year, or mixed would not affect management time and public review and analysis devoted to specifications and management measures.
Process Alternative 5: 2-meeting, biennial process (June & Sept,) March 1 start date	Same as Alternative 3 with respect to both annual specifications process and OY duration process.	Same as Alternative 3 with respect to both annual specifications process and OY duration process.	Alternative 5 would be similar to Alternative 2 in benefits derived from Council time devoted to issues other than the groundfish specifications and management measures. This alternative could provide Council staff 9 months work time and NMFS staff 5.5 months work time. Like Alternative 2, March 1 start date would mean that inseason adjustments for final 3 months of year (Dec-Feb) would be made at a Nov meeting. Unlike Alternatives 2-4, this alternative would be a 2-meeting Council process, leaving less Council meeting time for discussing specifications and management measures. This alternative would not interfere with a salmon-focused Council meeting. Duration of OYs, whether one-year, two-year, or mixed would not affect management time and public review and analysis devoted to specifications and management measures.

4.3.1 Socio-Economic Effects of Changing Season Start Date

As detailed above in Table 4.3.1, the five process alternatives consider a range of fishing season start dates: January 1 (Alternatives 1 and 2,) March 1 (Alternatives 2 and 5,) and May 1 (Alternative 4.) In crafting these alternatives, the Multi-Year Management Committee considered only fishing year start dates that would coincide with both the start of a traditional "major" commercial cumulative limit period and with the start of a Recreational Fisheries Information Network (RecFIN) two-month recreational fishing "wave." Using these criteria was intended to allow a smooth transition of catch and landings data analysis from the current specifications and management measures process to any of the alternative processes. Based on these criteria, potential start dates could have been January 1, March 1, May 1, July 1, September 1, and November 1.

Groundfish has historically provided West Coast commercial fisheries participants with a relatively steady source of income over the year, supplementing the other more seasonal fisheries (Table 4.3.2). Although groundfish contributed only about 17% of total annual ex-vessel revenue during 2000, seasonally groundfish played a more significant role, providing 1/5 to 1/3 of ex-vessel revenue coastwide during April and also each of the three summer months.

Table 4.3.2 Percent of monthly exvessel value of all 2000 commercial fishery landings made on the West Coast in various fisheries stratified by month ($000)

Species Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Sablefish	0.8%	1.3%	3.6%	6.0%	3.7%	3.4%	6.3%	20.3%	5.7%	4.4%	4.3%	2.2%	5.8%
Whiting	0.0%	0.0%	0.0%	0.2%	1.9%	3.5%	7.6%	6.7%	4.4%	0.0%	0.0%	0.0%	2.3%
Flatfish	8.9%	5.5%	5.4%	7.1%	4.1%	3.2%	3.2%	2.7%	2.7%	3.0%	3.2%	3.0%	4.2%
Rockfish	2.5%	3.3%	5.6%	6.5%	5.6%	4.7%	5.6%	3.3%	5.9%	5.0%	6.8%	3.2%	4.6%
Other GF	0.2%	0.7%	0.3%	0.7%	1.1%	1.4%	1.3%	0.8%	0.8%	0.5%	0.4%	0.3%	0.7%
Shrimp/Prawns	1.6%	2.7%	3.8%	6.8%	7.1%	16.2%	14.3%	8.2%	8.3%	5.0%	1.6%	1.3%	6.2%
Crab/Lobster	51.0%	41.6%	29.6%	19.6%	15.9%	13.0%	7.2%	4.3%	8.3%	18.3%	18.4%	50.3%	23.5%
Salmon	0.2%	0.3%	0.2%	0.7%	17.1%	13.7%	10.0%	13.6%	13.3%	8.2%	2.0%	0.4%	6.9%
HMS	1.2%	6.5%	2.6%	4.7%	1.1%	1.4%	7.3%	16.3%	19.8%	19.6%	8.6%	6.7%	8.9%
CPS	13.5%	13.3%	11.3%	10.6%	8.1%	6.1%	7.8%	4.9%	6.5%	11.6%	25.0%	15.4%	11.0%
Other	20.2%	24.9%	37.5%	37.2%	34.3%	33.4%	29.3%	18.9%	24.2%	24.4%	29.7%	17.3%	25.9%

Section 4.2.1 discusses the potential biological effects on the marine environment of changing the fishing season start date. While not necessarily implied by choice of start date, the status quo January 1 fishing period start has historically tended to result in more intense fishing pressure at the beginning of the year, followed by increased overall participation and reduced per vessel participation mid-year, with any necessary landings slow downs or closure occurring around October-December. Extending this logic, shifting the start date to March 1, May 1, July 1, September 1 or November 1 would simply shift the activity cycle forward by a corresponding number of months, but still result in late season closures.

Impacts on markets supplied by the affected fisheries would be limited to possible changes or disruptions in the supply of local groundfish to fresh markets and to processors. While this may negatively affect fishers, processors, restaurants and others involved in the local supply chain, it is not anticipated to have significant impact on the overall availability or price of fish in local markets. West Coast groundfish do not command a large enough share of world markets to significantly affect prices, and local shortages would be offset by local supplies of substitute species or by supplies imported from outside the region.

Process Alternative 3 uses the same January 1 start date as the status quo/no action Process Alternative 1. Under both alternatives, following current season trends, harvest allocations would tend to be attained

Figure 4.3.1 Landings Volumes for Selected Larger-Volume West Coast Fisheries, 1997-2001

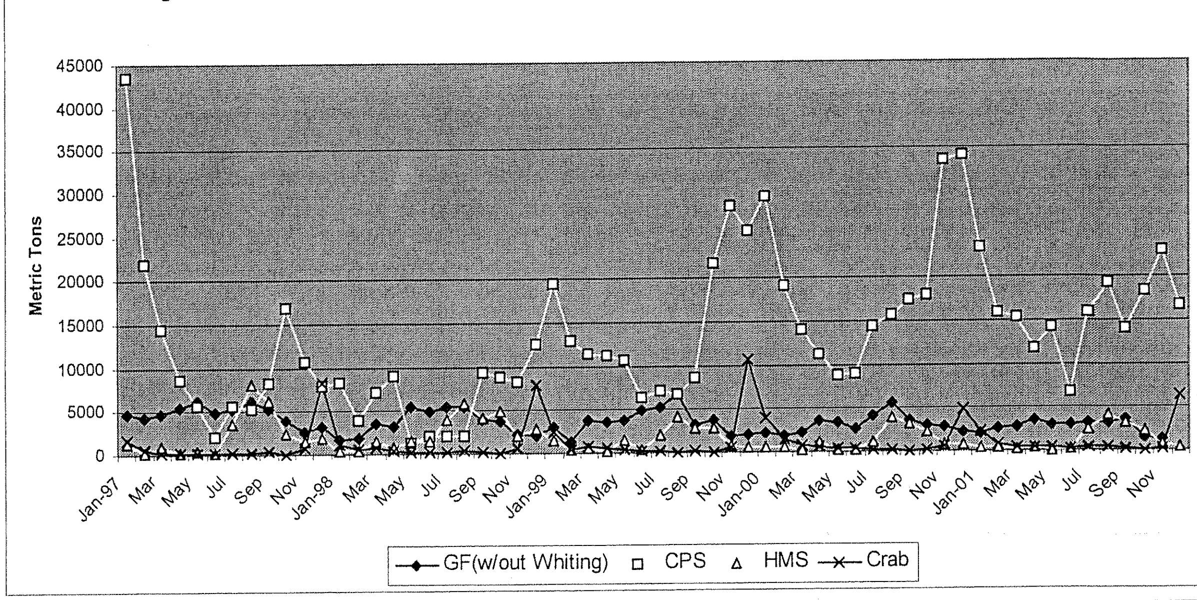
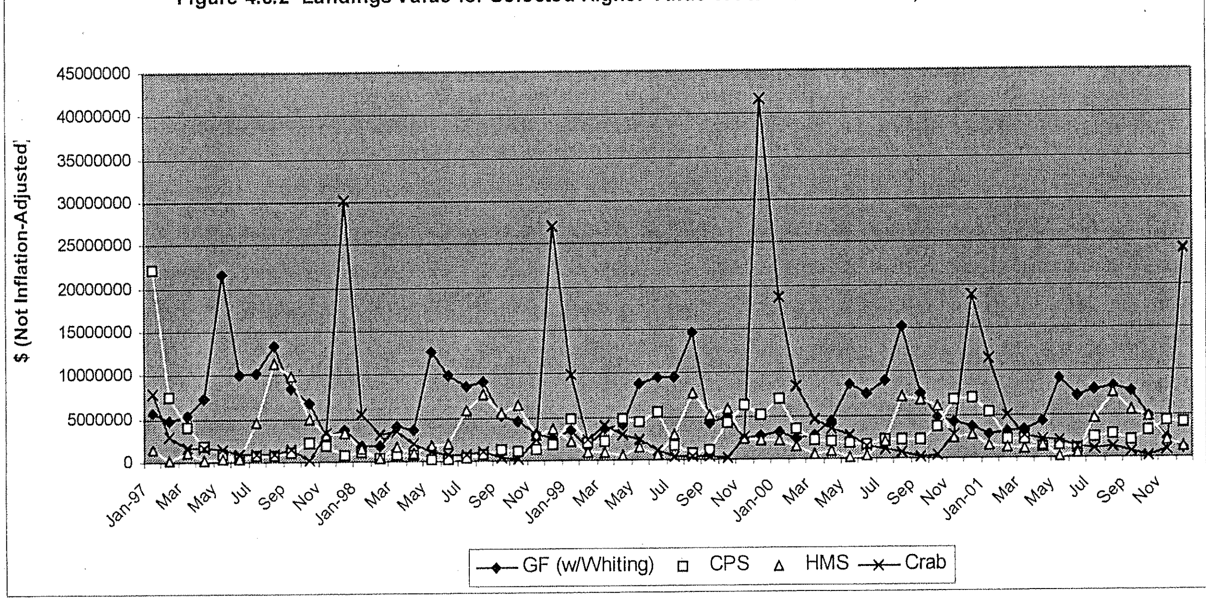


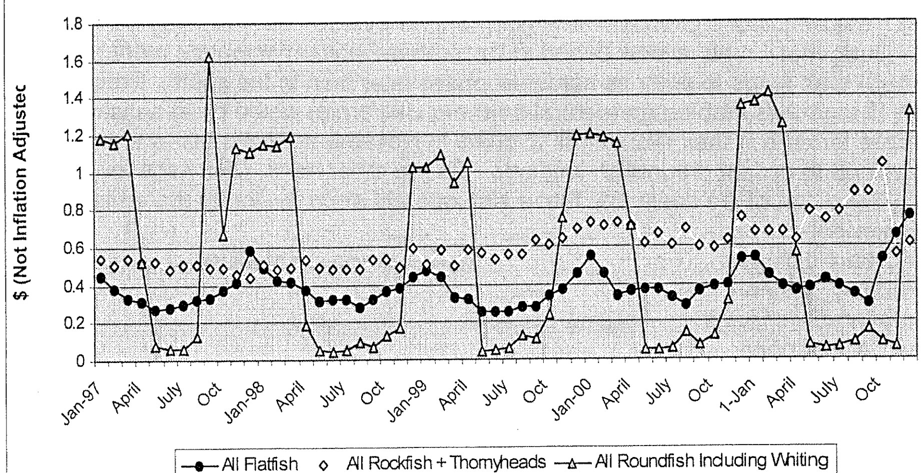
Figure 4.3.2 Landings Value for Selected Higher-Value West Coast Fisheires, 1997-2001



by late fall, with restrictions or closures occurring in the October-December period. In terms of safety, fishery restrictions and closures toward the end of the year when weather conditions are least favorable may be more acceptable. Small vessel operators who might want to have access to groundfish allocations during better weather months might be more adversely affected economically by summer closures than they are by winter closures. However for vessels operating off Southern California, winter weather is generally milder so restrictions during this period may be less important from a safety standpoint.

From the processors perspective, the January 1 start date with early winter restrictions may be economically acceptable because the Dungeness crab and coastal pelagic species (CPS) fishing seasons tend to be strong in the November through January period. Those fisheries may allow fish processing plants to stay open during an otherwise slow groundfish period. There are also disadvantages, however to a January 1 start date with early winter restrictions and closures for fish marketers. During the November-December period, Americans spend a great deal of money, buying gifts and entertaining friends and family either at home or at restaurants. December holidays and New Year's are also celebrated in other countries with purchases of a wide range of luxury foods. Marketing and export opportunities, particularly to cultures with more fish-oriented diets, may be lost during this potentially lucrative time of year, although studies have shown that export opportunities may be determined as much by relative exchange rates and the availability of competitive substitutes as by the presence of potential markets (Sigel, 1984.).

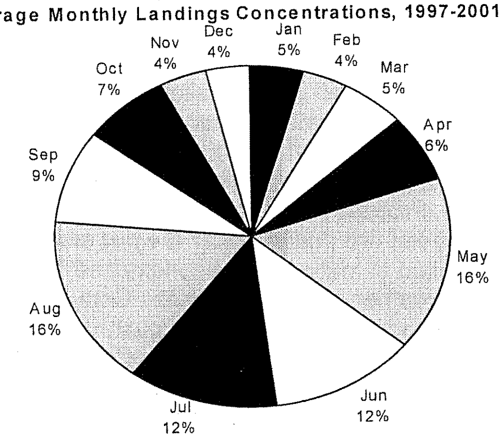
Figure 4.3.3 Price Per Pound for Groundfish Groups, By Month, 1997-2001



Note: Values and Prices in figures in this section not adjusted for inflation. Based on gross domestic product implicit price deflator, $1.00 in 2001 = $ 0.977 in 2000, $0.956 in 1999, $0.942 in 1998, and $0.931 in 1997.

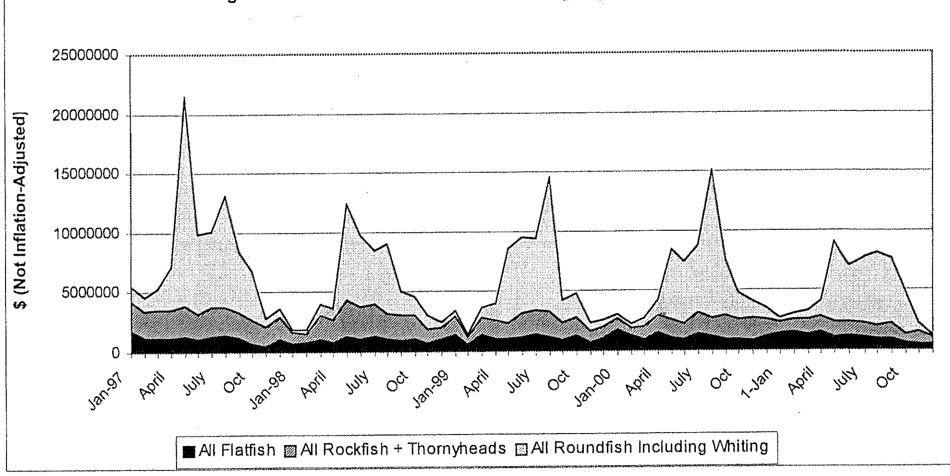
Closures may also affect the ability of fishery participants to manage the financial challenges of the holiday season. Like most Americans, groundfish fishery participants could probably better meet those challenges if they were able to increase their incomes during that November-December period. Process Alternatives 1 and 3 have the disadvantage of a fishing period start date that may result in fewer fishing opportunities at a time of year when fishery participants may have a greater need for income. Additionally, Process Alternative 3 could be modified to allow two-year OYs (OY Duration Alternatives 2 or 3,) which could place the slow end-of-period season into the latter half of the second year in a two-year cycle. The August-October period would not result in additional losses of holiday marketing opportunities, but could force the groundfish industry into a more dramatic cycle of openings and closures than under one-year OYs. To counteract this possibility, the Council would need to set conservative management measures at the start of the two-year management cycle.

Figure 4.3.4 Groundfish Landings (Including Whiting,) By Value, Average Monthly Landings Concentrations, 1997-2001



Process Alternatives 2 and 5 are biennial processes with March 1 fishing period start dates. A March 1 start date, with a corresponding February 28/29 ending date could push the restriction and closure period from the status quo October-December to a new December-February period. For processors that focus on Dungeness crab, a slow period in December-February might be more advantageous in northern ports, where crab tends to enter its hardshell phase later than in the south. Processors at the southern end of the Dungeness crab range (central-northern California) would be at a disadvantage because the hardshell phase for crab in their area tends to come in November-December, a time when they might want to continue to accept groundfish landings. On the other hand, CPS fisheries are concentrated in the southern part of the coast and those also operate strongly during the winter months. In terms of safety, a December-February closure probably has no measurable change over an October-December closure. Additionally, a slow December-February period may provide more year-end holiday marketing opportunities than an October-December closure. Conversely, closure in the early part of the calendar year may reduce marketers ability to participate in Asian cultures' celebration of New Years tied to the lunar calendar. Many Asian and Asian-American cultures tend to consume more fish per-capita than other American culture groups, making Asian holiday celebrations important fish-consumption periods. As with Process Alternative 3, setting two-year OYs could result in a long closure period at the end of the second fishing year. Under Process Alternatives 2 and 5, this period would likely occur in October-December, affecting both the groups that would be affected with one-year OYs under Process Alternative 3 and under Alternatives 2 and 5. Again, a more conservative harvest regime at the start of the management period could counteract the end-of-period closures.

Figure 4.3.5 Value of Groundfish Landings By Month, 1997-2001



Process Alternative 4 is a biennial process with a May 1 start date. A May 1 start date, with a corresponding April 30 ending date could push the restriction and closure period from the status quo October-December to a new February-April. This start date could ensure open groundfish fisheries throughout the Dungeness crab season, allowing vessels and processing plants to switch between crab or CPS and groundfish at will. Having a slow groundfish period of February-April, however, might be difficult for West Coast fishery participants trying to fill out their incomes between the Dungeness crab and CPS seasons and the shrimp, salmon and albacore seasons of spring and summer. For vessel safety and small vessel income, Process Alternative 4 is the least advantageous. February-April is the period when small vessels that do not fish during winter are just starting to get back on the water. Many fishers would not want to see a period of management-constrained fishing opportunities following immediately on the heels of a period of weather-constrained ones. Conversely, the knowledge that the fisheries would likely close during the February-April period would push vessel operators to fish during winter weather that they might otherwise avoid, thereby compromising safety. Like the potential December-February slow period associated with a March 1 start date, a February-April slow period associated with May 1 start could also negatively affect producers supplying fish for consumption during Asian and Asian-American New Years celebrations as well as during Lent, a period in the Christian calendar when many persons increase their fish consumption. Similar to all of the other Process Alternatives, the effects of this alternative would vary according whether one-year (OY Duration Alternative 1,) two-year (OY Duration Alternative 2,) or mixed (OY Duration Alternative 3) OY periods are used. Without conservative management measures, the lengthy closure period that could be associated with two-year OYs under this alternative would likely occur in December-April. This closure period would affect all of the groups described as affected under Process Alternatives 2 and 5 as well as those affected by the May 1 start date under Process Alternative 4.

A May 1 start date could require reorganization of both tribal and nontribal fishing opportunities for groundfish. The logistics of tribal commercial fishery management under a May 1 start date will be addressed in the next section, along with nontribal commercial fishery logistical concerns. For most tribal fisheries, however, there are also subsistence and ceremonial uses of different fish species. Much of the subsistence fishing by the four groundfish treaty tribes occurs during the March-April tribal commercial halibut and sablefish fisheries. Nontribal groundfish fisheries would need to be managed in a way that would ensure groundfish availability for all tribal commercial, subsistence and ceremonial fisheries during the February-April period.

As with biological effects, many of the potential socio-economic effects of shifting the fishing year start date should more properly be considered effects of the Council's year-round fishery policy, rather than effects of the start date of a management period. Socio-economic effects resulting from different closure periods associated with the alternative season start dates or with one- or two-year OY durations could more accurately be attributed to inadequate tools for the allocation of managed species among user groups and to the lack of management tools that would allow fishery participants access during periods most advantageous to their particular business needs. Ideally, vessel operators and processors should be able to take advantage of whichever seasonal markets best fit their needs. Small vessel operators should not be forced to fish during inclement weather because of concerns about fishery closures during spring and summer months. Vessel operators afforded the privilege of fishing for both Dungeness crab and groundfish, or groundfish and shrimp, should be able to time their fishing trips based on the migratory patterns of their target species and the needs of their own marketing strategies and those of their associated processors. While implementing multi-year groundfish management will not alleviate all season-related management problems for fisheries participants, it should be a positive step toward improving the stability and certainty of seasonal groundfish allocations for participating harvesters and processors. The improved science and management made possible with multi-year planning will help mitigate the closure cycle by stabilizing groundfish allocations and landings throughout the season.

4.3.2 Socio-Economic Effects of the Council and NMFS Public Review Processes

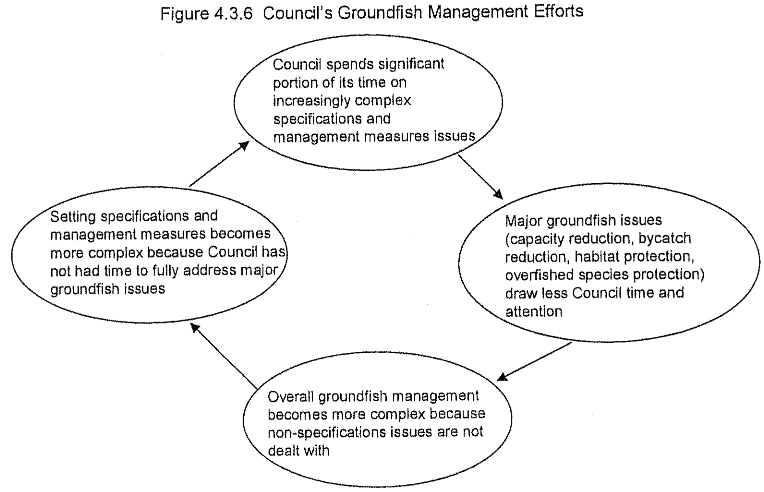
The changes to the Council's specifications and management measures process considered in Amendment 17 will also affect overall Council process and schedule. Each of the alternatives allows more or less Council and NMFS staff work time and uses a different number of Council meetings to achieve the same results. Alternatives that use more Council meetings to develop a specifications and management measures package may be more costly in terms of Council time spent on each issue, but may result in better overall analysis with less Council time spent on correcting mistakes. In addition to issues related to developing the specifications and management measures, changing the Council's process may also alter scheduling for inseason management measures. And, changing the Council meetings at which groundfish issues are considered may also conflict with non-groundfish issues traditionally considered at those meetings. Table 4.3.3 compares these factors across the process alternatives. OY duration would not affect the Council process.

Table 4.3.3 Council process issues under Amendment 17 alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Number of Council meetings needed to develop two years of specifications	4	3	3	3	2
Available time for Council staff and Council advisory committees analysis work	7 months	11-19 months	14 months	9 months	9 months
Available time for NMFS regulations development, publication, & public review period	2 months	5.5 months	6.5 months	6 months	5.5 months
Amount of time between the last Council meeting of the fishing year and the start of the new fishing period. (Inseason measures adjustment period.)	3 months. Inseason changes for Oct-Dec made in Sept, with final check at Nov. meeting.	3 months. Inseason changes for Dec-Feb made in Nov, no new meetings until after 3/1 start date.	3 months. Inseason changes for Oct-Dec made in Sept, with final check at Nov. meeting.	5 months. Inseason changes for Dec-Apr made in Nov, with final check at Mar. meeting.	3 months. Inseason changes for Dec-Feb made in Nov, no new meetings until after 3/1 start date.
Process includes a March or April meeting that could conflict with salmon management process?	No	Yes	Yes	No	No

Under Process Alternative 1 (status quo/no action,) the Council uses the highest number of meetings to develop specifications and management measures for a two-year period. Before setting up the Groundfish Multi-year Management Committee, the Council had decided to use a three-meeting process to develop annual specifications and management measures. With an annual three-meeting process, the Council would have used six meetings to develop specifications and management measures for a two-year period. In general, the Council considers groundfish issues at four out of five meetings per year, with the fifth meeting (March) used only for updates and preparatory discussions. One of the significant process advantages of Process Alternatives 2-5 is that the Council would have an "off" year in which it would not be developing specifications and management measures. During that off year, the Council could use its groundfish meetings to address its notable backlog of long-term groundfish management issues. Under status quo, the Council is stuck in a cycle that forces participants to spend so much time on specifications and management measures development that they are unable to work on issues (like capacity reduction) that could ultimately help to reduce the complexity of the specifications and management measures.

Figure 4.3.6 Council's Groundfish Management Efforts



In addition to varying in the number of meetings that would be used to develop specifications and management measures, the alternatives also vary in the amount of time that they allot for Council staff and Council advisory bodies to provide background documentation and analysis for the Council's work. Process Alternative 2 provides the longest period (11-19 months,) with the Council's work time dependent on when stock assessments are completed, while the shortest period (7 months) is provided under status quo. The level of analysis and background documentation required in each specifications and management measures process would be based on the factors particular to that year's process and would not vary between alternatives. A disadvantage of the alternatives with shorter periods for background analyses is that these periods are generally only sufficient in years when there are no notable questions about the outcomes of new stock assessments and overfished species rebuilding plans. In developing the 2003 specifications, for example, the Council has had to hold emergency stock assessment reviews between its preliminary (June) and final (September) specifications meetings. The results of these reviews will have to be folded into the analysis for 2003 specifications and management measures. Conversely, a disadvantage of the alternatives with longer analysis periods is that the analysis becomes farther disconnected in time from the science that was conducted in support of the analysis. Even in the current specifications and management measure process, new information that arises between the completion of stock assessment and the Council's final decisions affects those decisions. With a longer analysis period, there are more opportunities for new information to arise, making both analysis and decisions more complex.

With the exception of status quo, the alternatives are essentially the same in terms of the duration of time allowed for NMFS to draft proposed implementing regulations, receive public comment, respond to that comment and draft final implementing regulations. The minimum time needed to complete this process is 5 months from the Council's final recommendation on specifications and management measures. The status quo process was revised for 2003 to ensure adequate opportunity for public review of and comment on the specifications and management measures regulatory package. Under the 2003 process, NMFS expects to implement an emergency rule for January-February 2003 management measures, and publish and associated proposed rule for the complete 2003 specifications and management measures package. The agency expects to publish the final rule for the 2003 specifications and management measures by March 1, 2003. This emergency/proposed rule process could not be used on a regular basis, as emergency rules are intended for emergencies, not planned-for events.

All of the alternatives, except for Process Alternative 4, has three months between the last Council meeting at which an inseason may be made and the start of the new fishing year/period. Under Process Alternatives 1 and 3, the Council would be able to make inseason adjustments at its September meeting for the October-December period. The November Council meeting is usually not useful for making inseason adjustments, as those adjustments could only affect the month of December. Groundfish fishing activity tends to be slow in December, so there is little that the Council can change for December that will have much effect on the overall landings patterns for the year. Under Process Alternatives 2 and 5, the Council would be able to make inseason adjustments at its November meeting for the December-February period. Unlike Process Alternatives 1 and 3, the Council would not have an interim meeting for last-month checks on landings levels. With Process Alternative 4, the November Council meeting would also be the last Council meeting at which the Council could make inseason adjustments before the start of the new fishing period. Process Alternative 4 includes a May 1 start date, which means that the Council could make last-month changes at its March meeting, but those would not take effect until the last month of the fishing period. As with Process Alternatives 1 and 3, adjustments made in the last month of the fishing period could not be expected to significantly alter the overall landings patterns for the year. If the Council were to adopt Process Alternative 4, it may also have to set up a process that would allow either NMFS or a telephone conference of Council representatives to make inseason adjustments as needed during the December-April period.

Similar to the annual groundfish management cycle, the annual salmon management cycle is a carefully orchestrated set of meetings, all carefully timed to use up-to-date information and agreements in setting the new year's management measures. The Council addresses annual salmon management measures at its March (proposed) and April (final) meetings. To ensure that the Council is fully able to concentrate on salmon issues, the March meeting has traditionally had few to no groundfish items on its agenda. The Council's groundfish advisory bodies, the GMT and the GAP, do not meeting during the March meeting.

Although groundfish issues are on the Council's April meeting agendas and the GMT and GAP meet during the Council's April meeting, groundfish issues dealt with in April also tend to be less rigorous than those dealt with in June, September, and November. Process Alternative 2 and 3 both include a March or April meeting in the specifications and management measures development process. If the Council is to include specifications and management measures development in a March or April meeting, it will likely have to ensure that it addresses no other groundfish issues during those meetings, so that it may continue to devote the bulk of its attention to salmon management.

In addition to these longer term issues, there are several short-term logistical issues associated with changing the fishing year start date that could affect the Council process and its participants. If the Council chooses either Process Alternative 1 or 3, the fishing period start date of January 1 would remain the same. Process Alternatives 2 and 5 have a March 1 fishing year start date. To shift from a January 1 to March 1 start date, the Council and NMFS would need to create separate ABCs/OYs and management measures for the January/February period of the transition year, followed by a new set of specifications and management measures for the March 1 - February 28/29 period following the transition period. [Note: Transition scenarios for Process Alternatives 3 (Council preferred) and 5 (SSC preferred) are presented in Appendix B.] Similarly, the Process Alternative 4 May 1 start date would require a four month transitional set of ABCs/OYs and management measures. Shifting to the May 1 start date of Process Alternative 4 would also require that the Council make arrangements for accommodating the current management structure of the tribal commercial halibut/sablefish fisheries, the non-tribal primary fixed gear sablefish fishery, and the shorebased primary whiting season south of 42° N. lat. Table 4.3.4 examines some of the transitional issues that might have to be addressed for each of these fisheries under an Process Alternative 4 May 1 start date.

Table 4.3.4 Logistical Issues for Period-Defined Fisheries Associated with a May 1 Start Date

Fishery	Issues to be Addressed in Transition to May 1 Start Date
Tribal Halibut/Sablefish Fisheries	The bulk of tribal groundfish fishing occurs in March/April, concurrent with the major halibut and sablefish fisheries. Process Alternative 4 would not affect the tribal halibut fisheries. If the tribal sablefish fisheries were set to take their entire sablefish allocation during the March/April period, a May 1 start date would also not affect those fisheries. The tribal sablefish allocation is set at the beginning of the fishing period and the period when it is taken is not affected by the activities of the non-tribal fisheries. However, under Process Alternative 4, fishing activities beyond May 1 would be conducted against new ABCs/OYs and allocations. Should the tribes wish to hold a sablefish season that began in March and lasted through April and into May or beyond, the tribes and the Council would have to discuss how to best manage tribal harvests against two different allocations within a single tribal management period. It would be impractical for the tribes to move their fisheries earlier than March both because their groundfish fisheries are managed in concert with their halibut fisheries (which have a fishing period start date controlled by an international commission,) and because tribal fisheries operate off of northern Washington and rough weather in this northern area tends to prevent many tribal and non-tribal vessels from operating during winter months.

Fishery	Issues to be Addressed in Transition to May 1 Start Date
Limited Entry Fixed Gear Primary Sablefish Fishery	Amendment 14 to the FMP set the limited entry fixed gear primary sablefish season at April 1 through October 31. In order to maintain an April-October season within the May-April fishing period specified in Process Alternative 4, the Council would have to create two fishing seasons for each year: one held from May 1 through October 31 and a second season held from April 1 through April 30. At the May 1 start date, fishing could commence on the new period's sablefish ABC/OY. Alternatively, the Council could decide to shorten the primary sablefish season to May-October in order to eliminate the complexity of running two back-to back seasons fishing against different ABCs/OYs. This latter alternative may prove unpopular given the many years this fleet has invested in moving their management regime from a brief derby fishery to a longer season with more safety and flexibility for participants.
Primary Whiting Season South of 42° N. lat.	Opening dates for the non-tribal shorebased whiting season differ by area. In 2002, the shorebased fishery between 42° N. lat. and 40°30' N. lat. opened on April 1 and the shorebased fishery south of 40°30' N. lat. opened on April 15. North of 42° N. lat., the fishery opened on May 15. If the Council were to implement a May 1 start date through Amendment 17, it would likely also have to formalize a percentage of the shorebased whiting fishery allocation to be set aside for harvesting in April. Under Process Alternative 4, April would be the end of the overall fishing period. Without a set aside for the southern shorebased whiting fisheries, the shorebased whiting allocation would likely be taken in the earlier part of the fishing period (May-August). April openings are set for the southern shorebased fleet to allow that fleet to take advantage of whiting's springtime migration northward. Moving the fishing period start date for the southern whiting fishery would be impractical because later dates could prevent southern vessels and processors from accessing whiting as it migrates through their waters.

5.0 CONSISTENCY WITH FMP AND OTHER APPLICABLE LAW

5.1 Magnuson-Stevens Conservation and Management Act

The Magnuson-Stevens Act provides parameters and guidance for federal fisheries management, requiring that the Councils and NMFS adhere to a broad array of policy ideals. Overarching principles for fisheries management are found in the Act's National Standards. In crafting fisheries management regimes, the Councils and NMFS must balance their recommendations to meet these different national standards.

National Standard 1 requires that "Conservation and management measures shall prevent overfishing while achieving on a continuing basis, the optimum yield from each fishery for the United States fishing industry." Amendment 17 is administrative in nature and would not affect prevention of overfishing nor achievement of optimum yield.

National Standard 2 requires the use of the best available scientific information. As discussed above in Section 4.2 and detailed in Table 4.2.2, the alternative specifications and management measures processes (Issue 1) would vary in the speed with which information from resource surveys is used in fisheries management. While the status quo/no action process alternative would result in the swiftest incorporation of survey information into management for one-third of all assessed stocks, the biennial management processes (Process Alternatives 2-5) would provide stock assessment scientists with more opportunities to improve the overall quality of groundfish science. Process Alternative 3 uses resource survey data in fisheries management more swiftly than Alternative 2 and less swiftly than Alternatives 4 and 5. However, Process Alternative 3 provides stock assessment scientists with more time to complete the assessments than Alternatives 4 or 5, possibly resulting in better quality stock assessments. Process Alternative 3 differs from the swiftest data use alternative (Process Alternative 5) in the timing of survey data use by ten months. For each alternative, there is a trade-off between use of most recently available data and opportunity to improve the quality of scientific information needed for the management process. The OY Durations Alternatives (Issue 2) do not differ in their use of the best available science in the setting of the OYs. Two-year OYs (OY Duration Alternatives 2 or 3,) however, may provide more flexibility in responding to scientific infomation for inseason management than one-year OYs (Alternative 1).

National Standard 3 would not be affected by the proposed actions because they do not address whether individual stocks of fish are managed as a unit throughout their ranges, or whether interrelated stocks of fish are managed as a unit.

National Standard 4 requires that "Conservation and management measures shall not discriminate between residents of different States." All alternatives meet this standard

National Standard 5 is not affected by the proposed actions because none of the alternatives would affect the Council's ability to improve or alter efficiency in the utilization of fishery resources.

National Standard 6 is not affected by the proposed actions because none of the alternatives would affect the Council's ability to take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

National Standard 7 requires that "Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication." The biennial management measures processes proposed in Alternatives 2-5 would all reduce cost and duplication over the status quo/no action alternative of an annual specifications and management measures process. Alternatives 2-4 (Alternative 3 is preferred) include higher costs than Alternative 5 because they are 3-meeting Council processes for developing specifications and management measures, rather than a 2-meeting Council process.

National Standard 8 requires that "conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities." Fishing communities could be negatively affected by the biennial management processes (Process Alternatives 2-5) if the Council were to manage with two-year OYs (OY Duration Alternatives 2 or 3), rather than with two one-year OYs (OY Duration Alternative 1). In recent years, the Council has had to shut down large sectors of the fisheries 4-6 months before the end of the fishing year. If two-year OYs were implemented through a biennial management alternative, incautious management regimes in the first fishing year could result in overharvest and a complete fishery shut-down the second fishing year. Amendment 17 itself is administrative in nature and would not create a fishery shutdown, but management actions taken during the specifications and management measures process altered by Amendment 17 could certainly affect fishing communities.

National Standard 9 would not be affected by the proposed actions because Amendment 17 is administrative in nature does not affect the Council's ability to address the reduction of bycatch or bycatch mortality.

National Standard 10 would not be affected by the proposed actions because Amendment 17 is administrative in nature does not affect the Council's ability to promote the safety of human life at sea.

Amendment 17 is administrative in nature and is intended to alter the schedule by which the Council and NMFS develop and consider specifications and management measures; therefore, none of the alternatives are expected to have any effects (positive or negative) on essential fish habitat (EFH.)

5.2 Consistency with the FMP

Similar to the Magnuson-Stevens Act National Standard guidelines, the goals and objectives of the FMP are intended to provide a philosophical framework to guide the Council's decisions. Amendment 17 is intended to revise the process by which the Council considers the groundfish specifications and management measures. Amendment 17 does not revise the guiding principles of the FMP. None of the Amendment 17 alternatives to either Issue 1 (Process) or Issue 2 (OY Duration) are counter to any of the goals or objectives or the FMP, nor would the alternatives analyzed herein prevent the Council from managing the fishery with those goals and objectives in mind. Of the FMP's goals and objectives, only Objective 15, a "Social Factors" objective, may be affected by Amendment 17 deliberations.

> Objective 15. When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures, and the environment.

Alternatives 2, 4, and 5 all would change the start date of the fishing year. Fishery participants have expressed a desire to continue with the current management practice of a January 1 fishing year start date (Alternatives 1 and 3). Thus, Alternative 3 would be more consistent with Objective 15 than the other biennial process alternatives.

Objective 1, a "Conservation" objective calls for maintaining "an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs." This is similar to Magnuson-Stevens Act National Standard 2, which requires the use of the best available scientific information. Amendment 17 would not disrupt the information flow that is currently used in setting specifications and management measures and in revising management measures inseason. As discussed above for National Standard 2, each of the process alternatives provides a different time lag between when resource surveys are conducted and when the data from those surveys is used to support management for a fishing period.

Objective 17, another "Social Factors" objective is essentially the same as National Standard 8. It states, "Consider the importance of groundfish resources to fishing communities, provide for the sustained participation of fishing communities, and minimize adverse economic impacts on fishing communities to the extent practicable." And, as discussed at National Standard 8, above, the effect of a biennial management process on fishing communities depends mainly on the particular specifications and management measures developed for any one fishery management period.

5.3 Paperwork Reduction Act

None of the alternatives require collection-of-information subject to the PRA.

5.4 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972 is the principle federal legislation that guides marine mammal species protection and conservation policy in the United States. Under the MMPA, NMFS is responsible for the management and conservation of 153 stocks of whales, dolphins, porpoise, as well as seals, sea lions, and fur seals while the FWS is responsible for walrus, sea otters, and the West Indian manatee.

Off the West Coast, the Steller sea lion (*Eumetopias jubatus*) Eastern stock, Guadalupe fur seal (*Arctocephalus townsendi*), and Southern sea otter (*Enhydra lutris*) California stock are listed as threatened under the ESA and the sperm whale (*Physeter macrocephalus*) Washington, Oregon, and California (WOC) Stock, humpback whale (*Megaptera novaeangliae*) WOC - Mexico Stock, blue whale (*Balaenoptera musculus*) Eastern north Pacific stock, and Fin whale (*Balaenoptera physalus*) WOC Stock are listed as depleted under the MMPA. Any species listed as endangered or threatened under the ESA is automatically considered depleted under the MMPA.

The West Coast groundfish fisheries are considered a Category III fishery, indicating a remote likelihood of or no known serious injuries or mortalities to marine mammals, in the annual list of fisheries published in the Federal Register. Based on its Category III status, the incidental take of marine mammals in the West Coast groundfish fisheries does not significantly impact marine mammal stocks.

None of the proposed management alternatives are likely to affect the incidental mortality levels of species protected by the MMPA.

5.5 National Environmental Policy Act (NEPA)
This EA is intended to meet the NEPA requirements that apply to the proposed action.

5.6 Executive Order 12866
None of the Amendment 17 alternatives would be a significant action according to E.O. 12866. This action will not have a cumulative effect on the economy of $100 million or more nor will it result in a major increase in costs to consumers, industries, government agencies, or geographical regions. No significant adverse impacts are anticipated on competition, employment, investments, productivity, innovation, or competitiveness of U.S.-based enterprises.

5.7 Endangered Species Act
NMFS issued Biological Opinions under the ESA on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999 pertaining to the effects of the groundfish fishery on chinook salmon (Puget Sound, Snake River spring/summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley spring, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal), chum salmon (Hood Canal summer, Columbia River), sockeye salmon (Snake River, Ozette Lake), and steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south-central California, northern California, southern California). During the 2000 Pacific whiting season, the whiting fisheries exceeded the chinook bycatch amount specified in the Pacific whiting fishery Biological Opinion's (December 15, 1999) incidental take statement estimate of 11,000 fish, by approximately 500 fish. In the 2001 whiting season, however, the whiting fishery's chinook bycatch was about 7,000 fish, which approximates the long-term average. After reviewing data from, and management of, the 2000 and 2001 whiting fisheries (including industry bycatch minimization measures), the status of the affected listed chinook, environmental baseline information, and the incidental take statement from the 1999 whiting BO, NMFS determined in a letter dated April 25, 2002 that a re-initiation of the 1999 whiting BO was not required. NMFS has concluded that implementation of the FMP for the Pacific Coast groundfish fishery is not expected to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS, or result in the destruction or adverse modification of critical habitat. This action is within the scope of these consultations.

5.8 Coastal Zone Management Act
Section 307(c)(1) of the Federal Coastal Zone Management Act (CZMA) of 1972 requires all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. The proposed alternative would be implemented in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved coastal zone management programs of Washington, Oregon, and California. This determination has been submitted to the responsible state agencies for review under section 307(c)(1) of the Coastal Zone Management Act (CZMA). The relationship of the groundfish FMP with the CZMA is discussed in Section 11.7.3 of the groundfish FMP. The groundfish FMP has been found to be consistent with the Washington, Oregon, and California coastal zone management programs. The recommended action is consistent and within the scope of the actions contemplated under the framework FMP.

Under the CZMA, each state develops its own coastal zone management program which is then submitted for federal approval. This has resulted in programs which vary widely from one state to the next. Because the intent of Amendment 17 is administrative in nature -- to alter the schedule by which the Council and

NMFS develop and consider specifications and management measures -- none of the alternatives are expected to affect any state's coastal management program.

5.9 Executive Order 13175

Executive Order 13175 is intended to ensure regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

The Secretary of Commerce recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. At Section 302(b)(5), the Magnuson-Stevens Act reserves a seat on the Council for a representative of an Indian tribe with Federally recognized fishing rights from California, Oregon, Washington, or Idaho.

The U.S. government formally recognizes that the four Washington Coastal Tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish. In general terms, the quantification of those rights is 50 percent of the harvestable surplus of groundfish available in the tribes' usual and accustomed (U and A) fishing areas (described at 50 CFR 660.324). Each of the treaty tribes has the discretion to administer their fisheries and to establish their own policies to achieve program objectives. Accordingly, tribal allocations and regulations have been developed in consultation with the affected tribe(s) and, insofar as possible, with tribal consensus.

None of the alternatives under consideration for Amendment 17 would affect tribal groundfish allocations. As discussed above in Section 4.0, changing the start date of the fishing period from the current January 1 start date could affect tribal management activities for the halibut and groundfish fisheries. The major tribal groundfish and halibut seasons occur in March and April. A fishing year start date of March 1 (Alternatives 2 and 5) would shorten the time between the NOAA approval of groundfish harvest specifications and the start date of tribal fisheries, which could cause logistical challenges for tribal fisheries managers setting season start dates and harvest amounts. Alternative 4, which includes a May 1 fishing period start date, would set the March-April tribal groundfish and halibut fisheries at the end of the Council's fishing period. While this fishing period start date would provide tribal fisheries managers with more advance notice of available groundfish harvest amounts, there could be greater logistical challenges under Alternative 4 if the treaty tribes wished to change their current management practices to extend the tribal fisheries from the current March-April into a March-May or April-May season. None of the alternatives would affect the halibut fishery management schedule, which is determined by the International Pacific Halibut Commission, and which has traditionally had an annual fisheries start date on or around March 15.

5.10 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 was designed to end the commercial trade of migratory birds and their feathers that, by the early years of the 20th century, had diminished populations of many native bird species. The Act states that it is unlawful to take, kill, or possess migratory birds and their parts (including eggs, nests, and feathers) and is a shared agreement between the United States, Canada, Japan, Mexico, and Russia to protect a common migratory bird resource. The Migratory Bird Treaty Act prohibits the directed take of seabirds, but the incidental take of seabirds does occur. None of the proposed management alternatives, or the Council recommended action are likely to affect the incidental take of seabirds protected by the Migratory Bird Treaty Act.

6.0 REGULATORY IMPACT REVIEW (RIR)

The RIR analyses has many aspects in common with the EA. Much of the information required for the RIR has been provided above in the EA. Table 6.0.1 identifies where previous discussions relevant to the EA can be found in this document. In addition to the information provided in the EA, above, a basic economic profile of the fishery is provided annually in the Council's SAFE document.

Table 6.1 Regulatory Impact Review and Regulatory Flexibility Analysis

RIR Elements of Analysis	Corresponding Sections in EA
Description of management objectives	1.0
Description of the Fishery	3.3
Statement of the Problem	1.0
Description of each selected alternative	2.0
An economic analysis of the expected effects of alternatives relative to no action	4.3

Regulatory Impact Review

The RIR is designed to determine whether the proposed actions could be considered "significant regulatory actions" according to E.O. 12866. Table 6.2 identifies E.O. 12866 test requirements used to assess whether or not an action would be a "significant regulatory action", and identifies the expected outcomes of the proposed management alternatives: 1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; 2) Create a serious inconsistency or otherwise interfere with action taken or planned by another agency; 3) Materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or 4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive Order. Based on the analysis in section 4.0 of this document the proposed alternatives are not expected to be significant regulatory actions for the purposes of E.O. (Table 6.2)

Table 6.2 Summary of E.O. 12866 Test Requirements

E.O 12866 Test of "Significant Regulatory Actions	Alternative 1: No Action	Alternative 2	Alternative 3	Alternative 4	Alternative 5
1) Have a annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;	No	No	No	No	No
2) Create a serious inconsistency or otherwise interfere with action taken or planned by another agency;	No	No	No	No	No
3) Materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or	No	No	No	No	No
4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive Order,	No	No	No	No	No

7.0 REFERENCE MATERIAL

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7.2 List of Public Meetings, Agencies and Persons Consulted

Meetings of the Groundfish Multi-Year Management Committee were held on December 13-14, 2001, and on January 31- February 2, 2002. Amendment 17 was further discussed at the Council's meetings in April, June, and September 2002. Through these meetings, the Council has consulted with the NMFS, WDFW, ODFW, CDFG, and the Groundfish Treaty Tribes. Through its Multi-Year Management Committee and advisory bodies, the Council has also consulted with representatives of the fishing and processing industries, environmental conservation organizations, academia and other public groups.

7.3 List of Federal Register Notices Published in Connection with this Action

66 FR 52114-52115 – 10/12/01 – Announcing November 2001 Council meeting where Council requested formation of Groundfish Multi-Year Management Committee based on recommendations of Groundfish Management Process Committee

66 FR 59575 – 11/29/01 – Announcing first Groundfish Multi-Year Management Committee meeting for December 13-14, 2001

> SUPPLEMENTARY INFORMATION: The formation of this ad hoc committee is in response to the Council's request for a committee to scope multi-year management approaches for the West Coast groundfish fishery. Multi-year management of the groundfish fishery would be synchronized with a multi-year groundfish stock assessment schedule. Full accommodation of federal notice and comment requirements would also be incorporated into the multi-year cycle. This is the first meeting of the committee, and the primary purpose of the meeting is to refine the purpose and objectives of multi-year management, as well as initiate scoping of alternative approaches.

67 FR 569 – 01/04/02 – Announcing second Groundfish Multi-Year Management Committee meeting for January 31-February 2, 2002

67 FR 7358-7360 – 02/19/02 – Announcing March 2002 Council meeting where initial review of Groundfish Multi-Year Management Committee recommendations occurred.

67 FR 13317-13318 – 03/22/02 – Announcing April 2002 Council meeting where Council initiated FMP amendment.

7.4 List of Preparers

This document was prepared by the Northwest Regional Office of the National Marine Fisheries Service. Contributors: Yvonne deReynier, Jamie Goen, Carrie Nordeen, Becky Renko. Richard Methot of the Northwest Fisheries Science Center provided the discussion of the effects of changing the management process on the timeliness of stock assessment information. Edward Waters of the Pacific Fishery Management Council provided the analysis of the expected economic effects of altering the start date of the fishing year. Preparers also appreciate the organizational aid of Daniel Waldeck of the Pacific Fishery Management Council, who staffed Groundfish Multi-Year Management Committee meetings and Amendment 17 discussion items for the Council.

Appendix A

DRAFT AMENDATORY LANGUAGE FOR AMENDMENT 17 – MULTI-YEAR MANAGEMENT

This document presents draft amendatory language that would revise the FMP to allow multi-year management. Plain text shows status quo (Alternative 1) language. Bolded text shows where the FMP could be amended to allow a biennial specifications and management measures process under Alternatives 2-5. Some ~~strikeout~~ text is shown as editing text that is not relevant to any of the alternatives. There are numerous places in the FMP where the words "annual," "year," or "yearly" are used in descriptive paragraphs mentioning the Council's annual specifications and management measures process without affecting that process. To better focus attention on the FMP processes that would be affected by Amendment 17, these descriptive paragraphs have not been provided here. If the Council chooses any of the multi-year management alternatives (Alternatives 2-5,) permission from the Council to make minor edits to account for the change in management period would be helpful to the Council staff.

<u>2.2</u> <u>Operational Definition of Terms</u>

<u>Acceptable Biological Catch (ABC)</u> is a biologically based estimate of the amount of fish that may be harvested from the fishery each year **or each biennial fishing period (Alternatives 2-5)** without jeopardizing the resource. It is a seasonally determined catch that may differ from MSY for biological reasons. It may be lower or higher than MSY in some years **or two-year periods** for species with fluctuating recruitment. The ABC may be modified to incorporate biological safety factors and risk assessment due to uncertainty. Lacking other biological justification, the ABC is defined as the MSY exploitation rate multiplied by the exploitable biomass for the relevant time period.

* * *

<u>**Biennial fishing period**</u> **is defined as a 24-month period beginning January 1 (Alternative 3) / March 1 (Alternatives 2 & 5) / May 1 (Alternative 4) and ending December 31 (Alternative 3) / February 28 [or 29 in leap years] (Alternatives 2 & 5) / April 30 (Alternative 4).**

* * *

<u>Fishing year</u> is defined as January 1 through December 31 **(Alternatives 1& 3) / March 1 through February 28 [or 29 in leap years] (Alternatives 2 & 5) / May 1 through April 30 (Alternative 4).**

* * *

<u>Maximum sustainable yield (MSY)</u> is an estimate of the largest average annual **or biennial** catch or yield that can be taken over a significant period of time from each stock under prevailing ecological and environmental conditions. It may be presented as a range of values. One MSY may be specified for a group of species in a mixed-species fishery. Since MSY is a long-term average, it need not be specified annually **or biennially**, but may be reassessed periodically based on the best scientific information available.

* * *

5.0 SPECIFICATION AND APPORTIONMENT OF HARVEST LEVELS

The ability to establish and adjust harvest levels is the first major tool at the Council's disposal to exercise its resource stewardship responsibilities. Each fishing year **(Alternative 1) biennial fishing period (Alternatives 2-5)**, the Council will assess the biological, social, and economic condition of the Pacific coast groundfish fishery and update maximum sustainable yield (MSY) estimates or proxies for specific stocks (management units) where new information on the population dynamics is available. The Council will make this information available to the public in the form of the *Stock Assessment and Fishery Evaluation (SAFE)* document described in Section 5.1. Based upon the best scientific information available, the Council will evaluate the current level of fishing relative to the MSY level for stocks where sufficient data are available. Estimates of the acceptable biological catch (ABC) for major stocks will be developed, and the Council will identify those species or species groups which it proposes to be managed by the establishment of numerical harvest levels (optimum yields [OYs], harvest guidelines [HGs], or quotas). For those stocks judged to be below their overfished/rebuilding threshold, the Council will develop a stock rebuilding management strategy.

The process for specification of numerical harvest levels includes the estimation of ABC, the establishment of OYs for various stocks, calculation of specified allocations between harvest sectors, and the apportionment of numerical specifications to domestic annual processing (DAP), joint venture processing (JVP), total allowable level of foreign fishing (TALFF), and the reserve. The specification of numerical harvest levels described in this chapter is the process of designating and adjusting overall numerical limits for a stock either throughout the entire fishery management area or throughout specified subareas. The process normally occurs annually between September and November **(Alternative 1) / biennially between April and September (Alternative 2) / between November and June (Alternative 3) / between June and November (Alternative 4) / between June and September (Alternative 5)** , but can occur, under specified circumstances at other times of the fishing year. The Council will identify those OYs which should be designated for allocation between limited entry and open access sectors of the commercial industry. Other numerical limits which allocate the resource or which apply to one segment of the fishery and not another are imposed through the socioeconomic framework process described in Chapter 6 rather than the specification process.

The National Marine Fisheries Service (NMFS) Regional Administrator will review the Council's recommendations, supporting rationale, public comments, and other relevant information; and, if it is approved, will undertake the appropriate method of implementation. Rejection of a recommendation will be explained in writing.

The procedures specified in this chapter do not affect the authority of the U.S. Secretary of Commerce (Secretary) to take emergency regulatory action as provided for in Section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) if an emergency exists involving any groundfish resource or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(d) of the Magnuson-Stevens Act.

The ~~annual~~ specification**s and management measures** process, in general terms, occurs as follows:

1. The Council will determine the MSY or MSY proxy and ABC for each major stock. Typically, the MSY proxy will be in terms of a fishing mortality rate ($F_{x\%}$,) and ABC will be the $F_{x\%}$ applied to the current biomass estimate.

2. Every species will either have its own designated OY or be included in a multispecies OY. Species which are included in a multispecies OY may also have individual OYs, have individual HGs, or be included in a HG for a subgroup of the multispecies OY. Stocks without quantitative or qualitative assessment information may be included in a numerical or non-numerical OY.

3. To determine the OY for each stock, the Council will determine the best estimate of current abundance and its relation to its precautionary and overfished thresholds. If the abundance is above the precautionary threshold, OY will be equal to or less than ABC. If abundance falls below the precautionary threshold, OY will be reduced according to the harvest control rule for that stock. If abundance falls below the overfished/rebuilding threshold, OY will be set according to the interim rebuilding rule until the Council develops a formal rebuilding plan for that species.

4. ****Editorial changes for this paragraph would be addressed under Amendment 16 (overfished species rebuilding) to the FMP**** For any stock the Secretary has declared overfished or approaching the overfished condition, or for any stock the Council determines is in need of rebuilding, the Council will develop a rebuilding plan and submit it in the same manner as recommendations of the annual management process. Once approved, a rebuilding plan will remain in effect for the specified duration or until the Council recommends and the Secretary approves revision.

5. The Council may reserve and deduct a portion of the ABC of any stock to provide for compensation for vessels conducting scientific research authorized by NMFS. Prior to the research activities, the Council will authorize amounts to be made available to a research reserve. However, the deduction from the ABC will be made in the year after the "compensation fishing"; the amounts deducted from the ABC will reflect the actual catch during compensation fishing activities.

6. The Council will identify stocks which are likely to be fully harvested (i.e., the ABC, OY, or HG achieved) in the absence of specific management measures and for which allocation between limited entry and open access sectors of the fishery is appropriate.

7. The groundfish resource is fully utilized by U.S. fishing vessels and seafood processors. The Council may entertain applications for foreign or joint venture fishing or processing at any time, but fishing opportunities may be established only through amendment to this FMP. This section supercedes other provisions of this FMP relating to foreign and joint venture fishing.

This chapter describes the steps in this process.

5.1 SAFE Document

****Annual SAFE documents are required under Federal regulations implementing National Standard 2 of the Magnuson-Stevens Act (base conservation and management measures on the best available scientific information.) Under Amendment 16 to the FMP, the Council will consider revising the SAFE document production schedule (stock assessments available before final decision on specifications and management measures, evaluation of the fishery available after end of fishing year).**

Amendment 17 Alternatives 2-5 consider a biennial management process. Under a biennial management process, some elements of the SAFE document may not be necessary in years when the Council is not preparing specifications and management measures. For example, elements 2, 5, 6, 7, and 11 could be eliminated from "off year" SAFE documents without violating Federal regulations or hampering the Council's ability to conduct inseason management.**

For the purpose of providing the best available scientific information to the Council for evaluating the status of the fisheries relative to the MSY and overfishing definition, developing ABCs, determining the need for individual species or species group management, setting and adjusting numerical harvest levels, assessing social and economic conditions in the fishery, and updating the appendices of this fishery management plan (FMP); a SAFE document is prepared annually. Not all species and species groups can be reevaluated every year due to limited state and federal resources. However, the SAFE document will in general contain the following information:

1. A report on the current status of Washington, Oregon, and California groundfish resources by major species or species group.

2. Specify and update estimates of harvest control rule parameters for those species or species groups for which information is available.

3. Estimates of MSY and ABC for major species or species groups.

4. Catch statistics (landings and value) for commercial, recreational, and charter sectors.

5. Recommendations of species or species groups for individual management by OYs.

6. A brief history of the harvesting sector of the fishery, including recreational sectors.

7. A brief history of regional groundfish management.

8. A summary of the most recent economic information available, including number of vessels and economic characteristics by gear type.

9. Other relevant biological, social, economic, ecological, and essential fish habitat information which may be useful to the Council.

10. A description of any rebuilding plans currently in effect, a summary of the information relevant to the rebuilding plans, and any management measures proposed or currently in effect to achieve the rebuilding plan goals and objectives.

11. A list of annual specifications and management measures that have been designated as routine under processes described in the FMP at Section 6.2.

Under a biennial specifications and management measures process, elements 2, 5, 6, 7, and 11 would not need to be included in a SAFE document in years when the Council is not setting specifications and management measures for an upcoming biennial fishing period (Alternatives 2-5). The preliminary SAFE document is normally completed late in the year, generally late October, when the most current stock assessment and fisheries performance information is available and prior to the meeting at which the Council approves its final management recommendations for the upcoming year. The Council will make the preliminary SAFE document available to the public by such means as mailing lists or newsletters and will provide copies upon request. A final SAFE may be prepared after the Council has made its final recommendations for the upcoming year and will include the final recommendations, including summaries of proposed and pre-existing rebuilding plans. The final SAFE document, if prepared, will also be made available upon request.

* * *

5.4 Authorization and Accounting for Fish Taken as Compensation for Authorized Scientific Research Activities.

At a Council meeting, NMFS will advise the Council of upcoming resource surveys that would be conducted using private vessels with groundfish as whole or partial compensation. For each proposal, NMFS will identify the maximum number of vessels expected or needed to conduct the survey, an estimate of the species and amounts of compensation fish likely to be needed to compensate vessels for conducting the survey, when the fish would be taken, and when the fish would be deducted from the ABC in determining the OY/harvest guideline. NMFS will initiate a competitive solicitation to select vessels to conduct resource surveys. NMFS will consult with the Council regarding the amounts and types of groundfish species to be used to support the surveys. If the Council approves NMFS' proposal, NMFS may proceed with awarding the contracts, taking into account any modifications requested by the Council. If the Council does not approve the proposal to use fish as compensation to pay for resource surveys, NMFS will not use fish as compensation.

Because the species and amounts of fish used as compensation will not be determined until the contract is awarded, it may not be possible to deduct the amount of compensation fish from the ABC or harvest guideline in the year that the fish are caught. Therefore, the compensation fish will be deducted from the ABC the year **(Alternative 1) / biennial fishing period (Alternatives 2-5)** after the fish are harvested. During the ~~annual~~ specifications **and management measures** process, NMFS will announce the total amount of fish caught during the year **(Alternative 1) / biennial fishing period (Alternatives 2-5)** as compensation for conducting a resource survey, which then will be deducted from the following year's ABCs in setting the OYs.

* * *

5.6 Annual **(Alternative 1) / Biennial (Alternatives 2-5)** Implementation Procedures for Specifications and ~~Apportionments~~ **Management measures**(previously section 5.8)

Annually/**Biennially**, the Council will develop recommendations for the specification of ABCs, OYs, any HGs or quotas, ~~and apportionments to DAH, DAP, JVP, and TALFF and the reserve~~ over the span of two **(Alternatives 1 & 5) / three (Alternatives 2, 3, 4)** Council meetings. In addition during this process, the Council may recommend establishment of HGs and quotas for species or species groups within an OY.

The Council will develop preliminary recommendations at the first of two **/ three** meetings (usually in August or September) **(Alternative 1) / in April (Alternative 2) / in November (Alternative 3) / in June (Alternatives 4 & 5)** , based upon the best stock assessment information available to the Council at the time and consideration of public comment. After the first meeting, the Council will provide a summary of its preliminary recommendations and their basis to the public through its mailing list as well as providing copies of the information at the Council office and to the public upon request. The Council will notify the public of its intent to develop final recommendations at its second **/third** meeting (usually October or November) **(Alternative 1) / in September (Alternatives 2 & 5) / in June (Alternative 3) / in November (Alternative 4)**, and solicit public comment both before and at its second meeting.

At its second **and/or third** meeting, the Council will again consider the best available stock assessment information which should be contained in the recently completed SAFE report and consider public testimony before adopting final recommendations to the Secretary. Following the second**/third** meeting, the Council will submit its recommendations along with the rationale and supporting information to the Secretary for review and implementation.

Upon receipt of the Council's recommendations supporting rationale and information, the Secretary will review the submission, and, if approved, publish a notice in the *Federal Register* making the Council's recommendations effective January 1 of the upcoming fishing year **(Alternative 1) / publish a proposed rule in the *Federal Register*, making the Council's recommendations available for public comment and agency review. Following the public comment period on the proposed rule, the Secretary will review the proposed rule, taking into account any comments or additional information received, and will publish a final rule in the *Federal Register*, possibly modified from the proposed rule in accordance with the Secretary's consideration of the proposed rule.**

In the event that the Secretary disapproves one or more of the Council's recommendations, he may implement those portions approved and notify the Council in writing of the disapproved portions along with the reasons for disapproval. The Council may either provide additional rationale or information to support its original recommendation, if required, or may submit alternative recommendations with supporting rationale. In the absence of an approved recommendation at the beginning of the fishing year**/biennial fishing period**, the current specifications in effect at the end of the previous fishing year**/biennial fishing period** will remain in effect until modified, superseded, or rescinded.

5.7 Inseason Procedures for Establishing or Adjusting Specifications and ~~Apportionments~~ **Management Measures**(previously 5.9)

5.7.1 Inseason Adjustments to ABCs

Occasionally, new stock assessment information may become available inseason that supports a determination that an ABC no longer accurately describes the status of a particular species or species group. However, adjustments will only be made during the annual **/biennial** specifications process and a revised ABC announced at the beginning of the next fishing year / **biennial fishing period**. The only exception is in the case where the ABC announced at the beginning of the fishing year / **biennial fishing period** is found to have resulted from incorrect data or from computational errors. If the Council finds that such an error has occurred, it may recommend the Secretary publish a notice in the *Federal Register* revising the ABC at the earliest possible date.

* * *

6.0 MANAGEMENT MEASURES

* * *

6.2 General Procedures for Establishing and Adjusting Management Measures

Management measures are normally imposed, adjusted, or removed at the beginning of the fishing year / **biennial fishing period**, but may, if the Council determines it necessary, be imposed, adjusted, or removed at any time during the year. Management measures may be imposed for resource conservation, social or economic reasons consistent with the criteria, procedures, goals, and objectives set forth in the FMP.

Because the potential actions which may be taken under the two frameworks established by the FMP cover a wide range analyses of biological, social, and economic impacts will be considered at the time a particular change is proposed. As a result, the time required to take action under either framework will vary depending on the nature of the action, its impacts on the fishing industry, resource, environment, and review of these impacts by interested parties. Satisfaction of the legal requirements of other applicable law (e.g., the Administrative Procedure Act, Regulatory Flexibility Act, Executive Order 12291, etc.) for actions taken under this framework requires analysis and public comment before measures may be implemented by the Secretary.

Four different categories of management actions are authorized by this FMP, each of which requires a slightly different process. Management measures may be established, adjusted, or removed using any of the four procedures. The four basic categories of management actions are as follows:

A. Automatic Actions - Automatic management actions may be initiated by the NMFS Regional Administrator without prior public notice, opportunity to comment, or a Council meeting. These actions are nondiscretionary, and the impacts previously must have been taken into account. Examples include fishery, season, or gear type closures when a quota has been projected to have been attained. The Secretary will publish a single "notice" in the *Federal Register* making the action effective.

B. "Notice" Actions Requiring at Least One Council Meeting and One *Federal Register* Notice - These include all management actions other than "automatic" actions that are either nondiscretionary or for which the scope of probable impacts has been previously analyzed.

These actions are intended to have temporary effect, and the expectation is that they will need frequent adjustment. They may be recommended at a single Council meeting ~~(usually November)~~, although the Council will provide as much advance information to the public as possible concerning the issues it will be considering at its decision meeting. The primary examples are those **inseason** management actions defined as "routine" according to the criteria in Section 6.2.1. These include trip landing and frequency limits and size limits for all commercial gear types and closed seasons for any groundfish species in cases where protection of an overfished or depleted stock is required, and bag limits, size limits, time/area closures, boat limits, hook limits, and dressing requirements for all recreational fisheries. Previous analysis must have been specific as to species and gear type before a management measure can be defined as "routine" and acted upon at a single Council meeting. If the recommendations are approved, the Secretary will waive for good cause the requirement for prior notice and comment in the *Federal Register* and will publish a single "notice" in the *Federal Register* making the action effective. This category of actions presumes the Secretary will find that the extensive notice and opportunity for comment on these types of measures along with the scope of their impacts already provided by the Council will serve as good cause to waive the need for additional prior notice and comment in the *Federal Register*.

<u>C. Abbreviated Rulemaking Actions Normally Requiring at Least Two Council Meetings and One *Federal Register* "Rule" or "Notice"</u> **(Alternative 1) <u>C. Specifications and Management Measures Rulemaking Actions Requiring at Least Two (Alternative 5) / Three (Alternatives 2-4) Council Meetings and Two *Federal Register* Notices</u>** - These include (1) management actions being classified as "routine", or (2) trip limits that vary by gear type, closed seasons or areas, and in the recreational fishery, bag limits, size limits, time/area closures, boat limits, hook limits, and dressing requirements the first time these measures are used or ~~(3) management measures that are intended to have permanent effect and are discretionary, and for which the impacts have not been previously analyzed~~ **(moved to Section D, below)**. Examples include changes to or imposition of gear regulations, or imposition of landings limits, frequency limits, or limits that are differential by gear type, or closed areas or seasons for the first time on any species or species group, or gear type. The Council will develop and analyze the proposed management actions over the span of at least two **/ three** Council meetings ~~(usually September and November)~~ and provide the public advance notice and opportunity to comment on both the proposals and the analysis prior to and at the second Council meeting. If the Regional Administrator approves the Council's recommendation, the Secretary will waive for good cause the requirement for prior notice and comment in the *Federal Register* and publish a "final rule" or "notice" in the *Federal Register* which will remain in effect until amended. **(Alternative 1 – sentence would be deleted under Alternatives 2-5)** If a management measure is designated as "routine" under this procedure, specific adjustments of that measure can subsequently be announced in the *Federal Register* by "notice" as described in the previous paragraphs. Nothing in this section prevents the Secretary from exercising the right not to waive the opportunity for prior notice and comment in the *Federal Register*, if appropriate, but presumes the Council process will adequately satisfy that requirement. **(Alternative 1 – sentence would be deleted under Alternatives 2-5) The Secretary will publish a "proposed rule" in the *Federal Register* with an appropriate period for public comment followed by publication of a "final rule" in the *Federal Register* (Alternatives 2-5).**

The primary purpose of the previous two categories of abbreviated notice and rulemaking procedures is to accommodate the Council's September-November meeting schedule for developing annual management recommendations, to satisfy the Secretary's responsibilities under the Administrative Procedures Act, and to address the need to implement management measures by January 1 of each fishing year.**(Alternative 1 – paragraph would be deleted under Alternatives 2-5)**

It should be noted the two **/three** Council meeting process refers to two decision meetings. The first **and second (Alternatives 2-4)** meeting to develop proposed management measures and their alternatives, the second **/third** meeting to make a final recommendation to the Secretary. For the Council to have adequate information to identify proposed management measures for public comment at the first meeting, the identification of issues and the development of proposals normally must begin at a prior Council meeting, ~~usually the June Council meeting~~.

<u>D. Full Rulemaking Actions Normally Requiring at Least Two Council Meetings and Two *Federal Register* Rules (Regulatory Amendment)</u> - These include any proposed management measure that is highly controversial or any measure which directly allocates the resource. **These also include management**

measures that are intended to have permanent effect and are discretionary, and for which the impacts have not been previously analyzed. (Alternative 2-5, moved from Section C, above) The Council normally will follow the two meeting procedure described for the abbreviated/ **specifications and management measures** rulemaking category. The Secretary will publish a "proposed rule" in the *Federal Register* with an appropriate period for public comment followed by publication of a "final rule" in the *Federal Register.*

Management measures recommended to address a resource conservation issue must be based upon the establishment of a "point of concern" and consistent with the specific procedures and criteria listed in Section 6.2.2.

Management measures recommended to address social or economic issues must be consistent with the specific procedures and criteria described in Section 6.2.3.

Appendix B

TRANSITION TO MULTI-YEAR MANAGEMENT UNDER ALTERNATIVE 3 (COUNCIL PREFERRED)

<table>
<tr><th></th><th>Jan '03</th><th>April '03</th><th>June '03</th><th>Sept '03</th><th>Nov '03</th><th>Jan '04</th><th>Mar/Apr 04</th><th>June '04</th><th>Sept '04</th><th>Nov '04</th><th>Jan '05</th></tr>
<tr><td rowspan="2">Stock Assessments</td><td colspan="4">Assessments and STAR for '04 due **5/03**</td><td rowspan="2"></td><td colspan="5" rowspan="2">"Off" year for stock assessments. Advanced model development and stock assessment model refinement year.</td><td rowspan="2">"On" year begins</td></tr>
<tr><td colspan="4">Assessments and STAR for '05-'06 due **10/03**</td></tr>
<tr><td>Council Process</td><td colspan="2"></td><td>Proposed '04 Specs</td><td>Final '04 Specs</td><td>Proposed '05-'06 ABC/OY</td><td></td><td>Proposed '05-'06 manage measures</td><td>Final '05-'06 Specs & measures</td><td colspan="3">First "off" year for Council begins 9/04 and ends 11/05. In 11/05, proposed ABC/OY for '07-'08</td></tr>
<tr><td rowspan="2">NMFS Regulatory Process</td><td colspan="2" rowspan="2">Public review and NOAA implementation of Amendment 17</td><td colspan="2" rowspan="2"></td><td colspan="2">'04 Specs via emergency for Jan-Feb or carry-over if '03 conservative enough</td><td colspan="2" rowspan="2"></td><td colspan="3" rowspan="2">NMFS sends '05-'06 out for public review via proposed rule and implements via final rule by 01/05</td></tr>
<tr><td colspan="2">'04 Specs proposed rule, public review; final rule due 3/04</td></tr>
</table>

TRANSITION TO MULTI-YEAR MANAGEMENT UNDER ALTERNATIVE 5 (SSC SUPPORTED)

<table>
<tr><th></th><th>Jan '03</th><th>April '03</th><th>June '03</th><th>Sept '03</th><th>Nov '03</th><th>Jan '04</th><th>Mar/Apr 04</th><th>June '04</th><th>Sept '04</th><th>Nov '04</th><th>Jan '05</th></tr>
<tr><td>Stock Assessments</td><td colspan="3">Assessments and STAR for '04-'05 due 5/03.</td><td colspan="2"></td><td colspan="5">"Off" year for stock assessments. Advanced model development and stock assessment model refinement year.</td><td>"On" year begins</td></tr>
<tr><td rowspan="2">Council Process</td><td colspan="2" rowspan="2"></td><td>Proposed '04-'05 Specs</td><td>Final '04-'05 Specs</td><td colspan="2" rowspan="2"></td><td colspan="5" rowspan="2">First "off" year for Council begins 3/04 and ends 6/05. In 6/05, proposed ABC/OY for '06-'07</td></tr>
<tr><td colspan="2">Transitional OYs needed for Jan-Feb -04</td></tr>
<tr><td rowspan="2">NMFS Regulatory Process</td><td colspan="2" rowspan="2">Public review and NOAA implementation of Amendment 17</td><td rowspan="2"></td><td colspan="2">Emergency rule for Jan-Feb '04 specs may be needed even if Jan-Feb '03 used for carry-over because of transition to 3/1 start date</td><td colspan="2"></td><td colspan="4" rowspan="2"></td></tr>
<tr><td colspan="3">'04-'05 Specs proposed rule, public review; final rule due 3/04</td><td></td></tr>
</table>

AMENDMENT 17 - MULTI-YEAR MANAGEMENT

Situation: In response to the increasing complexity of the groundfish management process and a court decision requiring National Marine Fisheries Service (NMFS) to publish the proposed annual specifications and management measures in the *Federal Register* for public comment before publishing a final rule implementing these specifications and management measures, the Council initiated Amendment 17 to the Pacific Coast groundfish fishery management plan (FMP).

Amendment 17 has several goals, including: optimizing development of specifications and management measures, providing more time for work on other critical issues (e.g., strategic plan implementation), and providing adequate time for public notice and comment during the NMFS review period. The amendment includes five alternative management schedules, with various options for setting specifications and management measures, the number and schedule of Council meetings for developing specifications and measures, fishing year start dates, schedules for conducting new and updated groundfish stock assessments, and the effects of using one-year optimum yields versus two-year optimum yields within a biennial framework.

In June, the Council reviewed the draft environmental assessment (EA) for Amendment 17 and identified a preferred alternative: biennial management with a three-meeting process and a January 1 fishing year start (Option 3 in the June 2002 draft). The Council asked for additional information, including: socioeconomic analysis, description of transition from current management to the new process, and discussion of the effects of using one-year optimum yields versus two-year optimum yields within a biennial framework.

At this meeting, the Council will review new information developed since the June meeting. The Council is scheduled to further consider the management alternatives available in Amendment 17 and provide guidance for further development of the EA and analytical decision documents. It is anticipated final action on Amendment 17 will occur at the November 2002 meeting.

Council Action:

1. Further consideration of management alternatives.

Reference Materials:

1. Exhibit C.9, Attachment 1.

Agenda Order: — over

a. Agendum Overview — Dan Waldeck
b. NMFS Report — Yvonne de Reynier
c. Reports and Comments of Advisory Bodies
d. Public Comment
e. **Council Action**: Further Consideration of Management Alternatives

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis
The purposes of Amendment 17 (optimizing the groundfish management process and providing for adequate public notice and comment) are in line with GFSP goals for the Council process. These goals include: establishing and maintaining a management process that is transparent, participatory, understandable, accessible, consistent, effective, credible, and adaptable; providing a public forum that can respond in a timely way to the needs of the resource and to the communities and individuals who depend on them; and establishing a long-term view with clear, measurable goals and objectives.

PFMC
08/22/02

2. Exhibit C.9.c, Supplemental GAP Report.
3. Exhibit C.9.b, Supplemental NMFS Report.

State of California · The Resources Agency
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
1416 Ninth Street
Sacramento, CA 95814
(916) 653-7667

GRAY DAVIS, *Governor*

August 16, 2002

RECEIVED
AUG 2 2 2002
PFMC

Dr. Donald O. McIsaac
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

Dear Dr. McIsaac:

Enclosed for the September briefing book are responses to the Groundfish Advisory Subpanel's comments received at the June Council meeting regarding delegation of management authority of nearshore groundfish stocks from the Council to the State of California. At the June meeting, we asked the Council to consider initiating an amendment to the West Coast Groundfish Plan at its September meeting. We recognize the Council is overloaded with amendment and regulatory issues at this time and we will be prepared to offer a transfer of management authority strategy at the September meeting.

If you have any questions, please do not hesitate to contact me at (916) 651-6281.

Sincerely,

LB Boydstun

LB Boydstun
Intergovernmental Affairs Representative

Enclosure(s)

cc: Ms. Patricia Wolf, Regional Manager, Marine Region
Ms. Marija Vojkovich, Offshore Ecosystem Coordinator

Responses to Groundfish Advisory SubPanel Statement on Scoping for Delegation on Nearshore Management Authority

Comment (C)1. The Groundfish Advisory Subpanel (GAP) recommends the Council give this issue a low priority in light of the many more crucial issues facing the Council.

Response (R)1. We appreciate your concern and we do recognize the Council is overloaded with amendment and regulatory issues at this time. We plan to delay the amendment process as the GAP has recommended but proceed with developing California regulations to replace federal regulations for nearshore management beginning in 2004. In this approach, we would come to the Council with our draft proposed regulations at the June 2003 meeting for review and comment. This would be a deferral process.

C2. The GAP believes the types of authority transfer being contemplated will cause additional confusion to resource users, and added cost, and could actually increase discards.

R2. We have held extensive public meetings through out the state to discuss nearshore groundfish management. Most of our constituents preferred regional management under the direction of the state. Please see addendum 1; pages 203-205, specifically page 205 which outlines a bycatch allowance of 5 to 15 percent for gill net and trawl caught nearshore species taken in California's restricted access program. The restricted access species include the following minor nearshore rockfish black-and-yellow, gopher, kelp, china, grass, California scorpionfish, and the other nearshore groundfish kelp greenling and cabezon.

C3. Vessels legally fishing in the Exclusive Economic Zone (EEZ) off California and either not registered in California or landing in Oregon could be forced to discard species on the delegated list which could otherwise be legally taken.

R3. Delegation of management authority is a long way off at this time. We plan to work with the Council to address this issue and others that will arise during the transition period.

C4. The GAP notes there is no provision for full participation in California management decisions by non-residents who are affected by the law.

R4. California encourages the public to be involved in the process of fishery management. The California Department of Fish and Game (CDFG) and the Fish and Game Commission (FGC) have web sites to receive public comments and questions regarding the management process in addition to letters and public comment (www.dfg.ca.gov).

C5. Even residents can be adversely affected by the management process, as they are forced to attend FGC meetings as well as Council meetings to keep abreast of nearshore rockfish science and management. Often the Council and Commission meetings are scheduled at the same time.

R5. To better coordinate the consistency ruling process between the Council and the FGC, we plan to draft our initial statement, regulation(s), and other documents prior to the Council's June meeting. This approach would give the Council an opportunity to review and comment on the draft regulations at their June meeting before filing the initial regulations through FGC in August. The Council would signoff on the regulations at their September meeting and the FGC would adopt them at their October meeting. The regulation(s) would go into effective in January of the following year.

C6. How will nearshore groundfish science be coordinated between the Council and California, given that some of these species exist inside and outside of California waters and off the shores of more than one state?

C6. Under deferral and delegation of management authority, the species would continue to appear in the Council Groundfish Plan; hence, the NMFS would presumably have a justification to work on them. In addition, the CDFG has taken the lead in organizing a cooperative sampling program for the nearshore called CRANE – Cooperative Research and Assessment of Nearshore Ecosystems. The CRANE program will eventually provide important information for assessment and management of nearshore finfish, including rockfish.

C7. Will the CDFG have the resources to conduct the necessary level of research, management, and enforcement if nearshore species are transferred? If not, then there is a question of whether the fish stocks and users will be better off with the transfer of management authority.

R7. See answer 6 regarding research. The NFMP outlines the cost associated with implantation of the NFMP in chapter 5. In terms of enforcement, California's Wildlife Protection Unit has historically enforced both federal and state groundfish regulations on the water and dockside.

Exhibit C.10.c
Supplemental GAP Report
September 2002

GROUNDFISH ADVISORY SUBPANEL STATEMENT ON SCOPING FOR DELEGATION OF NEARSHORE MANAGEMENT AUTHORITY

The Groundfish Advisory Subpanel (GAP) met with California Department of Fish and Game staff to discuss current plans for delegation of nearshore management authority.

As it has on several previous occasions, the GAP raised serious concerns about delegation of authority as has been proposed in the past. These concerns include impacts on species (and fisheries for those species) present both within and outside of state waters; the lack of adequate financial and personnel resources to conduct the level of assessment and management needed, especially for species that might be declared overfished; the confusion that would result from having two different management systems apply to a single species of fish; how the state management process would interact with the state's marine protected area process; and how public participation and allocation decisions would be handled.

In short, the GAP recommends that no further effort be expended on delegation of nearshore management authority to California until these concerns have been met. The GAP notes that it would have the same questions if delegation of authority were sought by other states.

PFMC
09/12/02

Exhibit C.10.d
Public Comment
September 2002

RECEIVED

JUL 15 2002

PFMC

TO: PFMC\NMFS date : 7\10\02
RE: CA NSF EXPANSION

Dear Dr. Hans Radtke

As holders of federal ground fish "A" permits that are currently administrated by PFMC\NMFS , we are writing to voice our absolute opposition to the state of California expanding their control to include 19 species of NSF- black snappers, ling cod,etc.- that we have historically and currently are commercially harvesting.

As you know, CA DFG has refused to recognize the "A" permits as qualifiers for their current NSF limited entry plan, including permits such as ours which are based upon landings of NSF taken within 20 fathoms of water, using principally hook and line and limited long line. Consequently, DFG has refused to renew our NSF permits for 2002-2003, eventhough, we landed the required poundage of the target fish and couldn't record them correctly due to a deficeincy in the fish tickets available to us at the time of our landings. Multiple attempts by us in the form of phone calls and letters to DFG have been to no avail in resolving this issue.

For reasons outlined in the enclosed letters, we believe that CA DFG is behaving in an arbitrary and capricious manner and ignoring our legal fishing rights set forth in the MAGNUSON-STEVENS ACT. They seem more interested in their bureaucratic ease and their agenda than they are in developing and administrating a fair and equitable, lawful NSF fish management plan.

Thank you for your assistance in this matter.

Respectfully,

Waldo V. Taylor

Waldo V. Taylor
231 Ruchong Lane
Crescent City,CA 95531
FV WILD WINDS

Wesley C. Taylor

Wesley C. Taylor
ph. 707 464 1502

RECEIVED

JUL 15 2002

PFMC

TO: nearshore restricted access team
CA DFG
RE: federal "A" permit for ground fish issued by PFMC\NMFS

We were informed that DFG threw out the "A" permits as qualifiers for NSF PERMIT renewals because they represented a "whole bunch of other fish" not relevant to the NSF PERMITS.
We are not shelf fishermen , except for black cod(sable fish). An estimated 75% of our landings were black rock fish caught ,using mostly rod and reel and some longline,in 4-20 fathoms of water. Due to lack of separate boxes on the fish tickets for greenling and cabazon they were clumped in with black snappers.

DFG could have corrected that deficiency in 1994 when they upgraded the fishtickets but they chose not to.

We request the team review the fish tickets in our file and see the that they contain thousands of pounds of black snappers and we estimate that 10% were greenling and cabazon. A passable knowledge of black snappers habitats support our contention that they prefer very shallow depths(inside 20 fathoms) and that greenling and cabazon live in the same areas. This is particularly true north of Fort Bragg where we do most of our fishing.

We believe were wrongfully denied our NSF PERMIT renewal and should have been "grandfathered "in due to our catch history of NSF.

Thank you for your assistance.

Respectfully,

Waldo V. Taylor

Wesley C. Taylor

Waldo V. Taylor
231 Ruchong Lane,
Crescent City, CA 99531

Wesley C. Taylor FV WILD WINDS
ph. 707-4641502
6\17\02

RECEIVED
JUL 1 5 2002
PFMC

TO: CA DFG
FROM: Waldo & Wesley Taylor
RE: NSF PLAN SUGGESTIONS

As CA fishermen with 20+ years of continuous fishing experience, we have caught / delivered using longline and hook and line, hundreds of thousands of pounds of the target (19) species of NSF. Additionally, we have invested hundreds of thousands of dollars for fishing vessels, gear, and permits. Based upon our long historical participation in, dependence upon, and very high "catch history", We propose that DFG include in their NSF plan the following suggestions.

"Grandfather in " vessels/owners and fishermen:

1. With 20 years in the fishery.
2. Or who hold a valid Federal "A" groundfish permit issued by NMFS/PFMC.
3. Or who have landed a cumulative total of 100,000 pounds , in any combination, Of the 19 species .
4. Rollback STARTING date of "window period" to 1985.

Currently, we see a bias in the plan that favors newcomers with little or no investment or catch history. That bias comes at our expense. Conceivably, a guy with a $500 boat and meager deliveries could be included in ,and fishermen with big investments and big deliveries, and long historical participation be ousted. The Magneson Act protects our fishing rights and should be adhered to.

Please consider our suggestions to restore equity in the NSF plan.

Respectfully,

Waldo & Wesley Taylor
Waldo V. Taylor F&G # L05158
Wesley C. Taylor F&G # L20421
231 Ruchong Lane
Crescent City,CA 95531
Ph. 707 464-1502

date: 5/24/02

FISHERIES INC.

CAITO FISHERIES, INC.

P.O. BOX 1370
FORT BRAGG, CALIFORNIA 95437
TELEPHONE (707) 964-6368
FAX (707) 964-6439

May 15, 2002

Department of Fish & Game
Marine Region/License & Revenue Branch
3211 S Street
Sacramento CA 95816

RE: Cabezon and Greenlings (Sea Trout)

Dear Sirs or Madams:

Prior to 1994 and during the window period of 1994 to 2000, the fishing vessel Wild Winds, Fish & Game License #40226, owned by Waldo Taylor, Fish & Game #L05158, and captained by Wes Taylor, Fish & Game License #L20421, landed Cabezon and Greenlings well in excess of the 100 combined pounds required to qualify for a near shore permit. During these periods, the Cabezon and Greenlings landed were weighed in with either the black and blue rockfish and ling cod and were not listed on the Fish & Game landing receipts seperately.

Sincerely,

Joseph A. Caito
President

JUL 1 5 2002

PFMC

TO: CA F&G COMMISSION Mr. Robert Treanor
RE: Synopsis of our position concerning appeal of our NSF permit denial For 2002-2003

Simply put, we landed and delivered the necessary poundage of NSF During the window period (1994-1999) to qualify for our NSF permit renewal. See attached letter from Caito Fisheries, Inc.

During our 20+ years of participation in the CA NSF industry, DFG has never had boxes on the fish tickets for Greenling or Cabazon and our traditional practice has been to clump them in with blackrock fish on the fish tickets when we made our deliveries of NSF. See attached pre\post 1994 fish tickets.

We assert that DFG is improperly depriving us of legal fishing rights as established by the MAGNUSON-STEVENS ACT in the following respects:

1. DFG is improperly ignoring our long historical participation in,dependence upon, and large investment in the NSF industry. We have hundreds of thousands of pounds of NSF delivered and hundreds of thousands of dollars invested into permits and vessels.
2. DFG is improperly ignoring our economic impact upon the depressed small coastal community of Del Norte Co. and Crescent City. 90% of our gross revenues are expended locally. Using a multiplier of 7, we create an average annual local ripple effect at, or near, 2 million dollars. To divert any part, or all of that, to another part of the state, to another state or country is absolute poor social\economic policy. SEE ATTACHED DNFC letter

DFG seems to unfairly neglect the north coast, in that, communications of their desires and intents are poor, and local meetings are scarce. E.g., leaving 2 of the 3 NSF qualifying species for the northern region of the state, off the revised 1994 fishtickets is inappropriate.

Thank you, for your assistance in this matter.

Respectfully,

Waldo V. Taylor   Wesley C. Taylor

Waldo V. Taylor
231 Ruchong Lane
Crescent City, CA 95531

Wesley C. Taylor FV WILD WINDS
ph. 707-464-1502

6\29\02

CC: PFMC
NMFS
STATE ASSEMBLY MEMBER VIRGINIA STROM-MARTIN
STATE SENATOR WES CHESBRO

Claudia Frances
Business Assistance Coordinator
Del Norte Workforce Center
286 M Street, Suite B
Crescent City, CA 95531
(707) 464-8347

July 3, 2002

To Whom It May Concern:

From: Ms. Claudia Frances, Business Assistance Coordinator
Del Norte Workforce Center

RE: Del Norte County Fishing Industry

Del Norte County has a long and rich history with the fishing industry. In recent years we have witnessed the demise of the industry and are living with the effects of lost jobs and economic hardship. I am a team member of the Del Norte Workforce Center, a partnership of state and local agencies,that deals daily with the personal impact of the loss of natural resource industries in our area. The best we can hope to do is to support the remaining natural resource businesses and business owners as they adapt to local, state, and federal demands.

It is in this spirit that I wish to express my support in regards to Mr. Waldo V. Taylors efforts to rectify the issue of his permit renewal. I would hope that the CA NSF industry would take his argument for the issuance of his permit, and historical documentation to that argument, into serious consideration.

Maintaining our natural resources should be done hand in hand with protecting the livelyhoods of those who live and work within those natural resource areas. It is a task not to be taken lightly, but one that can be successful when everyone works together to achieve the common goal.

State of California - The Resources Agency
GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
License and Revenue Branch
3211 S Street
Sacramento, CA 95816
(916) 227-2282

Flex your Power

August 22, 2001

Mr. Waldo V. Taylor
231 Ruchong Lane
Crescent City, California 95531

Dear Mr. Taylor:

On July 30, 2001, the Department of Fish and Game approved your request for a 2001-2002 Nearshore Fishery Permit (NFP) L05158.

This is to acknowledge receipt of payment in the amount of $375 which was applied to the back fees for a 1999-2000 and 2000-2001 NFP. Since we no longer have the prior year permits available for issuance, this letter will serve as documentation that the required fees have been paid for the 1999–2000 permit year and 2000-2001 permit year. This letter should be retained in your files indefinitely as your verification of payment.

Enclosed is your 2001-2002 NFP. If you have any questions or require additional assistance, please contact Ms. Vandella Campbell, of my staff, at the letterhead address, by telephone at (916) 227-2281, or e-mail at vcampbel@dfg.ca.gov.

Sincerely,

for Marie Melchione

Antoinette R. Lobo, Chief
License and Revenue Branch

Enclosure

cc: Ms. Vandella Campbell
Department of Fish and Game
Sacramento, California

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
License and Revenue Branch
3211 S Street
Sacramento, CA 95816
(916) 227-2282

Certified Mail

June 29, 2001

Mr. Wesley C. Taylor
231 Ruchong Lane
Crescent City, California 95531

Dear Mr. Taylor:

Based on recent actions by the Fish and Game Commission (Commission), the Department of Fish and Game (Department) has approved your appeal for a 2001-2002 Nearshore Fishery Permit (NFP). This approval is contingent upon you paying the back fee of $125 for a 1999-2000 NFP and the fee of $125 for a 2001-2002 NFP.

Your full payment is due within 30 days after receipt of this letter. The back fee must be paid to the License and Revenue Branch before the 2001-2002 NFP can be issued.

You are not required to attend the hearing scheduled on July 24, 2001, in San Diego.

Please Take Notice: Any action by this decision reflects relief of only certain specific provisions of the now existing Section 150, Title 14, California Code of Regulations. This provision is of limited term and presently scheduled to expire on March 31, 2002. No relief granted herein shall entitle the licensee or permit holder to any other relief or remedy and does not reflect any determination by the Commission that the licensee or permit holder herein is, or will be, qualified to participate in the nearshore fishery program following adoption of any permanent regulations by the Commission of the nearshore fishery.

CAL'FORNIA DEPARTMENT OF FISH AND GAME

PERMIT # [illegible]

MONTH 08 DAY 01 YEAR 94

E 051050

SEE 2ND PAGE

FISHERMAN LAST NAME	F.L	I.D. NUMBER	PORT OF FIRST LANDING	LOCATION WHERE FISH WERE CAUGHT
TAVLyd	W	L 005158	201	1042

VESSEL NAME	VESSEL I.D.	FISH BUSINESS NAME	FISH BUSINESS I.D.
WILd winds	40226	CAITO	02832-020

NO CARBON ON SCREENING BOXES

FISH NAME	POUNDS	PRICE	TOTAL AMOUNT	CONDITION	GEAR
1) WIDOW 269 ROCKFISH		$			
2) BOCACCIO 253 ROCKFISH		$			
3) CHILIPEPPER ROCKFISH 254		$			
4) BLACK 252 ROCKFISH	553	$ .45	248.85		
5) BLUE 665 ROCKFISH		$			
6) YELLOWTAIL ROCKFISH 259		$			
7) GREENSPOTTED ROCKFISH 255		$			
8) CANARY 247 ROCKFISH	4	$ .90	3.60		
9) YELLOWEYE ROCKFISH 265		$			
10) COPPER 655 ROCKFISH		$			
11) CHINA 258 ROCKFISH		$			
12) ROSETHORN ROCKFISH 664		$			
13) VERMILLION ROCKFISH 249		$			
14) ROCKFISH UNSPEC 250		$			
15) ROCKFISH SMALL 960		$			
16) LINGCOD 195	7	$ .55	3.85		
17)		$			
18)		$			
19)		$			

PRIMARY GEAR USED: 01

GEAR LEGEND
- 01 HOOK & LINE
- 03 VERTICAL H & L (PORTUGUESE LONGLINE)
- 05 SET LONGLINE
- 08 TROLL (GROUNDFISH)
- 54 MIDWATER TRAWL
- 56 BOTTOM TRAWL
- 66 SET GILLNET
- OTHER

(BIOLOGIST USE) FISH CODE

TOTALS # 564 $ 256.30

NOTE PAD

CORRECTIONS - FOR FIELD BIOLOGIST USE ONLY

LINE#	FISH CODE	POUNDS	PRICE	CONDITION	GEAR
			$		
			$		
			$		

CHANGES ON BACK

FISHERMAN/PERMITTEE SIGNATURE [signature]

RECEIVED BY [signature]

CALIFORNIA DEPARTMENT OF FISH AND GAME

A 822031

FISHERMAN NAME	I.D. NUMBER	DATE
Wally Taylor	L05158	9-15-92

BOAT NAME AND BOAT NUMBER	DEALER NO.	PORT OF LANDING
Wild Wings 40226	02832-03	Eureka

DEALER NAME: Caito Fisheries Inc

GEAR CHECK ONE BOX: ☐ TRAWL 50 ☐ TRAP & POT 20 ☐ GILL NET 60 ☒ HOOK & LINE 01 ☐ LONG LINE 05 OTHER

ORIGIN BLOCK NUMBER: 1041

USE: HUMAN CONSUMPTION ☒ PET FOOD ☐ DEADBAIT ☐ OTHER

FISH TYPE	FISH NAME	POUNDS	PRICE	AMOUNT
SALMON	302 CHINOOK SALMON LG			
	302 CHINOOK SALMON MED			
	302 CHINOOK SALMON SML			
	304 COHO SALMON (SILVER)			
MISC. FISH	005 ALBACORE			
	550 SURFPERCH			
	185 WHITEBAIT SMELT			
	051 PACIFIC MACKEREL			
	165 ANGEL SHARK			
	155 THRESHER SHARK			
SHELLFISH	752 SEA URCHIN RED			
	753 SEA URCHIN PURPLE			
	711 SQUID			
	801 ROCK CRAB			
	800 DUNGENESS CRAB			
	TOTALS			

WEIGHBACKS/TARE/DEDUCTIONS

FISH TYPE	FISH NAME	POUNDS	PRICE	AMOUNT
ROCKFISH	250 ROCKFISH	2330	35	815 50
	253 BOCACCIO			
	959 RED	30	.45	13 50
	960 SMALL ROCKFISH			
	961 ROSEFISH			
	957 BOLINAS			
	962 GOPHER			
	269 WIDOW (BROWNIES)			
	254 CHILIPEPPER			
	Copper	50	.40	20 00
GROUNDFISH	262 CHANNEL/HARDHEAD			
	190 SABLE FISH LG			
	190 SABLE FISH MED			
	190 SABLE FISH SML			
	195 LINGCOD	66	50	33 00
	206 ENGLISH SOLE			
	222 HALIBUT (CALIFORNIA)			
	175 SKATE (WINGS)			
	435 KINGFISH			
	230 FLOUNDER			
	457 HAGFISH			
	TOTALS	2476		882 00

TO BE USED FOR TRANSPORTATION RECEIPT NO. IF TRANSPORTED BY FISHERMAN: FOOD

RECEIVED BY: D. Downing

CERTIFIED UNDER PENALTY OF PERJURY AS TRUE AND ACCURATE

F & G 625-A (REV. 5-91)

UNITED ANGLERS
of Southern California

5948 Warner Avenue
Huntington Beach, CA 92649
714 840-0227 TEL
714 840-3146 FAX

RECEIVED
AUG 2 2002
PFMC

June 27, 2002

California Fish and Game Commission
1416 Ninth Street
Sacramento, CA 95814

Dear Commissioners:

The following represents our major comments regarding the Nearshore Fishery Management Plan. It is our opinion that this plan does not represent the wishes of the California recreational fishing public. The plan substantially deviates from accepted biological science for fishery management and embarks on an untested quest for a new fishery management regime.

1. Plan control rules.
   a. The department has fashioned three stages of control rule evolution. Section 7087 of the Fish and Game Code ("FGC") states the plan must state which sort of plan changes would require a plan amendment and which can be accomplished within the framework of the plan. Changes to the control rule are listed as requiring a plan amendment. It seems rather cavalier to add several evolutions of control rules when inadequate EFI exists to estimate what levels of fishing will be allowed under later evolutions of the control rule. This approach smacks of attempts to avoid the requirements of the MLMA and CEQA to determine what the impacts will be on the fisheries by implementation of control rules. Further it does not appear that the latter stage control rules have been peer reviewed. This lack of peer review and lack of impact analysis for later stage control rules would appear to be a violation of Sections 7072, 7081, and 7083 of the FGC. We realize that the department doesn't have much experience in designing and implementing fishery management plans, therefore, before the Department runs off and attempts to design the future of marine science they should probably take it one step at a time.
   b. The peer review panel criticized the Stage I MSY proxy in the previous draft because the Department had selected the period with highest catches on record. We were especially concerned that anecdotal data suggested there were problems during that period from excessive fishing effort. This plan recognizes that the control rule was based upon a "variant of Restrepo", and attempts to justify this variation by merely stating that the variation "seemed appropriate at the time" (when the variant was implemented in December 2000 as an interim protocol). Its our belief that there was no good scientific justification at the time it was implemented, but regardless of whether there was justification or not Section 7072 of the FGC is not served by avoiding a discussion of why or why not the "variant" proxy should be the preferred option for this FMP upon its adoption.
   c. The Stage II and III control rules should be removed from the plan and instead submitted through plan amendment after adequate essential fishery information ("EFI") is available to estimate the total catch that will be allowed initially. In our opinion, it is arbitrary and capricious to include evolutions of control rules within the plan when the impacts of such control rules cannot be determined through an admitted lack of EFI. The essence of a good plan is to tell the people who are expected to benefit from the plan what level of fishing will be allowed under various stock conditions. By not doing this, the plan clearly does not properly recognize the long-term interests of the fishermen and provides no basis for determining the environmental impacts of the management regime on the ecosystem. To paraphrase the situation, the

essential element of an architectural plan is the amount of square feet of buildings to be constructed. The architect can render a drawing of the Taj Mahal, but unless a somewhat reliable estimate of the square footage is given the resulting building could be no larger than an outhouse or may be far beyond the client's budget.

d. UASC recommends that the control rule for this beginning plan be aligned with the control rule established by the PFMC in their nearshore groundfish plan. UASC believes that it is completely consistent with the objectives of federal management to establish higher levels of precaution for the State. By approaching the control rule in this manner the State can attain its objectives while still providing clear assurance to Oregon and Washington that California isn't off on a wild goose chase. Also, in this way, the State can continue to contribute to the efforts of federal managers by supplementing their research into these valuable fisheries. The State should avoid attempting to reinvent the wheel with this plan and take full advantage of federal efforts and funds in order to maximize the level of science available for achieving sustainability for our nearshore stocks.

2. Regional Managment

a. In general we are supportive of regional management. However, we believe that the plan development team has taken a narrow view of the benefits and challenges related to multi-jurisdictional fisheries. The Magnuson-Stevens Conservation and Management Act which has been the bible of fishery management in the United States for two and half decades states in its National Standards: "To the extent practicable, an individual stock of fish shall be managed as a unit or in close coordination." This concept has been extended to the Law of the Sea Convention and has also been adopted by the majority of nations.

b. Further, UASC believes that fishery stocks are dynamic. What may work today may not work tomorrow as ocean regimes shift north and south across regional, State, and international borders. The plan needs to give consideration to stock-wide issues such as recruitment in designing regional management schemes.

c. California with little experience in managing fish seems intent on deviating from international and federal standards in order to run its own experiments in fishery management. UASC is adamantly opposed to using our fishery and our license dollars in such an experimental fashion in contravention to conventional wisdom.

d. UASC believes that California needs to give strong consideration not only to local regional needs but also to the needs of the entire State, and to the effects their management will have on adjacent states and adjacent nations. Only by cooperating at a Statewide level and with federal and international management regimes wherever and whenever they exist can this plan have strong assurance of achieving the objectives of the fishery management plan. No consideration of these needs appears to be detailed in the recommended regional management regime. This gaping hole needs repair.

e. UASC believes that close coordination with the PFMC will help provide the sort of cohesive management that will be needed over the long run. Working with the PFMC will enable angler dollars to obtain their maximum punch when combined federal dollars in an ecosystem/stock-wide program for fishery management. Clearly this is how the recreational fisherman wants his license dollars expended.

f. UASC recommends this plan first be modified to include multi-jurisdictional considerations and then be adopted and remain consistent with the PFMC ground fish plan. California has an important role on the PFMC and as science is developed and EFI collected, California will be able to influence change in the national process all the while bringing California issues to the forefront through the Commission and this FMP.

3. Marine Reserves.

a. It is our belief that marine reserves remain untested as a fishery management tool. California should manage its fish in a manner that is clearly within the MLMA policies of recognizing the importance of recreational and commercial fishing. The Marine Life Protection Act has provided a means for establishing reserves for purposes other than fishery management. The MLMA should remain as the act to ensure the future of sustainable fishing using the best science available.

b. A recent report by the Science and Statistics Committee of the PFMC points out a major missing factor in the California CEQA document for marine reserves in the Channel Islands National Marine Sanctuary. They point out the undeniable fact that either fishers will experience full economic impacts of the loss of fishing grounds from marine reserves or that environmental impacts will occur outside of the reserves. It is fallacious to say there will not be substantial economic impacts from reserves while claiming great ecological benefits. There is no science to suggest that merely condensing fishing effort results in a net ecological gain. Furthermore, if the conclusion that reducing fishing is the most appropriate remedy for avoiding ecological damage it should be noted that economic impacts can be minimized by focusing on specifically damaging activities rather than across the board cuts in efforts.

c. UASC offers a study by Dr. Robert L. Shipp, PhD on problems associated with the use of no take reserves for fishery management purposes. Its our belief that Dr. Shipp has captured the essence of our concerns and we have enclosed this Study as attachment I.

d. UASC also offers the testimony of Dr. William Hogarth on the implementation of federal MPAs. We believe that networks of MPAs for the purpose of providing stock protections also need to be designed with ecosystem-wide considerations and will fail to achieve the objects of the MLMA if they are not done in concert with federal and international authorities. We include this testimony as attachment II.

4. Peer Review.

a. The Department appears to be operating out of compliance with sections 7062 and 7059 of the FGC. To date no public process has ensued to determine a peer review protocol.

b. UASC recommends that until such a process is developed the Department submit everything it offers for public review, including its plan revisions, to full peer review by independent scientists not engaged in the process of writing or substantively advising on the plan choices.

c. UASC would like to be provided full details of review comments by the peer review panel for this latest draft and for the public comment period to be left open for a minimum of 45 days after those comments are provided.

5. Essential Fishery Information.

a. The weakest element of this fishery management plan is clearly the lack of EFI. Stock assessments, specifications of MSY, and fishery dependent data are all lacking. Recreational data is severely lacking as the department depends nearly entirely on federal funds to conduct surveys of anglers. The DFG in a misguided decision has been failing to even collect the names and addresses of the people to whom it sells fishing licenses. The use of outside private sector expertise in the collection of recreational fishery information appears to be non-existent. The Torquemanda Study demonstrates that fishery dependent data fouling from the commercial sector is rampant.

b. UASC strongly recommends that the State's management of the nearshore remain tied to the federal process to extend the State's limited funds in attaining stock assessments. UASC believes the State will waste dollars pursuing fish per unit territory strategies rather than traditional strategies for stock assessments until such time that new strategies are adopted ecosystem/stock-wide. Additionally, by coordinating research with existing federal research the impact of angler dollars can be maximized.

c. UASC strongly recommends that priorities be given to building cost-effective fishery dependent data collection systems in conjunction with federal processes and that sufficient funds be provided for collecting this information by the appropriate sectors that will benefit from the management regime. Explanations of how problems in (a) above will be addressed should be clearly stated in the plan. Considering the well-established importance of fishery dependent EFI any other approach would be a misappropriation of angler dollars.

d. UASC strongly suggests that the DFG examine the EFI improvements obtained by the State of Florida. The DFG seems enamored with some of Florida's success stories. UASC verbal discussions with Florida officials indicates that Florida believes one of the tools most responsible for those successes is the vast improvement they have made in collecting fishery dependent EFI. For example, Florida officials have stated that they more than tripled the precision of MRFSS intercept data by essentially matching the federal funds. Likewise Florida officials were appalled that our DFG doesn't even collect contact information of those persons who they sell recreational fishing licenses to. Not collecting that contact information, whether computerized or not, only serves to prevent studies conducted from random samplings of the participants. It is criminal that this information gap still has not been corrected.

6. UASC Proposal.

   a. We would like to thank the Department for including the UASC proposal. We are still strongly supportive of the use of this proposal to address overcapacity and conservation concerns to manage these fisheries in the face of tight budgets.

   b. UASC does not believe that the Department has yet recognized the benefits of this proposal. In order to properly analyze this proposal, the Department should compare the expected results of this proposal to the specific objectives and goals of the plan and commission policies on allocation and revised fishing mortality targets and only then conclude whether the proposal represents the best alternative or not.

7. Limited Entry.

   a. UASC has great concerns about the ability of limited entry to effectively control powerful and efficient fishing weapons. The history of fishery management is littered with the economic woes wrought by failed limited entry programs. The failure of PFMC's ground fish programs, promoted by the State of California, with limited entry on trawl gear was a dismal failure. California still seems incapable of realizing this failure as it has failed to act to adequately restrict State exempted trawls, some of which also dramatically affect nearshore habitats.

   b. One of the primary benefits of the UASC proposal is to increase the effectiveness of limited entry controls by reducing the risks that arise from gear efficiencies. UASC does not believe adequate considerations of this have been given in the FMP.

   c. Numerous papers by world renowned scientists exist on IFQs and limited entry program issues, yet the Department has failed to consider some of the key issues and risks peculiar to the nearshore fishery in arriving at their recommendations for limited entry as a primary management tool. Considerable discussion of these issues has been had with the FGC consultants on Canearshore and Oceancoalitions listservs.

Sincerely,

Tom Raftican, President
United Anglers of Southern California

Bob Osborn, Fishery Consultant
United Anglers of Southern California

Cc: Bob Hight, Director California Department of Fish and Game
Patricia Wolf, Regional Manager, Marine Region, PFMC
Dr. Donald McIsaac, Executive Director, PFMC

RECEIVED

AUG 2 2 2002

PFMC

8-21-02

Public comment: Nearshore Ground Fisheries Management Transfer

My name is Lloyd Reeves. I am a longtime California resident with a Federal Groundfish longline "A" permit, #0005. I qualified for this permit with nearshore, shelf & slope landings.

The State of California has already excluded some fishermen that qualified for federal "A" permits with nearshore landings. But they have issued over **900** "nearshore permits" to "Open Access" fishermen with more recent landings. Do you really want to transfer authority to this kind of management?

California F&G has stated that they want to increase the scope of their management to include more than the 9 fish they have listed. If it was just these 9 nearshore fish I would not mind too much. However they want to include fish such as Blue, Olive and Brown rockfish that are caught in Federal waters. I would be fine if the State of California said I could not fish in state waters but they want control of part of the Federal shelf as well. Is it smart to let them manage these other fish? Remember they have issued over 900 nearshore permits to Open Access fishermen!

The State could shut down areas of state waters to commercial fishing (which would be fine by me). However the State of California wants to continue to pursue its own Nearshore Limited Entry Permit instead of using the existing Federal Limited Entry. I urge the Pacific Fishery Management Council to **NOT** transfer the nearshore rockfish management to the state of California.

Sincerely,

Lloyd Reeves

Lloyd Reeves
1155 2nd Street
Los Osos, Ca. 93412

SCOPING FOR DELEGATION OF NEARSHORE MANAGEMENT AUTHORITY

Situation: California Department of Fish and Game (CDFG) is developing a fishery management plan (FMP) for California's nearshore finfish fishery. CDFG also intends to seek transfer of management authority for several groundfish species that would be managed under their nearshore FMP. Approximately 16 of the species included in the State's draft FMP are currently managed under the federal Pacific Coast groundfish FMP.

Information on the nearshore FMP and transfer of management authority were presented to the Council in June 2002. The public comment period on CDFG's nearshore FMP has ended. The California Fish and Game Commission (CFGC) considered action on the nearshore FMP at their August 29-30, 2002 meeting.

CDFG will report to the Council on the outcome of the CFGC meeting.

Based on the information presented by CDFG and the Council's advisory bodies, the Council could consider initiating an amendment to the groundfish FMP that would transfer management authority over certain species from the federal FMP to the California nearshore FMP.

During the discussion of the transfer of authority issue, the Council may want to consider how it intends to formally review and act on CDFG's nearshore FMP and transfer of management authority request. That is, what sort of process might be necessary to review the voluminous information, coordinate with CDFG and CFGC, and develop a plan amendment to the federal groundfish FMP.

Council Action:

1. Consider initiating FMP amendment process.

Reference Materials:

1. Exhibit C.10.b, CDFG Report.
2. Exhibit C.10.d, Public Comment.
3. Exhibit C.10.c, Supplemental GAP Report.

Agenda Order:

a. Agendum Overview — Dan Waldeck
b. California Department of Fish and Game Report — LB Boydstun
c. Reports and Comments of Advisory Bodies
d. Public Comment
e. **Council Action:** Consider Initiating FMP Amendment Process

Groundfish Fishery Strategic Plan (GFSP) Consistency Analysis

The GFSP contemplates delegation or deferral of management authority for certain nearshore species to the states, particularly species that reside in and are harvested primarily within state waters. The GFSP notes "the Council and NMFS are not well suited to assess the biological requirements of many of these local populations, to assess the social and economic issues associated with them, or to monitor localized fisheries." Therefore, the GFSP recommends the Council "[c]onsider delegating or deferring nearshore rockfish and other groundfish species, such as scorpionfish, greenling, and cabezon, to the States." (Groundfish Strategic Plan, Management Policies Recommendation, p. 13).

PFMC
08/20/02