March 20, 2008

Mr. Donald K. Hansen
Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384
Fax 503-820-2299

Dear Chairman Hansen:

As purchasers and sellers of West Coast seafood products, we have a great interest in protecting and promoting a vibrant and sustainable fishing and seafood processing industry. Combined, Oregon restaurants and grocers represent thousands of jobs and a huge sales market for West Coast fish and seafood products.

Along the West Coast, we are blessed with some of the freshest and best seafood products found anywhere. Getting these products from the Pacific Ocean to the grocery carts and restaurant plates of our customers requires a healthy fishing industry, a healthy and innovative processing sector and an efficient distribution and transportation network. All are critical to the entire industry’s success.

As you consider adopting new rules that govern how fish are caught and processed along the West Coast, we urge you to adopt rules that include and are fair to both fishermen and processors. As we understand it, the initial quota allocations will be made according to historical industry contributions and there can be no doubt of the equally important historic roles played by both the fishing and processing sectors in creating a sustainable industry. A quota program that fails to recognize the critical role of processors in creating markets for seafood products could have an adverse impact on consumers. In short, fishermen need processors to be healthy; processors need fishermen healthy; and consumers need them both to get the products they desire.

We are proud of our relationships with fishermen, processors and everyone in between who helps us deliver fine seafood products to our customers and share Oregon’s bounty with the world. I support new rules that will make this industry stronger and urge you to consider the impact new rules will have on every aspect of this seafood industry sectors.

Sincerely,

[Signature]

Aaron Noveshen
50 copies of the letters like that from “Pacific Catch Fresh Fish Grill” were received from restaurants, grocery chains, seafood wholesalers, and processors.

<table>
<thead>
<tr>
<th>State</th>
<th>Count</th>
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<tbody>
<tr>
<td>California</td>
<td>5</td>
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<tr>
<td>Oregon</td>
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<td>Washington</td>
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<td>Nevada</td>
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<td>Other States</td>
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<td>Canada</td>
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<tr>
<td>Undetermined</td>
<td>6</td>
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April 2008

Dear Pacific Fisheries Management Council:

A healthy and growing West Coast seafood industry is important not only for our regional economy, but to the many industries that support it and for those who depend on it for quality consumer products. That is why I am writing today.

As you consider new rules to manage and govern West Coast fisheries, please remember the entire seafood industry – from the fishermen, to the dock support, processor, sales and distribution networks and grocery and restaurant consumers. Specifically, I urge you to support a quota allocation system that provides a fair initial allocation to both fishing vessel owners and processors. A fair quota allocation will mean a stronger seafood industry for everyone; an unfair allocation will threaten industry stability and growth.

Thank you for your thoughtful consideration of my point of view and your commitment to policies that will protect and grow the seafood industry.

Sincerely,
Kirsten Forsberg

Additional Comments:
Mr. Donald K. Hansen  
Chairman  
Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, Oregon 97220-1384  

Dear Chairman Hansen and members of the Pacific Fishery Management Council,

I am a fish buyer/processor from ... and I am writing to ask you to oppose initial allocation of quota to processors in the IFQ program for the west coast trawl fleet. If quota is allocated to processors based on processing history, it will have a disastrous effect on small processors/buyers up and down the coast.

The way the alternatives are currently structured only a handful of the very largest processors would be eligible to receive any allocation. Such an allocation system will enable that small number of large processors to become even larger, and will make it easier for them to continue to squeeze out small processors/buyers. Large processors will become the beneficiaries of an even larger market advantage eliminating the potential for small buyers/processors to partner with fishermen on innovative marketing arrangements.

There is absolutely no justification for a giveaway of public trust resources to a handful of very large processing companies that will create such devastating impacts for other processors/buyers who are not entitled to receive a piece of the allocation pie. Please oppose initial allocation of quota to processors.

Sincerely,

Robert J. & Nancy C. Phelps  
171 Ivy Lane  
Port Angeles, WA 98362

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PS: We are customers at the small & large store on the Olympic Peninsula and we like buying fish from Pilot and not a large fish...
Groundfish Rationalization Catch History Years

The choice of catch history years should be consistent between sectors, whether or not the choice of programs is consistent.

The choice of program type (either IFQ or Coop) should not be influenced by differences in the sets of catch history years between the two program alternatives, nor should the catch history years be determined by the choice of program.

As presently structured, the IFQ alternatives use a longer time series than the Coop alternatives. (1994 to 2003 versus 1997 to 2003). Additionally, some members of the MS sector have advocated using 1998 to 2004 for the MS sector only.

Using different years for different sectors, does not result in “fair and equitable distribution of access privileges in the fishery” among similarly situated persons, as illustrated by the following table.

<table>
<thead>
<tr>
<th>Catch History Years by Sector - with hypothetical vessel histories.</th>
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<tbody>
<tr>
<td>Shoreside IFQ</td>
</tr>
<tr>
<td>MS Coops</td>
</tr>
<tr>
<td>Vessel 1</td>
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<tr>
<td>Vessel 2</td>
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<tr>
<td>Vessel 3</td>
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</tbody>
</table>

Hypothetical Vessels 1 & 2 each participated in only one sector per year, however each participated every year in either the MS or the SS sector of the whiting fishery. Between 1994 and 2003 both Vessels 1 & 2 participated for 5 years in the MS sector, and 5 years in the SS sector (assume these hypothetical vessels had typical and consistent landings.)

If IFQs are chosen for the Shoreside sector using 1994 to 2003, and Coops are chosen for the MS sector using 1998 to 2004, the allocations to the two vessels would differ radically.

Vessel 1 would get credit for 1 of 7 qualifying years for the MS sector, while Vessel 2 gets credit for 6 out of 7 years.

Vessel 1 would get credit for 5 of 5 qualifying years for the SS sector, and Vessel 2 also gets credit for 5 out of 5 years.

The result is that each vessel gets 50% of a full Shoreside history, but Vessel 1 only gets 14% of a full MS history, while Vessel 2 gets 86%. Vessel 2 gets a windfall as a result of using more recent years for the MS sector relative to the Shoreside sector, while Vessel 1 gets penalized.

1994 through 1997 should be included for all sectors or none.

The desire to include catch history that is more than a decade old should be balanced against recognizing “present participation” and current “dependence” on the fishery.”

We don’t oppose including history as far back as 1994, though there is little precedent for reaching that far back. However, it is necessary to recognize that “control dates” don’t have any regulatory weight, nor are they mentioned in the MSA. What the MSA does say, is that limited access programs must “take into account…” (among other things) “present participation….and dependence on the fishery.”

A vessel that has participated in, and depended on, the shoreside whiting fishery for the last 10 years, should not lose the last 4 years of that “present participation” if a vessel that hasn’t depended on the fishery for 10 years is to get credit for history that older than that.
Subject: fishing Steve Aarvik
From: oneme5she@comcast.net
Date: Fri, 02 May 2008 23:41:39 +0000
To: John.DeVore@noaa.gov (John DeVore)

To Whom It May Concern;

My name is Steve Aarvik the owner of the Windjammer. I have been the owner/operator for these last 20 plus years. My family and others have been through the changes of the fishing industry. Unfortunately, most of them have been to the detriment to my family and the industry we have nurtured and preserved for these many years. The lively hood that is now being stripped from the people that have been so committed to for all of these years. When my family started in the fishing industry we began fishing Rock fish. That was taken away from us, given to other fisherman, Native Americans as to appease other cultures for the negative occurrences from years past. These participants didn't have the years of experience and years of sweat and tears, the building a family dedicated to the industry since the early 1950’s. Going through these many changes, paying the taxes, the increase in licensing costs changing the permit prices. This buy back program of the trawling fishing boats, allowing them to sell off and come back into the industry in another boat, other licensing stealing from those of us who have dedicated our lives and families to this industry. Unfortunately, this quick but not permanent fix for some, the overall impact who like my family is having to pay the consequences of this program,

The Windjammer was built in Seattle, has paid for the licensing, federal and state taxes for all of these years. My family started this at a time when not many were involved or willing to work so hard to supply food for their families to support the state in ways by paying our taxes and fees. There needs to be consideration for those of us who are not in and never have been in the “Buy Back” programs. This industry has broken many a fisherman and families, the lives have been lost, but those of us who were and still are dedicated still merge through the changes and continue to fish to support our families should have some kind of protection, a grandfather clause to provide for us in order to keep fishing and managing our business which enables us to support our families. In addition, with the changes over and over again, the recession that has not given us only 12 cents a pound for fish from 1.10 a pound, we still continue to bring in the demand of the people, providing the fish, for the tables of many. How can this continue with the increases in taxes, the permits, the cost of fuel how in every direction our lively hood and dedication means nothing, we are still keep bringing home the fish to feed the multitudes the starving as we are becoming second in many ways, where is the safety net, the protection that will keep us afloat, give the recognition to the hard work in this industry. Who will take over this for the industry?
When the AFA Endorsement was signed by Patty Murray, and Ted Stevens who guaranteed us precautions, to protect us from this type of situation happening again. The false promises, the inability or unwillingness to return our calls address our concerns when now we are going through the raping and pillaging of the industry that my family and others have worked so hard to appreciate, nurture and develop into food on the plate of the families all over the globe.

With the ever changing requirements, new licenses and a third party deciding who can fish, how much a vessel is allowed to fish for regardless of their dedication to the industry, such as my family and others who have been fisherman for these many years. The powers that make these decisions do not take into consideration those of us who are Native to the industry, who started fishing years back, through the changes and regulations, the taxes the federal requirements. The thousands of dollars we spend with insuring the safety and well being of our crew, the purchasing of supplies to provide for our crew. The fuel expenditures that pay taxes, and keep other industries surviving. There needs to be some type of monitoring or accountability to those who participate in the “Buy Back” who may be “double dipping” after completion of the “Buy Back”. They then may purchase other licenses and vessels which allow them to pursue the same fishing opportunities. How can this be permitted, when the Processors as well as the other industry participants who manage to sell and then buy other licenses and start back where they left off, After they sell their interests and then are allowed to take a second piece of this smaller pie that so many have to share, those of us like my family have been involved and doing the back breaking, yet honest way of doing business, for all these years. This create a larger issue, the monopolizing the industry and creating an Anti-trust, of this business that so many have built to provide for our families, and put the food on the table of many, yet at times struggling to survive or stay in the lively hood of my family for these many years.

--

John Coon, Deputy Director
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384
Phone: 503-820-2280; Fax: 503-820-2299
Mr. David Ortmann
Pacific Fishery Management Council
7700 NE Ambassador Place
Suite 200
Portland, OR 97220-1384

May 8, 2008

Dear Mr. Ortmann,

Enclosed is an Op-Ed that ran in yesterday's Sacramento Bee that may be of interest to you.

As you may know, many stakeholders met with members of the California Legislature on Monday to discuss how appropriately designed catch share programs hold much promise for restoring coastal jobs, communities and the environment.

We look forward to the important vote at the Council on the Pacific groundfish IFQ.

Sincerely,

Johanna Thomas
Director of Fisheries Projects
'Catch share' process can help fisheries

By Johanna Thomas

If you've bought wild salmon recently you undoubtedly got hit with some serious sticker shock. Retail prices have nearly doubled from last year because the fish have largely disappeared off the California coast. If you're a fisherman, the shock is worse: Salmon is off limits to recreational and commercial harvests, leaving fishermen in a state of crisis. Unfortunately, the problems aren't just limited to salmon. Other fisheries such as Pacific rockfish, marketed as "red snapper," are also in trouble.

West Coast landings of rockfish or groundfish plunged by 70 percent during the last two decades, from an average of 74,000 tons in the 1980s to 22,214 tons in 2007. Revenues from the groundfish fell by more than half from 1997 to 2007, from $47.3 million to $22.2 million. In 2000, the U.S. Department of Commerce declared the fishery a disaster, due to major declines in nine of 82 species of groundfish. Today, the Pacific Fishery Management Council, which governs West Coast fishing, lists seven species of rockfish as overfished.

The problem is not the fishermen. Fishermen have done everything that fishery managers have asked them to do. With fisheries continuing to fail, perhaps now is the time to reconsider the direction we've been taking with fishery management.

On June 8, the Pacific Fishery Management Council, one of eight regional councils governing fishing in U.S. waters, will meet in California on the future of Pacific groundfish. The council has an opportunity to incorporate management measures for harvesting Pacific groundfish that have worked well to recover fisheries in other regions. Opportunities to make fishing more profitable and sustainable also will be considered during a hearing today of the Joint Legislative Committee on Fisheries and Aquaculture in the Legislature's annual Fisheries Forum.

Historically, fishery management councils have responded to crisis through measures such as shorter fishing seasons and smaller daily limits. Instead of reducing the catch as intended, such regulations set up a "race for fish." The consequence has been dangerous fishing conditions, larger investments in boats and gear, a market glut and associated environmental damage. There are substantially better management techniques.

In several places in the United States and globally, fishermen have been given the right conservation incentives and accountability to fish more efficiently, conserve the resource and bring in better quality fish at a higher price. Similar to the current plight of U.S. Pacific groundfish, British Columbia was experiencing steep declines in groundfish landings in the mid-1990s. As a result, fishermen were put under increased regulations, raced to bring in as many fish as possible and received a lower price for their fish when the market was flooded.

In 1997, British Columbia launched a catch share program for their groundfish fleet. This program gave each boat a guaranteed "share" of the allowable rockfish catch for the year based on a combination of each vessel's catch history and size. The guarantee allowed fishermen to fish at their own pace. Since they could fish when prices were best, they could make a higher profit on fewer fish. In 1996, 29,000 tons of groundfish were landed in British Columbia with revenues worth $21 million. In 2000, 26,000 tons of groundfish – 10 percent less than in 1996 – yielded more than a 60 percent increase in revenue, $34 million. And the program required a scientific observer to be aboard the boat, which provided better data about the health of the fishery and served as a basis for better fishery management decisions.

A similar catch share program is up for vote by the Pacific Fishery Management Council in June. It is critical that the council get this one right. With the correct safeguards in place and tools for fishermen, Pacific groundfish can experience the same comeback as was experienced in British Columbia. Much depends on what opportunities and flexibility fishermen have to make the right choices about how much, and when, to fish.

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AgItem F.6.f

9
Thank you, Mr. Chairman and committee members for this opportunity to speak to you once again.

You have been charged by the Council to develop recommendations for sector allocations that seem to be necessary due to the trawl rationalization effort. You have done an admirable job given the charge you received from the Council. In addition to the recommendations you have made so far you could also include no sector allocations as a recommendation. Recommending no sector allocations is appropriate since the Council needs to have all viable options before them in order to make the best possible decision. Granted, no sector allocations would require allocations to each individual permit. Recommending no sector allocations would also require that the trawl rationalization effort be expanded to encompass non-trawl and open-access fishermen.

Sector allocations are undesirable and very detrimental to a sustainable fishery management regime. Sector allocations will prevent trawl and non-trawl fishermen from exchanging dollars for annual allocations. Giving each fisherman the opportunity to buy and sell quota share amongst the largest number of fishermen is desirable and will move the fishery toward sustainability. Allowing non-trawl fishermen to buy annual allocations from trawl fishermen makes good sense, especially in a fishery constrained by the very small allowable catches for the seven rebuilding species. Sector allocations are not desirable since gear-types other than trawl may be a better way to catch fish, given bycatch, habitat, and sustainability considerations. A true economic marketplace would allow trawl and non-trawl fishermen to buy and sell their annual allocations amongst each other. A true economic marketplace would allow each fisherman to market his catch to the highest bidder. A true economic marketplace would allow each fisherman to lease his annual allocation without being required to permanently sell it. A true economic marketplace would allow each fisherman to fish sustainably and still have a successful fishing business.

Sector allocations would guarantee the trawl fleet approximately 85% of all future catches. This is not desirable. What is desirable is that each permit holder uses the appropriate gear-type to catch his allocation. Allowing each fisherman the opportunity to increase his share in each subsequent fishing year is desirable and will promote sustainable fishing practices. Gaining additional quota share through sustainable fishing practices is most desirable. Sector allocations are also undesirable because they would compartmentalize the fishery. The FCMA requires that each species must be managed holistically throughout its range. Sector allocations would create many small management regimes competing with one another. A single comprehensive management regime will be the most effective in achieving sustainable fishing. A single comprehensive management regime will allow the largest economic marketplace for trading annual allocations. A single comprehensive management regime will allow the Council and NMFS to conduct groundfish management with the least expense. A single comprehensive management regime will allow all fishermen to move to where the fish
are available. A single comprehensive management regime will allow the Council and NMFS to focus their efforts on other more important groundfish issues, including improving data collection for improved stock assessments.

Sector allocations would create ever more complexity for a groundfish fishery that is already managed with much more complexity than is necessary. No sector allocations coupled with individual allocations to each limited-entry permit, including open-access, would produce a management regime with the least complexity. Minimizing complexity is good. Minimizing complexity means minimizing costs. Sector allocations would create more complexity because there could be as many as six commercial segments of the fishery to manage. Each of these sectors will require some management. Allocating directly to each permit is the least complex method to manage this fishery. Allocating to each permit eliminates any middlemen such as co-ops would introduce. Co-ops, as they have been described, will not move the fishery toward sustainability. Individual responsibility at the permit level is the only allocation method that will produce sustainable management.

The OSHUA fishery management plan includes no sector allocations. The OSHUA plan also includes annual allocations to each permit, including open-access. This plan is the least complex and the least expensive. The OSHUA plan is holistic and comprehensive, whereas the Council options, including sector allocations, are piece-meal solutions. The most effective and fair management plan is a comprehensive plan that includes all fishermen. Each fisherman must be given an individual allocation if sustainability is to be achieved. I ask that you re-consider your decision to ignore the OSHUA plan, which is a viable alternative. NEPA and FCMA law requires that all viable alternatives be considered.
Thank you, Mr. Chairman and members of the committee for this opportunity to speak to you once again.

The Trawl IQ committee has done an admirable job of developing options for a trawl-only IFQ management plan. The committee has developed options that are focused primarily on the economic interests of those holding large amounts of catch history. The committee has developed options that are not focused on sustainable management. The committee has proposed using catch histories that would give large quota shares to those with catch histories earlier than the last five years. Using catch histories earlier than the last five years goes against the FCMA’s provision that IFQ’s must be based on current participation. ITQs in general are designed to privatize a public resource and the Trawl IQ committee’s options reflect this. Privatizing a public resource has become popular in recent years based on the belief that only private ownership of a public resource will produce sustainable management. On the contrary, privatizing a public resource is actually a method of implementing no management at all. The primary purpose of fisheries management is allocating among the many participants and that is the primary reason for which the Councils were created. Management must include adaptive management, but the TIQ committee options being proposed do not include any adaptive management measures. The options are such that once the trading begins the Pacific Council would cease to have any influence.

There is a better way to manage and to allocate a public resource. There is a better way to ensure that each fisherman receives a fair share of the available catch based on current participation. Including all commercial fishermen in the IFQ plan is the first step in developing options that are fair. Including all sectors as one single sector is the second step in producing a management plan that is fair to all fishermen. Sector allocations are the direct result of developing a trawl-only IFQ plan. A comprehensive IFQ plan does not require sector allocations because all available catch is allocated to each individual permit. The third step is to allocate to each permit annually, which obviates the need to privatize the public resource. Allocating a percentage of the available catch to each permit annually is a very simple task given the available technology. Granted, exploitation of some public resources has been improved as a result of transferable IQs, but privatization
is not necessary nor useful for Pacific Council groundfish management. Privatizing the groundfish fishery will continue the unsustainable fishing practices of the last 26 years. Privatizing this fishery will only produce wealth at the expense of sustainable management. Producing wealth is good, but only producing wealth as a result of a sustainable fishery is what is desirable. The whole purpose of sustainable management is to produce wealth for fishermen, processors, and communities.

The OSHUA plan does not privatize the fishery. The OSHUA plan does this by allocating catch to each commercial permit annually. The OSHUA plan will produce sustainable, adaptive management because annual allocations of rebuilding species are tied to the allocations of target species on a pro-rata basis. The OSHUA plan is a fair plan because all commercial fishermen will receive an allocation based on their most recent five-year catch history. The OSHUA plan is a fair plan because there are no sector allocations, allowing the largest marketplace for trading. The OSHUA plan is a fair plan because it provides for the seamless transition from rebuilding status to target status. I ask that you re-consider your decision regarding the OSHUA plan by comparing each feature of the OSHUA plan to each of the options developed by the TIQ committee.
Thank you, Mr. Chairman and members of the committee for the opportunity to speak to you once again.

This Groundfish Allocation Committee has done a fairly good job of pulling all the pieces together for the Sector Allocation and the Trawl Rationalization Amendments. You should be happy with what you have accomplished. However, there are a few things that you have overlooked. This Groundfish Allocation Committee has not proposed a fair allocation plan for all fishermen. Only limited-entry trawl fishermen will be receiving individual allocations if the TIQ committee options are accepted. If Co-ops are implemented then those fishermen participating in Co-ops will not be receiving an individual allocation. Individual allocations are the essence of an IFQ system, but the system you are contemplating will not have individual allocations for all commercial fishermen. All fishermen must be included in an IFQ plan if it is to be successful. To exclude any portion of the commercial fleet sets up a plan for failure. The only measure of success is whether a sustainable management regime results. Wealth will proceed from a fishery that is managed sustainably. Co-ops do not allow individual fishermen to take responsibility for all of their actions. Allowing fishermen to make their own deals with individual processors is good. If Co-ops are implemented they will have a negative effect on sustainable practices. Implementing any processor shares is also not desirable since this would take shares away from fishermen. The overall quotas are so small that giving processor shares would drive many fishermen out of business. The most important part of any fishery management plan is how it impacts those who actually do the fishing. Processors don’t catch fish. Fishermen should be allowed to interact with individual processors in order to get the best price for their catch. This is the essence of a free enterprise system, which is a cornerstone of American business. Giving processor shares would be protecting processors from the effects of the free enterprise system.

The free enterprise system will be the system that produces a sustainable fishery. What is being proposed via the TIQ committee options is not rooted in free enterprise. Although in a few cases protecting an industry from the economic marketplace is desirable, protectionism is generally not helpful. Protectionism always ends up costing the taxpayers and consumers more. Those industries that are being protected must compete in the real economic
world rather than an artificial one. The shoreside pacific whiting fishery is currently a protected industry. Under OSHUA this fishery will be incorporated into the commercial LE fishery. If a business is not profitable then it helps no one to implement regulations that keep unprofitable operations in business. One of the reasons that overfishing exists is because we protect unprofitable fishing and processing operations. Sustainable management means economically sustainable in addition to biologically sustainable. In fact, if a fishery is not economically sustainable it can not be biologically sustainable.

The law requires that the Council manage the fishery with the goal of achieving sustainability. For the Council to get involved in manipulating market flow or any other aspect of the fisher-processor economic relationship is a mistake. To spend any resources on fisher-processor issues that are best left to the economic market place is not a wise use of the very limited resources available. The Council should focus all of its resources on the relationship between fish and fishermen and remove itself from fisher-processor concerns. The OSHUA plan addresses only the relationship between fish and fishermen. The OSHUA plan addresses only that which is necessary. The OSHUA plan is a minimalist plan in that anything unnecessary is not included. Anything having to do with fisher-processor concerns is unnecessary in a fishery management plan. The only thing that is necessary are features that regulate how, when, and where fishermen catch fish. To include anything else in a fishery management plan immediately makes the plan unsustainable. Sustainability means leaving enough fish in order to propagate. Sustainability means fishermen having the opportunity to achieve successful businesses. Sustainability means leaving enough fish so that our children will be able to put fish on their dinner tables.
May 14, 2008

Mr. Donald K. Hansen
Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97229-1384

Dear Chairman Hansen and members of the Pacific Fishery Management Council:

This letter represents 10 (ten) trawl vessels from Eureka, California. The trawl history of the owners range from 5 to 30 years. We are very concerned about the division of the individual fisherman quotas (IFQ) that are being considered by the council.

The undersigned permit owners all agree that from the beginning of trawl quotas in the late 1980’s to present that the trip limits have always been equal, no matter what, for each and every vessel.

We are adamantly opposed to any allocation of trawl fish that would based on 100% catch history or any shares allocated to any processors. If either of these two options were to take place it would devastate the trawl fleet in Eureka, California.

Sincerely,
Eureka Trawlers

F/V AL W
GF# 0580

F/V GOOD NEWS
GF# 0392

F/V MANDY J
GF# 0540

F/V STORMBRINGER
GF# 0705

F/V GERRY B
GF# 0112

F/V RENABEL
GF# 0157

F/V JOY ANN
GF# 0196

F/V FISHWISH
GF# 0261

F/V WARRIOR II
GF# 0265

F/V CLEONE
GF# 0393

AgItem F.6.f
16
Don Hansen
Pacific Fisheries Management Council
7700 N.E. Ambassador Place, suite 101
Portland, OR 97220

Dear Don Hansen and Council Members

This letter represents four trawl vessels from San Francisco to Half Moon Bay, Ca. We are concerned of the IFQ possibility with trawl history. This is not fair or equal. We had the Buy Back a few years ago and haven't given that a chance to play out and now there is talk of IFQ. A hand full of boats will get most of the quota at the expense of the majority of boats. IFQ happens the boats with small quotas will sell to the boats with larger quotas and the boats will get out of the business which will be bad for the infrastructure of the industry (i.e., loss of jobs for crew, less boats to support fish buyers and services).

You might think IFQ worked well in Alaska in actually a hand full of boats ended up with most of the quota. In Alaska it was a derby fishery and IFQ made it safer. It's not the case on the west coast you have six two month periods to catch the equal quota so safety is not the issue. Seventy five percent of trawl fishermen I talk to are happy with the present system. Don't fix it if it is not broken. Sincerely

Bob Burdell

AgItem F.6.f
17
Sincerely
F/V Madeline
F/V Point Loma
F/V Lindy J
F/V Phllis J

My name is Bob Burchell. I am 54 years old. I have been fishing since I was 18. I own two boats with Trawl Ground Fish Permits and sold another permit to the Buoy Boch. I sincerely believe any IFQ system would be the downfall of the trawl fishery.

Bob Burchell
707-954-8977
Mr. Donald K. Hansen  
Chairman  
Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, Oregon 97220-1384

Dear Chairman Hansen and members of the Pacific Fishery Management Council,  

I am a fish buyer/processor from ... and I am writing to ask you to oppose initial allocation of quota to processors in the IFQ program for the west coast trawl fleet. If quota is allocated to processors based on processing history, it will have a disastrous effect on small processors/buyers up and down the coast.

The way the alternatives are currently structured only a handful of the very largest processors would be eligible to receive any allocation. Such an allocation system will enable that small number of large processors to become even larger, and will make it easier for them to continue to squeeze out small processors/buyers. Large processors will become the beneficiaries of an even larger market advantage eliminating the potential for small buyers/processors to partner with fishermen on innovative marketing arrangements.

There is absolutely no justification for a giveaway of public trust resources to a handful of very large processing companies that will create such devastating impacts for other processors/buyers who are not entitled to receive a piece of the allocation pie. Please oppose initial allocation of quota to processors.

Sincerely,

[Signature]

1363 Thompson Rd  
Sequim, WA 98382
May 13, 2008

Don Hansen
Pacific Fisheries Management Council
7700 N. East Ambassador Place ste 101
Portland Or. 97220

Dear Don Hansen and Fellow Council Members:

We are concerned about the division of the Individual Fisherman Quotas (IFQs) for the trawl industry. We are seven boats in Fort Bragg California who have discussed this at length. We all feel differently about how the quota should be divided, whether it be status quo, equal splits of the entire quota, or equal splits of the buyback fish only with catch history of the remainder. Two things that we agree upon, that we are adamantly opposed to, are using catch history for division of the entire quota and that no percentage of the quota should go to the processors. This type of division would be devastating to the trawl fleet of Noyo Harbor.

Sincerely,
Noyo Trawlers

F/V Tara Dawn
   [Signature]

F/V Verna Jean
   [Signature]

F/V Blue Pacific
   [Signature]

F/V Northern Light
   [Signature]

F/V Miss Kelley II
   [Signature]

F/V Miss Hailee
   [Signature]

F/V Donna J
   [Signature]
P.F.M.C. COUNCIL

TO: N.M.F.C. @ I.F.Q.'S
MR MCISAAC
GROUNDFISH MEMBERS

DEAR SIRS,

THIS LETTER IS IN REFERENCE TO MY POSITION ON I.F.Q.'S.
IT HAS COME TO THE ATTENTION OF MYSELF AND A LARGE NUMBER OF
OTHER TRAWL FISHERMEN THAT CERTAIN ORGANIZATIONS AND SELF-SERVING
INDIVIDUALS WERE SAYING "THE GENERAL CONSENSUS WAS IN FAVOR OF I.F.Q.'S
TO BE BASED ON PAST CATCH RECORDS." THIS IS NOT TRUE, IN A LAST MINUTE
CONTACT OF MANY BOATS FROM CRESSENT CITY TO MONRO BAY, THE MAJORITY
SAY OPPOSITE, BASICALLY LEAVE IT STATUS-QUO AND EQUAL SHARES TO
ALL LICENSES. THIS IS BASED ON THE FACT THAT ANYONE LEFT IN THE
INDUSTRY AFTER SUCH "REMEDIES" AS BOY-BACK, LIMITS, VESSEL-TRACKING,
AREA CLOSURES, OBSERVERS, ETC. HAVE FINALLY SETTLED IN ON A BUSINESS
PLAN OF STATUS-QUO. SOME INDIVIDUALS AND BOATS THAT ARE COMPANY
OWNED, HAVE THE VIEW THAT THEY ARE ENTITLED TO A LARGER SHARE
BASED ON PAST_TONNAGE, SINCE THEY ARE CONTROLLED BY THEIR COMPANY
THEY "SELF ALLOCATE" LIMITS LEAVING INDIVIDUALS MARKET LEFTOVERS.
THIS IS NOT ONLY UNFAIR TO THE BOATS BUT NOT IN THE INTEREST OF
SMALL COMMUNITY BUYERS AND ULTIMATELY THE PUBLIC.

IF IT HAD BEEN FORESEEN THAT I.F.Q.'S WOULD BE BASED ON CATCH
HISTORY, ALL CONCERNED WOULD HAVE PUSHED THEMSELVES TO THE LIMIT.
SINCE MAKING THESE "EX POST FACTO" TYPE LAWS WE ARE ALL GOING TO BE
HELD TO "PAST, USED-TO." HOW WOULD THE COUNCIL MEMBERS LIKELY
HAVE THEIR PENSIONS BASED ON WHAT THEIR EARNINGS WERE TEN TO
TWENTY YEARS AGO?

SINCE THERE IS SUCH A MYRIAD OF POTENTIAL PROBLEMS, MOST OF
THE BOATS THAT CONTACTED ME ARE OF THE OPINION "MAKE IT ALL EVEN" THUS
HELPING TO EQUALIZE THE BASIS INFRASTRUCTURE OF OUR INDUSTRY
FOR THE FUTURE OF EVERYONE.

SINCERELY,

G.F. 0152 ALOHA
G.F. 0157 REDBEL
OR66N SHRIMP 90044
CALIF. HARBOR 08544
CA.
L5053
CA. FARALLONES 08544
FARALLONES 241.862

AgItem F.6.f 21
May 19, 2008

Pacific Fisheries Management Council  
2700 N. E. Ambassador, Suite 101  
Portland, OR 97220-1384

Council Members;

It has come to my attention that the Council may be considering allowing trawl vessels to harvest parts of their quotas with fixed gear.

As one of the few fishing vessels dual permitted with trawl and fixed gear, it would be more economical to target certain species of my quota with fixed gear rather than trawl.

I believe that fixed gear is more user friendly to the ocean floor than the footline of a trawl net. In addition, I also believe there would be as much as a 50% reduction in fuel consumption.

Thank you for the Council's consideration of this matter. A decision in favor of these suggestions could only be positive for the fisheries.

Sincerely;

Richard Lustbader

541-888-5366
May 21, 2008

BY FAX, EMAIL, and U.S. MAIL

Mr. Donald Hansen and Members of the Pacific Fishery Management Council
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Re: Public Comment on Proposed Amendment 20: Trawl Rationalization

Dear Mr. Hansen and Members of the Pacific Fishery Management Council:

Natural Resources Defense Council hereby submits the following recommendations concerning the selection of Preferred Alternatives under the Trawl Rationalization program.

A.1.1 Gear Switching: Support analysis of an additional option to convert trawl undirectionally towards less impactful gear

Right now the gear switching component is unfettered which would allow quota holders switch back and forth between gears at will. While convenient for the quota holders, this arrangement provides little or no conservation benefit and does nothing to help transition the fishery to a smaller trawl footprint.

We urge the Council to include an option for analysis that allows for a trial period (e.g. 2 years) but that eventually requires the quota holder to commit to switching to the less impactful gear permanently if she or he wants to continue using that gear.

We address this issue further with a separate letter to the Council.

A.1.2 IFQ Management Units: Support option to subdivide quota geographically

Subdividing quota geographically at the 40 10 line will help prevent isolated geographical depletion due to shifting fishing patterns.

A.2.1.3 Allocation Formula: Support Option 2 for overfished species
Option 1 would reward those who contributed most heavily to the poor condition of the overfished species. Option 2 avoids this outcome by instead allocating overfished species quota on an industry average basis.

A.2.2.1 Permit/IFQ holding requirement: Remove the option (#6) to allow a vessel to resume fishing after 2 years in deficit

The level of quota overage that would result in two year’s deficit is extremely high, likely to be the result of repeated tows of depleted stock. We believe that individual incentive to stay within quota limits is essential to a properly functioning IFQ system. Fishermen who engage in risky fishing behavior should not be excused from individual responsibility.

A.2.2.3.e Grandfather Clause: Support no grandfather clause

Allowing everyone to reach the same level of quota ownership, without permitting a favored few to exceed that, is a fairer system. It also helps prevent too much consolidation of quota ownership.

A.2.3.1 Tracking and Monitoring: Support Option 3 –100% observer coverage with cameras if effective and feasible. No small vessel exception

100% observer coverage is necessary to achieve the conservation objective of reducing bycatch as well as improving accountability. Excusing small vessels from this requirement would create a gap in these features of the IFQ program.

A-3 Adaptive Management: Support having this option for the following potential uses:
  o Achieving conservation results, such as rewarding clean fishing and encouraging gear switching
  o Stabilizing vulnerable communities
  o Compensating processors for demonstrated injury (e.g., economic evidence of stranded capital). This use should be limited to 3 years
  o Managing unforeseen consequences

Having the flexibility to do adaptive management as the program unfolds could be a highly important tool for obtaining the objectives sought and mitigating against unforeseen impacts.

B.1.3.1 Non-coop fishery

While we have no reason to believe that coops are problematic, we are strongly concerned about the impact fishermen who may find themselves in the non-coop fishery could have. Such fishermen would be operating under a sector TAC and would have none of the conservation incentives an ITQ system is supposed to provide.
A-6 Fixed Term Auctions:  Support fixed term auctions

We are deeply concerned that the value of the fishery stays in the fishery, to be used for sound management of the resource. An auction allocation system can help accomplish this and is a method which has been used successfully for other public resources. The 15 or 16 years before auctions would be implemented provides not only free use of the resource for this time, but also gives ample time to devise an appropriate system for implementation. There is the added benefit to this option of providing an avenue for new entrants to come into the fishery.

We believe that the impact of any potential decline in the stewardship incentive in the final years of the term would be offset by having sufficient observer coverage to ensure that fishermen stay within quotas and bycatch limits. In addition, we note that the alternative to this option (outright permit grants) are subject to the same possible loss of stewardship incentive behavior if that quota is leased out.

Thank you very much for your consideration of these comments.

Sincerely,

Laura Pagano, Attorney
Karen Garrison, Oceans Program Co-Director
Natural Resources Defense Council
111 Sutter St., 20th Floor
San Francisco, CA 94104
(415) 875-6100

cc: Frank Lockhart
May 21, 2008

Donald K. Hansen, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Re: Identifying Gear Conversion Alternative for Analysis in the Trawl Rationalization Environmental Impact Statement

Dear Chair Hansen and Members of the Council:

On behalf of NRDC, we respectfully ask the Council to evaluate one more alternative for changing gears, in addition to the option for indiscriminate gear switching that you currently plan to analyze in the Trawl Rationalization Environmental Impact Statement (EIS). Specifically, we recommend analysis of a long-term, uni-directional conversion option (from trawl to an alternate gear) after a trial period of up to two years, with potential flexibility to switch among alternative gears. The rest of this letter refers to those two options as “switching” and “conversion.”

The point of allowing gear switching or conversion is to help achieve the objectives of the trawl rationalization program. We believe a well designed gear conversion option will better meet those objectives, particularly those related to minimizing ecological effects (objective 3) and adverse impacts on other fisheries (objective 5). As such, this option deserves consideration in the EIS. Furthermore, the report on gear conversion produced by Dr. Lekelia Jenkins found that the terms and design of a gear switching or conversion program make a significant difference.1 Evaluating an additional option will provide analysis of a reasonable range of alternatives and give the Council more information and better choices as you design that program.

According to the best available science (Dr. Jenkins’ report), a gear conversion program can help trawlers minimize ecological impacts by allowing them to fish instead with gears that have lower bycatch and discard mortality and reduced impacts on habitat. Dr. Jenkins’ gear conversion report confirms that pots and longlines have orders of magnitude less bycatch mortality for most species and significantly lower habitat impacts than trawl gear in the sablefish fishery (Gear Conversion Report, pp. 11 – 21). To the extent trawlers use indiscriminate gear switching to supplement, not substitute for

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1 Jenkins, Lekelia D., Gear Conversion as a Means to Reduce Bycatch and Habitat Impacts in the U.S. West Coast Sablefish Fishery, March 2008.
trawling, switching may not result in any significant shrinking of the trawl footprint. In contrast, long-term conversion could make a major reduction in the trawl footprint possible—particularly in high-bycatch areas—without a significant economic cost.

Gear conversion can serve a second set of objectives: to provide additional economic opportunity and operational flexibility for fishermen (objectives 2, 4, and 7). For example, a fisherman whose trawl opportunities are constrained by living in a region prone to high bycatch of depleted species might be able to reap economic benefits by switching to pots that virtually eliminate bycatch while providing a high quality product. Allowing use of alternate gears encourages fishermen to use their ingenuity and try gears that with potential economic and ecological benefits. The conversion option doesn’t have to involve a loss of flexibility, if it includes a trial period during which a fisherman can experiment with alternative gears and return to trawl if the results prove unsatisfactory.

Gear conversion, as an alternative to indiscriminate gear switching, could serve a third objective: to minimize adverse effects of the trawl rationalization program on other fisheries (objective 5). Analysis may show that with the long-term conversion option the impacts on other fisheries are more likely to stabilize after an initial adjustment period, allowing managers to better assess and address those impacts. Long-term conversion could be very attractive to trawlers who are severely restricted under the present management system, due to small boat size and/or high bycatch rates near their ports. For such individuals, gear conversion may offer a viable option for continuing to fish, and a means of maintaining a supply of fish to vulnerable ports.

There may be ways to combine the best features of these two scenarios for shifting gears. The analysis may identify other important sideboards for this program. Analyzing both alternatives will give the Council will cover a reasonable range of possibilities and provide the Council with an array of options. We respectfully request that you include both indiscriminate gear switching and long-term gear conversion in the EIS analysis. We appreciate the opportunity to comment.

Sincerely,

Karen Garrison, Oceans Program Co-Director
Laura Pagano, Attorney
Natural Resources Defense Council
111 Sutter St., 20th Floor
San Francisco, CA 94104
(415) 875-6100

Cc: Frank Lockhart
Gear Conversion as a Means to Reduce Bycatch and Habitat Impacts in the U.S. West Coast Sablefish Fishery

by Dr. Lekelia D. Jenkins

March, 2008
Acknowledgments

The author would like to thank the following people for reviewing the portions of this report relevant to their area of expertise. The views presented in this document do not necessarily reflect the opinions of those who helped review it. Jim Hastie’s assistance in providing data and scientific advice was invaluable. Many thanks also to the 44 people who generously gave their time in the interview process.

Reviewers

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# Table of Contents

EXECUTIVE SUMMARY ........................................................................................................... i

PURPOSE OF STUDY..................................................................................................................1

FISHERY OVERVIEW................................................................................................................1

GEAR DESCRIPTIONS ..............................................................................................................5
  • Trawl Fishing Gear and Process
  • Sablefish Fixed-Gear Fishery

METHODS ....................................................................................................................................9
  • Bycatch Analysis
  • Habitat Impact Analysis
  • Gear switching feasibility analysis

FINDINGS & DISCUSSION .......................................................................................................11
  • Gear Comparison Snapshot Analysis
  • Simultaneous comparison of pots and longlines
  • Bycatch comparison by gear over time using observer data
  • Bycatch comparison by gear and depth
  • Habitat Impacts
  • Gear Modifications to Reduce Bycatch and Habitat Impacts
  • Perceptions, Pros, and Cons of Gear Switching
  • Management Scenarios and Incentives

CONCLUSION .........................................................................................................................36
  • Bycatch
  • Habitat Impacts
  • Most Preferable Gear
  • Pros and Cons of Gear Conversion
  • Most Preferable Management Scenario

LITERATURE CITED ..............................................................................................................39

APPENDIX 1: SAMPLE POPULATION DEMOGRAPHICS .........................................................41

APPENDIX 2: GEAR SWITCHING INTERVIEW QUESTIONS...................................................42

APPENDIX 3: GEAR MODIFICATIONS TO REDUCE BYCATCH AND HABITAT IMPACTS .........................................................................................................................46
**EXECUTIVE SUMMARY**

The purpose of this study is to examine the value and feasibility of gear conversion as a means to reduce bycatch and habitat impacts of fisheries. The U.S. west coast sablefish fishery (off California, Oregon and Washington) is an excellent subject for this study, because it employs three different gear types: bottom trawls, bottom longlines, and fish pots (traps). Currently, a permit to use one of these gears does not allow conversion to another gear regardless of potential environmental or economic benefits of doing so. Sablefish is a groundfish that frequents a variety of habitats including muddy, sandy and rocky bottoms. The sablefish fishery spans the west coast.

Since 1998, the management of the fishery has been guided by the need to rebuild overfished groundfish stocks—bocaccio rockfish, canary rockfish, cowcod rockfish, darkblotched rockfish, lingcod (now rebuilt), Pacific ocean perch, widow rockfish, and yelloweye rockfish. Unfortunately, these species often co-occur in the same areas as sablefish and so are caught as bycatch. Managers assume that 100% of many discarded rockfish die, because rockfish species have pressure-sensitive swim bladders. If these fish are brought to the surface from deep waters, the swim bladder often explodes and kills or disables the fish. Minimizing bycatch mortality is important both because of the need to rebuild overfished species and because the Magnuson-Stevens Fishery Conservation and Management Act requires bycatch minimization.

Longlines and pots (traps) are managed together in the limited-entry fixed gear sector with separate gear endorsements (i.e., permits are either endorsed for longlines or pots/traps). The size of the permitted limited-entry trawl and fixed gear sablefishing fishery is nearly the same—about 170 permits each, but only about 120 trawlers actively fish each year. The amount of sablefish landed by each fleet has been around the same order of magnitude in recent years with almost 2300 mt (metric tons) landed by each in 2005.

Using published data from the West Coast Groundfish Observer Program, I graphed the bycatch ratios and standard errors for each gear type over time, per depth category, and for each overfished species. I used some of this data in a snapshot analysis of a spatiotemporal period in which the trawl and fixed gear fisheries were actively operating under similar regulatory conditions. This analysis allowed the most direct comparison of the bycatch rates of the three gear types. I supplemented the results of this analysis by conducting an analysis of data gathered by the Oregon Department of Fish & Wildlife during a study to compare pot and longlines as survey tools for sablefish.

In order to assess habitat impacts of the gear, I drew upon the “Shifting Gears” study. This study used an extensive literature review and expert panel to rank ten gear types according to their impact on physical structure, seafloor organisms, shellfish and crabs, finfish, seabirds and turtles, marine mammals, and sharks. Using this study as a baseline, I conducted interviews with sablefish longliners, trawlers, pot fishers and other stakeholders in the sablefish fishery. Based on these interviews and my own expertise in fishing gear, I adjusted, when necessary, the results of the Shifting Gears study to more accurately represent the sablefish fishery.

To make a qualitative assessment of the potential costs, benefits, problems, and solutions associated with gear conversion, I conducted a series of interviews with a total of 44 individuals, representing trawlers, pot and line fishermen, processors, managers,
scientists and an environmental NGO. I analyzed these data with a loose application of Ground Theory methodology, which allowed me to identify common themes and construct explanatory theories. Based on the initial interview analysis, I composed management scenarios, which I presented in follow-up interviews to key individuals for their feedback. Furthermore, I used the interviews to seek and identify potential conservation technologies that could be applied in the sablefish fishery to reduce bycatch and habitat impacts.

This report presents evidence that the inherent bycatch rates of trawls are substantially greater than those of longlines and pots. Bycatch rates of pots and longlines are quite similar, but there is a consistent trend for the bycatch rates of pots to be the lowest of the three gear types. However, pots may be more susceptible to the bycatch of rounder-bodied fish, such as lingcod. Depending on where the gear is deployed, longlines may have bycatch of yelloweye and canary rockfish—often the most constraining overfished shelf species in recent years. In addition, there is a lack of data on shark bycatch for longlines, which adds to the uncertainties in using this gear.

The Shifting Gears study shows that trawls have a substantially greater impact on habitat than do longlines and pots. With the adjustments I made to tailor the pot impact profile to the sablefish fishery, I show that pots have more severe habitat impacts than longlines. The use of small footrope trawls and selective flatfish trawls on the west coast serve to reduce habitat impacts associated with bottom trawling while reducing rockfish bycatch. In addition, National Marine Fisheries Service is currently developing several conservation technologies for various Alaskan Fisheries. The most promising of these is a trawl modification that greatly reduces bottom contact without reducing the number of fish caught. This technology would be compatible with the west coast groundfishing trawl gear, and holds some potential for reducing habitat impacts on sandy and muddy ocean floor.

Perceived pros and cons of gear conversion varied widely, both within and between stakeholder groups. However, several motifs repeatedly emerged from interviews. Positive effects of gear conversion included that: (1) it would allow for better management of the fish populations by reducing bycatch; (2) it would allow more business options and flexibility for some current trawlers; and (3) sablefish caught with fixed gear would reap a higher selling price, and thus would be a financially workable option for the trawlers who switch gears. The most prominent negative economic impact of gear switching was that with fewer trawlers, less flatfish would be caught. The sale and processing of flatfish is a substantial component of the groundfish trawl industry. Presently, flatfish can only be effectively caught in trawls, so, for certain members of the current fishing industry community to remain viable, some number of trawlers must remain active. The survey also revealed that all major stakeholder groups saw some benefit in gear conversion. Most fixed-gear fishermen and women interviewed were not opposed to trawls switching to fixed-gear, though more than one expressed concern that the ability to make that switch would not relieve the ongoing problem of overcapitalization in the groundfish fishery. Notably, trawlers voiced a unanimous preference for converting to pots rather than longlines.

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1 A recent buyout reduced capacity in the groundfish trawl fleet to some degree, and the PFMC aims to further reduce it via a trawl rationalization initiative that may include management by individual fishing quotas and/or harvest cooperatives. However, targets for capacity reduction have not been updated since
Given the available information, I find that a conversion from trawl gear to either pots or longlines could significantly reduce bycatch and habitat impacts of the sablefish fleet. However, pots may be the preferable gear given trawlers’ interest in pots and the potential of longlines to increase the bycatch of yelloweye and canary rockfish. Because the bycatch situation may change in the future, a gear conversion program should have flexibility to allow for use of pot or longline gear as well as other forms of hook and line gear when appropriate.

I presented four different management scenarios to the interviewees: (1) with permanent uni-directional gear conversion, trawlers would be offered an opportunity to make a one-time irreversible switch to pot or longline gear; (2) with long-term uni-directional gear conversion, trawlers would have the opportunity to switch to pot or longline gear for a multi-year term; (3) with pre-declared bi-directional gear switching trawlers would have the opportunity to switch between trawl and fixed-gear within the same fishing season; (4) with unconstrained gear switching, trawlers would be able to switch between trawl and fixed-gear within the same fishing season without needing to declare when they planned to switch or how much fish they planned to catch with each gear type.

Of these scenarios, the preferable option from an accountability perspective would be long-term uni-directional gear conversion. This scenario could be effectively overseen by the current management and observer program infrastructure. It would have a real benefit in reducing bycatch, because trawlers would commit to using fixed gear for several years. Because of the long-term commitment, some trawlers, especially those with the highest volume, are not likely to convert to an alternative gear. Their continued landings should allow the processors and other volume-based shoreside infrastructure to continue operating. Short-term or unconstrained gear switching could only be done in an accountable fashion if 100% observer coverage were maintained.

Incentives are likely to be an important means of encouraging gear conversion. As an incentive to convert their gear, trawlers who switched could receive a higher catch limit of sablefish, reflective of the lower bycatch rates of fixed gear. Other incentives include encouraging good gear practices by using a portion of the “adaptive management trust” quota to reward those who consistently meet a standard of minimal bycatch over a period of time; a trial period during which trawlers could change their mind before making a long-term conversion; and low-interest loans to help purchase new gear.

Future study topics include the following. (1) Explore in more depth the benefits and impacts of various gear-conversion scenarios, including other gear types, such as hook and line and vertical longline. (2) Conduct a GIS analysis of the types of seafloor habitat in the sablefish fishing area and the concentration of each gear type in these habitats. The study should examine the past and present gear distribution, as well as attempt to forecast the gear distribution under different gear switching scenarios. It should also research the impacts of different gears in various habitats and the feasibility of an area-based management system for each gear type. (3) Investigate additional potential incentives to encourage switching to lower impact gears. (4) Examine the feasibility of using the conservation technologies being developed for the Alaskan fisheries in the west coast groundfish trawl fishery.
PURPOSE OF STUDY

The purpose of this study is to examine the feasibility of gear conversion as a means to reduce bycatch and habitat impacts of fisheries. The U.S. west coast sablefish fishery was selected as the subject of study, because this fishery uses three different gear types—bottom trawls, bottom longlines, and fish pots—with no interchangeability between gear types. This offers a rare opportunity to compare the use of several different gear types in the same fishery. In addition there are five years of available observer data on this fishery (NMFS 2003; NMFS 2004a; NMFS 2004b; NMFS 2005b; NMFS 2005c; NMFS 2005a; Hastie 2006; Hastie and Bellman 2006; Hastie, Cusick et al. 2006; NMFS 2006a; NMFS 2006b). These data will allow the examination of bycatch of overfished and other species by each gear type over time and by depth. Currently, a permit to use one of these gears does not allow conversion to another gear regardless of potential environmental or economic benefits of doing so.

This was a two-phase study; both phases are summarized in this report. Phase I details the relative bycatch and habitat impacts of the three gear types. It ranks the gear according to the intensity of their environmental impacts and includes findings about the most desirable gear to which to convert. Phase II of this study involved a survey of fishermen/women, observers, and managers about gear conversion to determine qualitatively the costs and benefits as well as impediments and their potential resolutions.

NRDC invited a diverse group of managers, government scientists and stakeholders (including representatives of processors, each relevant gear group, gear experts, and conservation NGOs) to review a draft of this report. Their comments were considered in light of the data and incorporated wherever appropriate.

FISHERY OVERVIEW

The U.S. west coast commercial sablefish fishery is managed as part of the west coast groundfish fishery (Pacific Fisheries Management Council and National Marine Fisheries Service 2007). The groundfish fishery ranges the length of the coast from Alaska through California and occurs in nearshore waters shallower than 50 fathoms (fm) to off the continental shelf. Management of this fishery is under the jurisdiction of the National Marine Fisheries Service and its advisors, the Pacific Fishery Management Council (PFMC) and the North Pacific Fisheries Management Council. Each council has its own management framework and regulations. This study focuses on the groundfish fishery in the PFMC’s jurisdiction, off California, Oregon and Washington. Sablefish is a species of groundfish that frequents a variety of habitats including muddy, sandy and rocky bottoms. The fishery for this species employs bottoms trawls, bottom longlines, and pots.

Active management of the groundfish fishery began in the 1980s with the determination of optimum yields and trip limits for several species, including sablefish. Since 1998, the management of the fishery has been guided by the need to rebuild overfished groundfish stocks, which are bocaccio rockfish, canary rockfish, cowcod rockfish, darkblotched rockfish, lingcod (now rebuilt), Pacific ocean perch, widow
rockfish, and yelloweye rockfish. Minimizing sablefish bycatch mortality is also important both because bycatch minimization is required by the Magnuson-Stevens Fishery Conservation and Management Act and because the sablefish population is in the precautionary zone, with a predicted downward trajectory in future years under an assumption of average future recruitment.

More than 80 species of groundfish are managed under the fishery management plan. Each species has its own habitat requirements as far as depth, bottom type, water temperature, etc. Some of these species are associated with a diverse range of habitats, while other are restricted in their distribution. Often healthy groundfish stocks will co-occur with overfished stocks. Management measures have recognized and tried to account for problems posed by this overlap. It is assumed that 100% of many discarded rockfish die, because rockfish species have pressure-sensitive swim bladders. If these fish are brought to the surface, the swim bladder explodes and kills the fish. Sablefish do not have swim bladders, so, if properly handled, sablefish can have low discard mortality.

The management program establishes catch limits that take into account both target catch and bycatch of managed species. In order not to exceed optimum yield, the management regime for the commercial fishery applies a suite of tools including time/area closures, gear modifications, and larger trip limits in areas where overfished species are less likely to be encountered. Also fishermen and women are required to sort the catch by species or species group, discard prohibited species (e.g. salmon, Pacific halibut, and Dungeness crab), and discard groundfish that exceed the allotted trip limit. In 2002, fishery managers began using a new bycatch analysis model. The resulting information allowed managers to set trip limits that targeted abundant stocks during times when they are least likely to co-occur with overfished stocks. Also in 2002, the Council began implementing depth-based area closures, where bottom fishing is prohibited to reduce encounters with and mortality of overfished stocks. These Rockfish Conservation Areas (RCAs) have boundaries that may change every two years based on changes in catch levels and rebuilding plans, and may vary seasonally depending on factors like the distribution of the overfished stocks.

In addition to the formation of the trawl and non-trawl RCAs, the Council has adopted several gear restrictions. In 2000, the Council placed restrictions on trawl gear in an attempt to protect overfished shelf rockfish species that inhabit rocky areas. Specifically, it prohibited the landing of shelf rockfish and most flatfish caught using large footrope chafing gear. Because only trawls with a large diameter footrope chafing gear are rugged enough to fish on rocky bottoms, this regulation created an economic

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2 These species were declared overfished at different times during this period as follows: bocaccio, lingcod, and Pacific ocean perch in 1999; cowcod and canary in 2000; darkblotched and widow in 2001; and yelloweye in 2002.

3 Acceptable biological catches and optimum yields are specified for each managed species or species complex

4 The commercial non-trawl RCA has changed little since its inception in 2003, largely due to lack of logbooks and other data informing vessel distribution and area-specific catch. The trawl RCA is more flexible and the shoreward and seaward boundaries can change in-season to take advantage of seasonal shoreward/seaward migrations of target and overfished species. This is due to a greater amount of vessel-specific catch and effort data from logbooks and on-board observers. In all circumstances, there is a core area (100-150 fm) that has always been closed since RCAs were first implemented.
disincentive to use that gear on the shelf, effectively ending trawling in shelf and nearshore rocky areas. Beginning in 2003, only small footropes were allowed shoreward of the RCA, thus expressly prohibiting large footrope gear from being used on the shelf. In 2005, the Council mandated the use of the selective flatfish trawls shoreward of the trawl RCA in the fishing areas north of Cape Mendocino. The selective flatfish trawl is also known as the upside-down trawl or pineapple trawl. It is a small footrope trawl with a cut-back head rope and low profile, which allows rockfish to escape.

In August 2002, the National Marine Fisheries Service (NMFS) implemented the West Coast Groundfish Observer Program (WCGOP). The goal of the program is to collect data to improve estimates of total catch and discards in the groundfish fishery. The regulation requires that all vessels fishing for groundfish in the U.S. exclusive economic zone take an observer onboard when notified to do so by NMFS. Adequate coverage of the non-whiting bottom-trawl fleets was the initial priority. Coverage has broadened over time, and subsequent state regulations require that Oregon and California-based fishermen/women, who fish in state-managed fisheries, but may catch federally managed groundfish, also participate in the NMFS observer program. Target observer coverage over the years has ranged from 10 to 20% for both trawls and fixed gear. Actual observer coverage (by weight of total landed catch) has ranged from 8 to 38% for longlines, 6 to 46% for pots, and 13 to 29% for trawls.

In 1994, the federal government instituted a limited-entry permit system in order to restructure the derby fishery for groundfish into a longer season with catch levels more evenly distributed over time. The program limited the number of trawl, longline, and pot permits and placed conditions on the use of the remaining permits. Each permit specifies the type of gear and the length of vessel that may be used for fishing. Although it prevented new entrants, the program did not address the underlying problem of overcapacity in this fishery. Subsequently, the Pacific Fishery Management Council modified the permit system to allow fixed-gear (i.e. longlines and pots) to accumulate or “stack” up to three sablefish-endorsed permits, thus increasing the portion of the total sablefish quota available to each fixed gear vessel. The amount of catch available to each sector is based on an allocation formula established in the Groundfish Fishery Management Plan (FMP), and the total allowable catch is determined by the stock assessment (and the rebuilding plan, in the case of overfished species). The limited-entry allocations are based on the estimated abundance of sablefish north of 36° N. lat. as follows:

\[
\begin{array}{c|c|c|c|c}
\text{Sablefish OY} & \text{Subtract Tribal Share} & \text{Subtract Estimated Total Mortality in Research Fisheries and Incidental Catch in Nongroundfish Fisheries} & \text{Nontribal Share} & \text{Limited Entry Share} \\
\text{North of 36 Degrees N Latitude} & (10\%) & & \text{(90.6\%)} & \text{(9.4\%)} \\
\end{array}
\]

In 2003, a federally-sponsored program retired 92 trawl permits and vessels, reducing the size of the trawl fishery by over a third. In 2005, there were 178 limited-entry trawl permits of which 169 were usable in the bottom-trawl fishery, which includes sablefish as a target species. Of these permits about 120 were attached to vessels that

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5 north of 40°10’ N latitude
landed fish in 2005 for a total of 2291 metric tons (mt) of sablefish. That same year, there were 230 limited-entry fixed-gear permits, of which 164 were sablefish-endorsed, of these 136 were endorsed for use with longlines and the remaining 28 were endorsed for use with pots. This fishery landed 2243 metric tons mt of sablefish in 2005. These statistics show that the number of permits available for fishing in the trawl and fixed-gear limited-entry sablefishing fleets is nearly the same (Fig. 1). Furthermore, the realized sablefish fishing capacities of both fleets are nearly the same as well (Fig. 2).

Some non-trawl vessels targeting sablefish are exempt from the limited-entry program and so remain in the open access fishery and subject to trip limits. In 2005, this

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6 There are also limited-entry fixed-gear permits without sablefish endorsements that are subject to limited-entry fixed-gear trip limits, which may be larger than open access trip limits.
fishery landed 913 mt of sablefish, which is over 15% of the total sablefish landings that year (Fig. 2). The observer coverage of the open-access fishery is poor and multiple gears are allowed in this fishery. For these reasons, it is difficult to link the discard rates of the open-access fishery with a specific gear type and so the open-access fishery will not be analyzed as part of this study. Nor will the recreational groundfish fishery be analyzed due to the use of different gear and the limited data on this fishery. The recreational groundfish fishery is mostly restricted to shallow waters—around 30 fm or less—and is managed with a combination of bag limits, gear restrictions, size limits, and time/area closures.

GEAR DESCRIPTIONS

Trawl Fishing Gear and Process

The sablefish bottom trawl fishery operates throughout the year in offshore waters. Groundfish bottom trawl vessels range in length from 35 to 100 feet and average 65 feet. The vessel pulls a single trawl net (Fig. 3), which on an average-sized boat would be about 100 feet wide. The length of a typical tow is about 6 hours and covers a distance of about 12 miles. During a tow, heavy metal doors or boards (Fig. 3) drag along the sea floor. The water moves past them, pushing the doors apart and forcing the mouth of the net to open. A string of floats along the top of the net mouth, called the floatline or headrope, pulls the top of the net open. A weighted line along the bottom of the net mouth, called the footrope, leadline, or bottomline, keeps the trawl in contact with the sea floor. The doors are attached to the net by sweeps also known as bridles. The sweeps are each about 65 fathoms long and are covered in mud gear, i.e. small rubber disks. The majority of the trawls’ bottom contact is due to the sweeps. As the sweeps drag along the seafloor they form a mud cloud that is thought to help herd the fish. The mouth of the net intercepts fish that are funneled to and collected in the codend. At the end of a tow, the codend is brought aboard the boat and emptied. In order to trawl along rugged bottom and protect the net from damage, trawlers may use rollers or chafing gear on their nets. Typically for the sablefish fishery, this special gear consists of rubber disks (Fig. 4) three to twelve inches in diameter that are punched from old tires and placed at regular intervals along the footrope. The complex of footrope and chafing gear is referred to as ground gear.

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7 Besides longlines and pots/traps, allowable open access gears also include vertical hook and line gears, which can be used to target sablefish.
8 There are recreational opportunities in deeper water, such as those targeting Pacific halibut, where groundfish (including sablefish) are incidentally caught.
Trawlers often target multiple groundfish species. This in combination with the low selectivity of trawl gear results in a very diverse catch. A single tow will typically net 15-20 different species. The size and weight of individual fish and total catch vary greatly from tow to tow, but the total catch is often thousands of pounds. A significant portion of the catch from each tow is discarded at sea because it is not marketable, prohibited to bring to port, of small size, or of little value. But due to the extended sorting time—characteristic of trawling—and physical trauma caused by the net, mortality of discarded sablefish in the trawl fishery is likely high, especially relative to fixed gears. Fishery managers assume that 50% of sablefish die after being released from a trawl.

**Sablefish Fixed-Gear Fishery**

The sablefish fixed-gear fishery consists of pot/trap fishing and bottom longlining (and at least one instance of vertical longline). The primary fishing season
lasts for seven months from April to October each year. Most of the vessels in this fishery operate out of Washington and Oregon ports and fish primarily north of Monterey, CA. The vessels range in length from 33 to 95 feet. Unlike the trawl fishery, the fixed-gear fishery primarily targets a single species—sablefish. However, there are still some discards for much the same reasons as in the trawl fishery. Longlines and pots allow the catch to be sorted soon after it is brought aboard, thus fish mortality is lower for fixed-gear than for trawls. Based on a few limited studies, fishery managers assume a discard mortality of 20% for sablefish targeted by fixed-gear.

**Longline Fishing Gear and Process:**

A typical longlining vessel in the sablefish fishery is about 50 feet in length. Longlining gear (Fig. 5) consists of a weighted groundline or mainline that sinks to the seafloor (Smolowitz 1998). Attached to the groundline typically at about 40 inch intervals are shorter lines, called gangions, which have baited hooks at the end. An average-sized vessel would deploy or set about 2 miles of line with approximately 3000 hooks. Once set, the gear, which is marked with floats, would be left to fish or soak for about six hours. The gear is then mechanically hauled in. A fisherman/woman will sort the catch as it comes onboard. Most unwanted fish will be discarded directly into the water without ever coming onboard the boat.

![Figure 5: A bottom longline being set (top) and the gear once fully deployed (bottom).](from Smolowitz 1998)

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9 The primary sablefish fishery is open only to limited-entry fixed gear permittees with sablefish endorsements. Other limited-entry fixed gear fishermen can participate in the limited-entry daily trip limit fishery year-round (unless the allocation is taken). Once a limited-entry fixed gear fisherman with a sablefish endorsement catches their tier limit in the primary season, they can then participate in the daily trip limit fishery.

10 While sablefish is a primary target for the limited-entry fixed gear sector, slope rockfish are also targeted in significant numbers, especially in southern California.
Pot Fishing Gear and Process:

The pot fishery for sablefish uses fish traps which are often conical (Fig. 6) in shape, but may also be rectangular (Fig. 7). The conical pots are the preferred gear, because they are collapsible and stackable and so allow fishermen/women to carry more gear on their vessels. A typical conical pot is 54 inches in diameter at its base, has a steel frame covered in synthetic mesh, is equipped with two 4-inch escape rings to allow undersized fish to exit the pot, and has a biodegradable escape area, also called a rot cord, rot panel or escape panel.\footnote{Escape rings are voluntarily used by most of the fishery. Escape panels are mandated by a regulation that states "Traps must have biodegradable escape panels constructed with 21 or smaller untreated cotton twine in such a manner that an opening at least 8 inches (20.3 cm) in diameter results when the twine deteriorates." (50CFR660.382)} The rot cord helps to prevent continued fishing if the gear is lost (i.e., ghost fishing). The baited pots are set on the ocean floor along a trotline typically with about 40 pots spaced at 120 to 150 feet intervals. Typically a pot vessel will make five individual sets for a total of about 200 pots fishing simultaneously. Fishermen/women leave the pots, which are marked with floats, to soak for 15-20 hours before hauling in the gear. Some pot fishers bring their gear into port after each fishing trip, while others may leave their gear unattended in the water and return at a later time to rebait the pots.

Figure 6: Conical sablefish pot
(from http://www.ladnertraps.com/bcod.htm)
METHODS

Bycatch Analysis

Without designing an experiment specific to the purpose, analyzing the comparative bycatch rates of different gear types is difficult. The existing observer data are collected for the purpose of monitoring the effectiveness of fishing regulations. Because trawls and fixed-gear are often regulated differently (i.e., different time/area closures and retention allowances for bycatch species), the bycatch data are not directly comparable between gear types.

With the advisory help of Jim Hastie, of NOAA Fisheries, I identified data that would yield the most direct comparison between gear types. This data subset consists of data collected during April to October 2004 in the northern fishing area (north of 40°10' N lat). This was a time and place when both trawl and fixed gear fleets were actively fishing. Furthermore the subset only includes data from depths greater than 150 fm, because this was the only depth category used in both trawl and fixed gear reports that was also outside of the RCAs. The limitation of this approach is that it is only a “snapshot” analysis. Subsequent sections of this report will examine trends over time, depth, and by overfished species in order to identify potential weak points in this snapshot analysis.

I supplemented the results of this analysis by conducting an analysis of data gathered by the Oregon Department of Fish & Wildlife (ODFW) during a study to compare pot and longlines as survey tools for sablefish. ODFW conducted this study in May 1999 in a 2200 square mile area from north of Newport, Oregon up to Tillamook Bay and ranging from 124° 20’ W to 125° 20’ W. Using one boat equipped with longline gear and another equipped with pots, ODFW made six sets at three different depths (200, 600, and 900 fathoms) for a total of 18 sets for each gear type. Each gear type was assigned to sample sites on an alternating basis. Pots had a soak time of at least 24 hours and longlines had a soak time of at least 6 hours.

Using bar charts to allow visual comparison, I graphed the bycatch ratios (a calculation of the pounds of each bycatch species that are caught for every hundred pounds of target species) of each gear type. When available I included the standard errors as recorded in the West Coast Groundfish Observer Program (WCGOP) reports. The
error bars give a measure of the consistency of the observed levels of bycatch used to calculate the bycatch ratio.

I conducted much of the bycatch analysis in this report using the published data from the WCGOP. In order to best determine the level of bycatch characteristic of each gear, I used bycatch ratios rather than total bycatch. Total bycatch is not a good measure of gear performance because the amount of bycatch is directly linked to the amount of fishing effort. On the other hand, a bycatch ratio is a measure that allows the balanced comparison of bycatch rates.

\[
\text{Bycatch Ratio} = \frac{\text{total pounds of bycatch}}{\text{total pounds of target species}}
\]

Because the bycatch rates in the sablefish fishery are often very small, the WCGOP reports record the bycatch ratio as per 100 pounds of target species.

\[
\text{Bycatch Ratio} \times \frac{100}{100} = \frac{\text{pounds of bycatch}}{\text{100 pounds of target species}}
\]

For longlines and pots, the bycatch ratio is calculated using just retained sablefish, because this is the gross majority of the target catch. For trawls—which target a dozen or more species—the bycatch ratio is calculated using all the retained target species.

**Habitat Impact Analysis**

There is little data available on the impacts of west coast groundfish fishing gear. Thus an analysis would have to draw from studies of similar gear in other areas. In 2003, the Marine Conservation Biology Institute completed “Shifting Gears”, a comprehensive review of gear impacts in U.S. waters. Using data compiled from over 170 sources, an expert panel of 13 fishermen, managers, and scientists examined ten commercial gear classes, including bottom trawls, bottom longlines, and pots. The panel’s analysis was reported using a five-point scale, to assess the impacts of each gear on physical structure, seafloor organisms, shellfish and crabs, finfish, seabirds and turtles, marine mammals, and sharks.

Using this study as a baseline, I interviewed sablefish longliners, trawlers, pot fishermen, and other stakeholders in the sablefish fishery. Based on these interviews and my own expertise in fishing gear I adjusted, when necessary, the results of the Shifting Gears to more accurately represent the sablefish fishery.

**Gear switching feasibility analysis**

In order to make a qualitative assessment of the potential costs, benefits, problems, and solutions associated with gear switching, I conducted a series of unstructured and semi-structured interviews (see Appendix Two for a copy of the interview instrument). I built the sample populations using the survey method of snowballing, in which interviewees recommend other potential interviewees. With a combination of face-to-face, phone, and e-mail interviews, I surveyed a total of 44
individuals, representing trawlers, pot fishers, hook and line fishers, processors, managers, scientists and environmental NGOs (see Appendix One for a detailed breakdown of sample population demographics). I took written notes of the face-to-face and phone interviews and, when possible, also recorded the interviews for future reference. I analyzed these data with a loose application of Ground Theory methodology, which allowed me to identify common themes and construct explanatory theories.

FINDINGS & DISCUSSION

Gear Comparison Snapshot Analysis

In order to minimize the effects of variables such as fishing depth and season, I sought to identify a period in time where both trawls and fixed-gear were actively operating under similar regulations. This occurred from April to October 2004 in the northern fishing area (north of 40° 10’ N lat.) in waters deeper than 150 fathoms. During this spatiotemporal period there were 206 observed longline sets and 130 observed pot sets. The number of observed trawl tows could not be quantified in time for this report.

A comparison of bycatch ratios for each gear type shows that trawls consistently have the highest bycatch rates, as much as three orders of magnitude more bycatch in the case of deepwater species like darkblotched rockfish and Pacific ocean perch (Table 1). Bycatch rates of longlines and pots are approximately the same with negligible differences—amounting to roughly 1/1000 of a pound of bycatch for every 100 lbs of target fish, except in a few specific instances of interest.

<table>
<thead>
<tr>
<th>Overfished Species (2004 status)</th>
<th>Bycatch Ratio (lbs. of bycatch species caught per 100 lbs. of retained target catch)</th>
<th>Relative Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Longline</td>
<td>Pot</td>
</tr>
<tr>
<td>Bocaccio</td>
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<td>0</td>
</tr>
<tr>
<td>Canary</td>
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<td>0</td>
</tr>
<tr>
<td>Cowcod</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Darkblotched</td>
<td>.068</td>
<td>.033</td>
</tr>
<tr>
<td>Lingcod</td>
<td>.363</td>
<td>.659</td>
</tr>
<tr>
<td>Pacific ocean perch</td>
<td>.006</td>
<td>.003</td>
</tr>
<tr>
<td>Widow</td>
<td>0</td>
<td>.001</td>
</tr>
<tr>
<td>Yelloweye</td>
<td>.037</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1: Comparison under similar regulatory and spatiotemporal conditions (April-October 2004, north of 40° 10’ N lat., >150 fm) of bycatch of eight overfished species by longline, trawl, and pot gear (data from NMFS 2005c; NMFS 2005a)

The notable exceptions to these trends are lingcod, canary rockfish, and yelloweye rockfish. Longline bycatch of canary rockfish and yelloweye rockfish is an
order of magnitude greater than the bycatch of these species caught using other gear. This difference is very important given the low allowable catch levels for these species and can be credited to the fact that longlines can more easily access the rocky habitat that these species inhabit. The prohibition on large diameter footropes in shelf habitat effectively eliminates trawling in areas where canary and yelloweye are located.

Due to the lack of readily comparable data for trawls and substantially higher bycatch for trawls, the remainder of this report will focus on determining the relative differences between longlines and pots.

Simultaneous comparison of pots and longlines

Data collect by the ODFW allowed the direct comparison of species bycatch rates by longlines and pots. Based on the reported poundage of fish caught, I was able to calculate a bycatch ratio for each bycatch species. Because this was data from a research rather than commercial fishing cruise, there was no discard of sablefish. Thus, the bycatch ratio is based on total pounds of sablefish caught not pounds of sablefish retained. For this reason, the bycatch ratios may be an underestimate of what would have occurred in a commercial setting. Also the deepest depths observed in the study were beyond those typically set in by commercial longliners and so may not be representative of a commercial situation. Compared to pots, longlines had 100 times as much total bycatch per 100 lbs of sablefish (Fig. 8). Most of the bycatch, in terms of number of species, occurred in the 200 fm depth zone (Fig. 9). In terms of pounds of bycatch, most occurred in the 600 fm depth zone. At all the observed depths, longlines had the highest level of bycatch, both in number of species and pounds caught. Notably in this study, the only bycatch of an overfished species—darkblotched rockfish—was caught by a longline. At 200 fm, pots did have bycatch of two species—rosethorn rockfish and redbanded rockfish—that were not caught by longlines. Bycatch at 400 fm and 600 fm was minimal for pots but more substantial for longlines, especially of two grenadier species (Fig. 10).
Figure 9: Bycatch ratios of pots and longlines set in 200 fm during a simultaneous comparative gear study (data from Matteson, Hannah et al. 2001).
Bycatch comparison by gear over time using observer data

A comparison of the bycatch ratio for each gear type for the period of 2001-2005 reveals that bycatch rates remain similar within each gear type. In other words, time (and any associated changes in the ecosystem or management measures) had little effect on bycatch rates for the fixed gear sablefish fishery. Discard rates of sablefish remained approximately the same (Fig. 11). The spike in discards of sablefish by pots in 2004 is likely an artifact of observing a pot fisherman that did not use escape rings. Although escape rings are not mandatory, most pot fishers use them, so the bycatch rates for pots in 2004 are likely not representative of the pot fishery as a whole.
Bycatch rates for many of the overfished species remained approximately the same over time with the exception of canary rockfish, darkblotched, and lingcod. (Widow rockfish and cowcod rockfish were also analyzed but bycatch ratios were too small to be included in the graphs below.) Relative to other years, there were marked increases in bycatch of canary rockfish in 2004 and of darkblotched rockfish in 2005 by longlines (Fig. 12). While the rates of bycatch more than tripled, the difference between these and other years remained small at about 0.3 lbs of canary for every 100 lbs. of retained sablefish and about 0.1 lbs of darkblotched for every 100 lbs of retained sablefish. These increases in bycatch rates could be due to any one or combination of reasons, but is probably due to changes in the depth of the RCA.
The bycatch of lingcod varied by as much as 0.5 lbs of lingcod per 100 lbs of retained sablefish (Fig. 13). Notably in 2005, bycatch of lingcod by longlines was nearly twice that of pots, an almost exact reversal of the pattern from 2004. The high lingcod bycatch rates by pots in 2004 are likely due to the observation of a pot fisher who did not use escape rings. The steadily increasing bycatch of lingcod by longlines is indicative of the increasing population size, which was declared rebuilt in 2005.

Bycatch comparison by gear and depth

Discards of sablefish (fish thrown out because they are too small or otherwise not marketable) are fairly consistent across depths (Fig. 14). This is indicative of the fact that sablefish are the target of the fishery, are widespread, and frequent a variety of habitat types. In contrast six of the eight overfished species (according to their 2004 status) show strong bycatch trends across depths (Figs. 15-20). (Bycatch of cowcod rockfish and bocaccio rockfish was too limited to graph.) These strong depth trends confirm that depth-based area closures must be considered in any analysis of the west coast groundfish fishery. This limits our ability to make direct comparisons between gears, because depth-based area closures differ for trawls and fixed gear.
Figure 14: Comparative bycatch by depth of sablefish by longlines and pots during the period of 2001-2003 (data from NMFS 2004b)

Notably, at the depth (> 150 fm) of the direct gear comparison (Table 1), bycatch rates of overfished species were quite low except for Pacific ocean perch and darkblotched rockfish (Figs. 19-20). These were also the two species for which trawls had the greatest relative bycatch rates. This may suggest that in the direct gear comparison (Table 1) catch rates of the other six overfished species were too low in deep water to make a discernable difference in gear bycatch rates. In other words, the bycatch rates for these six species as depicted in Figure 8 may underestimate the inherent bycatch rates of the gear. This underestimate would most likely be greatest for trawls, because of their lack of selectivity. To determine the validity of these conjectures, future studies should attempt to identify and analyze bycatch in spatiotemporal areas in shallower depths, where trawls and fixed-gear are actively operating under similar regulatory conditions.
Figure 15: Comparative bycatch by depth of lingcod by longlines and pots during the period of 2001-2003 (data from NMFS 2004b)

Figure 16: Comparative bycatch by depth of widow rockfish by longlines and pots during the period of 2001-2003 (data from NMFS 2004b)
Figure 17: Comparative bycatch by depth of canary rockfish by longlines and pots during the period of 2001-2003 (data from NMFS 2004b).

Figure 18: Comparative bycatch by depth of yelloweye rockfish by longlines and pots during the period of 2001-2003 (data from NMFS 2004b).
Habitat Impacts

Because of the lack of research in the northeastern Pacific, habitat impacts of bottom longlines, bottom trawls, and pots must be extrapolated from studies done in other areas. The “Shifting Gears” study did just this. The study considered gear impacts on
physical structure, seafloor organisms, shellfish and crabs, finfish, sharks, marine mammals, as well as seabirds and turtles. The study found that on a 100 point scale—with 1 being the least severe—the cumulative impact scores for bottom trawls, pots and traps, and bottom longlines were 91, 38, and 30, respectively (Morgan and Chuenpagdee 2003).

The breakdown of the bottom trawl impact score shows that bottom trawls were rated as having the highest possible severity score for habitat impacts (Fig. 21). The bottom gear on trawls tends to smooth and compact the seabed and harm invertebrates such as sponges and corals (National Research Council 2002). Trawls also increase turbidity, reducing primary productivity and contributing to anoxia. Additionally they disturb hard structures, such as boulders, reducing the available feeding and sheltering habitat. The study also gave finfish bycatch by bottom trawls the highest impact score. This corresponds with and supports the findings in the sablefish fishery that bottom trawls had higher bycatch ratios of most of the overfished species, which are all finfish.

Figure 21: Impact rating of bottom trawls as agreed by 13 expert “Shifting Gears” workshop participants (from “Shifting Gears” by L. Morgan and R. Chuenpagdee 2003)

The breakdown of bottom longlining impact score shows that its habitat impacts were rated low. The report does note that hauling in of the line may cause hooks to snag, abrading rocks, corals, and sponges. This damage is magnified if the gear is hauled in mechanically. The impact score breakdown reveals that the areas of greatest concern are finfish (Fig. 22). The available synthesized data on the sablefish fishery does not include useful information on shark bycatch and seabird bycatch, so the appropriateness of this rating cannot be determined. Given the present global concern for the health of shark and seabird populations, this would be crucial future research to conduct.
Of the three gear types and their use globally, pots vary the most in their form and function. Thus, the general impact profile for this gear type (Fig. 23) is not as directly applicable to the sablefish fishery. I therefore adjusted the profile for the sablefish pot fishery (Fig. 24), based on interviews with pot fishers and my understanding of how the specifics of sablefish pot fishing differ from the pot fishing considered in the Shifting Gears report. I did not use the Shifting Gears methods in making these adjustments.\textsuperscript{12}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{impact_rating_fishery.png}
\caption{Impact rating of bottom longlines as agreed by 13 expert “Shifting Gears” workshop participants (from “Shifting Gears” by L. Morgan and R. Chuenpagdee 2003)}
\end{figure}

\textsuperscript{12} The Shifting Gears study drew on the combined expertise of a panel of 13 fishers, managers, and scientists. Using the Shifting Gears methods would be an extensive process beyond the scope of this project. Such an endeavor would involve reconvening the panel to analyze the sablefish fishery and reanalyzing the data. Rather my approach was to make illustrative changes to the graphs that were indicative of a general increase or decrease in impact. I did not attempt to add or subtract value from the actual data set. Recognizing that their report was an average and might not correctly represent individual fisheries, the authors of the Shifting Gear report recommended the judicious tailoring of their findings.
I increased both the physical structure and seafloor organisms impact score, because the sablefish pot fishery uses trotlines. The “Shifting Gears reports aggregated both trotline and individually set pots, but notes that trotlines “tend to cause more damage during hauling than single pots.” The increase in these two scores reflects this greater potential to cause damage. Also some portion of the pot fishery moves their pots with
every set. This distributes the impact of gear to a larger area. It is unclear whether this distributed impact is worse than concentrated impacts for these specific habitats, and so should be a topic of future study. Sablefish pot fishers explained that the extent of habitat impact is directly related to the fisher’s skill. Skillful fishermen/women can retrieve that gear by picking it directly off the seafloor. Less skillful fishermen/women will drag the pots off the bottom, causing increased damage.

I decreased the shellfish and crabs bycatch score, because in the sablefish fishery all crabs must be discarded and the bycatch ratio is low (e.g. 0.009 lbs. of tanner crab per every pound of sablefish and 0.001 lbs of Dungeness crab for every pound of sablefish). I also decreased the marine mammal bycatch score, because the Shifting Gears report considered the entanglement of right whales in lobster pots lines. There is no recorded take of marine mammals in the sablefish fishery.

I increased the finfish bycatch impact score, because of the depth at which the sablefish fishery operates. Typically pots allow for live release of fish; but because rockfish have swim bladders, they die upon being brought to the surface. This partially negates the positive benefit of live release that pots often have. Also much of the research considered in the Shifting Gears report took place in warm climates, which facilitates the quick disintegration of rot cords. The deep waters of the sablefish fishery are cooler, so the rot cord will disintegrate more slowly, and so have a greater potential to ghost fish. Also the pots in this fish have only one rot cord, so if a pot becomes partially submerged or encrusted with organisms, the rot cord may be obscured and the pot may begin to ghost fish again.

**Gear Modifications to Reduce Bycatch and Habitat Impacts**

One of the secondary goals of this study was to seek out technologies or practices that could potentially reduce bycatch and habitat impacts in the sablefish fishery, especially in the trawl fishery. The survey identified three technologies that Dr. Craig Rose of NOAA’s Alaska Fisheries Science Center and his colleagues are developing for Alaskan fisheries. These technologies may be of use to the west coast groundfish fishery. Also the survey identified scientific evidence to warrant an interest by fishermen in modifying pots to increase their efficiency and ability to catch a wider range of species. To read about the details of this research, please see Appendix Three.

**Perceptions, Pros, and Cons of Gear Switching**

In the following section, I summarize how the interviewees defined gear conversion,¹³ how they view the pros and cons of gear switching, and any concerns they may have about the subject. When applicable, I include the responses of other stakeholder groups to certain concerns and offer my own analysis of the validity of these concerns. Most of the individuals interviewed for this study are community or industry leaders who are or have been active on state and federal advisory boards, industry groups, or community groups. Thus it is reasonable to assume that they are more knowledgeable.

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¹³ The term “gear switching” was used in the interviews. For the sake of clarity in the report, I use the term “gear conversion” for long-term and/or unidirectional changes in gear, and “gear switching” for bi-directional or unconstrained changes in gear.
than the constituents they represent about potential management options, such as gear conversion. So the views summarized below are likely of a detail and depth beyond that of the average stakeholder.

**Trawlers and Affiliates**

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>May decrease discards</td>
<td>May increase discards</td>
</tr>
<tr>
<td>Will increase business options</td>
<td>Too time consuming to convert vessel</td>
</tr>
<tr>
<td>More places to fish</td>
<td>Initial investment too costly</td>
</tr>
<tr>
<td>More convenient places to fish</td>
<td>Continued investment not worthwhile</td>
</tr>
<tr>
<td>More flexibility in when to go fishing</td>
<td>Not enough potential profit</td>
</tr>
<tr>
<td>Increased value of fish</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Summary of the pros and cons of gear conversion as opined by the trawling community

Of the trawlers and their affiliates (hereafter referred to as trawlers) that I interviewed, all were aware of the concept of gear conversion or switching. They viewed it as a way to increase their business options, by being able to fish a portion of their sablefish allocation using fixed gear. With this perception the trawlers assumed that gear conversion or switching would occur as part of an individual quota (IQ) system that would guarantee them access to a share of the quota. Many of these trawlers also assumed that the quota would be transferable. With a few exceptions, the trawlers believed that an ideal gear switching system would allow them to move between fixed-gear and trawling fisheries at will. They believed that without this level of freedom, gear switching would not be worth the time and financial investment. In my expert opinion as an interviewer, I believe that this stance was at least in part gamesmanship, trying to establish an advantageous position for future discussions. When pressed for their views on a more restricted gear conversion scenario many agreed that they would at least consider other options.

The exceptions to most common perceptions of gear conversion included those of two small boat trawlers whose fishing operations had been severely restricted by the RCA. Because of these restrictions, trawling had become a much more costly and dangerous endeavor, as they had to travel a much greater distance to reach legal fishing grounds. They were quite interested in gear conversion as a semi-permanent or permanent uni-directional switch. They were willing to switch gear for the length of the two-year management cycle or even longer. In the course of my interviews, I heard rumor of at least one other trawler who might be interested in a permanent gear conversion. Yet another trawler expressed interesting in having his permit bought out as The Nature Conservancy has done in Morro Bay. However, I believe his interest was simply in a profitable means to leave the fishery not in lease-backs as a means of gear switching.

All the trawlers showed a preference for pots rather than longlines as a target for gear conversion. They stated that pots are an easier gear to fish. They perceive that pots

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14 The Nature Conservancy (TNC) has purchased 6 limited entry trawl permits from trawlers based in Morro Bay, CA. In partnership with Environmental Defense, TNC has obtained an experimental fishing permit from PFMC that allows the leasing of most of these permits back to fishermen as fixed-gear permits, within the context of a research protocol.
would allow them more flexibility as to when they fish their gear, because pots can be left unattended—unlike longlines. This is especially attractive to small trawlers who cannot contend with severe weather, which can thus cost them fishing time. However, my interviews with pot fishers reveal that there is a limit to this flexibility. Unattended gear may be lost to weather or gear conflicts. Also, if the gear is left for too long it will yield poor quality fish. Notably, one trawler has purchased a pot permit in order to increase his allowable sablefish catch. He fishes this permit on another boat, so does not practice gear switching, per se. However, he seems quite satisfied with this arrangement as a viable way to catch sablefish.

Only one trawler was not interested in any form of gear conversion. This trawler fished on a boat with a substantial fishing history and so participated in numerous fisheries. In order to pursue these fisheries, he had to change the gear on his boat. By his estimate, he changes fisheries and gear 90% more frequently than other trawlers. Because of this full schedule, he would only have a couple of weeks each year during which he could switch to using pot gear, which would be his preferred gear. The trawler explained that the financial cost and fishing time that he would lose in converting his vessel to operate for such a short time would not be worthwhile for him. He states, unlike all the other trawlers that I spoke to, that he catches his full limit of sablefish while trawling and makes a substantial profit. So for him, increased revenue from gear switching would only come from the increased value of the fish. This potential increase in revenue would not be worthwhile given the initial and recurring investments. In addition to the initial $10,000 investment to buy pots, he estimated that the time to convert the vessel to a pot fishing boat would be 3-7 days and would cost $500 for the price of a crane rental to remove the winch from the boat deck. These same time and financial costs would be repeated when converting the boat back to trawling. For these reasons, he was not interested in gear switching. I believe that he is an exceptional case, both in the history of his boat that allows participation in so many fisheries and his high level of catching success as a trawler. Thus his views, while noteworthy, are probably not representative of most trawlers.

Several trawlers expressed concern that gear switching would result in an increase in discards. This they believed would result from trawlers switching between gears within the same fishing season. Trawlers would be limited in how much of their sablefish allocation they could catch with fixed-gear, because a portion of this allocation must be set aside to account for the sablefish bycatch they will encounter while trawling for Dover sole and thornyhead. If the trawler does not set aside enough sablefish to allow the capture of the full allocation of these other species, the trawler will be forced to discard sablefish in order to catch and retain Dover sole and thornyhead.

When I presented this concern to managers and other trawlers, they discounted it on several points. First, this same problem occurs with the current trip limit system. Trawlers often exceed their trip limit and are placed in a position of discarding some fish in order to catch others. These dissenters believe that in comparison to current discard practices, gear switching as part of an Individual Quota (IQ) program would likely decrease discards. Second, if gear conversion were part of an IQ program, discarding would only occur on the final trip during which one or more of the allocations were exceeded. That is because once a fisherman exceeds his allocation, the fishing season will be over for him/her. Third, an IQ program may include a measure that makes quota
holders accountable for any exceedance of their allocation. This would serve as a disincentive to exceed allocations.

It was very difficult to elucidate the basis of the concerns about increased discards. Even with repeated follow-up questions and interviews, the individuals who voiced this opinion had difficulty detailing their concerns. My sense as an interviewer is that perhaps these individuals have a hunch that gear switching may create loopholes that allow or encourage discards or high-grading of fish. This speaks to doubts about the enforceability and structure of a gear switching program. Additionally, the dissenters to the idea of increased discards support their view by pointing to potential structural elements of a gear switching program. Thus, this study was not able to define the true risk of increased discards. However, I can say with certainty that the viability of a gear conversion program will depend heavily on how well the enforcement and accountability mechanisms function.

**Pot Fishers and Affiliates**

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>More judicious use of the resource</td>
<td>May reduce value of fixed-gear caught fish</td>
</tr>
<tr>
<td>May reduce discards</td>
<td>May increase competition for pot fishers</td>
</tr>
<tr>
<td>More ecologically sound</td>
<td>Inequitable; pot fishers cannot gear switch</td>
</tr>
<tr>
<td>May reduce gear conflicts with trawls</td>
<td>Over-crowding of fishing grounds</td>
</tr>
</tbody>
</table>

Table 3: Summary of the pros and cons of gear conversion as opined by the pot fishing community

Of the pot fishers and their affiliates (hereafter referred to as pot fishers) with whom I spoke, the majority were unfamiliar with the concept of gear conversion. Because they had not previously considered the option, their perceptions of the concept were vague. The few that had some understanding of the concept, knew it only in the context of The Nature Conservancy’s efforts in Morro Bay, CA. Thus for the gross majority of the pot fishers, I had to define gear conversion in order to initiate the conversation. Their unfamiliarity with the topic may have affected the depth of their responses.

With the exception of two individuals, the pot fishers believe that there is space in the fishery both geographically and in the amount of sablefish available for the trawlers to convert to other gears. These fishermen did not foresee any conflicts. In fact, several thought that it would be better for the resource, because trawls “waste” so many fish as bycatch. With gear conversion, these previously “wasted” fish would remain in the water to grow, reproduce, and be available for other fishermen/women to catch. Also several interviewees saw an added benefit in that they might lose less pot gear from having it intercepted by trawls. They reasoned that gear conversion would reduce the trawl effort and thus reduce the degree of gear conflict.

Those who objected to gear conversion supported the concept as being a more ecologically sound practice, but were concerned that it would come at a cost to established pot fishers. Specifically, this cost would be the over-crowding of fishing grounds. There may not be enough geographic space for new entrants in the fishery. Even if space is available the increase in gear may also result in an increase of pot gear entangling with each other. The small number of comments on this topic indicates that
space may only be an issue for a portion of the pot fishery. Specifically those concerned are from areas where fishing grounds are limited by topography and/or regulations and where the boats are smaller and so cannot travel far to fish. Over-crowding may be further heightened by a tendency of pot fishers to concentrate their fishing during the time when the price of hake—the preferred bait—is lowest. Typically, this is a three month window from June to August, during the seven month fishing season.

Another perceived cost to established pot fishers is a reduction in value of fixed gear caught fish, because trawlers-turned-pot-fishers would flood the market with their fish and drive down prices. In discussions of this concern with other fixed-gear fishermen and processors, they all discounted it. They pointed out that the prices for sablefish are driven by the global market. West Coast caught sablefish is only a small percentage of what is caught globally, so even major changes in the composition of the West Coast sablefish fishing fleet are unlikely to affect prices.

Other concerns centered on fairness. One individual felt that fixed-gear fishermen/women should also have the option of gear switching to another fixed-gear or even trawling, so that they also could increase their business options. Another concern was that pot Fisher’s stakes in the fishery should be protected and that they should be compensated for the increased competition. One individual offered several mechanisms to protect existing fixed gear fishermen from competition from new entrants. These mechanisms could include season restrictions on the new entrants, such as fishing only during the five months not included in the existing fixed-gear fishing season. Managers could also consider opening restricted areas to be used by the existing fixed-gear fleet only. Another mechanism would be restriction on the amount of gear new entrants may use.

The favored form of compensation was an increase of the fixed-gear industry’s allocation of sablefish, preferably to the historical level of 48%. Many of the interviewees were opposed to compensation. Several of the fixed-gear fishermen opined that competition is part of the fishing industry and they did not think that compensation is necessary. Trawlers opposed the idea, because most likely the increase in fixed-gear allocation would come at the expense of the trawl allocation. One manager opposed the idea on the basis that it would be a bad precedent to set, because fish are a public resource and exploiters of this resources should not be compensated for losses as though fish were private property. Notably, if gear switching were to occur—even without an IQ system—it is likely that the program could allow trawlers to bring their portion of the sector allocation with them when they switch to the fixed gear sector. Future research should thoroughly investigate potential negative impacts, especially over-crowding of fishing grounds, of gear switching on the fixed-gear fishery.

**Longliners and Their Affiliates**

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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</thead>
<tbody>
<tr>
<td>More judicious use of the resource</td>
<td>Not enough space on fishing grounds</td>
</tr>
<tr>
<td>May reduce discards</td>
<td>May not reduce discards</td>
</tr>
<tr>
<td></td>
<td>Less fish to support shoreside infrastructure</td>
</tr>
</tbody>
</table>

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15 Reportedly, PFMC will explore allowing limited-entry fixed gear fishermen to switch from longlines to pots/traps with potential implementation in 2009.
Table 4: Summary of the pros and cons of gear conversion as opined by the longlining community

Like the pot fishers, most of the longliners and their affiliates (hereafter referred to as longliners) with whom I spoke, were unfamiliar with the concept of gear conversion. Because they had not previously considered the option, their perceptions of the concept were vague. Again, the few that had some understanding of the concept, knew it mostly in the context of The Nature Conservancy’s efforts in Morro Bay, CA. Thus for the gross majority of the longliners, I had to define gear conversion in order to initiate the conversation. Their unfamiliarity with the topic may have affected the depth of their responses.

In general, longliners were supportive of gear conversion, but less so than pot fishers. Like pot fishers, they thought that it would be a better, less wasteful use of the resource. However, one longliner reasoned that trawlers who are used to a much larger amount of discards may continue these “dirty” fishing practices even with fixed gear. There may be merit to this concern, because the cleanest of fixed-gear results not only from the more selective nature of the gear, but also how it is fished. For example, if a longliner chose not to sort fish on deck rather than at the side of the boat, mortality of discarded fish would likely increase significantly. Because many longliner boats are small and lack deck space, there is an incentive to sort the catch as it is being hauled in. Trawl vessels have more deck space. Feasibly, the catch could be sorted on deck and there would be an incentive to do this because the haul in time could increase and the line could be reset faster.

Unlike pot fishers, several longliners expressed concern about geographic space to accommodate more fixed-gear fishermen/women. This issue may be particularly valid for ports near a non-trawl RCA or which have mostly small vessels that cannot safely travel to distant fishing grounds. Longliners were especially concerned about gear switching resulting in more pot fishers, because it is difficult to set a longline in an area where pots are set as well. Notably, one longliner opposed the idea of gear switching on the basis that it would result in trawlers landing less fish and thus have negative effects on shore-side infrastructure.

<table>
<thead>
<tr>
<th>Processors</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Will increase trawlers’ business options</td>
<td>Less fish to support shoreside infrastructure</td>
</tr>
<tr>
<td></td>
<td>Will increase the supply of fixed-gear quality sablefish</td>
<td>Will reduce supply of flatfish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>May increase competition from small processors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>May result in the loss of skilled workers</td>
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Table 5: Summary of the pros and cons of gear conversion as opined by the processing community

Most processors and their affiliates (hereafter referred to as processors) with whom I spoke were familiar with the concept of gear conversion and support it on the basis that it would give trawlers more business options. Their primary concern was
guaranteeing that they would have an adequate supply of fish to maintain their workers and meet market demand. As a means of mitigating this problem, one manager suggested that in addition to conversion to fixed-gear, bottom trawlers be allowed to use mid-water trawls. This would potentially increase the amount of whiting available to the processors and offset losses from a reduction in groundfish landings. However the processors also feared that a reduction in the number of trawlers would affect the supply of flatfish, which are not caught in mid-water trawls. Also they thought that an increase in longliners, who often process their own fish onboard their boats, might reduce the processing load available to support their workers. Because the processors assumed that gear conversion would occur in conjunction with an IQ program, a couple of them were concerned that trawlers would start their own processing operation by using their allocation as collateral for a start-up loan. They felt the only way to guarantee their supply of fish would be to have a processor allocation of 10-15%.

Currently flatfish, which make up a significant portion of the fish processors market, can only be commercially caught with trawls. However, the large processors that I spoke to only had 5 or 6 trawlers that regularly supplied them. Given that there are only about 4 large processors on the West Coast, it would seem that a viable flatfish market could still be sustained by just a fraction of the 169 active trawl permits currently operating in the groundfish fishery. In further support of this reasoning, many of the trawlers and processors I spoke to said that the global market for common flatfish such as Dover sole is often flooded, during which times processors do not purchase these fish. This suggests that under the present system processors are often over-supplied with some species by the present trawl fleet.

Regarding the maintenance of workers, I do not believe this will be a significant issue with gear conversion. All the trawlers I spoke to expressed interest in switching to pots, which legally are not allowed to process fish on-board their boats, so the amount of sablefish needing to be processed is likely to remain stable. The standard way to process sablefish is a “J cut” in which the head and the guts of the fish are removed and the rest frozen whole. This is a very simple means of processing fish, which does not require much skill. The most skilled workers in processing plants fillet fish; they frequently process flatfish. Assuming that some portion of the trawl fleet will continue to capture flatfish, it should be possible to maintain the skilled workforce in processing plants.

The trawlers with whom I spoke were divided in their interest in processing their own fish. A couple said that they would consider the option as they would any new business option that might be profitable to them. Others clearly stated that they had no interest in fish processing. No one stated that they would definitely pursue processing if that option was available to them. Based on a conversation with a small-scale processor, I doubt that processing by single fishermen or even cooperatives would be a major challenge to the larger processors, because fisher/processors must divide their time between business responsibilities at sea and on land. Also the money generated by these small processors is more likely to remain in the community, thus benefiting it as a whole.

Concerning a processors’ allocation, most of my interviewees outside of the processing community opposed this idea. Much as with compensation for pot fishermen, a processors’ allocation may be an inappropriate use of a public resource. Allocations to fishermen and women serve as a management tool, but a processor allocation could be viewed as simply protection against competition. While processors present their concerns
as being about the welfare of fishing communities, many of the interviewees pointed out that first and foremost processors are trying to preserve their personal interests. Most of the interviewees believed that a realistic gear conversion scenario (i.e. with some trawlers still trawling), would allow fishing communities to continue to operate productively. A determination of the number and distribution of trawlers necessary to supply the flatfish market and help support fishing communities would require a detailed economic analysis beyond the scope of this study. Future research to make this determination should be a priority in any further assessment of gear conversion.

**Gear Suppliers**

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>May lose money on unwanted stock</td>
<td>May not have enough time to supply initial demand</td>
</tr>
<tr>
<td></td>
<td>May reduce overall revenue</td>
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</tbody>
</table>

Table 6: Summary of the pros and cons of gear conversion as opined by gear suppliers

Most of the gear suppliers I spoke with were unaware of the gear conversion concept. Once explained to them, the majority were neutral in their opinions, because they serve many aspects of the fishing community from trawlers and longliners to fish processors. However, it should be noted that trawl gear is more expensive gear than longlines and most pots are imported, so the gear suppliers definitely have a larger financial dependency on trawls in comparison to other gear types. The gear suppliers’ greatest concern is being given adequate advance notice of large-scale gear changes. They forecast that they would need six months to a year to reduce their inventory of obsolete gear and stock sufficient amounts of the newly desired gear. The one net shop owner I spoke with believed that gear conversion would reduce the number of nets that the business sells but was not overly concerned, because the owner believed there would always be a need for trawlers. Also, the number of operating net shops has declined greatly in recent years, so the remaining shops serve a large area and have a healthy demand for their service.

** Managers**

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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</thead>
<tbody>
<tr>
<td>Would reduce overall bycatch</td>
<td>Bycatch of yelloweye and canary rockfish may increase</td>
</tr>
<tr>
<td>Trawlers may be able to access full allocation</td>
<td>May impair processors’ ability to supply their markets and keep staff employed</td>
</tr>
<tr>
<td>Will allow trawl permit holders to access the trawl RCA</td>
<td>May add complexity, difficulty, and expense to the observer program</td>
</tr>
<tr>
<td></td>
<td>Would require a major education program</td>
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<tr>
<td></td>
<td>May not be politically feasible</td>
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Table 7: Summary of the pros and cons of gear conversion as opined by managers

Of the federal and state fisheries managers with whom I spoke, all were aware of the gear conversion. Only one supported the idea outright and most others abstained from
offering an opinion on the overall merit of gear conversion. The managers believed that gear conversion would decrease overall bycatch. They also thought it would increase business options for trawlers by allowing them to increase the places they can fish and their ability to catch their full allocation.

However, each also voiced specific concerns about the concept. Several managers mentioned that switching to longline gear could result in increased bycatch of yelloweye and canary rockfish, two overfished species that have often constrained shelf rockfish catches in recent years. The trawl RCA and gear restrictions currently protect these fish from trawls, but the populations still remain vulnerable to longlines, which can access their rocky habitat. An increased use of longlines may put the recovery of these species in jeopardy unless appropriate steps are taken to minimize this bycatch.

One manager, expressed concern that a decrease in trawl-caught fish may impair processors’ ability to supply their markets and keep their staff employed. I addressed this concern in the previous “Processors” section. Several managers mentioned that depending on the final format of the gear conversion program, the observer requirements could result in a more complex, more costly, and more difficult-to-implement observer system. I will discuss this concern further in the “Management Scenarios and Incentives” section below. A successful gear conversion program will likely also need an education effort to inform the industry about the new program and assist the learning curve for the new gear. This may require a significant investment of resources. Notably, one manager mentioned that because of the diverse stakeholders and the political power of some of these interests, especially processors, gear switching may not be politically feasible at this time. None of the stakeholder groups, including processors that I interviewed, were uniformly or vehemently against gear conversion. In fact, all of them saw some benefit in it. I believe that all stakeholder groups are open to discussing and negotiating the issue of gear conversion.

Management Scenarios and Incentives

In the following section, I will outline several potential management scenarios for gear conversion. I created these management scenarios based on some of the ideal gear conversion scenarios offered by the interviewees. I then presented these scenarios to other interviewees, especially managers, for their responses. The scenarios detailed below are not an attempt to prescribe potential gear conversion regulations. Rather, it is an attempt to divide the range of gear conversion possibilities into clearly delineated and analyzable categories, which can yield insight into the fuller range of possibilities. I will also discuss incentives that might be helpful to encourage participation in gear conversion. One conclusion emerges clearly from this analysis: the Council and NMFS must define the terms of a gear conversion program in order to achieve desired results.

Permanent Uni-directional Gear Conversion

In this management scenario, trawlers would be offered an opportunity to make a one-time irreversible conversion to either pot or longline gear. In terms of reducing bycatch and habitat impacts, this would likely be the most beneficial scenario, because it would permanently reduce the number of limited-entry trawl permits and likely reduce trawl effort. Notably, it is possible (but unlikely) that under this and all other listed
scenarios total fishing effort could increase, for example, if permitted trawlers who are currently inactive decide to switch gears and become active fixed gear fishermen/women.

The permanent uni-directional scenario would be the easiest for the present management and observer system to orchestrate and monitor. It should not require significant additional resources. However, like all the scenarios it could and likely would cause some instability in how the fishery operates. For instance, trawlers who switch gears may relocate to areas that are more conducive to fixed-gear fishing. Initially, it may be difficult for the observer program to predict where fishing effort will be focused and as a result may have logistical issues in placing observers. It may take several years for the instability in fishing operations to even out into a predictable pattern. These logistical issues could be minimized by setting a deadline for trawlers to take advantage of gear conversion, so that trawlers cannot switch during the middle of a fishing season and/or the opportunity to convert to another gear does not remain available indefinitely.

The permanent uni-directional scenario may not be as appealing as other gear conversion options for fishermen/women because it would not substantially increase their fishing flexibility. A permanent uni-directional switch would offer trawlers an additional option of how to fish, but once committed to converting; their flexibility in day-to-day fishing decisions would be reduced. Specifically, based on current market demands, trawlers can attempt to target the most desirable of a range of fish species, while pot fishers can only effectively target sablefish. Because of this lack of flexibility a permanent uni-directional gear conversion may be attractive primarily to trawlers who are severely restricted under the present management system. Such individuals may include small boat trawlers who cannot travel to distant fishing grounds and whose closer fishing areas are restricted by conservation areas or not producing highly marketable fish.

Long-term Uni-directional Gear Conversion

This scenario would offer trawlers the opportunity to convert to pot or longline gear for a multi-year term. This scenario would offer many of the same benefits and raise similar issues as a permanent gear conversion scenario. It should reduce bycatch and habitat impacts by reducing trawl effort. It also may be a more attractive scenario to trawlers because it is not a permanent commitment. Thus, trawlers can make business decisions that are responsive to management and market changes. For example, the current high price for sablefish is driven by the demand for it in Asia; if tastes change or for some other reason the price of sablefish falls, fishermen/women will be able to change their fishing practices on a commensurate time-scale.

The management and observer issues presented by the long-term scenario are much the same as with the permanent gear conversion scenario. However, the repeated opportunity to convert to another gear could result in recurring disturbances in the fishing patterns of the industry, causing logistical problems for the observer program. A two-year commitment term to a gear type would probably be most compatible with the existing two-year management cycle. But a two-year term might create considerable flux in the groundfish fishery and thus be too unpredictable to allow an adequate sampling design. A longer term, such as 5 years, would potentially allow the fishing patterns to stabilize for a few years and thus permit adequate monitoring by the observer program. Sampling design could be less problematic to the extent gear switching occurs as part of an ITQ program with 100% observer coverage.
Pre-declared Bi-directional Gear Switching

In this scenario, trawlers would have the opportunity to switch between trawl and fixed-gear within the same fishing season. Before the beginning of the fishing season, trawlers would be required to declare the portion of their sablefish allocation that they intend to catch with fixed-gear. Thus, this scenario assumes that an IQ program is in place. The pre-declared bi-directional scenario should offer reductions in habitat impact and potentially reductions in bycatch as well. However, bi-directional gear switching is a scenario that caused some interviewees to raise concerns about the potential of increasing discards over the status quo. As previously stated, I believe these concerns are not reflective of an inherent flaw in bi-directional gear switching but rather are rooted in concerns about the potential adequacy of monitoring and enforcement measures.

The current observer and data reporting programs are unlikely to be able to handle this type of management scenario. Both personnel and timely data reporting are lacking. Currently, fishermen/women are required to give the observer program 24 hours of notice before leaving on a fishing trip. A representative of the observer program estimated that under this scenario the observer program would need at least four or five days notice, because gear switching would introduce another degree of complexity that must be considered in observer placement and sampling design. For example, a rise in sablefish prices may trigger trawlers to convert to fixed-gear and relocate from trawling grounds to fixed-gear fishing grounds. Without adequate notice the trawling areas would be overstaffed with observers and the fixed-gear fishing grounds understaffed. This complexity would also place limitations on the fishermen/women, because they would have to abide by their declaration of when and where they intended to fish.

The representative of the observer program with whom I spoke anticipated that under this scenario the number of reporting phone calls from fishermen/women to the observer program would increase to such a level that an additional staff person would be needed to respond to them. Also the current catch reporting procedures are too slow to provide up-to-date information on the industry’s fishing activities, thus further limiting the observer program’s ability to monitor the total catch. These issues will have to be resolved before an IQ program can be implemented. Given these difficulties and uncertainties, the observer program representative with whom I spoke suggested that 100% observer coverage would be the only option that could guarantee adequate coverage and confirm that fishermen/women are using the declared gear.

Unconstrained gear switching

In this scenario, trawlers would have the opportunity to switch between trawl and fixed-gear within the same fishing season without needing to declare when they planned to switch or how much fish they planned to catch with each gear. Like the pre-declared bi-directional scenario, this scenario assumes that an IQ program is in place. The pros and cons are also similar to the pre-declared bi-directional scenario, but would be more extreme. There would be even more uncertainties to hamper the development of an adequate sample design for an observer program. Also without a declaration process, it will be difficult for enforcement to insure compliance with various RCAs, because fixed-gear and trawl vessels are subject to different RCAs. Thus, in the absence of a method by
which to determine what level of monitoring coverage would be effective in such a
dynamic system, 100% observer coverage would be the only option that could guarantee
adequacy and provide sufficient information for managing the fishery.

Incentives

Incentives are likely to be an important means of stimulating gear conversion and
achieving its full potential to reduce bycatch and habitat impacts. Several interviewees
proposed incentives for encouraging gear conversion. One is an increase in sablefish
catch for trawlers who convert to fixed gear, commensurate with the lower level of that
gear’s discards. Under the current system, managers set the actual catch limit for each
gear sector taking anticipated discards and discard mortality for that sector into account.
In effect, they set trip limits by taking a percentage off the top of the quota. Because
trawls have more discards than fixed gear, a greater percentage is taken from the top. To
create an incentive for conversion, managers could increase the trip limit of a trawler who
converts, to reflect the lesser discard and discard mortality rates of fixed gear. Under an
IQ program, if trawlers fish their quota with fixed gear, more of that quota is likely to be
landed catch and less will be discarded, due to the lower bycatch rates of fixed gear. The
catch increase would provide an incentive to fish a trawl allocation with fixed gear,
because in doing so trawlers would increase their sablefish catch without increasing total
sablefish mortality or affecting someone else’s quota. This idea was well received by the
fishery managers with whom I spoke. However, one individual pointed out that this
incentive program would help decrease bycatch, but did not guarantee a reduction in
habitat impacts, thus he proposed an additional incentive program.

This manager reasoned that a reduction in the amount of trawling would not
necessarily have a functional reduction in habitat impacts if the remaining trawling
occurred over the same geographic area. For example, if a particular area is trawled over
5 times a week rather than 8 times a week, it may not be any healthier. To insure a
habitat benefit, he proposed that the trawl RCA increase in conjunction with the decrease
in the number of trawlers. The decreasing area available for trawling would also serve as
a further incentive for more trawlers to switch to fixed gear. Other managers found this
idea interesting, but believed that it or any other major regulatory change would have to
be phased in 4 or 5 years after the gear conversion program had begun. They emphasized
that it is important to be able to monitor and evaluate each component separately, so they
should not be enacted all at once. An alternative version of this idea is to designate areas
that are open to non-trawl gear but closed to trawl gear.

Another suggestion was an incentive system that rewards low-impact
performance over time, not just the conversion to fixed gear. For example, a portion of
the “adaptive management trust” quota could be used to reward those who consistently
meet a defined standard of minimal bycatch and/or habitat impact over a year or two,
based on observer data. A system like this could encourage trawlers who switch gears to
learn the best practices for deploying their new gear, and help address concerns that the
ability to minimize habitat impacts from pots, for example, depends on the skill and care
of the pot fisher.

Some trawlers may be reluctant to make a long-term commitment to fixed gear
due to uncertainties about the economics or other factors. A trial period of one or two
years during which a trawler could change his mind could help lower the barriers to gear
conversion in any of the longer-term scenarios above. Finally, another possible incentive is low-interest loans to help trawlers who wish to convert purchase fixed gear.

CONCLUSION

Bycatch

This report presents evidence that the inherent bycatch rates of trawls are substantially greater than that of longlines and pots for most groundfish species. Bycatch rates of pots and longlines are quite similar, but there is a consistent trend for the bycatch rates of pots to be the lowest of the three gear types. The most important difference between the bycatch rates of pots and longlines is that longlines have a small bycatch of yelloweye and canary rockfish while pots have none. Given the low population levels of these species, any bycatch, even small levels, is of concern and should be considered in evaluating options for gear conversion. Also, in considering gear switching to longlines, the lack of synthesized data on shark and seabird bycatch in the longline sablefish fishery introduces uncertainty that must be accounted for.

Expert opinion and presented data support that the one species for which pots have a substantially greater bycatch than longline is lingcod. Fishery managers conjecture that this greater bycatch results from a rounder body shape or behavioral characteristics of the fish. If pots are truly more susceptible to rounder-bodied fish, this should also be a consideration in gear conversion. While lingcod are presently considered recovered, they only gained this status in 2005. In addition, there may be other rounder-bodied fish populations that are currently healthy, but could succumb to added fishing pressure if more people switched to pots.

Habitat Impacts

The Shifting Gears study shows that trawls have a substantially greater impact on habitat than do longlines and pots. The study ranked longlines and pots closely, but finds slightly more severe impacts for pots. With the adjustments I made to tailor the pot impact profile to the sablefish fishery, the difference is even greater, with pots having more severe habitat impacts than longlines. The work of Dr. Rose on modified trawl sweeps could potentially reduce the habitat impacts of trawls, but the impact would remain substantially higher than fixed gear. Future research should explore the feasibility of using this gear in the west coast groundfish trawl fishery. An additional useful future study would be a GIS analysis of the types of seafloor habitat in the sablefish fishing area and the concentration of each gear type in each habitat. The study should examine the past and present gear distribution, as well as attempt to forecast the gear distribution under different gear conversion scenarios.

Most Preferable Gear

My research suggests that with appropriate management, conversion to longlines or pots could result in reduced bycatch and habitat damage relative to trawl gear. However, the potential ecological risks and the uncertainties about regulatory capacity to
handle them are lower with pots than with longlines. In taking a precautionary approach to yelloweye and canary rockfish bycatch, pots would be the best gear to switch to, especially given trawlers overwhelming preference for pots. On the other hand, while pots have less bycatch than longlines, their habitat impacts are less easily managed. Also, pots may have lasting habitat impacts, but the significance of any such impacts is unknown, and reducing it could require innovation. Furthermore, habitat impact of this gear varies with the skill of the user. If trawlers were to switch to pots, many would likely lack this skill. With only 28 active licensed pot fishers, with varying skill levels, there is only a small pool of expert pot fishers to instruct new pot fishers in how best to use the gear. Also, there is little incentive for experts to teach and for novices to learn as long as reducing habitat impacts does not affect their profit margins. At a minimum, training may need to be required for first time pot fishermen, and escape rings should be mandatory.

Longlines have greater bycatch of some overfished species than pots, but this is directly related to the accessibility of rocky habitat to longlines. Time/area closures with associated gear restrictions have proven to be effective measures to reduce trawling in rocky habitat. Similar measures may be effective for longlines, for example, reconfiguring the non-trawl RCA or closing hot spots for vulnerable species. Also, restricting or prohibiting the use of line-strippers may help further reduce mortality of bycatch, including species of concern such as sharks.

The assessment of this study is that longlines and pots have substantially lower bycatch and habitat impacts than trawls. This is true for most overfished species and for sablefish themselves. Minimizing bycatch mortality of sablefish in addition to that of overfished species is important both because bycatch minimization is required by the Magnuson-Stevens Fishery Conservation and Management Act and because the sablefish population is in the precautionary zone, with a predicted downward trajectory in future years under current conditions in the fishery. The costs of continuing the current distribution of gears, in terms of bycatch and habitat alteration, are high.

Based on the available information, I recommend adoption of policies that allow and encourage trawlers to switch to longlines or pots. In weighing the above uncertainties and concerns—on the basis of bycatch alone—pots may be the preferred conversion target because of the lack of yelloweye and canary rockfish bycatch. Further analysis is warranted—of the tradeoffs, of potential bycatch and habitat impact mitigation measures, and of the adoption of a flexible gear conversion system that could allow fishermen/women to switch to longlines or other hook and line gears if more information supports such changes or if the nature of bycatch problems or other factors change.

Pros and Cons of Gear Conversion

Perceived pros and cons of gear conversion varied widely, both within and between stakeholder groups. However, several motifs repeatedly emerged from interviews. As positive effects of gear conversion, many people mentioned that it would allow for better management of the fish populations by reducing bycatch. Also, they mentioned that gear conversion would allow more business options and flexibility for trawlers. In addition, sablefish caught with fixed gear would reap a higher selling price, and thus likely to be financially workable for trawlers who switch gears. As for potential negative impacts of gear conversion, a repeated message was that with fewer trawlers less
flatfish would be caught. The sale and processing of flatfish is currently a substantial component of the groundfish trawl industry. Presently, flatfish can only be effectively caught in trawls, so if some number of trawlers remains active, communities dependent on such operations are more likely to remain viable.

**Most Preferable Management Scenario**

The findings of this study suggest that the most preferable management scenario would be long-term uni-directional gear conversion. This scenario could be effectively overseen by the current management and observer program infrastructure. An IQ program would not be necessary to implement this scenario, though it could prove to be helpful. This scenario is likely to have a real benefit in reducing bycatch, because trawlers will have to commit to using fixed-gear for several years. Because of the long-term commitment, some trawlers, especially those with high-volume operations, will chose not to switch gears. Their continued landings should allow the processors and other shoreside infrastructure to operate healthily. Future studies should explore in more depth the benefits and impacts of gear conversion scenarios.

Incentives are likely to play an important role in encouraging gear conversion. One promising incentive is to provide trawlers who convert to a cleaner gear with a higher trip limit of sablefish, reflective of the lower bycatch rates of fixed gear (in an IQ program, a larger portion of an individual’s quota would likely be landed if caught with fixed gear). Another is to encourage good gear practices in an IQ program by using a portion of the “adaptive management trust” quota to reward those who consistently meet a defined standard of minimal bycatch and/or habitat impact over a period of time. Incentive ideas also include a trial period of a year or two during which trawlers could change their mind before making a long-term conversion, low-interest loans to help purchase new gear, and designating areas that are open to non-trawl gear but closed to trawl gear as the number of trawlers declines. Future studies should examine whether and how incentives should be implemented.
NMFS (2003). West Coast Groundfish Observer Program initial data report and summary analyses, NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA.
NMFS (2004a). West Coast Groundfish Observer Program data report and summary analyses, NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA.
NMFS (2005a). West Coast Groundfish Observer Program data report and summary analyses of sablefish-endorsed fixed-gear permits, NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA.
NMFS (2005b). West Coast Groundfish Observer Program limited entry trawl annual report, NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA.
NMFS (2005c). West Coast Groundfish Observer Program limited entry trawl report, NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA.
NMFS (2006a). Data report and summary analyses of limited-entry trawl permits: West Coast Groundfish Observer Program, NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA.
Rose, C. (2007). Development and evaluation of trawl groundgear modification to reduce damage to living structure in soft bottom areas. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for an Amendment to the Fishery Management Plan (FMP) for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI) (#89), and regulatory amendments for Bering Sea Habitat Conservation. NMFS: 148-150.


APPENDIX ONE: SAMPLE POPULATION DEMOGRAPHICS

The categories and numbers below summarize the composition of the sample population. Some categories may sum to more than the total number of 44 people interviewed. In these cases an individual may represent more than one affiliation or was interviewed more than once using different methods. Some sub-categories may not sum to the total of the mother category, because some people who were interviewed were affiliated with the category but not participants themselves.

By State:
- California – 11
- Oregon – 15
- Washington – 18

By Affiliation:
- Environmental NGO – 3
- Trawl – 10 (limited entry – 9, open access – 0)
- Pot – 6 (limited entry – 4, open access – 1)
- Hook & Line – 8 (limited entry – 5, open access – 1)
- Manager/ Government Scientist – 9 (state – 3, federal – 6)
- Processor – 5 (large – 3, small – 1)
- Gear Supplier – 4
- Other – 1 (harbor master)

By Interview Format:
- Face to Face – 29
- Phone – 19
- E-mail – 4

By Interview Type:
- Unstructured – 11
- Semi-structured – 39
APPENDIX TWO: GEAR SWITCHING INTERVIEW QUESTIONS

The survey instrument below was used as a guide not a script for interviews. I changed the phrasing, order, and suite of questions asked to suit the knowledge and comfort level of the interviewee. I directed the follow-up questions to a sub-set of the original sample population in order to elucidate concepts that emerged from the first round of interviews. The interviewees were not shown this document.

General:

1. What do you think that “gear switching” means as a concept?
2. Ideally, what would the best gear switching scenario look like?
3. Is gear switching better suited for some types of target fish, not others?
4. What do you see as the pros and cons of gear switching?
5. Can you think of ways to mitigate the cons?
6. Given this ideal situation are you generally for or against gear switching?
7. Are there gear types—other than longlines and pots—that would be a good target for gear switching?
   a. If so, describe this gear.
   b. Do you know anyone who has or fishes with this gear? If so, who?
8. Ideally, what would be the best design for an IQ program?
9. What do you see as the pros and cons of an IQ program?
10. Can you think of ways to mitigate the cons?
11. Given this ideal design are you generally for or against an IQ program?
12. Are you aware of bycatch reduction devices, either ideas or prototypes that would help reduce the bycatch of trawls, longlines, or pots?
   a. If so, how does this device work?
   b. Who is making and/or using this device?
13. Are you aware of any technologies, techniques or practices that could help reduce the impact of trawls, pots, or longlines on sea floor habitats?
   a. If so, how does this device or practice work?
   b. Who is making and/or using this device?

All Fishermen/women:

1. Tell me about your fishing operation.
   a. Describe your boat and gear?
   b. Do you have a mortgage on your boat (good question, but if people are uncomfortable answering financial questions, drop it)?
   c. How many crew members do you employ?
      i. How long have they worked for you?
      ii. Are they relatives or close friends?
   d. When, where, and for what species do you fish?
   e. What fishing permits and endorsements do you hold?
   f. Where do you sell your fish?
   g. Is your operation profitable?
h. Do you want to remain in fishing for the foreseeable future? Using your present gear type?
   i. Do you believe that your vessel and operation is representative of other vessels using the same gear? If not, how do they differ?

2. Have you ever fished with longlines or pots? If so, how would you rate your skill level with this gear?

3. If you were to switch gears would you rather switch to pots, longlines, or another type of gear? Why?

4. What incentives would convince you to switch gears?

5. What resources would you need to ease your transition to a new gear type?

6. What would be reasons why you would not switch gears?
   a. What could be done to mitigate these obstacles?

7. If you were to switch gears how would it affect your fishing operation?
   a. Would it reduce your crew size?
   b. Would it change when, where, and for what species you fish?
   c. Would it change where you sell your fish?
   d. How would it affect your profit?
   e. Would you be able to meet all of your overhead costs? Mortgage? Insurance? Boat maintenance?
   f. Would the cost of conversion be an inhibiting factor?

8. Do you believe that your opinions are representative of other fishermen/women using the same gear type? If not, how do they differ?

Follow-up interview questions:
1. How many pounds of fish do you catch on average in each tow/set?
2. Would increased access into the RCA convince you to switch?
3. Do you believe that gear switching may result in increased discards? If so, why?

Longliners and Pot fishers:

1. How do you feel about trawlers switching gear and joining the fixed gear fishery?
   a. Do you believe that there is enough room (geographically, fish allocation, and market) for trawlers to switch gear?

2. Would you be willing to help newly converted fishermen/women learn how to use the fixed gear properly?
   a. Would you be willing to work with state government, federal, government, Sea Grant, and/or non-profits to do so? If so, which?

3. What would be the most effective way to transition trawlers into the fixed gear fishery?

4. What measures do you believe should be in place to ease the impact of the transition on your business? Would geographic or depth limits on new entrants help?

Follow-up Interview Questions:
1. Would increased sablefish allocation to you help ease the impact of new entrants into the fishery?
2. *Would the opportunity to process fish on-board your vessel help ease the impact of new entrants into the fishery?*

**Processors:**

1. Tell me about your business.
   a. How many people do you employ?
   b. How many of these are seasonal workers?
   c. What are the sources of your fish?
      i. What portion of it comes from trawls, longlines, pots, or imports?
      ii. How many of each type of vessel routinely sells to you?
   d. What products do you produce?
   e. How much does each product contribute to your revenues (general estimate)?
   f. What are the markets for your product?
   g. Do you believe that your business is representative of other processors? If not, how does it differ?

2. How would gear switching in the sablefish fishery affect your business?
   a. What species of fish would you likely receive less of? How much less, if 30% (or even 50%) of sablefish trawls converted to fixed gear?
   b. What species of fish would you likely receive more of? How much more, if (30% of sablefish) trawls converted to fixed gear?
   c. Would there be a change in the quality of fish? If so, how would this affect your revenue?
   d. Would this affect your ability to retain workers?

3. Are there measures that could mitigate negative effects of gear switching?
   a. Increased imports?
   b. A minimum number of trawlers?
   c. Specialty markets?

**Gear Suppliers:**

1. Tell me about your business.
   a. What types of services do you provide?
   b. How many and what types of vessels do you routinely supply?
   c. Do you believe that your business is representative of other gear suppliers? If not, how does it differ?

2. Do you assist in seasonal conversion of vessels, switching between fisheries? If so, describe this work.

3. In your opinion what percentage of the fleet does their own seasonal conversion and what percentage uses the services or a gear supplier or shipyard?

4. If wholesale gear switching were to occur, what would be the implications for your business?
   a. Would there be enough pots and/or longlining gear readily available? If not, what would need to be done in order to anticipate and meet the need?
b. Would there be enough skill manpower to assist fishermen/women in the conversion? If not, what would need to be done in order to anticipate and meet the need?

Managers:

1. How is the sablefish fishery currently managed in your state?
2. How many trawlers, longliners, and pot fishers operate out of your state?
3. How much sablefish does each group land respectively?
4. How would the management of the sablefish fishery change under a gear switching scenario?
5. What types of incentives would encourage gear switching?
6. What types of programs do you anticipate needing to ease the transition?
   a. Apparently in pot fishing the ability to minimize damage to the sea bottom by picking up rather than dragging the pots is a learned skill. How will you work to impart this knowledge to newly converted pot fishers?

Follow-up Interview Questions:

1. Would increasing the sablefish allocation by the difference in discard allowances between trawls and fixed gear be a good incentive to switch gear? Why or why not?
2. Would giving a portion of the discard allowance to established fixed gear fishermen/women as compensation for what they might lose from additional competition be a good idea? Why or why not?
3. Would the opportunity to process fish on-board their vessels be a good compensation for established fixed gear fishermen/women to offset the costs of additional competition?
4. Would increasing the RCA for trawls, but allowing access by fixed gear be a good incentive to switch gears? Why or why not?
5. How much personnel, time, and financial resources would be needed to support the infrastructure (observers, enforcement, management) of a gear switching program?

Ice houses, Fuel stations, other portside infrastructure:

1. Tell me about your business.
   a. What types of services do you provide?
   b. How many and what types of vessels do you routinely supply?
   c. Do you believe that your business is representative of other businesses in your industry? If not, how does it differ?
2. If whole sale gear switching were to occur, what would be the implications for your business?
   a. What would be the positive effects?
   b. What would be the negative effects? How could these be mitigated?
APPENDIX THREE:
GEAR MODIFICATIONS TO REDUCE BYCATCH AND HABITAT IMPACTS

Trawl Groundgear Modification:

The most promising technology was the modification of trawl groundgear used by Bering Sea flatfish trawlers (Rose 2007). In this fishery long “sweeps” connect the net to the trawl doors and are responsible for herding fish into the net (Fig. 25). These sweeps, which can be up to 1500 feet long, account for 90% of the trawl bottom contact. Dr. Rose found that by clustering rubber disks together at 30 foot intervals along the sweeps they could be lifted 3 inches off the seafloor, thus reducing bottom contact by 90% as compared to conventional trawls (Fig. 26).

![Figure 25: Relative Position of doors, sweeps, and trawl net in an otter trawl system from (from Rose 2007).](image)

![Figure 26: Schematic showing the concept of reducing bottom contact area of sweeps by limiting contact to disk clusters (from Rose 2007)](image)

On soft bottoms, such as sand and mud, this gear significantly reduced the impacts on sessile invertebrates, such as anemones, ascidians, sponge, and basketstars (Fig. 27). These are all low-profile organisms, but flexible organisms, such as sea whips benefited as well (Fig. 28). Although organisms living under the surface of the seafloor...
were not considered in this study, Dr. Rose conjectured that impacts to these organisms may be reduced by as much as 100%.

Figure 27: Percent of basketstars in different condition categories after exposure to trawl sweep modifications (from Rose 2007).
The best configuration of this gear involves clusters of 8-inch diameter disks on combination rope (i.e., interwoven cable of steel and fiber). This configuration had no significant change in catch rates for flathead sole, yellowfin sole, rock sole, and arrowtooth flounder in comparison to conventional trawls (Fig. 29). There was also some data suggesting the same may hold true for rex sole and Dover sole, which are species that are also targeted by the west coast groundfish fishery (Rose 2005). The 8-inch disk configuration also had slight increases in the catch rates of roundfish, such as Pacific cod and pollock, in comparison to conventional trawls. In addition, this gear substantially reduced the sediment cloud produced by the trawl, indicating that the cloud may not be necessary to herd fish into the net.
Figure 29: Proportional change in catch rates when trawl sweeps had disk clusters (6, 8 and 10 inch diameters) installed at 30 foot intervals (from Rose 2007)

Dr. Rose is continuing to explore improvements to the groundgear modification. Preliminary tests have shown that the spacing between disk clusters can be increased to 45 feet without causing the sweeps to sag. It may be possible to increase the intervals to 60 feet or even 90 feet, thus further decreasing bottom contact.

Several issues still need to be addressed for the gear to be commercially viable. Most importantly, a means must be found to attach the disks to the net so that they can withstand the rigors of commercial fishing. Also the modified gear works best with boats that are rigged to haul the net onboard using the net reel. The towing blocks that are used on other boats damage the disk clusters. The gear has not been studied at deep depths, where light conditions are low, but day/night studies showed no difference in fish catch. Also the gear has not been studied on extremely soft bottoms. Even with the issues that still need to be addressed, the Alaska Fisheries Management Council is seriously considering the groundgear modification for use by the Bering Sea flatfish fishery.

Dr. Rose tentatively reasoned that the gear may be of value to the west coast groundfish fishery. Because the sweeps are smaller in this fishery, Dr. Rose guessed off-the-cuff that bottom contact may only be decreased by 60%. Also this gear was designed only for used in soft bottom areas, so it could not be used in the rocky areas of the fishery. The groundgear modification should be compatible with any trawl net configuration including the selective flatfish trawl currently being used by a portion of the west coast groundfish fishery.
Halibut Bycatch Reduction Device:

Dr. Rose is also working on a halibut bycatch reduction device for use in the Alaskan cod fishery. Because halibut and cod are well matched in swimming speed and strength, this device takes advantage of the differences in morphology. Halibut are flatfish and cod are round-bodied fish with large heads. The device consists of placing horizontal halibut sized slots in the trawl net. Halibut are able to escape through these slots, but Alaskan cod physically cannot, because of their large heads. This basic principle would hold true for excluding halibut from trawls targeting sablefish. However, because the heads of sablefish are smaller than those of Alaskan cod, additional and likely substantial research would be needed to modify this device for use in the sablefish fishery.

Salmon Bycatch Reduction Device:

Dr. Rose is also developing a device to reduce salmon bycatch in the pollock fishery. This device operates on behavioral differences between the two species. Salmon are stronger swimmers and have a tendency to swim into currents. The device consists of a funnel that directs both cod and pollock toward the codend of the net. Surrounding the funnel are square-meshed escape holes, through which the strong swimming salmon can exit. To increase Pollock retention Dr. Rose has developed a mesh-flap that covers the escape holes until the trawl slows down to a low speed. For this device to work optimally, trawlers would voluntarily have to periodically slow down while trawling. A major problem that needs to be solved with this device is the tendency for the trawl net to tear at the junction of the diamond-mesh of the net’s main body and the square-mesh of the escape holes. The development of this device is worth monitoring; however its usefulness for the sablefish fishery can only be gauged after conducting behavioral studies of sablefish and other target species in the west coast groundfish fishery. Also, the adaptation of this device to the west coast groundfish fishery would likely require extensive gear development and testing.

Pot Modification:

Dr. Rose and Keith Matteson of the Oregon Department of Fish and Wildlife conducted a behavioral study of sablefish approaches to baited pots (Rose, Stoner et al. 2005). The study showed pots are extremely inefficient at capturing sablefish. When two pots were left to soak for six hours there were more than 2000 and 5000 approaches of a sablefish in the area of the pots with only 9 and 10 captures, respectively. A single fish likely approached the pot multiple times, highlighting the difficulty of sablefish entering the pot once attracted. This evidence of inefficiency could be a motivating force for the fishing industry and other parties to invest in further developing sablefish pots. Three of the fishermen I interviewed recounted unsuccessful attempts to modify pots to make them more efficient or more able to capture other species, such as flatfish. Each of these interviewees believed that such a design was possible. If a flatfish pot were developed, it would offer an alternative to trawling as a means of capturing commercially important flatfish.
May 21, 2008

BY EMAIL

Mr. Donald Hansen and Members of the Pacific Fishery Management Council
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Re: Public Comments on Groundfish Trawl Fishery Rationalization

Dear Mr. Hansen and Members of the Pacific Fishery Management Council:

The Pacific Marine Conservation Council (PMCC) respectfully submits these comments regarding rationalization of the west coast groundfish trawl fishery. Although the council is currently considering a trawl-only individual fishing quota (IFQ) system, a well-designed and comprehensive system for the entire groundfish fishery would ultimately improve our stewardship of the resource and preserve community access to west coast groundfish.

PMCC envisions a future comprehensive rationalization system that encompasses all commercial fishing effort for groundfish, employs area management for both biological and socio-economic reasons, and includes incentives for effective conservation.

PMCC is focusing considerable attention on area management issues from both the biological and fishing community perspectives. The attached progress report on a white paper under development examines the spatial scales of organization for west coast groundfish biophysics, socio-economics, and management. The report states that spatial structure clearly exists in the California Current System. Many species of groundfish caught in the trawl fishery have spatially complex populations, with the major capes on the west coast (Mendocino, Conception and Blanco) often functioning as significant biogeographic boundaries. PMCC will be co-hosting a workshop in late summer 2008 to develop management alternatives and recommendations.

Provisions for adapting to future geographic splits of species OY and management boundary shifts are appropriately included as features in the current trawl IFQ proposal. **We support the option under consideration to initially use Cape Mendocino as the boundary to subdivide species without an existing geographical subdivision.** This is a logical and informed step, one that should be taken in anticipation of development of additional information on the spatial structure of groundfish stocks.
The following provisions are critical features of an effective trawl IFQ program. PMCC requests that they be reflected in the preferred EIS alternative that the Council identifies.

- **Protect communities and use best available science.** The expectation that management will respond swiftly to the best available science and the needs of communities must be clear. This includes adapting and modifying quota share endorsements from to reflect spatial distribution of fish populations, changes in management boundaries, or subdivisions to preserve community access to the adjacent resource.

- **Reduce bycatch.** Bycatch reduction, specifically avoiding encounters with overfished species, was a central motivation for considering this rationalization. If some overfished species are not managed as IFQ, then the analysis must explicitly demonstrate an incentive to avoid these fish that is measurably superior to the status quo.

- **100% observer coverage.** The system must include 100% observer coverage and as close to real-time tracking of species mortality as possible.

- **Opportunity for a comprehensive quota program.** The system should not have any provisions that would discourage future rationalization of the entire west coast commercial groundfish fishery. In fact this should be anticipated.

- **Evaluate program impacts.** The analysis must explicitly evaluate the potential impacts of implementation upon coastal communities without trawl landings and upon adjacent fisheries, including recreational.

Thank you for considering our comments.

Respectfully submitted,

Peter Huhtala
Director of Government Affairs
PROGRESS REPORT

Matching Spatial Scales of Ecology, Economy, and Management for Groundfish of the U.S. West Coast Marine Ecosystem: A State of the Science Review

A report to the Lenfest Ocean Program at The Pew Charitable Trust

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The following is a progress report on a white paper entitled “Matching Spatial Scales of Ecology, Economy, and Management for Groundfish of the U.S. West Coast Marine Ecosystem: A State of the Science Review.” This project is supported by the Lenfest Ocean Program at The Pew Charitable Trust.

This white paper is divided into three sections as follows: 1) synthesize the state of knowledge of scales of organization in the various U.S. west coast groundfish fisheries, 2) identify and prioritize spatial matches and mismatches between various components of the west coast groundfish fishery, and 3) make recommendations for spatial management of west coast groundfish within the context of ecosystem-based fishery management (Field and Francis 2006, Francis et al. 2007, Levin and Lubchenco 2008). In this regard, the paper suggests that spatial management should:

- Consider spatial aspects of interactions between humans and nature (McEvoy 1986, 1996)
- Incorporate the capacity for resilience thinking (Walker and Salt 2006),
- Be “second stream” in its approach to both science (interdisciplinary, holistic, focus on understanding rather than prediction) and management (facilitate existing processes and variability, proactive rather than reactive (Francis et al 2007, Holling 1993, Holling and Meffe 1996),
- Employ rules which are as simple as possible in achieving the desired results (Berkes and Berkes in review).

A first draft of section 1, with an internal review, will be completed by June 2008. This draft will be submitted to the Lenfest Ocean Fund and will inform PMCC’s Cape to Cape 2 workshop to be held in late summer/early fall 2008.

Section 1 - Scales of Organization - Biophysics, Socio-economics, Management (written and in review)

In this first section (draft completed and in review), we examine spatial scales of organization for west coast groundfish biophysics, socio-economics, and management.

Spatial structure clearly exists throughout the entire area of the California Current Ecosystem (CCS), where a diverse fishing community pursues an equally dynamic and diverse resource; from northern Washington to southern California, from Cape to Cape, from port to port. It can only, briefly, be viewed through snapshots we take in time. These snapshots all reveal clear spatial structure. Unfortunately the clarity is blurred as we pass from one snapshot to another. Space is an elusive moving target. The ocean is constantly in motion, pushed and pulled by winds and tides, agitating away within a basin with a complex bottom structure, creating spatial patterns that morph from year to year, season to season, month to month, day to day,... That’s what both fish and fishers face. As a result, diversity ripples through the fishery - different upwelling zones (some separated by deep canyons); different prevalent groundfish assemblages (north and south, inshore and offshore); different fleet structures by state, county and port; different local, state, federal, non-governmental management jurisdictions - some overlapping and some not, a mosaic of diverse activity.
Our analysis reveals how diverse the groundfish fishing communities are as you visit ports dotted from San Diego north to Neah Bay. Fleets have changed over the past several decades, the rise of the offshore domestic hake fleet in the north and of the nearshore live-fish fleet in southern Oregon and California, the declines in overall revenues and the shift in the distribution of revenue between fleets and ports – shifts affected both by changes in the resource and changes in management. So, things are blurry but ... they are occasionally, and briefly, clear when taken at certain time scales. What we have reported in this section, generally, is based on, at best, annual observations. But—as is the case with the NMFS survey and its analysis—observations were taken carefully, and at a very fine spatial grid. The following are our major spatial findings:

Biophysics

- **Depth** defines the major axis of west coast groundfish variation (advection and larval transport, metapopulation structure, species assemblages) (Gunderson and Vetter 2006, Gabriel 1982).
- Nearshore demersal habitats tend to be vastly different from deeper offshore areas of the continental shelf and slope. Nearshore regions are typified by “sticky water” with very low alongshore movement (Largier 2003). Offshore regions are generally colder, lower oxygen, and stable ocean environments with much stronger alongshore advective processes coming into play in the pelagic region.
- Metapopulation structures of west coast rocky reef fishes tend to change with depth (Gunderson and Vetter 2006). Broad dispersal and coastwide populations tend to occur offshore (outer shelf and slope). Mesoscale dispersal and populations structured by the capes tend to occur in mid to inner shelf regions. Nearshore populations exhibit very limited dispersal.
- **Latitude** is the second most important factor influencing population and assemblage boundaries (Gabriel 1982). Dynamic atmosphere-ocean processes such as wind stress and current patterns are likely the most important factors controlling these north-south structures. There are two major latitudinal breaks in groundfish biophysics: 1) the turbulent wedge between Capes Blanco and Mendocino - a transition region between north and south which has the strongest upwelling winds and most turbulent coastal flows of the entire CCS (GLOBEC 1994, Peterson et al 2006, Botsford and Lawrence 2002) and 2) Point Conception - the area south of Conception is very different from the area to the north - much smaller local wind stress, warmer subtropical water, different timing in the upwelling season (Hickey 1998).
- Heavy fishing of rocky reef habitats can cause significant changes in ecosystem structure. Large piscivorous (rockfish) species have been fished out and replaced by smaller faster growing species. This has been demonstrated at the individual reef scale (Yoklavich et al. 2000), the regional scale (Baskett et al. 2006), and at the coastwide scale (Levin et al. 2006). These spatially explicit ecosystem effects of fishing have not been evenly distributed along the coast and have caused allocation of energy and reproductive potential to shift dramatically and vary from region to region. This has been shown in regional nearshore (O’Farrell and Botsford 2006) and shelf (Harvey et al 2006) ecosystems.
Socio-Economics

In this section we attempted to describe the spatial scales of organization within the groundfish fishery by using PacFIN statistics on landings, revenue and number of vessels by sector. In this summary we categorize by trawl (limited entry, whiting), non-trawl (limited entry, directed open access), recreational and tribal. Focus is on how spatial statistics have changed between 1995 and 2006.

- The whiting trawl fishery is the largest volume fishery on the west coast and primarily lands to ports north of Cape Blanco. Although it is a low value species (price-per-pound), it is landed in such high volume that whiting landings generate high revenues (PSMFC 2007).
- Landings by the limited-entry (LE) non-whiting trawl fishery previously spanned the coast to Point Conception, but currently are concentrated north of Cape Blanco. Due primarily to severe overfishing of shelf rockfish, landings and revenues have declined across the fishery. Flatfish now comprise the majority of landings (PSMFC 2007).
- The non-trawl fishery (LE fixed gear and open access fleets) has maintained its distribution along the entire coastline. Landings have declined but revenues have not changed due to several spatial factors. High-value sablefish dominate landings and revenue north of Cape Mendocino. South of Cape Mendocino, landings have shifted away from shelf rockfish since 1995. From Cape Mendocino to Point Conception, the shift has been inshore to nearshore rockfish supplying the high value live fish market. South of Point Conception, the shift has been offshore to thornyheads (PSMFC 2007).
- The open access fleet has the most participants of any groundfish sector. Over 50% of the open access fleet landings and revenues are in California. Washington and Oregon directed open access fleets are rapidly expanding; their primary target is sablefish (California Department of Fish and Game (CDFG) 2007).
- The recreational sector is largest in California, north of Point Conception, and appears to be increasing coastwise, aside from southern California. Rockfish are the mainstay of the recreational sector, particularly black and other nearshore rockfish (PFMC and NMFS 2006, PFMC 2007).
- Rapid expansion in the tribal fishery conducted in Washington State waters has potential to continue until harvest reaches the maximum allowable harvest allowable under treaty rights (1/2 of harvestable surplus of groundfish available in the usual and accustomed tribal fishing grounds)(PFMC and NMFS 2006).

Management

- **Federal** - The spatial management tools applied to the West Coast groundfish fishery are intended to accomplish a wide range of management objectives. These tools vary greatly in their size, temporal nature and goal. They range from coastwide Rockfish Conservation Areas to species-specific closed areas in the Southern California Bight (cowcod) and off northern Washington (yelloweye rockfish). They also include ecologically important habitat closed areas - 5 off.

AgItem F.6.f
89
Washington, 9 off Oregon and 20 off California - and bottom trawl footprint closures designed to prevent the seaward expansion of bottom trawling.

- **California** - The commercial and recreational fisheries for nearshore rockfishes in California are currently managed by the Pacific Fishery Management Council (PFMC) in conjunction with the state using three adjacent management areas with the boundaries at Cape Mendocino and Point Conception. California Department of Fish and Game (CDFG) is developing a fishery management plan for nearshore fish (NFMP) species. At this time, the NFMP Project identifies four management areas, yet to be fully implemented, with separate harvest guidelines. California is also attempting to apply the concepts of spatial management to state waters through implementation of the Marine Life Protection Act (MLPA) - a series of marine protected areas designed to protect and conserve marine life.

- **Oregon** - The Marine Resources Program of the Oregon Department of Fish and Wildlife is authorized by the State Legislature to administer the regulation, harvest, and management of commercial and recreational fisheries in Oregon. The agency uses a variety of tools to manage these fisheries, including trip and bag limits, area closures, and species-specific management zones. Oregon is undergoing an additional spatially oriented management process through the Governor’s Office and the Governor’s Ocean Policy Advisory Council (OPAC) to develop a network of marine reserves along the Oregon coast to protect the natural diversity and abundance of species that live in each type of habitat in Oregon’s Territorial Sea.

- **Washington** - Washington Department of Fish and Wildlife has jurisdiction over fishery resources within state waters (0-3 miles) as well as the inland fisheries of Puget Sound. WDFW employs a variety of management tools for nearshore groundfish. These tools have evolved over time and include area-based management such as the development and implementation of yelloweye rockfish conservation areas in federal waters through the Council process. In 2000, Washington banned all directed commercial harvest of groundfish in state waters.

**Note:** Sections 2 and 3 have yet to be written and will be the subject of PMCC’s Cape-to-Cape 2 workshop to be held during summer 2008.

**Section 2 - Matches and Mismatches Between Ecology, Economy and Management (to be written)**

This section will attempt to identify spatially explicit matches and mismatches between regional ecosystems, fleets, and management. Section 1 will serve as the basis for the analysis.

Almost two decades ago, and based on the history of California fisheries (McEvoy 1986), the environmental historian Arthur McEvoy presented an innovative, broad and comprehensive context for marine fishery science and management, with a strong emphasis on direct interactions and relationships, of which those occurring within the ecosystem are just a part. Ten years later he built on this experience to define a fishery as an interaction between three variables: an ecosystem, a group of people working (economy), and the system of social control within which the work takes place (management) (McEvoy 1996). His key assertion is that management must equally weigh the many social and economic relationships within the
fishery and how, in turn, they both influence and are influenced by marine ecosystem processes and dynamics. In fact it is human interrelationships that are of particular concern to decision makers. What McEvoy (1996) says is that a fishery is a classic example of a social-ecological system (Berkes et al. 2003, Berkes 2004): an integrated concept of humans in nature. And the essence of a sustainable fishery is the health of the interactions between the ecosystem, economy and management (Field and Francis 2006).

Specifically, in Section 2 we ask the question: what are the McEvoy interactions in the west coast groundfish fishery and how are they spatially structured? Based on recent research on sustaining ecosystems and people in a changing world (Walker and Salt 2006), we might rephrase the question as follows: Can the west coast groundfish fishery be spatially compartmentalized into modules where feedback is tight (economy and ecosystem highly connected) within modules and feedback is loose between modules? Walker and Salt (2006) indicate that modularity and tightness of feedback are key factors in maintaining general resilience, and that “the degree of modularity in the system allows individual modules to keep functioning when loosely linked modules fail, and the system as a whole has a chance to self-organize and therefore a greater capacity to absorb shocks.” Our analysis indicates that the Capes (Blanco, Mendocino, Conception) may provide this kind of modular framework.

Section 3 - Management Alternatives and Recommendations (to be written)

If one looks at the fishery from the McEvoy perspective, then it seems that ecosystem-based fishery management should strive to focus on maintaining or creating healthy interactions between the economy and the ecosystem. We feel that since the effects of fishing are not evenly distributed over space (O'Farrell and botsford 2006, Harvey et al 2006), spatial management could help provide incentives for achieving conservation objectives.

As we state in the introduction to the white paper, “an ecosystem approach to management is management that is adaptive, specified geographically, takes into account ecosystem knowledge and uncertainties, considers multiple external influences, and strives to balance diverse social objectives” (Francis et al 2007). This is a management which is proactive and seeks to preserve existing processes and variabilities. This is a management which requires resilience thinking, and its unifying concept of adaptive capacity, through heterogeneity, modularity and tight feedback. If adaptive capacity is at the heart of ecosystem-based fishery management, then spatial management is likely a powerful and essential tool of ecosystem-based fishery management. In our case this means making sure that space gets serious consideration in the halls of west coast groundfish management. It should not be written off just because our view is often blurry.

LITERATURE CITED


May 21, 2008

Mr. Donald K. Hansen
Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

Re: Amendment 20: Trawl Rationalization Alternatives

Dear Mr. Hansen and Members of the Pacific Fishery Management Council:

Food & Water Watch (FWW) is a national consumer action organization that works to resist corporate consolidation and market control of our food and water. We are, therefore, interested in the developing trawl rationalization alternatives in Amendment 20 for a new regime to manage Pacific groundfish.

As discussed in our previous public comment letter to the PFMC, dated October 30th 2007, we strongly support community-based co-op management rather than a traditional IFQ plan. However, should the PFMC decide to move forward on an IFQ regime for some of the groundfish fishery, we take this opportunity to echo recommendations made at the Groundfish Allocation Committee (GAC) meeting in May, as well as address other particular areas of concern below.

The GAC met on May 13, 2008 in Portland, Oregon and worked hard to develop sound advice regarding the options in Amendment 20. We support their preferred alternatives relating to initial allocation – no initial allocation of harvesting shares to processors and up to 10% of QS set aside for an adaptive management plan.

- Allowing processors initial allocation could lead to a severe shift in market power.

- Including an adaptive management plan provides tools to address unforeseen consequences that are likely to arise from implementing a rationalization plan, as well as to reward those with low bycatch.

We also support the GAC’s recommendation for co-ops in the mothership and catcher-processor sectors.

- As public comment indicated at the GAC meeting, co-ops offer peer support and peer pressure to participants, and the pooled bycatch can act as an insurance plan for members.

In addition to the above, we ask the Council to consider very strongly the following suggestions:

- Within the co-ops, we are very concerned about linkages to processors. Much of the language in the co-op alternatives includes a “punishment” for changing processors. This is very troubling. Catchers should be able to freely choose, based on any number of conditions, which processor to use. We urge the Council to select an alternative that does not allow linkages to processors and to develop the co-op plan in such a way that participants leaving the co-op do not trigger a race to fish.
- Term length for shares and permits should be shortened. Having long-lasting term lengths could suggest entitlement (property rights) to the resource instead of privilege. Shorter-term lengths would dispel any confusion that suggests a few people are handed property rights for a public resource, while other community members are left out of the allocation. For this reason, the renewal process should also indicate that qualifying requirements are in place, and that the renewal is not automatic.

- 100% monitoring is highly recommended. This is important to address such things as high bycatch levels and the incentive for high-grading.

- We ask the Council to develop the language regarding gear switching to indicate that only gear switching to cleaner gear is allowed.

- We also ask the Council to support language that would prevent against over-consolidation of the fleet. We acknowledge overcapitalization in the fishery, but are very concerned about the removal of longtime smaller-scale community members from the fleet through this new management regime. Safeguards could be included to protect historic fishermen.

Food & Water Watch continues to champion the community-based relationships that are fostered through co-ops. We do recognize that the Council currently leans toward a partial traditional IFQ program. While we hope co-ops created by private contract will exist under a larger rationalization plan, we have provided recommendations regarding IFQs as well. We respectfully ask that the Council consider our suggestions.

We look forward to working with the Council in implementation of a community-conscious, economically-efficient rationalization plan that will lead to a sustainable Pacific Coast Groundfish Trawl Fishery.

Sincerely,

Katherine Smith
Policy Analyst
Food & Water Watch
May 15, 2008

Don Hansen  
Pacific Fisheries Management Council  
7700 N. East Ambassador Place Ste 101  
Portland, OR 97220

Dear Don Hansen and Fellow Council Members

I am very concerned about the proposed division of the IFQs for the trawl fish industry.

My family has been in the business of providing construction, service and repair of commercial fishing equipment and hydraulics on the west coast since 1956. I am the second generation to be involved in this business and have witnessed first hand the changes that have taken place in the fishing industry.

The trawl permit buy back program that was implemented has had a tremendous impact on my customer base forcing me to downsize my business accordingly. The current proposals for IFQs will, if implemented, have an even greater potential effect on my business.

The fishermen that remained in the Trawl Fleet after the buy back have made a significant investment in time, vessels and equipment and did so with the understanding that they would have greater yet equal access to the resource in the future.

It is therefore my opinion that the current system of an equal split of the trawl fish quotas be maintained and no IFQs should be implemented. Please allow the buy back program time to increase stocks, as was the purpose of that program, before implementing any further restrictions on equal access to the resource for permit holders.

I am also opposed to any allocation of the trawl fish quota to processors. If they want a portion let them invest in permits and vessels accordingly.

Thank you for your consideration of my opinions.

With Best Regards,

Tom Wilwerding, Pres.
Fabcast, Inc.