FINAL AMENDMENT 4

TO THE

PACIFIC COAST GROUNDFISH PLAN

Including
Supplemental Environmental Impact Statement,
Regulatory Impact Review, and
Initial Regulatory Flexibility Analysis

Approved by the Pacific Fishery Management Council
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EXECUTIVE SUMMARY

The domestic and foreign groundfish fisheries in the Exclusive Economic Zone (EEZ) of the United States (3 to 200 miles offshore) in the Pacific Ocean off the coasts of California, Washington, and Oregon are managed under the "Pacific Coast Groundfish Fishery Management Plan (FMP) and Environmental Impact Statement (EIS) for the California, Oregon, and Washington Groundfish Fishery". The FMP was developed by the Council under the Magnuson Fishery Conservation and Management Act (MFCMA). It was approved by the Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration (NOAA) on January 4, 1982 and became effective on September 30, 1982. Implementing regulations were published in the Federal Register on October 5, 1982 (at 47 FR 43964) and appear at 50 CFR 663 and Part 675. Three amendments to the FMP have been implemented. This document is the FMP as amended through and including Amendment 4.

In 1987, the Council began a comprehensive review of the FMP, its federal implementing regulations, state regulations, and current Council management practices. This review identified several management, definition, and other problems. Some of the identified problems are technical/bookkeeping in nature (such as updating and reorganization of the descriptive portions of the FMP document), some are procedural (such as the procedure for reviewing applications for experimental fishing permits), and others relate to management of the fishery to obtain maximum benefits to the nation. The Council determined that a comprehensive amendment to the FMP was necessary to incorporate the previous amendments into a single document, update and reorganize the descriptive sections of the FMP, and correct several inadequacies of the current management program.

Amendment 4 makes major changes to the FMP to resolve problems in the current management regime. Four major inadequacies of the annual and inseason management program have been identified: (1) numerical optimum yields (OY) are always considered quotas or ceilings beyond which no fishing is allowed, which may result in discards of unavoidable catches; (2) the species selected for numerical OYs can not be changed without FMP amendment; (3) once acceptable harvest targets have been established, there is no mechanism to adjust regulations to achieve Council objectives to maximize benefits, etc., from those amounts of fish; and (4) inseason management actions for biological conservation require a determination of biological stress, which is poorly defined and difficult to document and/or predict. Amendment 4 revises the non-numerical OY concept to include all managed species and establishes a framework procedure for setting target harvest levels for any species needing active management.

With respect to annual and inseason procedures for establishing and modifying management measures, the amendment clarifies the procedures the Council will follow, including a provision to make certain changes to management measures at a single meeting. The "points of concern" procedure is revised so that determination of biological stress is no longer required. And a "socio-economic framework" for making adjustments for non-biological reasons is expanded. To provide clearer guidance to the Council and the Secretary in using the new framework procedures to make social, economic and biological decisions, the amendment also revises the FMP's goals and objectives.

One central part of Amendment 4 is establishment of standard procedures the Council will follow in establishing and making changes to management measures.

This two meeting process includes (1) preliminary discussion of proposed changes at one Council meeting, (2) analysis of the proposed changes and alternatives that might be considered to achieve the same stated objectives, (3) notice to the public of the Council's intention to take action and opportunity for public comment, and (4) final action at a second Council meeting. Certain routine changes may be exempted and could be made at a single Council meeting.

A detailed description of each major species is provided in Section 11 of the amendment, along with a discussion of the habitat requirements and the Council's habitat preservation policy.

The Supplemental Environmental Impact Statement (SEIS) prepared for Amendment 4 organizes the proposed changes into nine major issues and discusses them individually, including the alternatives considered to resolve each one. However, the amended FMP includes only those provisions adopted by the Council. The January 1982 SEIS prepared for the original FMP stated "The proposed action is designed to protect the long-term productivity of the groundfish resources and will involve no irreversible or irretrievable commitments of these resources." Amendment 4 is consistent with that statement and is designed to facilitate actions to ensure continued wise use of these public resources and the habitat supporting them. A description of the issues follows.

ISSUE 1. REVISE THE MANAGEMENT GOALS AND OBJECTIVES, UPDATE THE DESCRIPTIVE SECTIONS, AND REORGANIZE THE CHAPTERS OF THE FMP.

This amendment clarifies the Council's goals and objectives for management of the west coast groundfish fisheries. The goals are listed in order of priority. The 13 objectives are intended to express and explain the Council's policies and management priorities to the fishing industry and interested public, and to provide guidance to the Council and the Secretary in the development of regulations to manage the fisheries.

Goal 1 **Conservation.** Prevent overfishing by managing for appropriate harvest levels. Prevent any net loss of habitat of living marine resources.

Goal 2 **Economics.** Maximize the value of the groundfish resource as a whole.

Goal 3 **Utilization.** Achieve the maximum biological yield of the overall groundfish fishery and promote the year-round availability of quality seafood to the consumer.

ISSUE 2: REVISE THE OPERATIONAL DEFINITION AND USE OF OY AND ESTABLISH A PROCEDURE TO SPECIFY ALLOWABLE HARVEST LEVELS (HARVEST GUIDELINES, QUOTAS OR OYS) FOR ANY SPECIES, INCLUDING MANAGEMENT MEASURES TO ACHIEVE THEM

Numerical OYs were originally established for only six of the 80+ groundfish species and no other species could be managed by numerical limits except through the point of concern mechanism or through plan amendment. Also, no species could be removed from the list of numerical OY species except by plan amendment. In addition, increases to acceptable biological catches (ABC) and OYs and were limited to not more than 30 percent per year. The amendment removes the 30 percent restriction and establishes a two meeting procedure for the Council to make management changes. The amendment also establishes certain exemptions

to the two meeting process for "routine" adjustments to management measures which may be made at a single meeting.

ISSUE 3: ESTABLISH A PROCEDURE FOR MAKING ADJUSTMENTS TO FISHING RESTRICTIONS (SEASONS, QUOTAS, GEAR RESTRICTIONS, ETC.) FOR OTHER THAN BIOLOGICAL CONSERVATION REASONS (this includes and expands the gear regulation framework of Amendment 2)

The FMP originally contained no mechanism for implementing inseason management measures, even if desired, unless biological stress had occurred or was anticipated. Amendment 4 establishes a comprehensive authority to develop or modify management measures to better achieve the social and/or economic objectives of the FMP. Although sablefish allocation decisions were made under the point of concern authority, the economic and social implications of allocation decisions were not adequately analyzed to satisfy all parties involved. Actions taken under the expanded socio-economic framework require at least two Council meetings, analysis of impacts prior to implementation of any measures, and opportunities for public involvement at several stages. There is also a procedure for the Council to qualify a measure for routine status for future use at a single meeting.

ISSUE 4: REVISE THE POINT OF CONCERN PROVISION BY ELIMINATING THE REQUIREMENT TO DECLARE BIOLOGICAL STRESS OR THE LIKELIHOOD THEREOF

The original points of concern procedure in the FMP required the Groundfish Management Team (GMT) to make a finding of biological stress or the likelihood of stress on a species or species complex before the Council could recommend implementation of trip limits or other fishing restrictions. However, biological stress was poorly defined. The revised points of concern framework will make it easier for the Council to respond to biological problems that are identified as the fishery is monitored throughout the year.

ISSUE 5: REVISE THE USE OF THE HARVEST RESERVE FOR SPECIES FOR WHICH A JOINT VENTURE OR DIRECTED FOREIGN FISHERY IS CONDUCTED

In the original FMP, a reserve of 20 percent of its OY was set aside at the beginning of the year for each species assigned a "total allowable level of foreign fishing", or TALFF. The reserve was devised to provide for unanticipated expansion of the domestic industry within the year; to insure that foreign fishing activity did not actually reduce the amount that was caught by domestic fishermen. The reserve applied only if TALFF was designated, and Amendment 4 revises this to include situations where a joint venture fishery is anticipated. In addition, provision is made to release all or part of the reserve at any time during the year and reapportion it as needed to better accommodate the needs of changing fisheries and to provide for full utilization of the resource.

ISSUE 6: PROVIDE FOR IMPLEMENTATION OF REPORTING REQUIREMENTS WHEN STATE DATA COLLECTION SYSTEMS ARE INSUFFICIENT FOR MANAGEMENT OF THE FISHERY, INCLUDING FOR VESSELS WHICH PROCESS FISH AT SEA

Currently, catch, effort, biological and other data necessary for implementation of this FMP are collected by the states of Washington, Oregon, and California under existing state data collection provisions. Amendment 4 clarifies the Council's and Secretary's authority to establish federal reporting requirements

when the data collection and reporting systems operated by state agencies fail to provide the Secretary with statistical information adequate for management. The states are unable to manage offshore processing vessels (factory trawlers, for example) if they do not register with the state, fish in state waters or land in the state. In addition, the states have difficulty managing vessels that harvest fish off the west coast but land outside the area. Without the authority to require periodic reports, information about the harvest could be delayed several weeks or even months, which could seriously hamper inseason monitoring efforts and could lead to overshooting quotas and harvest guidelines.

ISSUE 7: STREAMLINE THE PROCEDURES TO REVIEW AND APPROVE APPLICATIONS FOR EXPERIMENTAL FISHING PERMITS

Amendment 4 revises the experimental fishing permit (EFP) process so that: blanket permits may be issued (i.e., one permit to an individual or agency responsible for a number of vessels); certain applications may be denied without involving the full Council process; administrative schedules are less rigid; and participants agree to release information gathered while fishing under the permit.

ISSUE 8: ESTABLISH PROCEDURES FOR REVIEWING STATE REGULATIONS TO DETERMINE IF THEY ARE CONSISTENT WITH THE FMP AND FEDERAL FISHING REGULATIONS

When originally approved by the Secretary, the groundfish FMP contained a provision which made then current California state law regarding use of set nets in state marine waters applicable in the federal EEZ as long as the state law remained consistent with the FMP, its implementing regulations, the MFCMA and other applicable law. However, since then, California has modified its set net regulations to impose area, depth and other restrictions. The new framework procedure authorizes the Council to review current and future state regulations to ensure that they are consistent with the FMP and other applicable law. Under this framework, the Council will decide whether to continue to apply a state's regulations in the EEZ or may recommend federal management measures be adopted or amended to be consistent with the state regulations.

ISSUE 9: ESTABLISH PROCEDURES FOR SETTING AND ADJUSTING RESTRICTIONS ON THE LANDING OF GROUNDFISH CAUGHT IN NON-GROUNDFISH FISHERIES

The FMP specifies what gear is legal for harvesting groundfish, and gears not listed may not land any groundfish taken either accidentally or intentionally. Exception was made for two non-groundfish fisheries (pink shrimp, and spot and ridgeback prawn) but the only way to allow landings of groundfish caught incidentally in other non-groundfish fisheries was by plan amendment or emergency rule. Amendment 4 authorizes adjustment of existing incidental allowances and establishment of new ones in non-groundfish fisheries.

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LIST OF ACRONYMS AND ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
Council	Pacific Fishery Management Council
CZMA	Coastal Zone Management Act
DAH	domestic annual harvest
DAP	domestic annual processing
DOC	Department of Commerce
DOE	Washington Department of Ecology
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EFP	experimental fishing permit
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FMP	fishery management plan
GAP	Groundfish Advisory Subpanel
GMT	Groundfish Management Team
GSG	Groundfish Select Group
HG	harvest guideline
INPFC	International North Pacific Fisheries Commission
IPHC	International Pacific Halibut Commission
IRFA	Initial Regulatory Flexibility Analysis
JV	joint venture
JVP	joint venture processing
LCDC	Oregon Land Conservation and Development Commission
MARPOL	International Convention for the Prevention of Pollution from Ships
MFCMA	Magnuson Fishery Conservation and Management Act of 1976
MMPA	Marine Mammal Protection Act
MSY	maximum sustainable yield
mt	metric tons
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NWAFC	Northwest and Alaska Fisheries Center
ODFW	Oregon Department of Fish and Wildlife
OSP	Optimum Sustainable Production
OY	optimum yield
PacFIN	Pacific Coast Fishery Information Network
PMP	preliminary fishery management plan
PRA	Paperwork Reduction Act
PSMFC	Pacific States Marine Fisheries Commission
regional director	regional director, National Marine Fisheries Service
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE	Stock Assessment and Fishery Evaluation
Secretary	Secretary of Commerce
SEIS	Supplemental Environmental Impact Statement
SSC	Scientific and Statistical Committee
TALFF	total allowable level of foreign fishing
WDF	Washington Department of Fisheries
WCZMP	Washington Coastal Zone Management Program

1.0 INTRODUCTION
[Refer to Section 2.0, page 2-1 of FMP]

Amendment 4 updates and revises the original fishery management plan (FMP) for the Pacific coast groundfish fishery off the coast of Washington, Oregon, and California developed by the Pacific Fishery Management Council (Council), approved by the Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration (NOAA), (Assistant Administrator) on January 4, 1982, and implemented on October 5, 1982. Amendment 4 is intended to replace the entire text of the original FMP, although the reader may wish to refer to the original FMP for additional background material relevant to the Pacific coast groundfish fishery. Except for those measures specifically revised, added or deleted by this amendment, all regulations and notices authorized by the original FMP and currently in effect at time Amendment 4 is implemented are intended to continue in effect concurrent with the implementation of this amendment.

In 1977, the National Marine Fisheries Service (NMFS) developed and the Secretary implemented the preliminary management plan (PMP) for the foreign trawl fishery of the California-Washington region. In 1982, the original FMP replaced the foreign trawl PMP and state management of domestic fishing in the 3 to 200 nautical mile Exclusive Economic Zone (EEZ). Since 1982, the FMP has been amended three times.

The Pacific coast groundfish fishery is the largest, most important fishery managed by the Council in terms of landings and value. The fisheries for some of the most valuable stocks have become more competitive and management more controversial in recent years. Although the original FMP provided flexibility to modify management measures for biological reasons, it contained no provisions for making adjustments for social or economic reasons. Amendment 4, among other things, provides these provisions, incorporates the previous amendments into a single document, and reorganizes the FMP into a more readable and useful document.

The following summary describes the major elements of Amendment 4:

1. Optimum Yield - The original FMP defines optimum yield (OY) for the Pacific coast groundfish fishery as a combination of specific numerical OYs for six species of groundfish and a generic non-numerical OY for the remainder of approximately 80 species which make up the fishery management unit. Amendment 4 defines a single non-numerical OY for all groundfish species in the fishery management unit and provides for specifying quotas or harvest guidelines for species needing individual management or increased protection.

2. Goals and Objectives - Amendment 4 updates, revises, and consolidates the goals and objectives for the Pacific coast groundfish fishery.

3. Management Processes - Amendment 4 maintains the existing authority for recommending management measures for resource conservation reasons and provides new authority and criteria for recommending management measures, including direct allocation of the resource, in response to social and economic issues as identified by the Council. In addition, it establishes framework procedures for recommending the establishment and adjustment of annual specifications and management measures without

resorting to amending the FMP. It describes the Council process, public notice and analytical requirements, and implementation scenario for Council recommendations based on the amount of public notice and opportunity for comment and analysis of impacts provided by the Council prior to taking a final action.

4. Experimental Fishing Permits (EFP) - Amendment 4 streamlines the process for NMFS to receive, review, and issue EFPs by authorizing the NMFS Regional Director to review applications for EFPs and make a determination whether or not they warrant further review and consultation with the Council. Currently all applications, regardless of their merit, must be published in the Federal Register and considered by the Council.

5. Scientific Research - Amendment 4 establishes a definition for determining what kinds of activities can be considered scientific research and a process for the Secretary to acknowledge such research.

6. Review of State Regulations for Consistency with the FMP - Amendment 4 establishes a process by which the Council may review state regulations for conformity with the FMP and its implementing regulations and either recommend their adoption as federal regulations or certify their consistency to a state without a recommendation for federal regulations.

7. Removal of Outdated FMP Provisions and Regulations - Amendment 4 deletes or revises a number of FMP provisions and implementing regulations which are not consistent with the current condition of the fishery. These changes are referenced throughout the text.

Although the FMP and its implementing regulations are not intended to regulate fishing for groundfish in the territorial sea of Washington, Oregon, and California, it is anticipated that state regulations will not substantially and adversely affect the carrying out of the FMP. The scope of the FMP includes management of the groundfish stocks throughout their range. Groundfish taken in both the EEZ and territorial waters off the coast of Washington, Oregon, and California, unless otherwise stated, are included in the computation of maximum sustainable yield (MSY), acceptable biological catch (ABC), harvest guidelines or quotas, incidental catch limitations, trip limits, daily catch limits, and any other specified amounts of any species included in Table 3.1 pursuant to any management measure which is based on a particular amount of fish. It is expected that the states will implement consistent regulations in the territorial sea for these species. It is expected that the framework measures established by this FMP and its implementing regulations will provide the management flexibility to address most potential resource and fishery changes in the foreseeable future. However, it is expected that this FMP will be amended from time to time whenever necessary for effective management of the resource and fisheries.

An Environmental Impact Statement (EIS) was prepared with the initial implementation of this FMP and an Environmental Assessment (EA) was prepared for each of the first three amendments. A Supplemental EIS was prepared for Amendment 4 which, in conjunction with the original EIS, assesses the effect that implementation of this FMP is expected to have on the environment of the region.

2.0 GOALS AND OBJECTIVES

2.1 Goals and Objectives for Managing the Pacific Coast Groundfish Fishery

[Section 2.1, page 2-4; Section 9.3.1. page 9-12 of FMP]

The Council is committed to developing long-range plans for managing the Washington, Oregon, and California groundfish fisheries that will promote a stable planning environment for the seafood industry, including marine recreation interests, and will maintain the health of the resource and environment. In developing allocation and harvesting systems, the Council will give consideration to maximizing economic benefits to the United States, consistent with resource stewardship responsibilities for the continuing welfare of the living marine resources. Thus, management must be flexible enough to meet changing social and economic needs of the fishery as well as to address fluctuations in the marine resources supporting the fishery. The following goals have been established in order of priority for managing the west coast groundfish fisheries, to be considered in conjunction with the national standards of the Magnuson Fishery Conservation and Management Act (MFCMA).

Management Goals.

Goal 1 - Conservation. Prevent overfishing by managing for appropriate harvest levels, and prevent any net loss of the habitat of living marine resources.

Goal 2 - Economics. Maximize the value of the groundfish resource as a whole.

Goal 3 - Utilization. Achieve the maximum biological yield of the overall groundfish fishery, promote year round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

Objectives. To accomplish these management goals, a number of objectives will be considered and followed as closely as practicable:

Conservation.

Objective 1. Maintain an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs.

Objective 2. Adopt harvest specifications and management measures consistent with resource stewardship responsibilities, for each groundfish species or species group.

Objective 3. For species or species groups which are below the level necessary to produce MSY, consider rebuilding the stock to the MSY level and, if necessary, develop a plan to rebuild the stock.

Economics.

Objective 4. Attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

Objective 5. Identify those sectors of the groundfish fishery for which it is beneficial to promote year round marketing opportunities and establish management policies that extend those sectors fishing and marketing opportunities as long as practicable during the fishing year.

Objective 6. Gear restrictions to minimize the necessity for other management measures will be used whenever practicable.

Utilization.

Objective 7. Develop management measures and policies that foster and encourage full utilization (harvesting and processing) of the Pacific coast groundfish resources by domestic fisheries.

Objective 8. Recognizing the multispecies nature of the fishery, establish a concept of managing by species and gear, or by groups of interrelated species.

Objective 9. Strive to reduce the economic incentives and regulatory measures that lead to wastage of fish.

Objective 10. Provide for foreign participation in the fishery, consistent with the other goals to take that portion of the OY not utilized by domestic fisheries while minimizing conflict with domestic fisheries.

Social Factors.

Objective 11. When conservation actions are necessary to protect a stock or stock assemblage, attempt to develop management measures that will affect users equitably.

Objective 12. Minimize gear conflicts among resource users.

Objective 13. When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures and environment.

2.2 Operational Definition of Terms

Acceptable Biological Catch (ABC) is a biologically based estimate of the amount of fish that may be harvested from the fishery each year without jeopardizing the resource. It is a seasonally determined catch that may differ from MSY for biological reasons. It may be lower or higher than MSY in some years for species with fluctuating recruitment. The ABC may be modified to incorporate biological safety factors and risk assessment due to uncertainty. Lacking other biological justification, the ABC is defined as the MSY exploitation rate multiplied by the exploitable biomass for the relevant time period.

Closure, when referring to closure of a fishery, means that taking and retaining, possessing, or landing the particular species or species complex is prohibited.

Council means the Pacific Fishery Management Council, including its Groundfish Management Team (GMT), Scientific and Statistical Committee (SSC), Groundfish Advisory Subpanel (GAP), and any other committee established by the Council.

Commercial Fishing is (a) fishing by a person who possesses a commercial fishing license or is required by law to possess such license issued by one of the states or the federal government as a prerequisite to taking, landing and/or sale; OR (b) fishing which results in or can be reasonably expected to result in sale, barter, trade or other disposition of fish for other than personal consumption.

Domestic Annual Harvest (DAH) is the estimated total harvest of groundfish by U.S. fishermen. It includes the portion expected to be utilized by domestic processors (DAP) and the estimated portion, if any, that will be delivered to foreign processors (JVP) which are permitted to receive U.S. harvested groundfish in the EEZ.

Domestic Annual Processing (DAP) is the estimated annual amount of U.S. harvest that domestic processors are expected to process and the amount of fish that will be harvested but not processed (e.g., marketed as fresh whole fish, used for private consumption, or used for bait).

Fishing means (a) the catching, taking or harvesting of fish; (b) the attempted catching, taking or harvesting of fish; (c) any other activity which can reasonably be expected to result in the catching, taking or harvesting of fish; or (d) any operations at sea in support of, or in preparation for, any activity described above. This term does not include any activity by a vessel conducting authorized scientific research.

Fishing Year is defined as January 1 through December 31.

Harvest Guideline is an specified numerical harvest objective which is not a quota. Attainment of a harvest guideline does not require closure of a fishery.

Incidental Catch or Incidental Species means groundfish species caught when fishing for the primary purpose of catching a different species.

Joint Venture Processing (JVP) is the estimated portion of DAH that exceeds the capacity and intent of U.S. processors to utilize, or for which domestic markets are not available, that is expected to be harvested by U.S. fishermen and delivered to foreign processors in the EEZ. (JVP = DAH - DAP.)

Maximum Sustainable Yield (MSY) is an estimate of the largest average annual catch or yield that can be taken over a significant period of time from each stock under prevailing ecological and environmental conditions. It may be presented as a range of values. One MSY may be specified for a group of species in a mixed-species fishery. Since MSY is a long-term average, it need not be specified annually, but may be reassessed periodically based on the best scientific information available.

Optimum Yield (OY) means the amount of fish which will provide the greatest overall benefit to the nation, with particular reference to food production and recreational opportunities; and which is prescribed as such on the basis of the MSY from each fishery, as modified by any relevant economic, social, or ecological factor. It may be expressed in terms of a quantified harvest level,

formula, or non-numerical fishery characteristic appropriate to the species or species complex, based on the ABC and on the best economic, social, and ecological information available. For the purposes of this FMP, OY is defined as all the fish that can be taken under regulations and/or notices authorized by the FMP and promulgated by the Secretary.

Overfishing is a level or rate of fishing mortality that jeopardizes the long-term capacity of a stock or stock complex to produce MSY on a continuing basis.

Prohibited Species are those species and species groups which must be returned to the sea as soon as is practicable with a minimum of injury when caught and brought aboard except when their retention is authorized by other applicable law. Exception may be made in the implementing regulations for tagged fish, which must be returned to the tagging agency, or for examination by an authorized observer.

Quota means a specified numerical harvest objective, the attainment (or expected attainment) of which causes closure of the fishery for that species or species group. Groundfish species or species groups under this FMP for which quotas have been achieved shall be treated in the same manner as prohibited species.

Reserve is a portion of the harvest guideline or quota set aside at the beginning of the year to allow for uncertainties in preseason estimates of DAP and JVP.

Stock Assessment and Fishery Evaluation (SAFE) Document is a document prepared by the Council that provides a summary of the most recent biological condition of species in the fishery management unit, and the social and economic condition of the recreational and commercial fishing industries and the fish processing industry. It summarizes, on a periodic basis, the best available information concerning the past, present, and possible future condition of the stocks and fisheries managed by the FMP.

Target fishing means fishing for the primary purpose of catching a particular species or species group (the target species).

Total Allowable Level of Foreign Fishing (TALFF) is the amount of fish surplus to domestic needs and available for foreign harvest. It is a quota determined by deducting the DAH and reserve, if any, from a species harvest guideline or quota.

3.0 AREAS AND STOCKS INVOLVED

The management regime of this FMP applies to:

1. The U.S. EEZ of the northeast Pacific Ocean that lies between the U.S.-Canada border (as specified in Federal Register Volume 42, Number 44, March 7, 1977, page 12938) and the U.S.-Mexico border (Figure 3.1).

2. All foreign and domestic commercial and recreational vessels which are used to fish for groundfish in the management area.

3. All groundfish stocks which comprise this fishery management unit (see Section 3.1).

Management Areas. Upon consideration of stock distribution and domestic and foreign historical catch statistics, the following statistical areas (Figure 3.1) have been determined by the Council to be the most convenient administrative and biological management areas. These areas are based on International North Pacific Fisheries Commission (INPFC) statistical areas but in some cases have been modified slightly. The areas are, from south to north:

Conception - Southern boundary of EEZ to 36°00'N latitude
Monterey - 36°00'N to 40°30'N
Eureka - 40°30'N to 43°00'N
Columbia - 43°00'N to 47°30'N
Vancouver - 47°30'N to northern boundary of the EEZ

These areas may be modified or deleted and additional statistical reporting and management areas may be added, modified, or deleted if necessary to refine information or management of a species or species group. Changes will be implemented in accordance with the procedures in Chapters 5 and 6.

3.1 Species Managed by This FMP [Amendment 1]

See Table 3.1 for listing of species managed under this FMP.

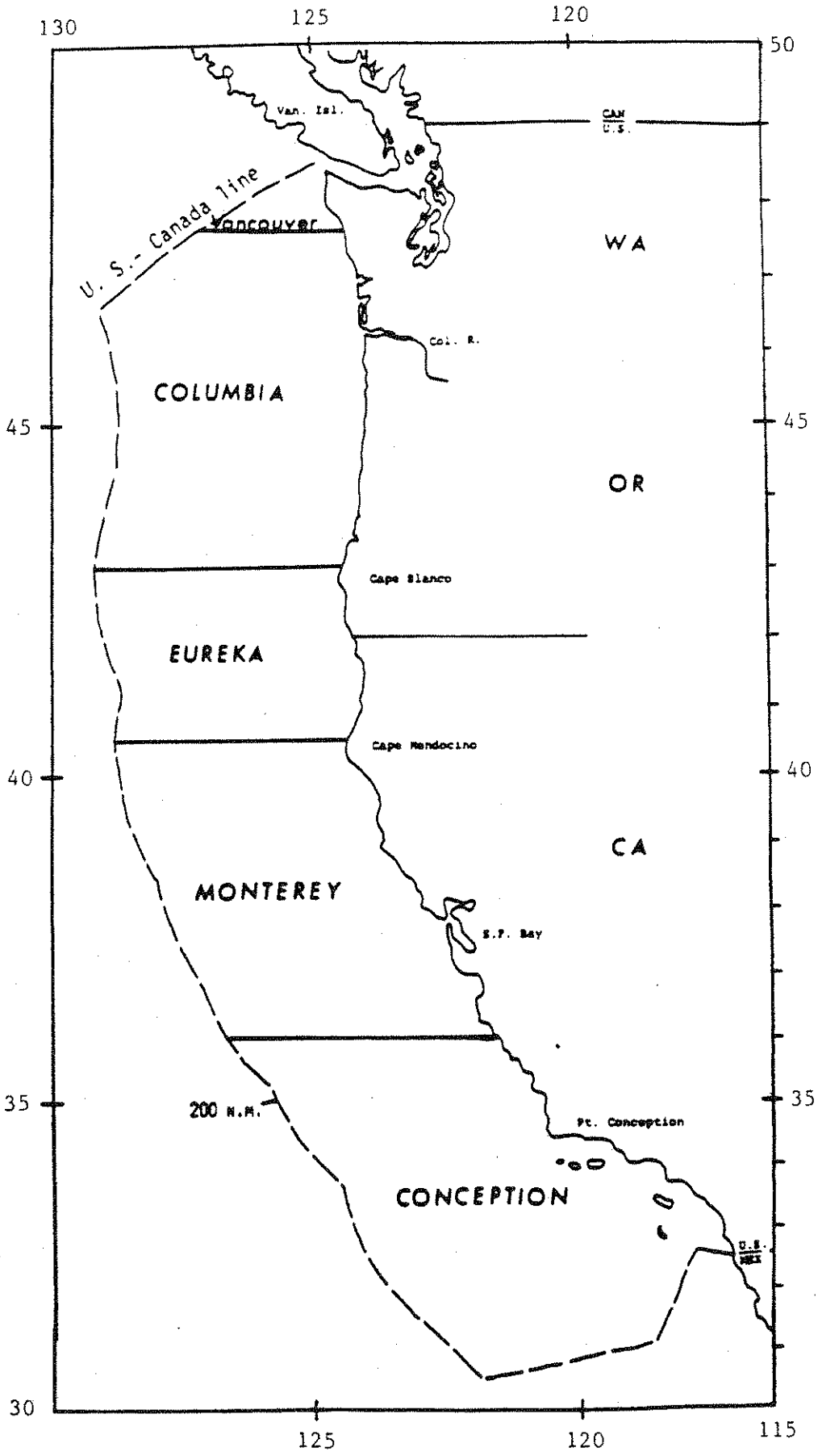

Figure 3.1 INPFC statistical area in the U.S. EEZ seaward of Washington, Oregon, and California.

Table 3.1 Common and scientific names of species included in the FMP.

Common Name	Scientific Name
SHARKS	
Leopard shark	Triakis semifasciata
Soupfin shark	Galeorhinus zyopterus
Spiny dogfish	Squalus acanthias
SKATES	
Big skate	Raja binoculata
California skate	R. inornata
Longnose skate	R. rhina
RATFISH	
Ratfish	Hydrolagus colliei
MORIDS	
Finescale codling	Antimora microlepis
GRENADIERS	
Pacific rattail	Coryphaenoides acrolepis
ROUNDFISH	
Lingcod	Ophiodon elongatus
Cabezon	Scorpaenichthys marmoratus
Kelp greenling	Hexagrammos decagrammus
Pacific cod	Gadus macrocephalus
Pacific whiting (hake)	Merluccius productus
Sablefish	Anoplopoma fimbria
Jack mackerel	Trachurus symmetricus
ROCKFISH[1/]	
Aurora rockfish	Sebastes aurora
Bank rockfish	S. rufus
Black rockfish	S. melanops
Black and yellow rockfish	S. chrysomelas
Blackgill rockfish	S. melanostomus
Blue rockfish	S. mystinus
Bocaccio	S. paucispinis
Bronze spotted rockfish	S. gilli
Brown rockfish	S. auriculatus
Calico rockfish	S. dallii
California scorpionfish	Scorpaena gutatta
Canary rockish	Sebastes pinniger
Chilipepper	S. goodei
China rockfish	S. nebulosus
Copper rockfish	S. caurinus
Cowcod	S. levis
Darkblotched rockfish	S. crameri
Dusky rockfish	S. ciliatus
Flag rockfish	S. rubrivinctus

Table 3.1 Common and scientific names of species included in the FMP (continued).

Common Name	Scientific Name
ROCKFISH (Continued)	
Gopher rockfish	S. carnatus
Grass rockfish	S. rastrelliger
Greenblotched rockfish	S. rosenblatti
Greenspotted rockfish	S. chlorostictus
Greenstriped rockfish	S. elongatus
Harlequin rockfish	S. variegatus
Honeycomb rockfish	S. umbrosus
Kelp rockfish	S. atrovirens
Longspine thornyhead	Sebastolobus altivelis
Mexican rockfish	Sebastes macdonaldi
Olive rockfish	S. serranoides
Pink rockfish	S. eos
Pacific ocean perch	S. alutus
Quillback rockfish	S. maliger
Redbanded rockfish	S. babcocki
Redstripe rockfish	S. proriger
Rosethorn rockfish	S. helvomaculatus
Rosy rockfish	S. rosaceus
Rougheye rockfish	S. aleutianus
Sharpchin rockfish	S. zacentrus
Shortbelly rockfish	S. jordani
Shortraker rockfish	S. borealis
Shortspine thornyhead	Sebastolobus alascanus
Silvergray rockfish	Sebastes brevispinis
Speckled rockfish	S. ovalis
Splitnose rockfish	S. diploproa
Squarespot rockfish	S. hopkinsi
Starry rockfish	S. constellatus
Stripetail rockfish	S. saxicola
Tiger rockfish	S. nigrocinctus
Treefish	S. serriceps
Vermilion rockfish	S. miniatus
Widow rockfish	S. entomelas
Yelloweye rockfish	S. ruberrimus
Yellowmouth rockfish	S. reedi
Yellowtail rockfish	S. flavidus
FLATFISH	
Arrowtooth flounder (turbot)	Atheresthes stomias
Butter sole	Isopsetta isolepis
Curlfin sole	Pleuronichthys decurrens
Dover sole	Microstomus pacificus
English sole	Parophrys vetulus
Flathead sole	Hippoglossoides elassodon
Pacific sanddab	Citharichthys sordidus
Petrale sole	Eopsetta jordani

Table 3.1 Common and scientific names of species included in the FMP (continued).

Common Name	Scientific Name
FLATFISH (Continued)	
Rex sole	Glyptocephalus zachirus
Rock sole	Lepidopsetta bilineata
Sand sole	Psettichthys melanostictus
Starry flounder	Platichthys stellatus

1/ The category "Rockfish" includes all genera and species of the family Scorpaenidae, even if not listed, that occur in the Washington, Oregon, and California area. The Scorpaenidae genera are Sebastes, Scorpaena, Sebastolobus, and Scorpaenodes.

4.0 OPTIMUM YIELD

OY is described in the MFCMA as the amount of fish which will provide the greatest overall benefit to the nation. This FMP establishes a single OY for the entire groundfish complex, which is defined as all the fish that can be taken under the regulations, specifications, and management measures authorized by the FMP and promulgated by the Secretary. It is not a predetermined numerical value, but rather the harvest that results from regulations, specifications, and management measures as they are changed in response to changes in the resource and the fishery. The non-numerical OY concept allows for a variable amount of groundfish to be harvested annually, limited by either or both the resource protection constraints or the measures responding to certain social and economic issues which are implemented through the various framework procedures in the FMP. Examples of management measures which determine the total amount of harvest each year include gear restrictions, including mesh size restrictions, quotas, and harvest guidelines either on individual species or species groups, and trip landing and frequency limits. The close spatial relationship of many groundfish species throughout the management area results in commercial catches often consisting of mixtures of several species. This is especially the case in the trawl fishery where fishermen may target on one species but unavoidably harvest several other species. In such cases, the optimum harvest strategy often is to target on a group (complex or assemblage) of groundfish species. The grouping of all groundfish species into a single non-numerical OY provides the flexibility to manage for the OY from the groundfish fishery as a whole rather than the maximum yield from each species. However, such flexibility does not preclude individual species management by means of quotas, harvest guidelines, allocations by gear-type, or other management measures designed to control the harvest of a single species or gear type. In certain circumstances, single species management may be necessary, especially to provide adequate resource protection, by-catch controls, or equitable allocation. Managing the multiple species complex for OY from the complex as a whole necessarily may result in some degree of overfishing, or failure to allow recovery to the MSY level, for some individual stocks. The Council will strive, to the extent practicable, to avoid overfishing individual stocks or preventing a stock from recovering to the MSY level. In the event the Council determines that greater long-term benefits will be gained from the groundfish fishery by overfishing individual stocks or by preventing a stock from recovering to its MSY level, it will justify the action in writing in accordance with the procedures in Section 5.6 (Stock Rebuilding Programs) or in Section 5.8 (the annual specification process). Conversely, the Council may determine that greater benefits will accrue from protecting an individual stock by constraining the multiple species complex or specific components of that complex.

Prior to implementation of the FMP in 1982, the States of Washington, Oregon, and California managed the groundfish fishery without the use of quotas. State regulations since the mid-1940s took the form of area closures (such as San Francisco Bay), legal gear definitions, minimum codend mesh regulations, size limits, bag limits, and other nonquota management measures. Implementation of the FMP built upon those historical management practices by increasing the level of catch monitoring, improving the assessment of stock conditions, and establishing other mechanisms for responding to management needs. It provides for continuation of the historical fishery on traditionally harvested groundfish species while allowing for the development of new fisheries for underutilized species. The FMP, as amended, provides for the establishment of resource conservation measures such as harvest guidelines or quotas through the annual specifications procedure and annual and inseason management measures through the "points of concern" and socio-economic framework mechanisms.

5.0 SPECIFICATION AND APPORTIONMENT OF HARVEST LEVELS

The ability to establish and adjust harvest levels is the first major tool at the Council's disposal to exercise its resource stewardship responsibilities. Each fishing year, the Council will assess the biological, social, and economic condition of the Pacific coast groundfish fishery and will make its assessment available to the public in the form of the SAFE document described in Section 5.1. Based upon the most recent stock assessments, the Council will develop estimates of the ABC for major species or species groups and identify those species or species groups which it proposes to be managed by the establishment of numerical harvest levels. The specification of numerical harvest levels includes the estimation of ABC, the establishment of harvest guidelines or quotas for specific species or species groups, and the apportionment of numerical specifications to DAH, DAP, JVP, TALFF, and the reserve. The specification of numerical harvest levels described in this chapter is the process of designating and adjusting overall numerical limits for a species or species group either throughout the entire fishery management area or throughout specified subareas. The process normally occurs annually between September and November, but can occur under specified circumstances at other times of the fishing year. Numerical limits which allocate the resource or which apply to one segment of the fishery and not another are imposed through the socio-economic framework process described in Chapter 6 rather than the specification process.

The NMFS Regional Director will review the Council's recommendation, supporting rationale, public comments and other relevant information, and, if it is approved, will undertake the appropriate method of implementation. Rejection of the recommendation will be explained in writing.

The procedures specified in this chapter do not affect the authority of the Secretary to take emergency regulatory action as provided for in Section 305(e) of the MFCMA if an emergency exists involving any groundfish resource, or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(g) of the MFCMA.

The annual specification process, in general terms, proceeds chronologically as follows:

1. Determine the ABC for each major species or species group.

2. Identify any species or species groups which may require special attention or individual management with numerical harvest limits in order to address or prevent resource conservation issues or issues of social, economic, or ecological concern identified by the Council. Examples of these issues include, but are not limited to, rebuilding stocks, achieving equitable resource allocation, increasing overall social and economic benefits, and providing for foreign and joint venture fishing for species not fully utilized by U.S. fish processors.

3. Based on the ABCs, recommend the establishment of either a numerical harvest guideline or quota for each species or species group requiring individual management.

4. Recommend the apportionment of numerical specifications between DAH, DAP, JVP, TALFF, and the reserve.

This chapter describes the steps in this process.

5.1 SAFE Document

For the purpose of providing the best available scientific information to the Council for developing ABCs, determining the need for individual species or species group management, setting and adjusting numerical harvest levels, assessing social and economic conditions in the fishery, and updating the appendices of this FMP, a SAFE document is prepared annually. Not all species and species groups can be reevaluated every year due to limited state and federal resources. However, the SAFE document will, at a minimum, contain the following information:

1. A report on the current status of Washington, Oregon, and California groundfish resources, by major species or species group.

2. Estimates of MSY and ABC for major species or species groups.

3. Catch statistics (landings and value).

4. Recommendations of species or species groups for individual management by harvest guidelines or quotas.

5. A brief history of the harvesting sector of the fishery.

6. A brief history of regional groundfish management.

7. A summary of the most recent economic information available, including number of vessels and economic characteristics by gear type.

8. Other relevant biological, social, economic and ecological information which may be useful to the Council.

The SAFE document is normally completed late in the year, generally late October, when the most current stock assessment and fisheries performance information is available. The Council will make the SAFE document available to the public by such means as mailing lists or newsletters, and will provide copies upon request.

5.2 Establishment and Adjustment of ABC

As part of the process of establishing annual specifications and apportionments described in Section 5.8, the Council will determine the annual ABC for each major species or species group. A detailed discussion of stock assessment techniques and available data used to determine ABC is provided in Appendix 11.1.2.1. MSY and exploitable biomass estimates are discussed in Appendix 11.1.3. ABCs, as defined in Section 2.2, do not act as harvest limits, but provide the biological basis for any numerical harvest levels that the Council recommends be established. ABCs may be established for the fishery management area as a whole or for specified subareas as appropriate. ABCs may be adjusted inseason only for the reasons specified in Section 5.9.1.

All ABCs will remain in effect until revised and, whether revised or not, will be announced at the beginning of each fishing year along with all other annual specifications. In some cases, there will be no new information on the condition of a species or species group. In other cases, new information might continue to support a previous assessment. Therefore, ABCs may remain unchanged over a period of years.

5.3 Identification of Species or Species Groups for Individual Management by Numerical Harvest Guideline or Quota

After reviewing the most current stock assessment information, considering public comment, and taking into account the goals and objectives of the FMP, the Council may determine that certain species or species groups require individual management by numerical harvest guidelines or quotas. Conversely, the Council may determine that a quota or harvest guideline is no longer necessary. Both harvest guidelines and quotas are harvest objectives for a specific species or species group. They are most commonly necessary when resource conservation concerns require the exercise of harvest restraint or when necessary to either apportion the resource to DAH, DAP, JVP, TALFF, and reserve, or to allocate the harvest among different segments of the fishery. They differ, however, in their application.

Harvest guidelines are specified numerical harvest objectives which differ from quotas in that closure of a fishery (i.e., prohibition of retention, possession or landing) is not automatically required upon attainment of a harvest guideline. A harvest guideline may be either a range or a point estimate.

Quotas are specified numerical harvest objectives the attainment of which results in automatic closure of the fishery for that species or species group. Retention, possession or landing of a species or species group after attainment of its quota is prohibited. A quota is a single numerical value, not a range.

Both harvest guidelines and quotas serve as harvest objectives which often require other management measures to be implemented to restrict the annual harvest to the desired level.

A harvest guideline or quota must be designated in order to determine JVP or TALFF for species which are surplus to domestic needs and which can be caught fairly selectively without impacting species which are fully utilized by the domestic industry.

Both harvest guidelines and quotas may be specified for the fishery management area as a whole or for specific subareas.

Before recommending that a species or species group be designated for individual management by either a harvest guideline or quota, the Council should determine whether one or more of the conditions listed below exists in the fishery.

1. Based on the most current stock assessment and expected harvest rates in the fishery, the species or species group is in need of special protection or more cautious exploitation than that provided by current management measures. An example of this consideration is the need to reduce harvests of a species or species group in order to maintain adherence to a stock rebuilding program or the expectation that harvest

rates will be sufficiently high, despite other types of management measures, to achieve or exceed ABC before the end of the year.

2. The species or species group can effectively be managed as a unit.

3. Based on the most current stock assessment and expected harvest rates in the fishery, failure to impose a numerical limitation would likely result in a "point of concern" (as defined in Chapter 6) being reached before the end of the year.

4. A harvestable stock surplus to domestic needs exists and the Council intends to recommend an apportionment of the numerical specification to JVP or TALFF. Any TALFF must be a quota. DAH, DAP and JVP may be either quotas or harvest guidelines. The apportionments to JVP and TALFF may be changed inseason due to reapportionment of the reserve and excess DAP or DAH consistent with the procedures in Section 5.9.3 or to changes in ABC resulting from correction of a technical error (see Section 5.9.1)

5. Through the framework processes described in section 6.2.3, the Council has recommended a direct allocation of the resource among different segments of the fishery.

5.4 Guidelines for Choosing Between a Harvest Guideline or Quota

Normally, the recommendation to manage a species or species group with a harvest guideline or quota will be made in conjunction with the ABC determination for the upcoming year. Harvest guidelines and quotas in effect at the end of the fishing year will carry over into the subsequent year in the absence of a recommendation for change by the Council.

Generally, a harvest guideline will be used rather than a quota when one or more of the following exists:

- a minimal level of additional protection or caution is believed to be sufficient;
- incidental catches in groundfish fisheries, or other fisheries not regulated by this FMP, are unavoidable and significant;
- unavoidable incidental catch would occur after a quota is reached and further landings are prohibited, resulting in the discard and wastage of significant quantities of fish;
- data are insufficient to adequately estimate status of stocks or inseason landings;
- harvest in excess of a harvest guideline is not expected to result in overfishing or to prevent adherence to a rebuilding program adopted by the Council and approved by the Secretary.

Generally a quota will be used rather than a harvest guideline when one or more of the following exists:

- It is necessary to prevent overfishing or to adhere to a rebuilding program adopted by the Council and approved by the Secretary.

- An overall quota is necessary to achieve resource allocations established through the frameworks described in Chapter 6.

As described in Chapter 1, unless otherwise specified by this amendment, all regulations and notices authorized by the original FMP and in effect at the time Amendment 4 is implemented are intended to continue in effect until changed. This includes the designation of species or species groups that are managed with a harvest guideline or quota. Under the original FMP, two species or species groups were managed by harvest guidelines and six species were managed by numerical OYs, or quotas. Consistent with the intent of this amendment and the original FMP, those species and species groups will continue to be managed as they have under the original FMP until such time as any changes are recommended by the Council and approved by the Secretary. A list of the species and species groups which initially will continue to be managed by harvest guidelines and quotas appears in Chapter 12.

It is expected that the Council will, from time to time, find it necessary to add new species or species groups, change quota managed species to harvest guideline management and the converse, revise areas to which harvest guidelines and quotas will apply, or remove some species from management by numerical specifications. All of these actions may be recommended provided they are consistent with the guidelines and procedures in this Amendment.

5.5 Guidelines for Determining the Numerical Specification of a Harvest Guideline or Quota

The determination of the actual numerical specification of a harvest guideline or quota is analogous to the determination of OY under the MFCMA and under the original FMP. The foundation for the Council's recommendation is the ABC for a species or species group. The numerical specification of a harvest guideline or quota is an adjustment from the ABC, either up or down, based upon social, economic, or ecological considerations. For example, the Council may recommend a harvest guideline or quota lower than ABC to speed up a stock rebuilding process or to account for estimates of discards. Conversely, the Council may recommend a numerical specification higher than ABC to mitigate abrupt adverse economic impacts in the face of the need to reduce harvests on a declining stock. However, if the Council chooses to recommend a harvest guideline or quota higher than ABC, it will consider the following factors in making its determination:

- Exploitable biomass and spawning biomass relative to MSY levels for the species or species group under consideration.

- Fishing mortality rate relative to MSY levels for the species under consideration.

- In the case of species normally taken in mixed catches, the relative contribution of the species to the total catch.

- The impact, if any, of the proposed increase on other groundfish species or species groups.

- The magnitude of incoming recruitment.

- The impact of harvest higher than ABC on the potential for future harvests to achieve the goals and objectives of the FMP.

The original FMP limited increases in OY, inseason and from year to year, to a maximum of 30 percent. Amendment 4 removes this restriction because it limited the Council's ability to utilize the best available biological information. Both ABC and numerical specifications based upon ABC should reflect the most current and best biological information as well as the most current information on the social and economic condition of the fishery.

In recommending a numerical specification, the Council generally will ensure the harvest at that level will prevent overfishing and that any stock rebuilding program adopted by the Council and approved by the Secretary is not adversely affected. However, as provided for in Chapter 4 and Sections 5.6 and 5.8, the Council may consider circumstances where reductions in future yield or even overfishing of a single species in a multiple species complex may be justified if increased benefits from the fishery as a whole will outweigh the loss from future reduced yield from the single species and the goals and objectives of the FMP can continue to be achieved in future years.

For species with harvest guidelines, the Council will monitor catch rates throughout the year and project when, and if, a harvest guideline will be reached. Upon determining that a harvest guideline is likely to be reached prematurely if harvest rates are not curtailed, a "point of concern" occurs, triggering a mandatory review of the stock status and harvest patterns as specified in Section 6.2.2. Based on the results of that review, the Council will recommend that continued harvest either be allowed with no additional restrictions, be allowed with additional restrictions to further reduce harvest, or be discontinued and the fishery closed.

5.6 Stock Rebuilding Programs [refer to original FMP Section 12.3.1.4.1, page 12-18]

When a stock falls below the level which will produce MSY, and is expected to stay below this level unless fishing mortality is reduced, the Council will review and determine if there is the need for more restrictive management measures (including harvest guidelines and quotas) to protect the stock and allow it to rebuild to more productive levels. Rebuilding objectives may be established by the Council on a case-by-case basis, taking into account the ABC, MSY, spawner recruit relationships, growth and maturation rates, age of recruitment, anticipated or assessed year class strength and age structure of the population, economic importance, and any other relevant social, economic, biological, or ecological factors. Appropriate measures to achieve the stated objectives will be determined by the Council based on those factors. More specific details relating to an operational definition of overfishing and the appropriate criteria, which might result in the Council being required to develop and implement a stock rebuilding program for stocks of Pacific coast groundfish, are currently being developed as Amendment 5 to this FMP in response to the NOAA Operational Guidelines (602 guidelines). Amendment 5 is required by the NOAA guidelines to be submitted for Secretarial review and approval by November 1990.

In certain limited situations a stock may be fished down to a spawning biomass below the level which will produce MSY and maintained at that level if justified in writing and approved by the Secretary (see Section 4.0). For example, harvesting the major components of the mixed fishery at the optimum level may result in the overfishing of a minor (smaller or less valuable) stock component in the fishery management unit. In this circumstance, the Council will evaluate whether some species may be underutilized and significant benefits to the fishery foregone if a rebuilding program were initiated. The Council may choose to not rebuild a stock back to the MSY level under this type of circumstance if it determines that significant benefits will be foregone by rebuilding, if the action will not cause any stock component to require protection under the Endangered Species Act (ESA), and if the choice is justified in writing and approved by the Secretary.

When the Council determines a rebuilding program is necessary, it shall develop a plan based upon the best available scientific information. The plan should specify the time required for rebuilding and anticipate, to the extent practicable, the harvest restrictions necessary to achieve rebuilding. The Council will hold public hearings on the plan which, if adopted, will be forwarded to the Secretary for review, approval, and implementation. The Secretary will publish a proposed rule implementing the plan in the Federal Register seeking public comment, following which, if approved, the Secretary will publish a final rule implementing the plan in the Federal Register.

In the event that the Secretary disagrees with the Council's recommended rebuilding program, he may recommend the Council consider alternative measures or provide a more complete rationale for the recommendation. The Council will consider the Secretary's comments and may reaffirm its choice of the proposed action and provide the requested justification, or may recommend alternative measures.

If the Council establishes a rebuilding program, it will periodically review the effectiveness of the rebuilding measures and may revise the measures or objectives, taking into account the best scientific information available.

Amendment 4 continues in effect a 20-year rebuilding program for Pacific ocean perch established by the original FMP. As discussed in Section 11.1.3.6, the abundance of Pacific ocean perch has been and continues to be below the level which will produce MSY. The initial rebuilding program relied on annual regulations, including quotas and trip limits, designed to implement the Council's policy of no directed fisheries for Pacific ocean perch during the rebuilding period while recognizing that some Pacific ocean perch will be taken in fisheries directed at other species. The quotas and trip limits in effect when Amendment 4 is implemented, which will continue in effect subject to adjustment in accordance with the provisions in Chapters 5 and 6, are intended to allow the retention only of amounts of Pacific ocean perch taken incidentally to fisheries for other groundfish species.

5.7 Establishing and Adjusting DAH, DAP, JVP, and TALFF Apportionments [refer to original FMP Section 10.2.1.3, page 10-4; Section 11.3, page 11-12]

In some cases, U.S. harvesting and/or processing capacity and intent may be insufficient to fully utilize all the fish that may be harvested. When the entire amount of fish available for harvest will not be caught by U.S. fishermen

and processed by U.S. (domestic) processors, and if it can be harvested without severely impacting another species that is fully utilized by the U.S. industry, any quantity of fish excess to DAP may be made available for JVP. If DAH (i.e., the sum of DAP and JVP) is less than the amount of fish available for harvest, any further remainder may be apportioned to the foreign directed fishery as TALFF. When it is determined that quantities of a species or species group exist which are surplus to domestic processing needs, the Council will consider recommending a numerical harvest guideline or quota for the purpose of further apportionment to DAH, DAP, JVP, TALFF, and the reserve.

Prior to the next year's fishing season (usually about September of the preceding year), NMFS will conduct a survey of domestic processors and joint venture operations to estimate processing capacity, planned utilization, and related information. The DAP, the estimate of domestic annual processing needs which is derived from the survey and subsequent public testimony, is subtracted first from the harvest guideline or quota. If after subtracting the DAP, any harvestable quantity of fish remains and is requested for joint venture operations, the amount requested may be specified for JVP after providing for the reserve. The sum of DAP and JVP is DAH, an estimate of the total domestic annual harvest. Any remainder may be made available for foreign fishing as TALFF. TALFF is only that quantity of fish surplus to DAH and the reserve. TALFF will always be a quota. DAH, DAP and JVP may be either a quota or harvest guideline.

A reserve will be set aside at the beginning of the year for any species with a JVP or TALFF. The reserve allows for uncertainties regarding estimates of DAP and DAH by providing a buffer for the domestic industry should its processing and harvesting needs exceed initial estimates. At the beginning of the year the reserve will equal 20 percent of the quota or harvest guide-line for a species unless DAP is greater than 80 percent of the harvest guideline or quota. In that case, the reserve will be the difference between the harvest guideline or quota and DAP. The reserve may be released during the year to DAH (DAP and/or JVP) or TALFF, with highest priority to DAP followed by JVP, and lastly, TALFF.

Generally, NMFS will present the results of the domestic and joint venture processing survey to the Council for consultation and public comment concurrent with the Council's consideration of annual specifications. The Council may adopt recommendations for annual apportionments for implementation in accordance with the annual procedures for developing and implementing annual specifications described in Section 5.8. Apportionments may be adjusted inseason following the procedures in Section 5.9.3. Incidental allowances for by-catch in the joint venture and foreign directed fisheries are discussed in Sections 6.3.5.3 and 6.3.6.3, respectively.

5.8 Procedure for Developing and Implementing Annual Specifications and Apportionments

Annually, the Council will develop recommendations for the specification of ABCs, identification of species or species groups for management by numerical harvest guidelines and quotas, specification of the numerical harvest guidelines and quotas, and apportionments to DAH, DAP, JVP, TALFF, and the reserve over the span of two Council meetings.

The Council will develop preliminary recommendations at the first of two meetings (usually in September) based upon the best stock assessment information available

to the Council at the time and consideration of public comment. After the first meeting, the Council will provide a summary of its preliminary recommendations and their basis to the public through its mailing list as well as providing copies of the information at the Council office and to the public upon request. The Council will notify the public of its intent to develop final recommendations at its second meeting (usually November) and solicit public comment both before and at its second meeting.

At its second meeting, the Council will again consider the best available stock assessment information which should be contained in the recently completed SAFE report and consider public testimony before adopting final recommendations to the Secretary. Following the second meeting the Council will submit its recommendations along with the rationale and supporting information to the Secretary for review and implementation.

Upon receipt of the Council's recommendations, supporting rationale and information, the Secretary will review the submission and, if approved, publish a notice in the Federal Register making the Council's recommendations effective January 1 of the upcoming fishing year.

In the event that the Secretary disapproves one or more of the Council's recommendations, he may implement those portions approved and notify the Council in writing of the disapproved portions along with the reasons for disapproval. The Council may either provide additional rationale or information to support its original recommendation, if required, or may submit alternative recommendations with supporting rationale. In the absence of an approved recommendation at the beginning of the fishing year, the current specifications in effect at the end of the previous fishing year will remain in effect until modified, superceded, or rescinded.

5.9 Inseason Procedures to Establish and Adjust Specifications and Apportionments

5.9.1 Inseason Adjustments to ABCs

Occasionally, new stock assessment information may become available inseason that supports a determination that an ABC no longer accurately describes the status of a particular species or species group. However, adjustments will only be made during the annual specifications process and a revised ABC announced at the beginning of the next fishing year. The only exception is in the case where the ABC announced at the beginning of the fishing year is found to have resulted from incorrect data or from computational errors. If the Council finds that such an error has occurred, it may recommend the Secretary publish a notice in the Federal Register revising the ABC at the earliest possible date.

5.9.2 Inseason Establishment and Adjustment of Harvest Guidelines and Quotas

Harvest guidelines may be established and adjusted inseason: (1) for resource conservation through the "points of concern" framework described in Chapter 6; (2) in response to a technical correction to ABC described in Section 5.9.1; or, (3) under the socio-economic framework described in Chapter 6.

Quotas, except for apportionments to DAH, DAP, JVP, TALFF, and reserve, may be established and adjusted inseason only for resource conservation or in response to a technical correction to ABC.

5.9.3 Inseason Apportionment and Adjustments to DAH, DAP, JVP, TALFF, and Reserve

It may become necessary inseason to adjust DAH, DAP, JVP, TALFF, and the reserve to respond to the establishment or adjustment of a harvest guideline or quota, revisions to ABC, an inseason reassessment of DAP and JVP needs, or an inseason release of the reserve. Estimates of the upcoming year's production by domestic processors are difficult to make accurately before the season begins. Processor survey responses are often optimistic and may not materialize during the year. Machinery installation delays, changes in markets, and better than normal alternative fisheries for the fishing fleets (or processors) may all affect their actual production. Therefore, a DAH reassessment process with a mechanism to make adjustments to apportionments within DAH (to DAP and/or JVP) or to TALFF, and to release the reserve is required to achieve full utilization of certain stocks and to insure the domestic processor preference intent of the MFCMA is met.

The original FMP specified that the reapportionment process would not start until after June 1 and reapportionments would not be released until after August 1 of any year. This schedule worked well when the foreign and joint venture fisheries for Pacific whiting began in April and ended in October and the reapportionment date corresponded with the midpoint of the fishery. In recent years, however, the foreign fishery has been displaced by the joint venture fishery and the joint venture season has shrunk to the point where the fishery in 1989 was over and the vessels had left for other fisheries before the reapportionment date. Thus, in order to fully utilize any surplus of Pacific whiting, for example, it is necessary to provide the latitude to reap-portion harvestable surpluses at other times of the year.

Thus, Amendment 4 revises the DAH reassessment process so it may be initiated at any time during the year that NMFS or the Council determines appropriate. The process begins with NMFS reassessing the needs of the domestic processing industry and updating its previous estimate of domestic processing intent.

Based upon this reassessment, all or part of the reserve may be apportioned among DAH, DAP, JVP, and TALFF with domestic needs met first (and with DAP having priority over JVP). If the domestic industry does not intend to harvest the entire reserve, the remainder may be made available to TALFF.

In addition to apportionment of the reserve, further adjustments may be made if the reassessment indicates that the domestic industry will not use the quantities designated for DAH. In this case, surplus DAP could be made avail-able to JVP, or surplus DAH to TALFF. This release would only be made if inseason performance of U.S. processors and harvesters was clearly expected to fall short of DAH estimates, and if the JVP and foreign harvesters indicated a desire to utilize amounts in excess of their initial apportionment.

Following reassessment of the DAH, the NMFS Regional Director will consult with the Council, if practicable, before publishing a notice in the Federal Register seeking public comment for a reasonable period of time on the proposed

adjustments to the apportionments. After receiving public comment, the Regional Director will publish a final notice in the Federal Register announcing the effectiveness of the adjustments.

Sometimes the pace of the fisheries may be so rapid that failure to act quickly to make adjustments to apportionments would ultimately result in the inability of the fishery to take advantage of an adjustment. For example, in 1990, as in 1989, the joint venture fishery for Pacific whiting is expected to occur very rapidly resulting in a season closure. At that point, the foreign processing vessels may leave to participate in other fisheries before an adjustment releasing additional fish to the JVP can be made through process described above. In such cases where rapid action is necessary to prevent underutilization of the resource, the Regional Director may immediately publish a notice in the Federal Register making the adjustments effective and seek public comment for a reasonable period of time afterwards. If insufficient time exists to consult with the Council, the Regional Director will inform the Council in writing of actions taken within two weeks of the effective date.

6.0 MANAGEMENT MEASURES

The regulatory measures available to manage the west coast groundfish fisheries include but are not limited to harvest guidelines, quotas, landing limits, frequency limits, gear restrictions (escape panels or ports, codend mesh size, etc.), time/area closures, prohibited species, bag and size limits, permits, other forms of effort control, allocation, reporting requirements, and onboard observers. This section of the FMP describes these measures and their general application for management of the groundfish fisheries in the Washington, Oregon, and California region.

The FMP, as amended, establishes the fishery management program and the process and procedures the Council will follow in making adjustments to that program. It also sets the limits of management authority of the Council and the Secretary when acting under the FMP. Management measures implementing the FMP, which directly control fishing activities, must be consistent with the goals and objectives of the FMP, the MFCMA, and other applicable law. Since the FMP provides several general framework procedures for making management decisions, not all management measures authorized by the FMP will be implemented at any given time. Management decisions made under the framework procedures outlined in the FMP are intended to be implemented without the need to amend the FMP.

Amendment 4 establishes two framework procedures through which the Council is able to recommend the establishment and adjustment of specific management measures for the Pacific coast groundfish fishery. The "points of concern" framework allows the Council to develop management measures that respond to resource conservation issues and the "socio-economic" framework allows the Council to develop management measures in response to social, economic, and ecological issues that affect the fishing community. Associated with each framework are a set of criteria which form the basis for Council recommendations and with which Council recommendations will be consistent.

Because the "points of concern" and "socio-economic" frameworks established by Amendment 4 both contain provisions that allow the establishment, modification, or removal of gear regulations, the gear regulatory framework established by Amendment 2 will become redundant and will be rescinded upon implementation of Amendment 4.

Amendment 4 also establishes a general process for developing and implementing management measures which normally will occur over the span of at least two Council meetings, with an exception that provides for more timely Council consideration under certain specific conditions. This process is explained in more detail in Section 6.2.

Amendment 4 contemplates that the Secretary will publish management measures recommended by the Council in the Federal Register as either "notices" or "regulations." Generally, management measures of broad applicability and permanent effectiveness are intended to be published as "regulations" while those measures more narrow in their applicability and which are meant to be effective only during the current fishing year, or even of shorter duration, and which might also require frequent adjustment, are intended to be published as "notices".

The NMFS Regional Director will review the Council's recommendation, supporting rationale, public comments and other relevant information, and, if it is approved, will undertake the appropriate method of implementation. Rejection of the recommendation will be explained in writing.

The procedures specified in this chapter do not affect the authority of the Secretary to take emergency regulatory action as provided for in Section 305(e) of the MFCMA if an emergency exists involving any groundfish resource, or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(g) of the MFCMA.

6.1 General List of Management Measures

In the early stages of fishery development, there is generally little concern with management strategies. As fishing effort increases, management measures become necessary to prevent overfishing and adverse social and economic impacts.

Recruitment, growth, natural mortality, and fishing mortality affect the size of fish populations. Fishing mortality is the only factor which can be effectively controlled in the ocean and therefore marine fishery management has focused primarily on measures which influence fishing mortality. The principal measures which traditionally have been used to control fishing mortality include, but are not limited to the following.

1. Mesh size
2. Landing limits and trip frequency limits
3. Quotas
4. Escape panels or ports
4. Size limits
5. Bag limits
6. Time/area closures
7. Other forms of effort control including limited access and other types of input controls on fishing gear such as restrictions on trawl size or longline length or number of hooks or pots
8. Allocation

The management measures discussed in this section do not include those additional measures necessary to monitor catch and effort or to enforce regulations. The need for management measures to monitor catch and effort in the fishery is discussed in a latter section of Chapter 6. Amendment 4, as does the original FMP, continues to authorize the promulgation of regulations necessary to enforce the provisions of the FMP and its implementing regulations through the appropriate rulemaking procedure described in Section 6.2. Although this document only discusses in detail those management measures just listed, other types of management measures may have valid applicability and are intended to be available to the Council providing their consideration is consistent with the criteria and general procedures contained in this FMP. An example of an untried management measure that holds some theoretical promise in addressing by-catch problems is the creation of an incentive program which rewards fishermen by granting access to a reserve quota if they have maintained a documented by-catch rate below a specified level.

6.1.1 Mesh Size

In net fisheries, a most common management measure applied world wide has been a minimum mesh size. By increasing or decreasing mesh size, it is possible to increase or decrease the size of fish retained in the net. Control over the size of entry into the fishery can ensure that sufficient numbers of immature fish pass through the net to protect the long-term productivity. Mesh size also can be adjusted to maximize the yield of certain species.

However, mesh size is not a panacea because a single mesh size is unlikely to provide the optimal age of recruitment for each species. In a multispecies fishery, a single mesh size will tend to overharvest some species while over protecting others. Ideally, the selected mesh size should tend to maximize the economic yield to the fishery over the longest period possible.

Mesh size in fish pots (traps) also affects the size of fish retained in the trap. By increasing the minimum mesh size in all or part of the trap, small fish may be allowed to escape.

6.1.2 Landing and Frequency Limits

A trip limit is the amount of groundfish that may be taken and retained, possessed or landed from a single fishing trip. Trip landing limits and trip frequency limits are used to control landings to delay achievement of a quota or harvest guideline and thus avoid premature closure of a fishery if it is desirable to extend the fishery over a longer time. Trip landing limits also can be utilized to minimize targeting on a species or species group while allowing landings of some level of incidental catch. Trip landing limits are most effective in fisheries where the fisher-man can control what is caught. In a multispecies fishery, trip limits can discourage targeting while, at the same time, providing for the landing of an incidental catch species which requires a greater degree of protection than the other species in the multispecies catch. Conversely, a trip limit may be necessary to restrict the overall multispecies complex catch in order to provide adequate protection to a single component of that catch.

6.1.3 Quotas

Quotas are specified harvest limits, the attainment of which causes closure of the fishery for that species or gear type. Quotas may be established for intentional allocation purposes, or to terminate harvest at a specified point. They may be specified for a particular area, gear type, time period, species or species group.

6.1.4 Escape Ports and Panels

Escape ports and panels are used in traps. Escape ports allow small fish to escape once caught in the trap. An escape panel is part of a trap which is constructed of biodegradable material or which is secured with biodegradable material. When the material degrades, it leaves a hole in the trap which allows fish to escape. Thus the panel prevents continued fishing if gear is lost or not attended for extended periods of time. Similarly, blowout panels could be used in a trawl fishery to limit the catch per haul.

6.1.5 Size Limits

Size limits are used to prevent the harvest of immature fish or those which have not reached their full reproductive capacity. In some cases, size limits are utilized in reverse to harvest younger recruit or prerecruits and protecting older, larger spawning stock. Generally, harvesting the larger members of the population tends to increase the yield by taking advantage of the combined growth of individual fish. Size limits can be applied to all fisheries but are generally used where fish are handled individually or in small groups such as trap-caught sablefish and recreational-caught fish. Size limits lose their utility in cases where the survival of the fish returned to the sea is low (e.g., rockfish).

6.1.6 Bag Limits

Bag limits have long been used in the recreational fishery and are perhaps the oldest method used to control recreational fishing. The intended effect of bag limits is to spread the available catch over a large number of anglers and to avoid waste.

6.1.7 Time/Area Closures (Seasons and Closed Areas)

Time/area closures have been used extensively to control human activity. This practice is used in forest management (controlled cutting) and fisheries (seasons and closed areas). Time/area closures have not been used extensively to regulate the domestic trawl, pot, or set line fisheries for groundfish species, except when the harvest limit has been reached.

Time/area closures are most applicable to species showing substantial changes in seasonal availability such as Pacific whiting, or area availability such as rockfish. In the case of whiting, the foreign fishery has been controlled by season (June 1 through October 31), area (no fishing within 12 miles of shore or south of 39°N latitude) and quota.

6.1.8 Other Forms of Effort Control

Effort limitation in its most general interpretation includes almost all measures to restrict fishing activities, including such measures as quotas, closures, seasons, and license limitation. The term is often used more specifically to characterize limited entry programs such as a limitation on the number of licenses or vessels, or individual transferable quotas. The number of participants in the Washington, Oregon, and California groundfish fishery has never been limited by regulation. However, the Council may determine that effective management of the fishery requires some form of effort limitation in order to protect the resource or to achieve the objectives of the FMP.

Other forms of effort controls commonly used include restrictions on the number of units of gear or restrictions on the size of trawls or length of longlines or the number of hooks or pots.

6.1.9 Allocation

Allocation is the apportionment of an item for a specific purpose or to a particular person or group of persons. Allocation of fishery resources may

result from any type of management measure, but is most commonly a numerical quota or harvest guideline for a specific gear or fishery sector. Most fishery management measures allocate fishery resources to some degree because they invariably affect access to the resource by different fishery sectors by different amounts. These allocative impacts, if not the intentional purpose of the management measure, are considered to be indirect, or unintentional, allocations. Direct allocation occurs when numerical quotas, harvest guidelines, or other management measures are established with the specific intent of affecting a particular group's access to the fishery resource.

Fishery resources may be allocated to accomplish a single biological, social or economic objective, or a combination of such objectives. The entire resource, or a portion, may be allocated to a particular group, although the MFCMA requires that allocation among user groups be determined in such a way that no group, person, or entity receives an undue share of the resource. The socio-economic framework described in Section 6.2.3 provides criteria for direct allocation. Allocative impacts of all proposed management measures should be analyzed and discussed in the Council's decision making process.

6.2 General Procedures for Establishing and Adjusting Management Measures

Management measures are normally imposed, adjusted, or removed at the beginning of the fishing year but may, if the Council determines it necessary, be imposed, adjusted or removed at any time during the year. Management measures may be imposed for resource conservation, social or economic reasons consistent with the criteria, procedures, goals, and objectives set forth in the FMP.

Because the potential actions which may be taken under the two frameworks established by Amendment 4 cover a wide range, analyses of biological, social, and economic impacts will be considered at the time a particular change is proposed. As a result, the time required to take action under either frame-work will vary depending on the nature of the action, its impacts on the fishing industry, resource, environment, and review of these impacts by interested parties. Satisfaction of the legal requirements of other applicable law (e.g., the Administrative Procedure Act, Regulatory Flexibility Act, Executive Order 12291, etc.) for actions taken under this framework requires analysis and public comment before measures may be implemented by the Secretary.

Amendment 4 establishes four different categories of management actions, each of which requires a slightly different process. According to the provisions of Amendment 4, management measures may be established, adjusted or removed using any of the four procedures. The four basic categories of management actions are as follows:

A. Automatic Actions - Automatic management actions may be initiated by the Regional Director without prior public notice, opportunity to comment, or a Council meeting. These actions are nondiscretionary and the impacts previously must have been taken into account. Examples include fishery, season, or gear type closures when a quota has been projected to have been attained. The Secretary will publish a single "notice" in the Federal Register making the action effective.

B. "Notice" Actions Requiring at Least One Council Meeting and One Federal Register Notice - These include all management actions other than "automatic"

actions that are either nondiscretionary or for which the scope of probable impacts has been previously analyzed.

These actions are intended to have temporary effect and the expectation is that they will need frequent adjustment. They may be recommended at a single Council meeting (usually November), although the Council will provide as much advance information to the public as possible concerning the issues it will be considering at its decision meeting. The primary examples are those management actions defined as "routine" according to the criteria in Section 6.2.1. These include trip landing and frequency limits for all gear types for widow rockfish, sablefish (including size limits), Pacific ocean perch, the Sebastes complex, nontrawl year-end trip limits for sablefish, and recreational bag limits for rockfish and lingcod. Previous analysis must have been specific as to species and gear type before a management measure can be defined as "routine" and acted upon at a single Council meeting. If the recommendations are approved, the Secretary will waive for good cause the requirement for prior notice and comment in the Federal Register and will publish a single "notice" in the Federal Register making the action effective. This category of actions presumes the Secretary will find that the extensive notice and opportunity for comment on these types of measures along with the scope of their impacts already provided by the Council will serve as good cause to waive the need for additional prior notice and comment in the Federal Register.

C. Abbreviated Rulemaking Actions Normally Requiring at Least Two Council Meetings and One Federal Register "Rule" - These include all management actions (1) being classified as "routine" or (2) intended to have permanent effect and are discretionary, and for which the impacts have not been previously analyzed. Examples include changes to or imposition of gear regulations, or imposition of landing or frequency limits for the first time on any species or species group, or gear type. The Council will develop and analyze the proposed management actions over the span of at least two Council meetings (usually September and November) and provide the public advance notice and opportunity to comment on both the proposals and the analysis prior to and at the second Council meeting. If the Regional Director approves the Council's recommendation, the Secretary will waive for good cause the requirement for prior notice and comment in the Federal Register and publish a "final rule" in the Federal Register which will remain in effect until amended. If a management measure is designated as "routine" by "final rule" under this procedure, specific adjustments of that measure can subsequently be announced in the Federal Register by "notice" as described in the previous paragraphs. Nothing in this section prevents the Secretary from exercising the right not to waive the opportunity for prior notice and comment in the Federal Register, if appropriate, but presumes that the Council process will adequately satisfy that requirement.

The primary purpose of the previous two categories of abbreviated notice and rulemaking procedures is to accommodate the Council's September-November meeting schedule for developing annual management recommendations, to satisfy the Secretary's responsibilities under the Administrative Procedures Act, and to address the need to implement management measures by January 1 of each fishing year.

It should be noted that the two Council meeting process refers to two decision meetings, the first meeting to develop proposed management measures and their alternatives, the second meeting to make a final recommendation to the Secretary.

For the Council to have adequate information to identify proposed management measures for public comment at the first meeting, the identification of issues and the development of proposals normally must begin at a prior Council meeting, usually the July Council meeting.

D. Full Rulemaking Actions Normally Requiring at Least Two Council Meetings and Two Federal Register Rules (Regulatory Amendment) - These include any proposed management measure that is highly controversial or any measure which directly allocates the resource. The Council normally will follow the two meeting procedure described for the abbreviated rulemaking category. The Secretary will publish a "proposed rule" in the Federal Register with an appropriate period for public comment followed by publication of a "final rule" in the Federal Register.

Management measures recommended to address a resource conservation issue must be based upon the establishment of a "point of concern" and consistent with the specific procedures and criteria listed in Section 6.2.2.

Management measures recommended to address social or economic issues must be consistent with the specific procedures and criteria described in Section 6.2.3.

6.2.1 Routine Management Measures

"Routine" management measures are those that the Council determines are likely to be adjusted on an annual or more frequent basis. Measures are classified as "routine" by the Council through either the full or abbreviated rulemaking process (C. or D. above). In order for a measure to be classified as "routine", the Council will determine that the measure is of the type normally used to address the issue at hand and may require further adjustment to achieve its purpose with accuracy.

As in the case of all proposed management measures, prior to initial implementation as "routine" measures, the Council will analyze the need for the measures, their impacts, and the rationale for their use. Once a management measure has been classified as "routine" through one of the two rulemaking procedures outlined above, it may be modified thereafter through the single meeting "notice" procedure (B. above) only if: (1) the modification is proposed for the same purpose as the original measure, and (2) the impacts of the modification are within the scope of the impacts analyzed when the measure was originally classified as "routine." The analysis of impacts need not be repeated when the measure is subsequently modified if the Council determines that they do not differ substantially from those contained in the original analysis. The Council may also recommend removing a "routine" classification.

Experience gained from management of the Pacific coast groundfish fishery indicates that certain measures usually require modification on a frequent basis to ensure that they meet their stated purpose with accuracy. These measures are commercial trip landing limits and trip frequency limits, including landing frequency and notification requirements and recreational bag limits as they have been applied to specific species, species groups, sizes of fish, and gear types. Their purpose in application to the commercial fishery has consistently been either to stretch the duration of the fishery so as not to disturb traditional fishing and marketing patterns, to reduce discards and wastage, or to discourage targeted fishing while allowing small incidental catches when attainment of a harvest guideline or quota is imminent. For the recreational fishery, bag and

size limits have been imposed to spread the available catch over a large number of anglers, to avoid waste, and to provide consistency with state regulations.

Accordingly, Amendment 4 initially classifies the measures listed below by species and gear type as "routine" measures due to the long history of their usage in the fishery and the extensive knowledge of their impacts. All of these measures are in effect for the 1990 season and their usage is expected to continue in the future. Amendment 4 eliminates specific recreational bag and size limits from the FMP, designates them as "routine," and contemplates their future implementation and adjustment through the appropriate regulatory process established by this amendment.

Trip Landing and Frequency Limits

Widow Rockfish - all gear
Sebastes Complex - all gear
Yellowtail Rockfish - all gear
Pacific Ocean Perch - all gear
Sablefish (including size limits)
trawl gear
nontrawl gear

Recreational Bag and Size Limits

Lingcod
Rockfish

Any measure designated as "routine" for one specific species, species group, or gear type may not be treated as "routine" for a different species, species group or gear type without first having been classified as "routine" through the rulemaking process.

The Council will conduct a continuing review of landings of those species for which harvest guidelines, quotas or specific "routine" management measures have been implemented, and will make projections of the landings at various times throughout the year. If in the course of this review it becomes apparent that the rate of landings is substantially different than anticipated and that the current "routine" management measures will not achieve the annual management objectives, the Council may recommend inseason adjustments to those measures. Such adjustments may be implemented through the single meeting "notice" procedure.

6.2.2 Resource Conservation Issues - The "Points of Concern" Framework [See old FMP Section 1.2, page 1-3; Section 9.3.1, page 9-11]

The "points of concern" process is the Council's second major tool (along with setting harvest levels) in exercising its resource stewardship responsibilities. The process is intended to foster a continuous and vigilant review of the Pacific coast groundfish stocks and fishery to prevent unintended overfishing or other resource damage. To facilitate this process a Council-appointed management team (the GMT) will monitor the fishery throughout the year, taking into account any new information on the status of each species or species group, to determine whether a resource conservation issue exists that requires a management response. The Council developed the "points of concern" criteria in the original FMP to

assist it in determining when a focused review on a specific species or species group is warranted which might result in the need to recommend the implementation of specific management measures to address the resource conservation issue. Amendment 4 modifies the procedure to eliminate the necessity for the Council to identify biological stress before recommending a management action, and provides the authority to act based solely on the "points of concern". This modification eliminates considerable confusion in the process because the condition of biological stress was undefined in the original FMP. Thus, Amendment 4 allows the Council to act more quickly and directly to a resource conservation issue. In conducting this review, the GMT will utilize the most current catch, effort, and other relevant data from the fishery.

In the course of the continuing review, a "point of concern" occurs when any one or more of the following is found or expected:

1. Catch for the calendar year is projected to exceed the best current estimate of ABC for those species for which a harvest guideline or quota is not specified;

2. Catch for the calendar year is projected to exceed the current harvest guideline or quota;

3. Any change in the biological characteristics of the species/species complex is discovered such as changes in age composition, size composition, and age at maturity;

4. Exploitable biomass or spawning biomass is below a level expected to produce MSY for the species/species complex under consideration; or

5. Recruitment is substantially below replacement level.

Once a "point of concern" is identified, the GMT will evaluate current data to determine if a resource conservation issue exists and will provide its findings in writing at the next scheduled Council meeting. If the GMT determines a resource conservation issue exists, it will provide its recommendation, rationale, and analysis for the appropriate management measures that will address the issue.

In developing its recommendation for management action, the Council will choose an action from one or more of the following categories which include the types of management measures most commonly used to address resource conservation issues.

- Harvest guidelines
- Quotas
- Cessation of directed fishing (foreign, domestic or both) on the identified species or species group with appropriate allowances for incidental harvest of that species or species group
- Size limits
- Landing limits
- Trip frequency limits
- Area or subarea closures
- Time closures
- Seasons

- Gear limitations, which include but are not limited to definitions of legal gear, mesh size specifications, codend specifications, marking requirements, and other gear specifications as necessary.
- Observer coverage
- Reporting requirements
- Permits
- Other necessary measures

Direct allocation of the resource between different segments of the fishery is, in most cases, not the preferred response to a resource conservation issue. Council recommendations to directly allocate the resource will be developed according to the criteria and process described in Section 6.2.3, the socio-economic framework.

After receiving the GMT's report, the Council will take public testimony and, if appropriate, will recommend management measures to the NMFS Regional Director accompanied by supporting rationale and analysis of impacts. The Council's analysis will include a description of (a) how the action will address the resource conservation issue consistent with the objectives of the FMP; (b) likely impacts on other management measures and other fisheries; and (c) economic impacts, particularly the cost to the commercial and recreational segments of the fishing industry.

The NMFS Regional Director will review the Council's recommendation and supporting information and will follow the appropriate implementation process described in Section 6.2 depending on the amount of public notice and comment provided by the Council and the intended permanence of the management action. If the Council contemplates the need for frequent adjustments to the recommended measures, it may classify them as "routine" through the appropriate process described in Section 6.2.1.

If the NMFS Regional Director does not concur with the Council's recommendation, the Council will be notified in writing of the reasons for the rejection.

Nothing in this section is meant to derogate from the authority of the Secretary to take emergency action under Section 305(e) of the MFCMA.

6.2.3 Non-Biological Issues--The Socio-Economic Framework

From time to time non-biological issues may arise which require the Council to recommend management actions to address certain social or economic issues in the fishery. Resource allocation, seasons, or landing limits based on market quality and timing, safety measures, and prevention of gear conflicts make up only a few examples of possible management issues with a social or economic basis. In general, there may be any number of situations where the Council determines that management measures are necessary to achieve the stated social and/or economic objectives of the FMP.

Either on its own initiative or by request, the Council may evaluate current information and issues to determine if social or economic factors warrant imposition of management measures to achieve the Council's established management objectives. Actions that are permitted under this framework include all of the categories of actions authorized under the "points of concern" frame-work with the addition of direct resource allocation.

If the Council concludes that a management action is necessary to address a social or economic issue, it will prepare a report containing the rationale in support of its conclusion. The report will include the proposed management measure, a description of other viable alternatives considered, and an analysis that addresses the following criteria: (a) how the action is expected to promote achievement of the goals and objectives of the FMP; (b) likely impacts on other management measures and other fisheries; (c) biological impacts; (d) economic impacts, particularly the cost to the fishing industry; and (e) how the action is expected to accomplish at least one of the following:

1. enable a quota, harvest guideline, or allocation to be achieved;
2. avoid exceeding a quota, harvest guideline, or allocation;
3. extend domestic fishing and marketing opportunities as long as practicable during the fishing year, for those sectors for which the Council has established this policy;
4. maintain stability in the fishery by continuing management measures for species that previously were managed under the points of concern mechanism;
5. maintain or improve product volume and flow to the consumer;
6. increase economic yield;
7. improve product quality;
8. reduce anticipated discards;
9. reduce gear conflicts, or conflicts between competing user groups;
10. develop fisheries for underutilized species with minimal impacts on existing domestic fisheries;
11. increase sustainable landings;
12. increase fishing efficiency;
13. maintain data collection and means for verification;
14. maintain or improve the recreational fishery; or,
15. any other measurable benefit to the fishery.

The Council, following review of the report, supporting data, public comment and other relevant information, may recommend management measures to the NMFS Regional Director accompanied by relevant background data, information and public comment. The recommendation will explain the urgency in implementation of the measure(s), if any, and reasons therefore.

The NMFS Regional Director will review the Council's recommendation, supporting rationale, public comments and other relevant information, and, if it is approved, will undertake the appropriate method of implementation. Rejection of the recommendation will be explained in writing.

The procedures specified in this chapter do not affect the authority of the Secretary to take emergency regulatory action as provided for in Section 305(e) of the MFCMA if an emergency exists involving any groundfish resource, or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(g) of the MFCMA.

If conditions warrant, the Council may designate a management measure developed and recommended to address social and economic issues as a "routine" management measure provided that the criteria and procedures in Section 6.2.1 are followed.

Quotas, including allocations, implemented through this framework will be set annually and may be modified inseason only to reflect technical corrections of

ABC. (In contrast, quotas may be imposed at any time of year for resource conservation reasons under the points of concern mechanism.)

6.2.3.1 Allocation

In addition to the requirements described in Section 6.2.3, the Council will consider the following factors when intending to recommend direct allocation of the resource.

a. present participation in and dependence on the fishery, including alternative fisheries;
b. historical fishing practices in, and historical dependence on, the fishery;
c. the economics of the fishery;
d. any consensus harvest sharing agreement or negotiated settlement between the affected participants in the fishery;
e. potential biological yield of any species or species complex affected by the allocation;
f. consistency with the MFCMA national standards;
g. consistency with the goals and objectives of this FMP.

The modification of a direct allocation cannot be designated as "routine" unless the specific criteria for the modification have been established in the regulations.

6.3 Other Management Measures

6.3.1 Generic

6.3.1.1 Observers [See old FMP Section 1.5.7, page 1-27; Section 12.3.5, page 12-46]

All fishing vessels operating in this management unit including catcher/processors, at-sea processors, and those vessels which harvest in the Washington, Oregon, and California area and land in another area, may be required to accommodate NMFS-certified onboard observers for the purposes of collecting scientific data. An observer program will be considered only for circumstances where other data collection methods are deemed insufficient for management of the fishery. Implementation of any observer program will be in accordance with appropriate federal procedures including economic analysis and public comment.

There may be a priority need for observers on at-sea processing vessels to collect data normally collected at shorebased processing plants. Certain information for management of the fishery can be obtained from logbooks and other reporting requirements, but the collection of some types of data would be too onerous for some fishermen to collect. Processing vessels must be willing to accommodate onboard observers and may be required to provide the NMFS-certified observers prior to issuance of any required federal permits.

Observers are required on foreign vessels operating in the EEZ according to the MFCMA. See Sections 6.3.5.9 and 6.3.6.9.

6.3.1.2 Habitat Protection [incorporated by Amendment 3]

Beginning in January 1989, the Marine Plastic Pollution Research and Control Act of 1987 (PL 100-220, MARPOL) restricted the dumping of gear or other material from domestic vessels. The Secretary, upon the recommendation of the Council, may propose additional management measures restricting disposal of fishing gear by domestic and foreign vessels. A description of the groundfish habitat and effects of habitat alteration, as required by the MFCMA, appear in Appendix 11.1.

6.3.1.3 Vessel Safety Considerations [incorporated by Amendment 3]

The Council will consider, and may provide for, temporary adjustments, after consultation with the U.S. Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safety of the vessels. A description of vessel safety considerations, as required by the MFCMA, appear in Appendix 11.6.

6.3.2. Domestic--Commercial

All measures, unless otherwise specified, apply to all domestic vessels regardless of whether catch is landed and processed on shore or processed at sea.

6.3.2.1 Permits (General)

All U.S. commercial fishing vessels are required by state laws to be in possession of a current fishing or landing permit from the appropriate state agency in order to land groundfish in the Washington, Oregon, and California area. Federal permits authorizing the harvest or processing of groundfish by U.S. vessels may be required under this FMP if necessary to obtain data that is not otherwise available and that is necessary for management of the fishery. In particular, federal permits may be required for domestic at-sea processors that do not land within the management area, or do not land often enough to provide landing reports in a timely manner for inseason management of the fishery. In the event that a federal fishing or access permit is required, failure to obtain and possess such a federal permit will be in violation of this FMP.

6.3.2.2 Catch Restrictions [See old FMP, Chapter 12; Amendments 1 and 2]

This amendment authorizes the commercial and recreational harvest of species listed in Chapter 3 of this plan, and provides for limiting the harvest of these species in Chapters 5 and 6. The specific catch restrictions on ground-fish currently in effect and intended to remain in affect when Amendment 4 is initially implemented, including limits on groundfish caught in non-groundfish fisheries, are referenced in Chapter 12. However, these catch restrictions may be modified under the framework provisions.

The catch restrictions imposed under Amendment 4 are the same as in the original FMP, as amended, with the exceptions explained below for sablefish and Pacific ocean perch.

Prohibited Species. It is unlawful under this FMP for any person to retain any species of salmonid or Pacific halibut caught by means of trawl fishing gear. State regulations prohibit the landing of crab incidentally caught in trawl gear off Washington and Oregon. However, trawl fishermen may land Dungeness crab in the State of California in compliance with the state landing law. Retention of salmonids and Pacific halibut caught by means of other groundfish fishing gear is also prohibited unless authorized by 50 CFR Parts 301, 371 or 661. Specifically, salmonids are prohibited species for longline and pot gear. Halibut may be retained and landed by troll and longline gear only during times and under conditions set by International Pacific Halibut Commission and/or other federal regulations. Salmon taken by troll gear may be retained and landed only as specified in troll salmon regulations. Species identified as prohibited must be returned to the sea as soon as practicable with a minimum of injury when caught and brought aboard, after allowing for sampling by an observer, if any. Exceptions may be made for the recovery of tagged fish.

Groundfish species or species groups under this FMP for which the quota has been reached shall be treated in the same manner as prohibited species.

This amendment authorizes the designation of other prohibited species in the future, or the removal of a species from this classification, consistent with other applicable law for that species.

Sablefish. Amendment 4 removes the provision in the FMP, as amended, which allocated the last 10 percent of the sablefish OY quota equally between trawl and fixed (pot and longline) gears, and imposed a trip limit on trawl landings equal to the average amount of sablefish in trawls containing sablefish.

This provision is removed because it proved to be too difficult to accurately predict the appropriate time to implement, it no longer reflects the current status of the resource or the fishery, and has been superseded by other management restrictions most years since its approval. First, it was difficult to project the 90 percent threshold and implement the allocations before the 90 percent level actually was reached. Similarly, five percent of the sablefish OY quota was too small an amount to monitor with accuracy for the two gear types, particularly as the OY declined over the years. The reason for allocating the last 10 percent of the OY is no longer relevant; it was intended to provide equitable opportunities for each gear type to finish up its season. But because only the last 10 percent was allocated, this regulation did not address the problems of increasing effort and dwindling quotas, and the potentially serious resource conservation concerns resulting from discards of sablefish caught unavoidably after the season was closed. Furthermore, the trawl trip limit did not specify which time period to consider and became inadequate as landings of both gear types competed for shrinking quotas.

This provision has been replaced during the last several years with restrictions allocating the entire resource between trawl and nontrawl gears, and by trawl trip limits that have reflected the most current conditions in the fishery. These measures will continue in effect with the implementation of Amendment 4 until such time as they are again revised.

Pacific Ocean Perch. The provision which sets the trip limit for Pacific ocean perch at 5,000 pounds or 10 percent (by weight) of all fish on board, whichever is greater, and the authority to change that trip limit to achieve the 20-year

rebuilding schedule for that species also is no longer needed. The trip limit has not been in effect since 1984, and is far too liberal in the current fishery. (At the beginning of 1990, the trip limit for Pacific ocean perch was set at 3,000 pounds or 20 percent [by weight] of all fish on board, whichever is less, in landings above 1,000 pounds.) The ability to modify a trip limit to achieve a rebuilding schedule is inherent in the points of concern and socio-economic frameworks of this amendment and no longer needs to be explicitly established for Pacific ocean perch in the FMP.

6.3.2.3 Gear Restrictions [see old FMP Section 1.4.1, page 1-6; set nets at Section 1.4.1.2, page 1-10; Amendment 2]

This plan authorizes the use of trawls, pots (traps), longlines, hook-and-line, and set nets (gill nets and trammel nets) as legal gear for the commercial harvest of groundfish. The use of set nets is prohibited in all areas north of 38°N latitude.

Implementation and modification of specific management measures regarding gear, such as definitions of legal gear, mesh size restrictions, codend size (length, diameter, or volume), chafing gear, gear marking, escape panels and ports, and the length of time gear may be left unattended, are authorized by this FMP. Gear restrictions may be established, modified, or removed under the points of concern or socio-economic frameworks described in Chapter 6. Any changes in gear regulations should be scheduled so as to minimize costs to the fishing industry, insofar as this is consistent with achieving the goals of the change.

The original FMP and implementing regulations, as amended, specified minimum mesh size and other gear restrictions, which are listed in Chapter 12 and which will remain in effect until modified under the procedures outlined in this FMP.

6.3.2.4 Reporting Requirements [see old FMP Sections 1.4.4, page 1-22; 10.2.1.4, page 10-4; 13.2.1, page 13-3]

Amendment 4 incorporates, with certain modifications discussed in the text, the past authorization for the DAH survey, EFP application, and foreign vessel reporting and recordkeeping requirements of the original FMP. Although this amendment authorizes domestic vessel permit applications and reporting requirements in the future, no new requirements are recommended for implementation concurrent with implementation of this Amendment.

Surveys to Determine DAH. Surveys of the domestic industry will be conducted biannually by NMFS, at the appropriate time determined by NMFS, to determine amounts of fish not needed by the domestic processing industry, which then may be made available to joint venture or foreign fishing, as described in Sections 5.8 and 5.9.3.

Permit Applications. Permit applications for the domestic groundfish fishery are authorized, but not required upon initial implementation of Amendment 4. Such applications may include vessel name, length, type, documentation number or state registration number, radio call sign, homeport, and capacity; owner or operator's name, mailing address, telephone number, and relationship of the applicant to the owner; type of fishing gear to be used, if any; signature of the applicant, and any other information found necessary for identification and registration of the vessel.

To date, federal permits for domestic groundfish vessels are required only for experimental fishing as provided in Chapter 7.

Other Reporting and Recordkeeping Requirements. Catch, effort, biological and other data necessary for implementation of this FMP will continue to be collected by the states of Washington, Oregon, and California under existing state data collection provisions. Federal reporting requirements will be implemented only when the data collection and reporting systems operated by state agencies fail to provide the Secretary with statistical information for adequate management.

Two major instances where state reporting requirements may be insufficient have been identified. The first is where a vessel harvests fish within the Washington, Oregon, and California management area but lands outside the management area. The second case occurs when a vessel (usually a processor) remains at sea for a long period of time before offloading its catch shore-side. In the first case, reporting of the harvest may never occur, which could affect stock assessments dependent on accurate catch information. In the second case, reporting frequently is delayed several weeks or even months. Delayed reporting could seriously hamper inseason management of quota and harvest guideline species.

To address these inadequacies, Amendment 4 authorizes implementation of federal reporting requirements in addition to those of the various states. (Such requirements will be announced in the Federal Resgister, but are not imposed by initial implementation of Amendment 4.) The owner or operator of any vessel that retains fish harvested in the area managed by this FMP whose port of landing is outside the management area may be required to report those catches in a timely manner. They also may be required to submit a completed fish landing ticket from either Washington, Oregon, or California, or an equivalent document containing all of the information required by the state on that fish ticket.

In addition, these vessels, or vessels that remain at sea for long periods of time (in particular, those that process their catch or the catch of another vessel at sea) may be required to report within a specified time period.

1. Vessel name
2. Radio call sign
3. Documentation number or federal permit number
4. Company representative and telephone, fax, and/or telex number
5. Vessel location including daily positions
6. Check-in and check-out reports giving the time, date, location of the beginning or ending of any fishing activity
7. Gear type
8. Reporting area and period
9. Duration of operation
10. Estimated catch by species and area, species disposition (including discards, product type, and weights)
11. Product recovery ratios, products sold (in weight and value by species and product type, and if applicable, size or grade)
12. Any other information deemed necessary for management of the fishery

These vessels also may be required to maintain and submit logbooks, accurately recording the following information in addition to the information listed above, and for a specified time period: daily and cumulative catch by species, effort,

processing, and transfer information; crew size; time, position, duration, sea depth, and catch by species of each haul or set; gear information; identification of catcher vessel, if applicable; information on other parties receiving fish or fish products; and any other information deemed necessary.

These vessels may be required to inform a NMFS enforcement or U.S. Coast Guard office prior to landing or offloading any seafood product. Such vessels may also be required to report prior to departing the Washington, Oregon, and California management area with fish or fish products on board.

The Council intends that any special reporting requirements will be imposed only if it could be expected to enhance the NMFS's ability to monitor the catch more accurately. It is also understood that any additional collection of information must be consistent with the requirements of the Paperwork Reduction Act (PRA).

6.3.2.5 Vessel Identification [see old FMP Section 1.4.6, page 1-23]

The FMP authorizes vessel identification requirements which may be modified as necessary to facilitate enforcement and vessel recognition. Current requirements appear in Chapter 12.

6.3.3 Domestic - Recreational (see old FMP Section 12.3.1.1, p. 12-11)

6.3.3.1 Permits (General)

All U.S. recreational fishermen are required by state laws to obtain a recreational permit or license in order to fish. In the event that a federal license or permit is required, failure to obtain and possess such federal permit will be in violation of this FMP.

6.3.3.2 Catch Restrictions

This FMP authorizes establishment of catch restrictions on the recreational fishery which are consistent with the goals and objectives of the FMP and the national standards established by the MFCMA. Any such catch restrictions will be established in accordance with the appropriate procedures in Sections 6.2.1, 6.2.2, or 6.2.3. Bag limits for lingcod and rockfish have been designated by Amendment 4 as "routine" management measures in Section 6.2.1. Concurrent with implementation of Amendment 4, bag limits will be announced for rockfish and lingcod by "notice" in the Federal Register in accordance with the procedures set forth in Section 6.2.

6.3.3.3 Gear Restrictions

Legal recreational gear are hook-and-line and spear.

6.3.4 Joint Venture--Domestic Vessels

U.S. vessels operating in joint ventures are domestic vessels and traditionally have been treated the same as U.S. vessels delivering shoreside. However, conditions in the fishery could warrant separate treatment in the future.

Although all U.S. vessels have been subject to the same regulations, joint venture catcher operations may be affected indirectly by restrictions (such as

closed areas) placed on the foreign processing vessels that receive U.S. catch at sea.

6.3.5 Joint Venture--Foreign Vessels

These measures apply to joint venture operations in which foreign processing vessels receive U.S.-caught fish at sea.

Management of the joint venture under Amendment 4 is the same as under the original FMP with the following exceptions: (1) in Section 6.3.5.5, the authority to establish, modify, or remove a season for the whiting joint venture is added; (2) in Section 6.3.5.5, the amendment provides the authority for area closures in the whiting joint venture, which may subsequently be modified or removed; (3) Section 6.3.5.5 also clarifies that the 39°N latitude southern boundary applies to joint ventures for species other than Pacific whiting, unless modified, consistent with the procedures in Sections 6.2.2 and 6.2.3; (4) in Section 6.3.5.3, the amendment provides authority for changing the way incidental retention limits are applied, which currently is to 5,000 mt increments of target species received; and (5) in Section 6.3.5.8, provisions for closing the joint venture fishery are changed to reflect the use of harvest guidelines and quotas.

6.3.5.1 Permits

All foreign vessels operating in this management area shall have on board a permit issued by the Secretary pursuant to the MFCMA.

6.3.5.2 Target Species

A foreign nation may conduct joint venture operations only for species for which there is a JVP and which that nation is authorized to receive by its vessel permit.

6.3.5.3 Incidental Catch

Incidental catch refers to groundfish species which are unavoidably caught while fishing for the authorized target species. It is recognized that catches of species that are fully utilized by the domestic processing industry will occur and are unavoidable in joint venture fisheries for Pacific whiting. The Council has adopted the policy originally established by the Trawl PMP to allow minimal incidental allowances which are consistent with the status of the stocks and the efficiency of the joint venture fisheries. These incidental allowances are not to be considered as surpluses to domestic processing needs (i.e., JVPs) and are allowed to provide for full utilization of the authorized target species.

Unless otherwise specified, incidental allowances for bycatch in the joint venture fishery are percentages that determine the amount that may be retained in the joint venture. Incidental allowances may be established or changed at any time during the year, but are published at least annually, concurrent with the annual specifications of JVP.

The Council may choose to use factors other than percentages in specifying incidental allowances or may change the way incidental allowances are applied (for example, to 5,000 mt increments of Pacific whiting received in the joint venture, or based on specified retention amounts).

The Regional Director may establish or modify incidental species allowances to reflect changes in the condition of the resource and performance of the U.S. industry. The Regional Director will consult with the Council, consider public testimony received, and consider the following factors before establishing or changing incidental allowances: (1) observed rates in the previous joint venture; (2) current estimates of relative abundance and availability of species caught incidentally; (3) ability of the foreign vessels to take the JVP; (4) past and projected foreign and U.S. fishing effort; (5) status of stocks; (6) impacts on the domestic industry; and (7) other relevant information. Changes will be made following the same procedures as for annual or inseason changes to the specifications in Chapter 5.

The incidental retention percentages that applied to the joint venture for Pacific whiting in 1990 appear in Chapter 12.

6.3.5.4 Prohibited Species

Prohibited species means salmonids, Pacific halibut, Dungeness crab, and any species of fish which that vessel is not specifically authorized to retain, including fish received in excess of any authorization, landing limit, or quota. These species must be immediately returned to the sea with a minimum of injury after allowing for sampling by an observer, if any. This amendment authorizes the designation of other prohibited species in the future, or the removal of a species from this classification if consistent with the applicable law for that species.

6.3.5.5 Season and Area Restrictions

Season. There is no season restriction, unless otherwise specified according to this FMP.

Area. The joint venture fishery for Pacific whiting may not be conducted south of 39°N latitude. Unless otherwise specified, joint venture fisheries for other species are prohibited south of 39°N latitude as well.

Season and area restrictions for foreign vessels operating in a joint venture (including additional area restrictions for the Pacific whiting joint venture) may be established, modified, or removed at any time during the year in accordance with the procedures in Sections 6.2.2 and 6.2.3 or by foreign vessel permit conditions.

Current season and area restrictions on the joint venture fishery for Pacific whiting, effective in 1990 and which will carry over with the implementation of Amendment 4, appear in Chapter 12, and incorporate provisions from the original FMP and its implementing regulations at 50 CFR Part 611.

6.3.5.6 Reporting and Recordkeeping Requirements

Foreign nations receiving U.S. harvested fish in a joint venture are required to submit detailed reports of fishing effort, location, amount, and disposition of species received by species or species group, and transfer of fish or fish products, as needed for monitoring and management of the fishery. Unless otherwise specified, reports of the receipt of U.S. harvested fish must be submitted weekly. The Regional Director may require daily reports when

90 percent of the JVP or of an incidental allowance is reached. In addition, each country must report the arrival, departure, and positions of each of its vessels, as specified under the regulations and permit conditions, as needed for monitoring deployment of the fleet.

Logbooks are required under 50 CFR Part 611 to fulfill the fishery conservation, management, and enforcement purposes of the MFCMA. These logs include a communications log, transfer log, and daily joint venture log which record haul by haul and daily receipt, effort, and production information.

6.3.5.7 Dumping [see old FMP Section 1.5.8, page 1-27]

Foreign vessels are prohibited from dumping pollutants and fishing gear which would degrade the environment or interfere with domestic fishing operations.

6.3.5.8 Fishery Closure

The joint venture fishery shall cease each year when (a) the JVP quota for the target species has been received; (b) the overall quota or harvest guideline for the target species is reached; (c) the applicable open season has ended, if any; or (d) as necessary for resource conservation reasons under the points of concern mechanism.

6.3.5.9 Observers

Observers shall be placed on each foreign processing vessel while it is operating in the joint venture, as provided by Title II of the MFCMA. The law provides for the following exceptions to this requirement:

1. if an observer is aboard the mothership(s) of a mothership/catcher vessel fleet;

2. if the vessel is in the EEZ for such a short time than at observer would be impractical;

3. if facilities for quartering an observer are inadequate or unsafe;

4. for reasons beyond the control of the Secretary an observer is not available.

6.3.5.10 Other Restrictions

The Secretary may impose additional requirements for the conservation and management of fishery resources covered by the vessel permit or for national defense or security reasons. These restrictions include, but are not limited to, season, area, and reporting requirements.

The highest priority of this FMP is to provide for conservation of the resource. Any restriction on the joint venture fishery may be modified under the points of concern mechanism for resource conservation reasons.

6.3.6 Foreign--Commercial

These measures apply to foreign vessels that operate in a fishery directed on an allocated species for which there is a TALFF. This is a foreign operation in which foreign vessels both catch and process the fish, and often is called the "directed foreign fishery" or the "foreign trawl fishery".

Management of the directed foreign fishery under Amendment 4 is the same as under the original FMP with the following exceptions. (1) Section 6.3.6.5 provides authority for modifying the June 1 through October 31 season for the foreign fishery for Pacific whiting, consistent with the FMP's implementing regulations; (2) Section 6.3.6.5 provides for additional area restrictions in the foreign fishery for Pacific whiting, which subsequently may be modified or removed; (3) Section 6.3.6.5 clarifies that seasons and areas for non-whiting foreign fisheries are the same as for the Pacific whiting fishery, unless modified, consistent with the FMP's implementing regulations; and, (4) In Section 6.3.6.8, fishery closure provisions have been changed to reflect the use of harvest guidelines and quotas under Amendment 4.

6.3.6.1 Permits

All foreign vessels operating in this management area shall have on board a permit issued by the Secretary pursuant to the MFCMA.

6.3.6.2 Target Species

Target fishing is allowed only for species for which the foreign nation has received an allocation of TALFF.

6.3.6.3 Incidental Catch

Incidental catch refers to groundfish species which are unavoidably caught while fishing for the allocated target species. It is recognized that catches of species that are fully utilized by the domestic fishing industry will occur and are unavoidable in foreign fisheries for Pacific whiting. The Council has adopted the policy originally established by the Trawl PMP to allow minimal incidental allowances which are consistent with the status of the stocks and the efficiency of the foreign fishery. These incidental allowances are not to be considered as surpluses to domestic fishermen's needs (i.e., TALFFs) and are allowed to provide for full utilization of the allocated target species.

Unless otherwise specified, incidental allowances for bycatch in the foreign fishery are percentages that determine the amount that may be caught in the foreign fishery. Incidental allowances may be established or changed at any time during the year, but are published at least annually, concurrent with the annual specifications of TALFF.

The Council may choose to use factors other than percentages in specifying incidental allowances or may change the way incidental allowances are applied (for example, based on specified catch amounts).

The Regional Director may establish or modify incidental species allowances to reflect changes in the condition of the resource and performance of the U.S.

industry. The Regional Director will consult with the Council, consider public testimony received, and consider the following factors before establishing or changing incidental allowances: (1) observed rates in the previous foreign directed fishery; (2) current estimates of relative abundance and availability of species caught incidentally; (3) ability of the foreign vessels to take the TALFF; (4) past and projected foreign and U.S. fishing effort; (5) status of stocks; (6) impacts on the domestic industry; and (7) other relevant information. Changes will be made following the same procedures as for annual or inseason changes to the specifications in Chapter 5.

Incidental catch percentages that would have applied to foreign fishing for Pacific whiting in 1990 appear in Chapter 12 (although no foreign fishery is expected in 1990).

6.3.6.4 Prohibited Species

Prohibited species means salmonids, Pacific halibut, Dungeness crab, and any species of fish which that vessel is not specifically permitted to retain, including fish received in excess of any allocation. These species must be immediately returned to the sea with a minimum of injury after allowing for sampling by an observer, if any. This amendment authorizes the designation of other prohibited species in the future, or the removal of species from this classification if consistent with the applicable law for that species.

6.3.6.5 Season, Area, and Gear Restrictions [old FMP Sections 1.5.5, 12.3.5]

Season. The season for the foreign fishery (any species) is June 1 to October 31, unless otherwise specified under the framework procedures of this amendment.

Area. The directed fishery for Pacific whiting may not be conducted in the following areas:

- south of 39°N latitude;
- north of 47°30'N latitude;
- shoreward of 12 nautical miles from shore;
- in the Columbia River Recreational Fishery Sanctuary (described in Chapter 12); or,
- in the Klamath River Sanctuary (described in Chapter 12).

Unless otherwise specified, the area restrictions listed above for the Pacific whiting fishery also apply to foreign fisheries for other species. (The sanctuaries may be removed, renamed, or coordinates refined, as needed.)

Gear. Unless otherwise specified, gear used in the directed foreign fishery (for any species) is an off-bottom (pelagic) trawl with minimum mesh size of 100 mm (3.92 inches) between opposing knots. Chafing gear may be used with this net if: the mesh size of the chafing gear is at least two times the mesh of the inner codend; it is aligned knot-to-knot to the inner net and tied to the straps and riblines; and, it is not connected directly to the terminal end of the codend. Fishing on-bottom or use of liners or any other method which would have the effect of reducing the mesh size in the codend are not allowed.
Season, area and gear restrictions for a directed foreign fishery (including additional area restrictions on the Pacific whiting fishery) may be established,

modified or removed at any time in accordance with the procedures in Sections 6.2.2 and 6.2.3 or by vessel permit condition.

Season, area, and gear restrictions that would have applied to foreign fishing in 1990 appear in Chapter 12 (although no foreign fishery is expected in 1990).

6.3.6.6 Reporting and Recordkeeping Requirements [reference 611.4, 611.9, 611.70, permits]

Foreign nations operating in the directed fishery are required to submit detailed reports of fishing effort, location, amount and disposition of catch by species or species group, and transfer of fish or fish products, as needed for monitoring and management of the fishery. Unless otherwise specified, catch reports must be submitted weekly. The Regional Director may require daily reports when 90 percent of a nation's fishing allocation or incidental allowance for any species or species group is reached. In addition, each country must report the arrival, departure and positions of each of its vessels, as specified under the regulations and permit conditions, as necessary for monitoring deployment of the fleet.

Logbooks are required to fulfill the fishery conservation, management and enforcement purposes of the MFCMA. These logs may include a communications log, transfer log, and daily catch log which record haul by haul and daily catch, effort, and production information.

6.3.6.7 Dumping [see old FMP Section 1.5.8, page 1-27]

Foreign vessels are prohibited from dumping pollutants and fishing gear which would degrade the environment or interfere with domestic fishing operations.

6.3.6.8 Fishery Closure

The directed foreign fishery shall cease each year when: (a) that nation's allocation of TALFF is reached, (b) the maximum incidental catch allowance for that nation of any species or species group is reached, (c) the overall quota or harvest guideline for the allocated species is reached, (d) the applicable open season is ended, or (e) as necessary for resource conservation reasons under the points of concern mechanism.

6.3.6.9 Observers

The requirement to carry observers on foreign catcher vessels is the same as for joint venture processing vessels (Section 6.3.5.11).

6.3.6.10 Other Restrictions

The imposition of additional requirements for the conservation and management of fishery resources covered by the vessel permit, or for national defense or security reasons, is the same as for the joint venture fishery (Section 6.3.5.10).

The highest priority of this FMP is to provide for conservation of the resource. Any restriction on the foreign fishery may be modified under the points of concern mechanism for resource conservation reasons.

6.3.7 Foreign--Recreational

Foreign recreational fishing refers to any fishing from a foreign vessel not operated for profit or scientific research, and may not involve the sale, barter, or trade of any part of the catch. This FMP authorizes establishment of catch restrictions on the foreign recreational fishery which are consistent with the goals and objectives of the FMP and the national standards established by the MFCMA.

6.3.8 Access Limitation [see old FMP Section 12.1, page 12-7]

The current condition of the groundfish fisheries of the Washington, Oregon, and California region is such that limited entry may be required in the near future. Both foreign and domestic vessels may be affected. Research and monitoring programs may need to be developed and implemented for the fishery so that information required in a limited entry program is available. Such data should indicate the character and level of participation in the fishery, including: (1) investment in vessel and gear; (2) the number and type of units of gear; (3) the distribution of catch; (4) the value of catch; (5) the economic returns to the participants; (6) mobility between fisheries; and (7) various social and community considerations.

7.0 EXPERIMENTAL FISHERIES
[Section 1.4.5, page 1-22; 13.6, page 13-12]

Among the objectives of this FMP is to provide for the orderly development of the domestic groundfish fisheries, including promotion of new domestic fisheries, or otherwise contribute to effective management of the stock. In order to accomplish this objective, it is desirable to permit limited domestic experimental fishing (recreational or commercial) for groundfish species covered by this plan. This provision is intended to promote increased utilization of underutilized species, realize the expansion potential of the domestic groundfish fishery, and increase the harvest efficiency of the fishery consistent with the MFCMA and the management goals of this FMP. Experimental fishing will be conducted under EFPs issued under Section 303(b)(1) of the MFCMA.

The Regional Director may authorize, for limited experimental purposes, the targeted or incidental harvest of groundfish managed under this FMP which would otherwise be prohibited. No experimental fishing may be conducted unless authorized by an EFP issued by the Regional Director to the participating vessel in accordance with the criteria and procedures specified in this section. EFPs will be issued without charge. An applicant for an EFP need not be the owner or operator of the vessel(s) for which the EFP is requested. Nothing in this section is intended to inhibit the authority of the Council or any other fishery management entity from requesting that the Regional Director consider issuance of EFPs for a particular experiment in advance of the Regional Director's receipt of applications for EFPs to participate in that experiment.

Criteria and procedures for the issuance of EFPs are:

1. Applicants must submit a completed application in writing to the Regional Director at least 60 days prior to the proposed effective date of the permit. The application must include, but is not limited to, the following information:

   a. The date of the application;
   b. The applicant's name, mailing address, and telephone number;
   c. A statement of the purposes and goals of the experiment for which an EFP is needed, including a general description of the arrangements for disposition of all species harvested under the EFP;
   d. Valid justification explaining why issuance of the EFP is warranted;
   e. A statement of whether the proposed experimental fishing has broader significance than the applicant's individual goals;
   f. For each vessel to be covered by the EFP:
      (1) vessel name;
      (2) name, address, and telephone number of owner and master;
      (3) U.S. Coast Guard documentation, state license, or registration number;
      (4) home port;
      (5) length of vessel;
      (6) net tonnage;
      (7) gross tonnage;
   g. A description of the species (target and incidental) to be harvested under the EFP and the amount(s) of such harvest necessary to conduct the experiment;

h. For each vessel covered by the EFP, the approximate time(s) and place(s) fishing will take place, and the type, size and amount of gear to be used; and

i. The signature of the applicant.

The Regional Director may request from an applicant additional information necessary to make the determinations required under this section.

2. The Regional Director will review each application and will make a preliminary determination whether or not the application contains all of the required information and constitutes a valid experimental program appropriate for further consideration. If the Regional Director finds any application does not warrant further consideration, he shall notify both the applicant and the Council in writing of the reasons for his decision. If the Regional Director determines any application warrants further consideration, he will publish a notice of receipt of the application in the Federal Register with a brief description of the proposal, and will give interested persons an opportunity to comment. The notice may establish a cut-off date for receipt of additional applications to participate in the same or a similar experiment.

   The Regional Director also will forward copies of the application to the Council, the U.S. Coast Guard, and the fishery management agencies of Oregon, Washington, California, and Idaho, accompanied by the following information:

   a. The current utilization of domestic annual harvesting and processing capacity (including existing experimental harvesting, if any) of the target and incidental species;
   b. A citation of the regulation or regulations which, absent the EFP, would prohibit the proposed activity; and
   c. Biological information relevant to the proposal.

3. At a Council meeting following receipt of a complete application, the Regional Director may choose to consult with the Council and the directors of the state fishery management agencies concerning the permit application. The Council shall notify the applicant in advance of the meeting, if any, at which the application will be considered and invite the applicant to appear in support of the application if the applicant desires.

4. As soon as practicable after receiving responses from the agencies identified above, or after consultation, if any, in paragraph 3 above, the Regional Director shall notify the applicant in writing of his decision to grant or deny the EFP, and, if denied, the reasons for the denial. Grounds to deny issuance of an EFP include, but are not limited to, the following:

   a. The applicant has failed to disclose material information required, or has made false statements as to any material fact, in connection with his application; or

b. According to the best scientific information available, the harvest to be conducted under the permit would detrimentally affect any species of fish in a significant way; or
c. Issuance of the EFP would inequitably allocate fishing privileges among domestic fishermen or would have economic allocation as its sole purpose; or
d. Activities to be conducted under the EFP would be inconsistent with the intent of this section or the management objectives of this FMP;
e. The applicant has failed to demonstrate a valid justification for the permit; or
f. The activity proposed under the EFP could create a significant enforcement problem.

5. If the permit is granted, the Regional Director will publish a notice in the Federal Register describing the experimental fishing to be conducted under the EFP. The Regional Director may attach terms and conditions to the EFP consistent with the purpose of the experiment, including, but not limited to:

a. The maximum amount of each species which can be harvested and landed during the term of the EFP, including trip limitations, where appropriate;
b. The number, size, names, and identification numbers of the vessels authorized to conduct fishing activities under the EFP;
c. The time(s) and place(s) where experimental fishing may be conducted;
d. The type, size, and amount of gear which may be used by each vessel operated under the EFP;
e. The condition that observers be allowed aboard vessels operated under an EFP;
f. Reasonable data reporting requirements;
g. Such other conditions as may be necessary to assure compliance with the purposes of the EFP consistent with the objectives of this FMP; and,
h. provisions for public release of data obtained under the EFP.

6. Failure of a permittee to comply with the terms and conditions of an EFP shall be grounds for revocation, suspension, or modification of the EFP with respect to all vessels conducting activities under that EFP. Any action taken to revoke, suspend, or modify an EFP shall be governed by 15 CFR, Part 904, Subpart D.

8.0 SCIENTIFIC RESEARCH

Nothing in this FMP is intended to inhibit or prevent any scientific research involving groundfish which is acknowledged by the Secretary or his delegee, and is to be conducted in the fishery management area by a scientific research vessel or a commercial vessel contracted to carry out scientific research.

Activity should not be acknowledged as scientific research unless it is submitted in writing to the Secretary or his delegee in the form of a research proposal which addresses all of the factors below. An activity may be acknowledged as scientific research if its primary objective, purpose, or product is the acquisition of data, information, or knowledge as determined by consideration of all of the following factors:

1. clearly researchable subject matter exists which will result in information useful for scientific or management purposes;

2. the application of existing knowledge alone is insufficient to solve the scientific or management subject presented by the scientific research proposal;

3. facts/data/samples will be collected or observed and analyzed in a scientifically acceptable manner and the results will be formally prepared and available to the public; and

4. recognized scientific experts, organizations, or institutions with expertise in the field or subject matter area are sponsoring or are otherwise affiliated with the activity.

Secretarial Acknowledgment of Scientific Research.

1. If the Secretary or his delegee agrees that an activity constitutes scientific research involving groundfish, a letter of acknowledgment should be issued to the operator or master of the vessel conducting the scientific research.

2. The letter will include information on the purpose, scope, location, and schedule of the acknowledged activities.

3. Any activities not in accordance with the letter of acknowledgment should be subject to all provisions of the MFCMA and its implementing regulations.

4. The Secretary or his delegee should transmit copies of letters of acknowledgment to the Council and to state and federal administrative and enforcement agencies to ensure they are aware of the research activities.

Groundfish taken under the scientific research exclusion may be sold to offset all or part of the cost of carrying out the research plan including costs associated with operating the research vessel.

9.0 RESTRICTIONS ON OTHER FISHERIES
[Section 1.4.3, page 1-20; Section 12.3.3, page 12-30]

For each non-groundfish fishery considered, a reasonable limit on the incidental groundfish catch may be established that is based on the best available information (from EFPs, logbooks, observer data, or other scientifically acceptable sources). These limits will remain unchanged unless substantial changes are observed in the condition of the groundfish resource or in the effort or catch rate in the groundfish or non-groundfish fishery.

Incidental limits or species categories may be imposed or adjusted in accordance with the appropriate procedures described in Chapter 6. The Secretary may accept or reject but not substantially modify the Council's recommendations. The trip limits for the pink shrimp and spot and ridgeback prawn fisheries in effect when Amendment 4 is implemented will be maintained until modified based on the above criteria through the management adjustment framework.

The objectives of this framework are to:

- Minimize discards in the non-groundfish fishery by allowing retention and sale, thereby increasing fishing income;
- Discourage targeting on groundfish by the non-groundfish fleet; and,
- Reduce the administrative burden of reviewing and issuing EFPs for the sole purpose of enabling non-groundfish fisheries to retain groundfish.

10.0 PROCEDURE FOR REVIEWING STATE REGULATIONS

10.1 Background

There are and will continue to be state regulations affecting groundfish fisheries off the west coast which are in addition to federal regulations. This potential extends to waters off all three west coast states, to all gear types, and to both the commercial and recreational fisheries. In some cases, it may be desirable to ensure consistency between state and federal regulations by implementing federal regulations that complement state regulations. In other cases, the Council may determine that federal regulations are not necessary to complement state regulations, but wish to assure a state that its regulations are consistent with the FMP insofar as they are applied to vessels registered in that state when fishing in the EEZ. Amendment 4 addresses this need by establishing a framework review process by which any state may petition the Council to initiate a review of its regulations, determine consistency with the FMP, and, if appropriate, recommend the implementation of complementary federal regulations.

For example, current regulations implementing the FMP prohibit the use of set nets (gill and trammel nets) to catch groundfish in waters north of 38°N latitude. The purpose of this regulation is to prevent the incidental take of salmon. South of 38°N latitude, set net gear is used primarily by small vessel fishermen to catch California halibut, white croaker, and rockfish. Only rockfish are included in the groundfish fishery management unit. Fishing for these species, which mainly are taken inshore, is regulated by the State of California. Thus, some of the set net fisheries regulated by the state harvest species of groundfish which are also managed under this FMP.

When the FMP was developed and approved by the Secretary, the Council acknowledged that the State of California was regulating the set net fishery off central and southern California. It was the Council's desire that state regulations regarding set nets also be applicable to vessels fishing in the EEZ to the extent that each state regulation was consistent with the goals of the FMP and the national standards of the MFCMA. The Council realized that it would be difficult to apply state regulations to non-California registered vessels in the EEZ. However, this was not considered a significant problem because most vessels in the fishery were registered in the State of California and were subject to its regulations even when fishing in the EEZ. Federal regulations were not considered necessary.

For a variety of reasons, California set net regulations have changed several times over the years. However none of these changes have been formally reviewed to determine if they remain consistent with the FMP and the national standards of the MFCMA. A system is required to determine consistency of state regulations with the FMP and the national standards to ensure the regulations continue to be enforceable against vessels fishing in the EEZ.

California is not the only state that has regulations which are applicable to its registered vessels fishing in the EEZ but which are not duplicated by federal regulations. Here again, a system is required to determine consistency of these state regulations with the FMP and the national standards to ensure that the state regulations are enforceable.

Amendment 4 establishes a framework review process by which any state may obtain a determination that its regulations are consistent with the FMP and the national standards. As necessary, the Council may also recommend to the NMFS that duplicate or different federal regulations be implemented in the EEZ. While the Council retains the authority to recommend federal regulations be implemented in the EEZ, the preference is to continue to rely on state regulations in that area as long as they are consistent with the FMP.

While states are not required to submit regulations which they wish to apply in the EEZ to the Council for a consistency determination, regulations which have not received a consistency determination run the risk of being declared inconsistent and invalid if challenged in a state law enforcement proceeding. The Council invites submission of all present and future state fishery regulations relating to the harvest of species managed under this FMP which are to apply in the EEZ.

10.2 Review Procedure

Any state may propose that the Council review a particular state regulation for the purpose of determining its consistency with the FMP and the need for complementary federal regulations. Although this procedure is directed at the review of new regulations, existing regulations affecting the harvest of groundfish managed by the FMP may also be reviewed under this process. The state making the proposal will include a summary of the regulation in question and concise arguments in support of consistency.

Upon receipt of a state's proposal, the Council may make an initial determination whether or not to proceed with the review. If the Council determines that the proposal has insufficient merit or little likelihood of being found consistent, it may terminate the process immediately and inform the petitioning state in writing of the reasons for its rejection.

If the Council determines sufficient merit exists to proceed with a determination, it will review the state's documentation or prepare an analysis considering, if relevant, the following factors:

1. how the proposal furthers or is not otherwise inconsistent with the objectives of the FMP, the MFCMA, and other applicable law;

2. the likely effect on or interaction with any other regulations in force for the fisheries in the area concerned;

3. the expected impacts on the species or species group taken in the fishery sector being affected by the regulation;

4. the economic impacts of the regulation, including changes in catch, effort, revenue, fishing costs, participation, and income to different sectors being regulated as well as to sectors which might be indirectly affected; and,

5. any impacts in terms of achievement of quotas or harvest guidelines, maintaining year-round fisheries, maintaining stability in fisheries, prices to consumers, improved product quality, discards, joint venture

operations, gear conflicts, enforcement, data collection, or other factors.

The Council will inform the public of the proposal and supporting analysis and invite public comments before and at the next scheduled Council meeting. At its next scheduled meeting, the Council will consider public testimony, public comment, advisory reports, and any further state comments or reports, and determine whether or not the proposal is consistent with the FMP and whether or not to recommend implementation of complementary federal regulations or to endorse state regulations as consistent with the FMP without additional federal regulations.

If the Council recommends the implementation of complementary federal regulations, it will forward its recommendation to the NMFS Regional Director for review and approval.

The NMFS Regional Director will publish the proposed regulation in the Federal Register for public comment, after which, if approved, he will publish final regulations as soon as practicable. If the Regional Director disapproves the proposed regulations, he will inform the Council in writing of the reasons for his disapproval.

11.0 APPENDICES

11.1 Biological and Environmental Characteristics of the Resource

11.1.1 Distribution and Life History Features

This section summarizes the distributions and life histories of various groundfish species of commercial importance off Washington, Oregon, and California. Unless otherwise noted, references for the summaries are from Hart 1973, Miller and Lea 1972, and Eschmeyer et al. 1983. Table 11.1 provides a summary of life history characteristics for the principal species found in the management area.

11.1.1.1 Roundfish

11.1.1.1.1 Lingcod (Ophiodon elongatus)

Lingcod occur from Baja California to Kodiak Island, Alaska. Adults appear to be sedentary in their distribution, although limited movements have been known to occur. In an analysis of tagging experiments, Chatwin (1956) found that less than 10 percent of recovered fish had moved more than 5 nautical miles from the point of release. Most adults live on rocky reefs from shallow inshore areas to depths in excess of 230 fathoms. Young lingcod live on the sand or mud bottom of bays and inshore areas. Spawning occurs from December to April (Garrison and Miller 1982), with females depositing their eggs in rock crevices in shallow water. Adults feed on herring, sand lance, flounders, Pacific whiting, rockfish, cod, walleye pollock, crustaceans, and octopus. Juveniles feed on copepods and other small crustaceans. Although lingcod may attain sizes up to 5 feet and 70 pounds, they seldom exceed 4 feet and 40 pounds.

11.1.1.1.2 Pacific cod (Gadus macrocephalus)

Pacific cod is a boreal species which inhabits the waters of the continental shelf from central California to the Bering Sea. Overall depth range is 0 to 475 fathoms, but most individuals occur between 25 and 100 fathoms (Phillips and Mason 1986; Allen and Smith 1988). This species is fished commercially from the Bering Sea and Aleutian Islands to central Oregon, being taken incidentally as far south as northern California. Pacific cod congregate to spawn, and disperse to feed. They migrate to deeper waters in autumn, spawn in winter, then return to shallower areas in spring to feed (Ketchen 1961). Pacific cod eat worms, crabs, mollusks, shrimp, herring, sand lance, walleye pollock, and flatfishes (Hart 1949; Jewett 1978; Clausen 1980; Anderson and Albers 1985). Pacific cod may grow to as large as 3.75 feet and may weigh in excess of 40 pounds.

11.1.1.1.3 Pacific Whiting (Merluccius productus)

The distribution of Pacific whiting (also known as hake) ranges from the Gulf of California to the Gulf of Alaska but is most abundant from Baja California to southern British Columbia (Alverson et al. 1964). Often classified as a demersal species, the distribution and behavior of Pacific whiting suggest a largely pelagic existence. The coastal stock of adults migrates seasonally, wintering and spawning along the continental slope and offshore from Baja California to central California. During summer, they move northward as far as Vancouver Island, British Columbia and inshore, influenced by food and currents. In fall,

Table 11.1. Summary of life history characteristics of some commercially important rockfish.

Species	Pacific Ocean Perch	Yellowtail Rockfish	Shortbelly Rockfish	Widow Rockfish	Canary Rockfish	Chilipepper	Boccacio
Common Depth Range (m)	100–450	50–350	50–350	50–350	50–250	50–350	50–300
Spawning Period	January through April	December through May	November through April	November through March	November through April	November through March	November through March
Maximum Age (Years)	70+	64	12	58	75	16	36
Mean Age At Maturity For Females	10	10	3	6	10	3–4	4–6
Mean Size At Maturity For Females (cm)	34	45	14	35	43	30–37	45–48
Natural Mortality Rate (Instantaneous Per Year)	.05	.07	.25	.15–.20	.01–.09	.20	.25
Growth Factors:							
K	.09	.16	.21	.15	.16	.18	.11
Lmax	49	56	32	52	58	54	88

Table 11.1. Summary of life history characteristics of some commercially important roundfish (continued).

Species	Lingcod	Pacific Cod	Pacific Whiting	Sablefish
Common Depth Range (m)	0–300	25–300	50–450	50–>900
Spawning Period	December through March	January through March	January through February	December through April
Maximum Age (Years)	15+	8+	20	50+
Mean Age At Maturity For Females	4–5	2–4	3	5
Mean Size At Maturity for Females (cm)	62–70	55	40	58
Natural Mortality Rate (Instantaneous Per Year)	.20–.27	.55–.63	.20	.10–.15
Growth Factors (Female):				
K	.15	.30–.70	.20–.40	.13
Lmax	117	115	52–60	80

Table 11.1. Summary of life history characteristics of some commercially important flatfish (continued).

Species	Dover Sole	English Sole	Petrale Sole	Rex Sole	Arrowtooth Flounder	Pacific Sanddab	Starry Flounder
Common Depth Range (m)	40–1,500	20–300	40–500	40–500	50–650	20–100	0–160
Spawning Period	November through March	November through March	November through March	January through June	December through March	July through September	November through February
Maximum Age (Years)	40+	18	25	24	22	13	10+
Mean Age At Maturity For Females	10	5	4–5	6	8	3	*
Mean Size At Maturity For Females (cm)	35	31	40	24	37–42	19	35
Natural Mortality Rate (Instantaneous Per Year)	.10–.15	.23	.18	.18	.15	.25	*
Growth Factors (Female):							
K	.11	.26	.21	.15	.16	.31	*
Lmax	61	43	54	39	69	30	90

the stock returns southward and offshore to spawn. Pacific whiting are apparently pelagic spawners, with most spawning occurring off southern California and northern Mexico (Bailey et al. 1982). They have been taken in trawls from the surface to 500 fathoms, with most of the population found in waters 25 to 275 fathoms over the continental slope and shelf (Mathews et al. 1974; Bailey 1982; Bailey et al. 1982). Larvae feed on calanoid copepods, and juveniles and small adults feed primarily on euphausiids. Larger adults eat euphausiids, shrimp, and small pelagic fishes such as herring, smelts, and anchovies, as well as flatfishes and tomcod. Adults are cannibalistic (Bailey et al. 1982). Feeding occurs coastwide on the shelf and upper continental slope. Mature whiting average 20 inches and about 1.7 pounds, but they may reach 3 feet in length and over 5 pounds.

11.1.1.1.4 Sablefish (Anoplopoma fimbria)

Sablefish occur from Baja California to the Asiatic coast of the Bering Sea. Sablefish are demersal and occur over a wide range of depths that include the outer continental shelf, slope, and abyssal habitats. The center of abundance of adult sablefish, however, appears to lie at 200 to 550 fathoms along the continental slope (Parks and Shaw, 1987), especially within or near submarine canyons and gullies. Although independent tagging studies conducted by scientists from Canada, Japan, and the United States have revealed that some sablefish cover vast distances, there is disagreement as to the degree of interchange of fish by region. Sablefish spawn from November to April, with peak spawning activity occurring in January and February. Juveniles have been observed in shallow water, including Puget Sound and the Strait of Juan de Fuca. The diet of juvenile sablefish include copepods, amphipods, euphausiids, fish eggs, and fish larvae. Adults eat euphausiids, tunicates, and fish. Sablefish may attain ages of 50+ years and reach sizes of 47 inches and 126 pounds (Chilton and Beamish 1982); but usually less than 30 inches and 25 pounds.

11.1.1.1.5 Jack Mackerel (Trachurus symmetricus)

Jack mackerel are semipelagic, ranging from the tropical mid-Pacific off California to Alaska. Apparently, spawning occurs during most of the year, with peak spawning varying by area: March through June off southern California and Baja California (MacCall et al. 1980); August off Oregon; and October off Washington (Frey 1971; MacCall and Stauffer 1983). Jack mackerel eggs and larvae are epipelagic and occur from the surface to about 75 fathoms; adults occur from the surface to 220 fathoms (MacGregor 1966; MacCall et al. 1980). Jack mackerel school to feed. Their diet is variable, often consisting of macroplankton, but at times mainly lanternfish or squid. Jack mackerel may live up to 30 years and reach sizes of 32 inches and 5.25 pounds (MacGregor 1966; Fitch and Lavenberg 1971).

11.1.1.2 Rockfish

Rockfish are elongate and stout with a large head that usually bears prominent ridges and spines. Rockfish inhabit shores, bays, kelp beds, and offshore areas to 500 fathoms or deeper. Many live in rocky areas, others prefer soft bottoms found offshore. A wide variety of feeding habits exits among the rockfish species. Rockfish bear live young.

11.1.1.2.1 Pacific Ocean Perch (Sebastes alutus)

Pacific ocean perch range from Honshu, Japan, through the Bering Sea to southern California. Adults can be found as deep as 450 fathoms, but most are commonly found along the outer continental shelf and on the upper continental slope at depths of 80 to 200 fathoms (Shippen and Major 1970). This species is slow-growing and long-lived, attaining ages well in excess of 70 years (Beamish 1979; Chilton and Beamish 1982). Pacific ocean perch exhibit seasonal inshore/offshore migrations, spending summer months in the shallowest part of their range and winter months at the deepest, where larvae are released (Gunderson 1971). Spawning usually takes place from January to April. Juveniles probably become demersal some time during their first year of life (Carlson and Haight 1976). Pacific ocean perch feed mainly on planktonic crustaceans, shrimp, squid, and small fishes. They grow to a maximum of about 21 inches and 3.5 pounds, although the mean size in the commercial catch from the INPFC Vancouver-Columbia area in 1981-1986 was 15.5 inches (Ito 1987).

11.1.1.2.2 Yellowtail Rockfish (Sebastes flavidus)

Although yellowtail rockfish are widely distributed from San Diego, California to Kodiak Island, Alaska, their center of abundance is mainly from Oregon to British Columbia (Alverson et al. 1964; Gunderson and Sample 1980; Tagart 1982). Landings have been reported from 0 to 300 fathoms, but most commercial landings have been from waters 50 to 100 fathoms deep (Alverson et al. 1964; Gunderson and Sample 1980; Tagart and Kimura 1982). This species is common over deep reefs. Spawning usually peaks during March and April (LaRoche and Richardson 1980). Yellowtail rockfish have been known to prey on smallfin lanternfish, crustaceans and squid (Pereyra et al. 1969). They grow to 26 inches.

11.1.1.2.3 Shortbelly Rockfish (Sebastes jordani)

Shortbelly rockfish are the most distinctively pelagic of the rockfish group. A small fish (to 13 inches, Kramer and O'Connell 1986), they occur from Baja California to Vancouver Island, British Columbia. Adults are found in large midwater schools over bottom depths of 50 to 150 fathoms; juveniles occur in shallower water. This species is very abundant in California waters and is a very important prey item for other fishes, seabirds, and marine mammals. Spawning apparently occurs from February to April in waters off California (Echeverria 1987). Adults feed on plankton, mainly euphausiids.

11.1.1.2.4 Widow Rockfish (Sebastes entomelas)

Widow rockfish occur over rocky banks from Baja California to Kodiak Island, Alaska. They are frequently in dense midwater schools during hours of darkness, making large catches possible with minimal effort (Wilkins 1987). Adults are found at 13 to 200 fathom depths; juveniles are found in shallower water. Young are produced mainly in January and February off California, and February and March off Oregon (Barss and Echeverria 1987). The diet of widow rockfish varies seasonally but consists mainly of small pelagic crustaceans, salps, and fishes (Adams 1987). They may reach lengths of 21 inches.

11.1.1.2.5 Canary Rockfish (Sebastes pinniger)

Canary rockfish are often encountered over hard bottom at depths of 10 to 200 fathoms (usually 50 to 100 fathoms) from Baja California to southeast Alaska

(Kramer and O'Connell 1986). They are a long-lived fish with a 70+ year life span (Chilton and Beamish 1982). Their young are born in winter. Their diet consists of small fishes and euphausiids. Although they may grow as large as 30 inches, the mean length in the commercial trawl fishery ranges from 17 to 20 inches (Golden and Demory 1984).

11.1.1.2.6 Chilipepper (Sebastes goodei)

Chilipepper range from southern Baja California to Vancouver Island, British Columbia. The approximate center of their abundance is from Point Sur to Fort Bragg in the INPFC Monterey statistical area (Henry 1985). They frequent deep rocky reefs as well as sand and mud bottoms from 33 to 180 fathoms; young chilipepper are found in shallower water. The spawning period for chilipepper is November through March (Phillips 1964), with peak parturition occurring in January (Henry 1985). Adults grow to 22 inches and they feed on euphausiids, small squids, and fishes.

11.1.1.2.7 Bocaccio (Sebastes paucispinis)

Bocaccio are found from central Baja California to Kodiak Island, Alaska. They can be found over rocky reefs or open bottom at about 15 to 175 fathoms. Adults are voracious carnivores, feeding mostly on other fish, including other rockfish. Spawning may occur once over a broad spawning season or there may be multiple spawnings (Gunderson et al. 1980; Moser 1967), perhaps one in the spring and another in the fall (Garrison and Miller 1982). The young school and are found in shallower rocky areas. Adults may attain ages in excess of 35 years (Chilton and Beamish 1982) and grow to 3 feet and 20 pounds (Fitch 1965); however, most adults range in size from 13 to 22 inches in length.

11.1.1.3 Flatfish

With exceptions, flatfish generally spawn during late winter and early spring. Larvae are pelagic, but settle to the bottom after metamorphosis. Once on the bottom, flatfish eat small crustaceans, polychaete worms, and mollusks. As they grow, they usually eat larger forms of the same organisms.

11.1.1.3.1 Dover Sole (Microstomus pacificus)

Dover sole live on mud bottoms from northern Baja California to the Bering Sea at depths of 15 to 700 fathoms. Tagging studies show evidence of subpopulations, limited coastwide movement, and extensive seasonal inshore-offshore migrations associated with feeding and reproduction (Frey 1971). Spawning occurs from November through April in deep offshore areas off Oregon and California (Garrison and Miller 1982; Hirschberger and Smith 1983). Eggs are pelagic; larvae have a prolonged pelagic existence before they metamorphose and settle to the bottom. Dover sole feed almost entirely on sedentary, mud-inhabiting invertebrates, such as small bivalves, polychaete worms, and crustaceans. This species may grow to a maximum of 30 inches and 10 pounds (Allen and Mearns 1976), and attain ages in excess of 50 years (Pikitch and Demory, 1988).

11.1.1.3.2 English Sole (Parophrys vetulus)

English sole occur in ocean waters to depths of 300 fathoms, and in bays and estuaries, from central Baja California to the eastern Bering Sea. Tagging studies indicate limited seasonal coastwide movement (Frey 1971). Spawning

occurs throughout its range from October to May, peaking in January and February (Frey 1971; Garrison and Miller 1982). Eggs and larvae are pelagic; after metamorphosis, the larvae settle to the bottom. Adults prefer mud bottom although they are sometimes found on sandy substrate (Becker 1984). The diet of English sole consists of bottom organisms such as segmented worms, clams, and small starfish. English sole may live as long as 22 years (Chilton and Beamish 1982) and grow to a maximum size of 24 inches; however, the average size in the commercial catch has ranged from about 13 to 15 inches (Demory 1984).

11.1.1.3.3 Petrale Sole (Eopsetta jordani)

Petrale sole are found from northern Baja California to the Bering Sea on sandy bottoms at depths ranging from 10 to 250 fathoms. They are known to move great distances: tagged fish released at Eureka, California have been recovered off British Columbia (Frey 1971). Petrale sole spawn from November through March at depths of 150 to 200 fathoms. Shortly after spawning, petrale sole move inshore and northward for the spring and summer. During autumn and winter there is offshore and southerly movement associated with spawning (Frey 1971). Their diet is composed largely of euphausiids, shrimp, anchovies, smelt, herring, juvenile whiting, small rockfish, and other flatfish. Although adults may reach maximum sizes of 27 inches, the average size in the commercial trawl fishery is generally between 15 and 17 inches (Demory 1987).

11.1.1.3.4 Rex Sole (Glyptocephalus zachirus)

Rex sole are found in shallow water to depths of 400 fathoms from southern California to the Bering Sea on sand or mud bottoms. They are apparently most abundant in water deeper than 200 fathoms (Alverson et al. 1964). Little is known of their movements and migrations. Spawning fish are most abundant from 30 to 50 fathoms at various times of the year; some are in spawning condition throughout the year. In the Eureka area, rex sole show heaviest spawning activity during summer months, while in the Gulf of Farallones spawning peaks in February and March. Rex sole are preyed upon by sharks, skates, rays, lingcod, and some rockfish. They eat annelid worms, shrimp, and amphipods. Rex sole may grow to a maximum size of about 24 inches.

11.1.1.3.5 Arrowtooth Flounder (Atheresthes stomias)

Arrowtooth flounder are distributed from central California to the western Bering Sea. This species is usually associated with soft substrate at depths of 10 to 500 fathoms. Arrowtooth flounder are known to undertake seasonal bathymetric migrations: from wintertime depths of 164 to 274 fathoms up to 109 to 274 fathoms during summer (Allen and Smith 1988; Webber and Sample 1976). Peak spawning probably takes place during winter or early spring, based on larvae taken off northern British Columbia in June (Taylor 1967). Larvae prey on copepods and eggs; juveniles and adults feed on ocean shrimp, krill, other shrimps, sanddabs, and miscellaneous fishes (Gotshall 1969). Although the flesh of arrowtooth flounder is of fair quality, human consumption only occurs in Asian markets and it is generally used for mink food elsewhere (Wolotira 1988; Hart 1973). Adults may live for 22 years (Chilton and Beamish 1982) and grow to almost 3 feet in length.

11.1.1.3.6 Pacific Sanddab (Citharichthys sordidus)

Pacific sanddab live on sandy bottoms at depths of 5 to 300 fathoms from southern Baja California to the Bering Sea. Sanddab in the Puget Sound spawn in February; however, there are indications that females may spawn twice in a season (Hart 1973). A fairly common species, it is a popular food fish in California where it is regarded as a delicacy. Pacific sanddab grow to a maximum of 16 inches.

11.1.1.3.7 Starry Flounder (Platichthys stellatus)

Starry flounder occur from Santa Barbara, California to the Bering Sea and can be found in waters off Japan and Korea. They are a relatively sedentary species found mostly in shallow nearshore areas, frequently in estuaries (Frey 1971), but catches in excess of 150 fathoms have been reported. They spawn pelagic eggs in February and April in the Puget Sound region and in December and January off California. They feed on crabs, shrimps, worms, clams, small mollusks, small fishes, and brittle stars. Starry flounder may grow to sizes of 36 inches and 20 pounds.

11.1.2 Models and Analytical Techniques for Determining MSYs and ABCs

Stock assessment techniques are used to estimate historical and current levels of abundance and appropriate fishing mortality rates and harvest levels. This section contains a summary of the stock assessment techniques used in managing the Pacific coast groundfish fishery. Detailed discussions of the assessment techniques used for individual species can be found in the status of stocks document produced annually for the Council.

The techniques chosen for a particular stock depend on the kind and quality of data available. For the Pacific coast groundfish fishery, a long series of landings data is available for most commercially important species. For species sold separately, such as Dover sole or sablefish, landings are assumed to be a precise measure of total catch, except for errors introduced by discarding. Other species (e.g., most rockfishes) are sold together under one or more market names, and port samples must be used to estimate the fraction of total landings due to each species. Thus, landings of those species could be mis-estimated due to sampling error as well as discarding. Errors in estimating landings generally are assumed to be small relative to other types of error in the assessments. All known removals (including incidental catch in foreign and joint venture fisheries) are considered in stock assessment models.

Port sampling provides estimates of the length and age composition of the landed catch for some species. Those data can be used to estimate fishing mortality, based on the rate at which a year class (fish spawned in a single year) disappears from the catch. For example, if fish from the 1970 year class appear in the catch samples every year from 1975 to 1990, then the fishing mortality rate on that population must be relatively low. Similarly, if larger and older fish historically present in the population disappear from the catch samples, then fishing mortality probably is high enough so that smaller, younger fish are caught before reaching the older age groups. The length and age composition estimates generally are assumed to be less precise than the estimates of total landings. The lower precision is due to sampling error, because of the differences in length and age composition among trips (for example, due to depth and area fished or time of year). The estimates could be biased by discarding (for example, due to a minimum size regulation). Errors in determining fish ages

(e.g., from cross-sections of otoliths or fin rays) could introduce bias into the estimates of age composition. In addition, the observed length and age composition will typically be quite different from the actual length and age composition of the population, because of the selective nature of the gear used. One of the difficult goals in stock assessment is to estimate the selectivity pattern of the gear (fraction vulnerable to fishing at different sizes and ages), so that the sample length and age composition data can be used to make inferences about the actual population.

Fishery-independent surveys provide estimates of relative or absolute abundance for those species occurring within the surveyed areas and depths. An advantage of survey data is that the amount of fishing effort used to obtain the catches is known; therefore, changes in catch per unit of survey fishing effort are assumed to be proportional to changes in population abundance. For that reason, the gear and locations fished are kept constant on sucessive surveys in order to develop a time series of relative abundance estimates. Estimates of absolute abundance typically are obtained from trawl surveys, using the swept-area method. In that approach, the catch per sampling stratum is expanded based on the ratio of total stratum area to the area swept by the trawl (Gunderson and Sample 1980). For example, the triennial trawl surveys provide estimates of the numerical abundance and biomass of fishes found from 30 to 200 fathoms. The accuracy of estimates of absolute abundance depends on whether all fish in the path of the trawl are captured. The precision of survey estimates depends on the spatial distribution of the target species. Rockfishes tend to have highly clumped spatial distributions; consequently, survey estimates of rockfish abundance are often imprecise (Gunderson and Sample 1980).

11.1.2.1 Stock Assessment Techniques

Potential Yield Models. Alverson and Pereyra (1969) suggested that the potential yield from undeveloped resources could be estimated from the model $MSY=aMB_0$, where 'a' was a constant (0.5), M represented the instantaneous annual rate of natural mortality, and B_0 represented virgin biomass. The rationale for the model was that biomass at MSY was roughly half the virgin biomass ($0.5B_0$), and the fishing mortality rate at MSY was usually similar to M. More recently, Gulland (1983) indicated that potential yield may be overestimated by using $a=0.5$, and recommended estimating MSY as $0.3MB_0$. This approach has been used in the Pacific coast groundfish fishery to estimate MSY for those stocks for which little information was available (except for the required estimate of virgin biomass). For example, MSY for the shortbelly rockfish stock was estimated using limited age and growth data (to estimate M) and a hydroacoustic survey estimate of biomass.

Surplus Production Models. Surplus production models (Graham 1935, Schaefer 1954, Pella and Tomlinson 1969) are based on the observation that, in the absense of fishing, recruitment and growth cause stock biomass to increase whereas natural mortality causes biomass to decrease. As long as the fishery harvests only the "surplus production" (defined as recruitment plus growth less natural mortality), stock biomass should remain unchanged. When stock biomass is low, recruitment and growth should be greater than when stock biomass is at or near the virgin level (because food per individual should be more limited for a large population). Based on that reasoning, the largest surplus production (i.e., MSY) is assumed to occur when the stock is at an intermediate level. Surplus production models have been widely used historically because they require only information on catch (in biomass) and effort (because the model is developed for

stock biomass rather than numbers of fish). They have not been used often in the Pacific coast groundfish fishery because of the difficulty of measuring fishing effort for individual species within a multispecies fishery.

Yield-Per-Recruit Models. Yield-per-recruit models (Beverton and Holt 1957, Ricker 1975) are based on the observation that the number of fish in a year class declines over time due to mortality, whereas the weight of each individual fish increases over time due to growth. For rapidly growing young fish, the increases in weight more than offset the decreases in number; consequently, total biomass (number X weight per individual) increases with the age of a year class. As fish get older and growth slows, the increases in weight are less than the decreases in number and the biomass of the year class declines. The purpose of a yield-per-recruit model is to describe how the biomass of a year class changes over time and how it should be fished to obtain the maximum yield. A disadvantage of these models is that recruitment is ignored. For that reason, yield-per-recruit models have not often been used in the Pacific coast groundfish fishery. Most of the more complex models that have been used can be thought of as the combination of a yield-per-recruit model with a stock-recruitment relationship.

Stock Reduction Analysis (SRA). SRA (Kimura and Tagart 1982, Kimura et al. 1984, Kimura 1985, Kimura 1988) is a biomass-based method of stock assessment. In the typical application, SRA requires the following: a series of landings estimates, an assumption about the strength of the stock-recruitment relationship, estimates of mean weight at age, and an estimate of the relative change in biomass over time. From those data, SRA is used to estimate historical levels of stock biomass and the fishing mortality rates that would produce the observed historical catches. An advantage of SRA is that the model can be used when only landings data are available (estimates of fishing effort or the age composition of the catch are not required). A disadvantage is that the assumptions usually made in SRA [knife-edge recruitment to the fishery, and the level of recruitment determined solely by spawning stock size (no random variability due to environmental variation)] are always violated to some degree. In the Pacific coast groundfish fishery, SRA has proven useful in developing management strategies for those stocks for which catch-at-age data are not available.

Virtual Population Analysis (VPA). According to Jones (1984), Fry (1957) originally used the term "virtual population" to refer to the estimate of year class strength obtained by summing all the catches from a year class over its lifetime in a fishery. Currently, VPA (Gulland 1965, Murphy 1965) refers to techniques for estimating the fishing mortality rates (F) and population sizes at age necessary to explain the observed landings plus losses from an assumed level of natural mortality (NEFMC 1985). (Natural mortality is defined as all sources of mortality other than fishing.) Cohort analysis and least-squares catch-at-age analysis are closely related to VPA, differing in the assumptions used to obtain solutions. In VPA, a table of catch estimates (in numbers) by age and year is used to generate corresponding tables of estimated Fs and population sizes. By examining how estimated population size changed historically in response to the observed historical catches, a fishery manager can estimate the highest average catch that the population can support (i.e., MSY).

VPA has proven to be a powerful tool for fishery management, but it must be applied carefully. Estimates of absolute abundance may be biased unless there is sufficient auxiliary information (e.g., survey estimates of abundance or estimates of annual levels of fishing effort) (Deriso et al. 1985). Auxiliary information is needed because fishing mortality and abundance are negatively

correlated. If only catch data are available, it is impossible to determine whether an observed catch was produced by a small population and a high F or a large population and a low F. Other potential sources of error in VPA include the assumed level of natural mortality, the accuracy of the catch-at-age data, and the level of discarding (if discards are not included in the catch estimates).

Stock synthesis model. The stock synthesis model (Methot 1986, Hollowed et al. 1988, Methot and Hightower 1988, Methot 1989) is a general approach for analyzing catch, abundance, and age composition data in order to estimate historical abundance and fishing mortality rates. The model seeks the time series of abundance and mortality estimates that would be most likely, given the observed data. Thus, it is similar to a simulation model, except that the synthesis model continuously adjusts its population parameters (e.g., mean historical recruitment) until the simulated and observed historical data match as closely as possible. In the Pacific coast groundfish fishery, the stock synthesis model has proven useful because it can make use of a wide variety of data. It is most valuable for those stocks for which no single data series is sufficient to define historical abundance. Several types of data can be used jointly to narrow the range of possible historical abundance levels. For example, in the sablefish assessment (Methot and Hightower 1988), historical abundance estimates are based on landings, tag returns, trawl survey catches of age-1 fish, catch-per-unit-effort from the pot survey, and length and age composition data from the survey and commercial catches. In the Pacific whiting assessment (Hollowed et al. 1988), historical abundance estimates are based on landings, hydroacoustic survey estimates of abundance, and age composition data from the survey and commercial catches.

11.1.3 Status of Stocks: MSY and Exploitable Biomass Estimates

This section summarizes the status of the various stocks of commercial importance in the Pacific coast groundfish fishery. The discussion is limited to a brief review of landings and estimates of stock abundance and MSY. (Section 10.10 provides Pacific Coast Fishery Information Network (PacFIN) landings data for each statistical area since 1981. The landings data included in section 10.1.3 were obtained from several sources including the annual status of stocks documents and PacFIN. Differences between numbers in the text and tables are due primarily to area of catch and, with respect to rockfish, species composition sampling. Numbers in the text are considered the best available information.) More detailed discussions and current estimates of biomass, MSY, and ABC can be found in the status of stocks document produced annually for the Council. That document contains further details on fishery statistics, resource assessment surveys, and the analytical techniques applied to the various species. The information below is primarily from 1988 assessments.

11.1.3.1 Lingcod

Coastwide trawl landings were less than 1,500 mt from 1956 until 1970, and between 1,500 and 3,400 from 1971 through 1985. Commercial landings by gears other than trawl increased steadily from 299 mt in 1973 to 919 mt in 1985. Recreational catches were relatively steady from 1973 to 1979 at about 450 mt.

A reliable assessment of Washington, Oregon, and California lingcod stocks has not been completed thus far. Reasons include: (1) the highly localized nature of the stocks, (2) the lack of data on age composition (due in part to

difficulties in aging lingcod), and (3) inadequacies in the catch statistics, particularly for recreational and commercial nontrawl catches (PFMC 1982, Adams 1986). In the Vancouver and Columbia INPFC areas, 1977 biomass as estimated from the triennial trawl survey was thought to be similar to biomass at MSY (PFMC 1982). For that reason, MSY estimates for the Vancouver (1,000 mt) and Columbia (4,000 mt) areas were obtained as MB. Estimates of MSY for the Eureka (500 mt), Monterey (1,100 mt), and Conception (400 mt) areas were obtained by setting MSY equal to the mean 1973-1977 annual catches. In the Vancouver and Eureka INPFC areas, total catches have exceeded the preliminary MSY estimates in some recent years. Columbia area catches remain well below the estimated MSY. An updated assessment of the status of lingcod stocks is needed.

11.1.3.2 Pacific Cod

Pacific cod are neither common nor commercially important in Eureka-Conception INPFC areas. Landings in the Columbia area were less than 300 mt from 1980-1986 but increased to 794 mt in 1987. Landings in the Vancouver area from 1980-1987 ranged from 297 mt in 1986 to 1,384 mt in 1987.

There are no estimates of MSY, biomass at MSY, or current biomass levels. Because the stock is at the southern end of its geographic range, variations in landings from year to year are expected to fluctuate depending more on the strength of incoming year classes than on recent levels of fishing (PFMC 1982).

11.1.3.3 Pacific Whiting

From 1966 to 1986, annual catches of Pacific whiting in U.S. waters ranged from 60,819 mt in 1968 to 231,549 mt in 1976. Combined catches from U.S. and Canadian waters ranged from 89,936 to 237,521 mt. Joint venture catches have accounted for a significant fraction of total landings since 1980.

Recruitment to the fishery is highly variable and assumed to be strongly influenced by ocean environmental conditions at the time of spawning (Hollowed et al. 1988). Strong year classes can be identified from midwater trawl survey catches of age-0 fish. These survey catches of pre-recruits can be used to forecast the strength of year classes for which recruitment estimates from cohort analysis are not yet available.

Estimates of MSY, biomass at MSY, and current biomass were based on analyses of landings and commercial and survey catch-at-age data, using cohort analysis and a stock synthesis model (Hollowed et al. 1988). Based on results of cohort analysis, the 1987 biomass of fish ages 3-11 was 1.9 million mt. Based on results of a stock synthesis model, the 1987 biomass of fish ages 3 and older was 1.8 million mt. The coastwide MSY was estimated to be 252,000 mt, at an MSY biomass level of 1.3 million mt. Current biomass levels and recommended yields are greater than the MSY levels because of the strength of the 1980 and 1984 year class. Yield from the fishery is expected to vary substantially from year to year due to the highly variable recruitment.

11.1.3.4 Sablefish

Sablefish landings off Washington, Oregon, and California were relatively low and stable at 2,000 to 3,000 mt from about 1915 to 1970. Catches increased substantially during the mid-1970s, with removals of over 24,000 mt in 1976 and

1979. Restrictions on the fishery maintained landings at about 14,000 mt from 1983 to 1986.

Estimates of coastwide stock biomass were obtained from a stock synthesis model, using landings data, recruitment estimates from the triennial trawl surveys, commercial and survey length and age composition data, tag returns, and survey catch per unit of effort (CPUE) data (Methot and Hightower 1988). Estimates of current stock biomass varied, depending on the relative weight given the different data sources. For the weighting scheme deemed most appropriate, the estimate of mean (midyear) 1988 total biomass was 94,700 mt; age-3+ biomass was 78,600 mt. An age-structured model was used to estimate MSY and stock biomass at MSY. Assuming the current 52:48 trawl:nontrawl gear allocation is maintained, the estimated MSY is 8,200 mt, obtained at a mean total biomass level of 82,700 mt. Mean age-3+ biomass at MSY was estimated to be 67,804 mt.

11.1.3.5 Jack Mackerel

The MSY for jack mackerel was estimated to be a range of approximately 12,000 to 27,000 mt. This estimate is tentative at best and the interactions between large and small jack mackerel and their roles in the ecosystem are uncertain. In 1977 and 1978, foreign fishermen had the opportunity to target on large jack mackerel when the TALFF was set at 4,000 mt under the PMP. Only half the TALFF was taken and it is unclear whether unfavorable markets, fish availability, non-selective fishing, or other more desirable fisheries dampened the foreign interest in jack mackerel. After 1978 these fish were taken only incidentally to other fisheries. There were no significant landings of jack mackerel, either domestic or foreign, from 1983 through 1987.

11.1.3.6 Pacific Ocean Perch

Pacific ocean perch occur in significant numbers in the Vancouver and Columbia INPFC areas. Landings from 1956 to 1964 in the Vancouver and Columbia areas averaged 2,018 and 1,980 mt, respectively. Catches increased sharply after 1964 with the introduction of large distant-water fishing fleets from the Soviet Union and Japan. Peak removals from all nations amounted to 16,358 mt from the Vancouver area in 1966 and 23,976 mt from the Columbia area in 1967. Catches dropped sharply immediately following those peak years and by 1969, the Pacific ocean perch stocks were severely depleted throughout the Oregon-Vancouver Island region. The average 1980-1987 harvest was 406 mt in the U.S.-Vancouver area and 896 mt in the Columbia area.

A 20-year rebuilding plan for Vancouver and Columbia areas Pacific ocean perch was established in 1981 (PFMC 1982). The most recent stock assessment (Ito et al. 1986) was based on VPA, SRA, and results of a 1985 NMFS trawl survey. Assuming a moderately strong stock-recruitment relationship (Cushing recruitment coefficient of 0.25-0.50), 1986 exploitable biomass for the entire Vancouver area ranged from 4,200 to 5,700 mt. Estimates for the Columbia area ranged from 9,300 to 10,500 mt. Biomass at MSY was estimated to be about 25,000 mt for each area, compared to the estimate of 30,000 mt per area that was the basis for the original rebuilding schedule. Thus, the more recent analysis confirms that a substantial rebuilding period with no directed fishing will be required. The estimated range for MSY was 600 to 1,000 mt in the Vancouver area and 700 to 1,100 mt for the Columbia area.

11.1.3.7 Yellowtail Rockfish

Yellowtail rockfish are a minor component of the trawl fishery in the Eureka-Conception INPFC areas. Vancouver area landings from 1967 to 1987 ranged from 440 mt in 1967 to 7,035 mt in 1975. U.S.-Vancouver landings from 1980 to 1987 ranged from 942 mt in 1985 to 3,342 mt in 1982. Average 1980-1987 landings for the entire Vancouver area and U.S. portion only were 3,381 and 1,973 mt, respectively. Columbia area landings generally increased from 1967 to 1987, with lowest landings occurring in 1970 (326 mt) and highest landings in 1979 (7,256 mt). Columbia area landings from 1980 to 1987 averaged 4,621 mt. Landings in both areas have been regulated since 1985.

Biomass estimates from the 1977-1986 triennial trawl surveys (Gunderson and Sample 1980, Weinberg et al. 1984, Coleman 1986, Coleman 1988) varied widely. In the Columbia area, the 1977 estimate was 11,950 mt and the 1980-1986 estimates ranged from 5,276 to 6,725 mt. In the U.S.-Vancouver area, the 1977 estimate was 11,480 mt and the 1980-1986 estimates ranged from 2,701 to 4,976 mt. (Note that 1977 estimates apply to the depth range 50 to 250 fathoms, whereas estimates for 1980, 1983, and 1986 apply to the depth range 30 to 200 fathoms) Current estimates of biomass and MSY are based on cohort analysis and simulation studies using an age-structured model (Tagart 1988). Estimates of 1988 Vancouver area biomass ranged from 8,930 to 17,825 mt, compared to a range of 9,377 to 14,835 mt for biomass at MSY (Tagart's B[EQ] and B[0.1] values). Estimates of MSY ranged from 1,782 to 3,115 mt. Based on a tentative 50:50 split of the yellowtail rockfish resource between the U.S. and Canadian portions of the Vancouver area, the average estimate of U.S.-Vancouver area MSY would be 1,205 mt. Estimates of 1988 Columbia area biomass ranged from 14,995 to 24,929 mt, compared to a range of 13,899 to 19,517 mt for biomass at MSY. The average estimate of the Columbia area MSY was 2,924 mt. Estimate of current and MSY biomass are not available for the Eureka area. The Eureka area MSY estimate (300 mt) is based on an examination of historical landings (PFMC 1982).

11.1.3.8 Shortbelly Rockfish

Shortbelly rockfish landings have been negligible to date due to the small size and low fillet yield of this species. However, the potential exists for a substantial fishery based on the large aggregations detected in Monterey area hydroacoustic surveys in 1977 (295,000 mt) and 1980 (152,700 mt) (Edward Nunnallee, Northwest and Alaska Fisheries Center, Seattle, Washington, personal communication). The current coastwide estimate of MSY (44,200 mt) was obtained from the potential yield model $MSY=0.5MB_0$, based on the 1977 biomass estimate and an assumed natural mortality rate of 0.3 (PFMC 1982). Recently, Pearson et al. (1989) obtained an estimated range for MSY (13,900 to 46,600 mt) by using the 1977 and 1980 biomass estimates, two potential yield models, and revised estimates of M. Both $0.5MB_0$ and $0.3MB_0$ were used to estimate MSY because Gulland (1983) suggested that $0.5MB_0$ may overestimate potential yield. Revised estimates of M were obtained from Hoenig's (1983) regression equation and exponential model relating maximum age to the total mortality rate (Z) and from Pauley's (1980) model based on temperature, average maximum length, and growth rate. Estimates of Z (which equals M in this case) ranged from 0.21 to 0.42.

11.1.3.9 Widow Rockfish

Widow rockfish landings were negligible prior to the development of a midwater trawl fishery in 1979. Coastwide landings increased rapidly from 4,941 mt in

1979 to about 27,000 mt in 1981 and 1982. Restrictions on the fishery maintained landings at about 10,000 to 12,000 mt from 1983 to 1988.

Estimates of coastwide stock biomass levels and MSY were obtained by cohort analysis and least-squares catch-at-age analysis (Lenarz and Hightower 1988). Based on cohort analysis, age-5+ biomass declined from a 1980 level of 123,000-134,000 mt to 77,000-78,000 mt in 1984. Estimated biomass increased after 1984 to a 1988 level of 97,000 to 117,000 mt, due to the apparent strength of the 1977-1981 year classes. Based on catch-at-age analysis, age-5+ biomass declined continuously from a 1980 level of 176,000-213,000 mt to a 1988 level of 61,000-66,000 mt. Differences in results obtained from the two methods were attributed to the difficulty of estimating the strength of recently recruited year classes and to the lack of auxiliary data that might stabilize the estimates. Based on simulation studies using the cohort analysis results, MSY was about 8,200-13,300 mt and MSY biomass was about 54,300-87,800 mt. Based on the catch-at-age analysis results, MSY was about 5,900-11,400 mt and MSY biomass was 45,400-72,500 mt. Thus, both assessment methods indicated that 1988 stock biomass was at or above the MSY level, although substantial uncertainty remained regarding the strength of the recent year classes.

11.1.3.10 Canary Rockfish

Canary rockfish landings are of commercial importance in the Vancouver-Eureka INPFC areas. Average 1977-1983 landings were 499, 2,283 and 384 mt for the U.S.-Vancouver, Columbia, and Eureka INPFC areas, respectively.

Based on estimates from the triennial trawl surveys (Gunderson and Sample 1980, Wilkins et al. 1984, Coleman 1986, Coleman 1988), U.S.-Vancouver area canary rockfish biomass was 19,940, 2,586, 4,636, and 3,367 mt in 1977, 1980, 1983, and 1986 respectively. For the Columbia area, estimates were 6,290, 2,920, 6,342, and 5,504 mt in 1977, 1980, 1983, and 1986 respectively. For the Eureka area, estimates were 490, 1,246, 366, and 792 mt in 1977, 1980, 1983, and 1986 respectively. (Note that 1977 estimates apply to the depth range 50 to 250 fathoms, whereas estimates for 1980, 1983, and 1986 apply to the depth range 30 to 200 fathoms). Given the magnitude of historical catches, biomass is probably higher than estimated in the triennial trawl surveys. Current MSY estimates for the U.S.-Vancouver (800 mt), Columbia (2,100 mt), and Eureka (600 mt) INPFC areas are based on an examination of historical landings (Golden and Demory 1984).

11.1.3.11 Chilipepper

Chilipepper are landed in commercial quantities in the Eureka, Monterey, and Conception INPFC areas, although the Monterey area has accounted for 82.8 percent of the 6 year (1980-1985) total California catch of chilipepper. Coastwide landings from 1980 to 1987 ranged from 669 mt in 1986 to 2,427 mt in 1980. Most commercial catches are made by bottom trawl but 100 to 200 mt are caught annually by set net and hook-and-line gears.

Biomass estimates were produced by catch-at-age analysis (Henry 1986). Estimates were made for female fish only since, because of their small size, male chilipepper comprised less than 22 percent of the catch. Estimates of female biomass were stable from 1978 through 1983, ranging from 34,700 to 40,900 mt (lambda=0.5) or 19,300 to 22,100 mt (lambda=10.0). Lambda represents the weight given to auxiliary estimates of fishing effort. Adjusted landings estimates were used to approximate the historical pattern for fishing effort. The estimated

range for current (1983) biomass for both sexes combined (28,500 to 61,500 mt) was higher than the range for MSY biomass (19,500 to 34,100 mt) estimated using an age-structured model. MSY estimates ranged from 2,600 to 4,600 mt, with an average of 3,600 mt.

11.1.3.12 Bocaccio

Bocaccio landings have been relatively small except in the Monterey INPFC area, where annual landings exceeded 2,000 mt from 1980 to 1984. Recent Monterey landings dropped substantially as the strong 1977 year class left the fishery. Coastwide landings from 1980 to 1987 ranged from 4,237 in 1983 to 1,033 mt in 1986.

Trawl survey estimates of 1980 and 1983 Monterey area biomass were assumed to be low because the estimates were only slightly greater than the annual landings (Thomas 1985). Estimates of mean 1978-1982 biomass based on cohort analysis ranged from 11,000 to 19,300 mt (Thomas 1985). Current estimates of MSY are based on an examination of historical landings data and recommended fishing mortality levels from yield-per-recruit analysis (PFMC 1982). The estimates of MSY for Monterey (4,100 mt) and Conception (2,000 mt) INPFC areas are greater than recent catch levels, and revision of MSY estimates is expected upon completion of catch-at-age analyses. MSY estimates were not warranted for the Vancouver-Eureka INPFC areas.

11.1.3.13 Dover Sole

Landings in the U.S.-Vancouver INPFC area from 1956 to1987 ranged from 118 (1967) to 3,187 mt (1984), with a 1980-1987 average of 2,074 mt. Columbia area landings from 1956 to 1987 ranged from 1,224 (1956) to 7,223 mt (1982), with a 1980-1987 average of 5,498 mt. Eureka area landings have remained relatively stable from 1972 to 1987, ranging from 4,011 mt in 1983 to 7,038 mt in 1972. Monterey area landings increased moderately from 1972 to 1987, with a range of 2,798 (1974) to 6,322 (1987) mt. Conception area landings were less than 100 mt prior to 1982. Landings increased sharply to a peak of 1,576 mt in 1985 then declined to a 1987 level of 134 mt.

Demory et al. (1984) used SRA to estimate that 1985 exploitable biomass in the U.S.-Vancouver area was 15,828 mt (Demory et al. 1984). MSY biomass was estimated to be 13,284 mt, with MSY equal to 1,985 mt. For the Columbia area, 1985 exploitable biomass was estimated to be 77,049 mt. MSY biomass was estimated to be 56,316 mt, with MSY equal to 8,413 mt. Biomass estimates for the Eureka, Monterey, and Conception areas were not available. The estimate of the Eureka area MSY (8,000 mt) was based on results of surplus production modeling and an examination of landings data (PFMC 1982). The MSY estimates for the Monterey (5,000 mt) and Conception (1,000 mt) areas were based on examination of landings data (PFMC 1982).

11.1.3.14 English Sole

Landings in the U.S.-Vancouver and Columbia INPFC areas from 1956 to 1987 were generally less than 1,000 mt. Average 1980-1987 landings were 285 mt (U.S.-Vancouver) and 676 mt (Columbia). Combined landings from Eureka-Conception INPFC areas were generally less than 3,000 mt, with average 1980-1987 landings of 1,433 mt. Low recent landings have been attributed to low recruitment due to natural fluctuations.

Based on 1973-1976 Oregon Department of Fish and Wildlife (ODFW) trawl surveys (Demory et al. 1975, Barss et al. 1977), estimated biomass for the Vancouver (PSMFC area 3B only) and Columbia areas was 13,196 mt (PFMC 1982). Results from stock production modeling (Lenarz 1978a) indicated that the Columbia area fishery was operating near the MSY level. For that reason, estimates of MSY for the U.S.-Vancouver (600 mt) and Columbia areas (2,000 mt) were obtained from a potential yield model (Y=MB), using the 1973-1976 ODFW trawl survey estimate of biomass (PFMC 1982). Based on a cohort analysis of catch-at-age data (Jow and Geibel 1985), estimated biomass for the Eureka-Conception INPFC areas was stable at about 20,000 mt from 1972 to 1979, then declined rapidly to a 1984 biomass of 6,406 mt. The decline was attributed to a lack of strong year classes. MSY estimates for the Eureka (800 mt), Monterey (900 mt), and Conception (200 mt) areas were based on examination of landings data (PFMC 1982). Estimates of MSY biomass levels were not available.

11.1.3.15 Petrale Sole

Landings in the U.S.-Vancouver INPFC area from 1956 to 1987 ranged from 164 (1987) to 943 mt (1975), with a 1980-1987 average of 273 mt. Columbia area landings from 1956 to 1987 ranged from 581 (1956) to 1,331 mt (1974), with a 1980-1987 average of 902 mt. Landings from 1980 to 1987 in the Eureka, Monterey, and Conception INPFC areas averaged 330, 427, and 97 mt, respectively.

Based on 1973-1976 ODFW surveys (Demory et al. 1975, Barss et al. 1977) and changes in CPUE, estimated 1987 exploitable biomass in the U.S.-Vancouver and Columbia areas was 2,776 mt (Demory 1987). Results from yield-per-recruit and stock production modeling suggested that the petrale sole fishery off Oregon and Washington was operating near the MSY level (Pedersen 1975, Lenarz 1978a, Lenarz 1978b). Based on that observation, MSY estimates for the Vancouver (600 mt) and Columbia areas (1,100 mt) were based on average 1973-1977 landings (PFMC 1982). Estimates of MSY biomass for the U.S.-Vancouver and Columbia areas were not available. MSY estimates for the Eureka (500 mt), Monterey (800 mt), and Conception (200 mt) areas were based on examination of landings data (PFMC 1982). Estimates of current or MSY biomass for the Eureka-Conception INPFC areas were not available.

11.1.4 Description of Habitat Types in the Washington, Oregon, and California Area

In November 1983, a habitat conservation policy was implemented for NMFS. Among other things, this policy encouraged greater participation by the regional fishery management councils in habitat conservation matters. In 1986, the MFCMA was amended to strengthen the involvement of the councils in habitat matters. The amendment required (1) inclusion of a section in the FMP which provides readily available information regarding the significance of habitat to the fishery and assessment as to the effects which changes to that habitat may have upon the fishery, and (2) federal agencies to provide a detailed written response to council comments and recommendations concerning impacts of their activities on the habitat of a fishery resource under council jurisdiction. The MFCMA requirement for FMPs to include this habitat information became effective on January 1, 1987. The information on the regional habitat and habitat concerns in this section was incorporated into the FMP in Amendment 3.

Description of Habitat Groundfish species off the Washington, Oregon, and California coast occur over all habitat types. They are found from intertidal

areas to the depths of the continental slope, on sand or mud bottoms, in rocky reef areas, or in the water column. They seek and select an optimum combination of physical and biological conditions in the environment favorable to the species.

The offshore environment of Washington, Oregon, and California is characterized be relatively stable thermal, chemical, and physical conditions. The nearshore and inshore environments, where some groundfish species spend all or part of their life cycle, are regions of physical and chemical variability due to the influx of freshwater from rivers and run-off from land. These waters are particularly vulnerable to the effects of coastal development and habitat alteration.

Variation in environmental conditions can exert a profound effect on the behavior, distribution, and survival of fish, particularly during early life stages. Each species has its characteristic optimum range and tolerance limits for different environmental conditions.

Water temperature affects the metabolic activity of fish and can modify physical activity. Unusual temperature patterns can cause shifts in the timing and location of spawning, or disruptions in the development of eggs and larvae. The onshore-offshore movement of some groundfish stocks may be temperature dependent (Laevastu and Hayes 1981). Temperature can also affect the distribution of adult populations.

Ocean currents may act as environment boundaries to fish and the seasonal shifts in currents may play a role in the migrations of some groundfish stocks (Laevastu and Hayes 1981). The influence of ocean currents on fish is greatest at the egg and larval stages. Currents transport pelagic eggs and fry from spawning areas to nursery grounds and from nursery grounds to feeding grounds. Current may also influence adult migrations and may affect the distribution of adults through the presence of food or temperature boundaries.

Several currents traverse the Northeast Pacific; of these the southerly flowing California current is significant due to the upwelling that occurs along its route off the Oregon and California coasts. Upwelling mixes deep, nutrient-rich waters with surface water, is associated with high productivity and probably has a great influence over many resident groundfish stocks. Occasional disruptions in upwelling occur, such as during El Niño events, when large scale shifts in currents and water temperature can severely affect fishery resources through the disruption of the food web and displacement of food organisms.

Light is also an important factor in ocean habitats. Some groundfish species rely on sight for capturing prey. Light may also be used for signaling reproductive behavior, locating shelter, or for coloration. Light may be involved in triggering migrations, thus influencing the timing of reproduction.

The bulk of commercially important groundfish resources off the Washington, Oregon, and California coast occur on the continental shelf and slope. The continental shelf is the shallow apron of land 0 to 100 fathoms deep surrounding continental land masses. The shelf is continuous with the continental slope, the region where the continental land mass drops rapidly to the deep sea floor. Depth of the continental slope generally ranges from 100 to 1,500 fathoms. The continental shelf off Washington, Oregon, and California is narrow, ranging from

less that one mile wide off Monterey, California to 43 miles wide off northern Washington.

The groundfish fishery is conducted along most of the coastline off Washington, Oregon, and California with concentrations of fishing effort found near major fishing ports and in certain productive banks and canyons. A majority of fishing vessels fish within a 60-mile radius of their home ports. Areas in the vicinity of the ports of Monterey, San Francisco, Eureka, Crescent City, Coos Bay, Newport, Astoria, Westport, and Neah Bay are especially important to groundfish fishermen. Grounds such as the Farallon Islands/Cordell Banks off California, Heceta Bank and Astoria Canyon off Oregon, and Grays Canyon and Cape Flattery Spit off Washington are examples of productive groundfish areas which also concentrate groundfish fishing vessels.

11.1.5 Effects of Habitat Alteration

Industrial, urban and agricultural activities are major contributors to marine habitat degradation. Developmental pressures in coastal areas have altered and decreased the amount of habitat available for fishery production, with chemical pollution degrading the quality of what remains. Impacts on fish include mortality, disease, increased susceptibility to predation, or reduced reproductive success, all potentially lowering the quantity and quality of commercial and recreational fishes or those species upon which they depend for food.

The dependence of Pacific groundfish species on nearshore or inshore areas, where the potential for impacts from habitat alteration may exist, is poorly understood. Areas close to shore have been suggested as essential habitat for juvenile bocaccio, as well as blue, olive, yellowtail, widow, and shortbelly rockfishes (Miller and Geibel 1973); for English sole and bocaccio in their early years; and for lingcod spawning and nesting areas (PFMC 1982). Although the effects of habitat alteration on fishery production are more pronounced inshore than offshore, concern about offshore species is warranted to the extent that offshore habitats are degraded by inshore activities or offshore uses, or offshore species are directly or indirectly dependent on inshore habitats for reproduction and/or food supply.

The waters off the coast of Washington, Oregon, and California are used for commercial and recreational fishing, pleasure boating, commercial navigation, and waste disposal. At this time, it is unknown whether offshore habitats supporting Pacific groundfish species have been affected by these activities. Expanded use of the waters off the coasts of Washington, Oregon, and California may mean increased risks to Pacific groundfish from impacts associated with those activities, as discussed in the following sections.

11.1.5.1 Oil and Gas Development

The U.S. Department of the Interior is considering oil and gas leasing in 1991 for the continental shelf and slope (to 200 nautical miles) from Cape Mendocino, California to the Washington-Canada border. Current estimates for oil and gas resources feasible for development off Oregon and Washington are projected at 56 million barrels. This amount is 20 to 33 percent of the amount off northern California, and 8 to 14 percent of that in the southern California planning area (MMS 1987).

There are typically three phases to oil and gas development: geological surveys, drilling, and production. Each phase may pose some element of risk to marine organisms and some level of conflict with preexisting fisheries. In general, the risks include biological impacts (i.e., mortality, impaired growth, reduced reproductive success) from spilled oil and discharged drilling fluids and cuttings, or physical disruption (i.e., scattering of species off normal grounds, altering migration routes, etc.) from sound waves or construction and related exploratory and production activities. Other conflicts with fisheries include disruption of soft bottom areas, hard bottom areas, and kelp beds; impacts from the discharge of drilling muds and cuttings; loss of fishing area due to presence of drilling rigs; increased risk of collision due to increased vessel traffic; gear snags from lost drilling equipment; or fouling of fishing gear by spilled oil.

Two potentially competing objectives involved in the use of offshore resources are to meet national energy needs and to conserve living marine resources. While 39 percent of the estimated 3.2 million mt of petroleum entering the marine environment each year derives directly from oil and gas production and transportation, it is not known whether commercially important offshore fisheries have been disrupted by either chronic or catastrophic contamination of their habitat by oil (NAS 1985).

In general, the greatest potential impact of offshore oil and gas development is to coastal areas. Specifically, risks are highest in shallow water areas; areas of poor circulation; areas where circulation patterns may entrain contaminants (e.g., Puget Sound); or pebble-cobble beaches, where oil penetrates deeply and rapidly and the pebble-cobble sediments are replaced very slowly by natural coastal processes (Owens 1973).

The season, location, sea state, water temperature, volume and type of oil released, and whether oil dispersants are used are important factors influencing the impact of a spill on marine biota. If a spill were to coincide with fish spawning, hatching, or larval development, mortality might be higher than otherwise because the early life stages tend to be particularly susceptible to petroleum exposure. The rate of degradation of spilled oil slows as water temperature decreases. As such, spilled oil may persist for longer periods in colder waters.

Laboratory and field studies have shown a broad range of effects on behavioral, reproductive, and developmental processes at low concentrations (less than one part per million) including reduced feeding activity, delayed development, decreased hatching success, and increased incidence of skeletal abnormalities (NAS 1985). Decreased growth in English sole has been observed in studies simulating field exposure conditions (McCain, et al. 1986).

Photosynthetic activity, and thereby phytoplankton growth, is depressed by a wide range of petroleum hydrocarbons (NAS 1985). Zooplankton as well are vulnerable to dispersed and dissolved petroleum constituents (NAS 1985). With perhaps the exception of chronically oiled or enclosed waters, recovery of oil-impacted phytoplankton and zooplankton communities is probably rapid due to recruitment from other areas and their wide distribution, large populations, and short generation times. Pacific groundfish larvae are directly or indirectly dependent upon phytoplankton and zooplankton productivity in the waters in which they rear.

Concerns about spills or chronic release of oil from offshore oil and gas development center on potential biological and ecological impacts. Various studies have shown that low concentrations of petroleum hydrocarbons can disrupt normal behavior of marine organisms, particularly fragile life stages such as larval or juvenile forms (NAS 1985). Population changes that occur as a result of oil and gas development might result in additional effects by altering food web relationships and interspecific competition in the ecosystem. Identifying these effects is difficult because of problems associated with monitoring offshore pelagic and benthic communities and because the natural variability of offshore fish stocks may mask petroleum effects.

While studies support concern about spills and chronic discharges of oil into protected or enclosed coastal waters, there are virtually no data available on long term effects of petroleum discharges offshore (Malins 1981). Therefore, the effects of oil and gas development on the abundance and distribution of Pacific groundfish stocks is largely unknown.

11.1.5.2 Marine Mining

Demand is increasing for sand and gravel as a construction aggregate, and as onshore deposits are depleted, pressure increases to mine offshore. It is estimated that the continental shelf off Oregon and Washington alone contains eight billion cubic meters of sand and gravel (Moore and Luken 1979).

The MMS of the U.S. Department of Interior is examining the possibility of leasing areas of the Oregon-Washington continental shelf for mining placer deposits of hard minerals such as chromite, garnet, ilmenite, magnetite, zircon, gold, and platinum. The extent and abundance of these deposits is unknown, and while market conditions do not favor extraction at present, exploration and development is expected in the near future because of demand and strategic importance of many of these minerals (ODFW 1987).

Potential impacts from marine mining are a function of the timing of dredging operations in relation to seasonal fish migration, and include coastal erosion, interruption of the longshore transport of sand, potential conflicts with fisheries, and the loss of important benthic habitat. There may also be beneficial effects, such as re-suspension of nutrients trapped in sediments. The release of these nutrients increases food availability.

The potential impacts of mining operation to groundfish species would have to be assessed on a site-specific basis. In general, risks to groundfish species would be greater in later rather than earlier life stages, since many of these species have pelagic egg and larval stages. While some studies suggest limited harmful effects on fish (Gustafson 1972; Moore and Luken 1979), the effects of increased turbidity from mining on primary productivity and egg and larval survival, as well as other long range impacts of marine mining operations on Pacific groundfish stocks are unknown.

11.1.5.3 Dredge and Fill

The removal and relocation of river, harbor, and coastal sediments is often conducted for maintenance of navigation channels and port facilities. Associated impacts have the potential to affect Pacific groundfish species to the extent that populations occur at or near sites of dredging, filling, or dredged material disposal operations.

Dredging results in increased turbidity, with the effects being dependent on the type of substrate dredged, on currents, tides, preventive measures, and the type of dredge employed by the contractor. Habitat alteration occurs from dredging through disruption of benthic communities, loss of shallow water habitat, or re-suspension of polluted sediments. These effects can be temporary or long term.

Dredged material is either disposed of at designated sites or used as fill. There is little evidence that the disposal of dredged material poses significant risk to Pacific groundfish communities, except perhaps in localized inshore areas. NMFS conducted a study of four interim dredge disposal sites off Oregon and found no indication of habitat degradation as measured in terms of benthic invertebrate species and densities (NMFS 1987).

Filling occurs as part of dredging operations, as well as for urban and agricultural purposes. Significant losses of wetlands have reduced important nursery, rearing, and spawning habitats for fish. The relationship between wetland loss and the distribution and abundance of offshore groundfish stocks is poorly understood. More knowledge of the life histories of groundfish species as well as that of their food organisms is required to judge impacts.

11.1.5.4 Marine Debris

The problem of debris in the marine environment is receiving increased attention. Highly persistent plastics cause mortality of fish, marine mammals, and seabirds through ingestion or entanglement. Discarded fishery gear (ghost nets) continue to catch commercially valuable species, Pacific groundfish included, for years after their loss.

Quantitative data regarding effects on fishery stocks due to plastic debris or ghost nets are limited. There is concern, however, that ghost fishing may pose a significant problem to fisheries (Center for Environmental Education 1987). A NMFS study observed a synthetic gillnet to remain adequately strong to hold living animals for six years (High 1985). Although commercially and ecologically important, impacts on fish are the least researched and documented areas in the study of the effects of marine debris (Wallace 1985). Therefore, no conclusions on impacts of marine debris on Pacific groundfish species can be drawn at this time.

11.1.5.5 Waste Discharge

The discharge of organic and industrial wastes can cause severe damage in the marine environment. Heavy metals, petroleum hydrocarbons, chlorinated hydrocarbons, and other wastes can be toxic or cause sublethal effects in fish and their food organisms. The effects of waste discharge are the most severe in areas where the contaminants are entrained or collect in bottom sediments.

A variety of pollutant-associated pathological conditions, including liver lesions and cancers, have been identified in Puget Sound and San Francisco Bay. In Puget Sound, a correlation has been established between certain liver diseases in English sole, concentrations of aromatic hydrocarbons in sediment, and metabolites of aromatic compounds in bile (McCain et al. 1986). Very high levels of organochlorine compounds, including DDT and PCBs, have been found in fish off Los Angeles and near the Farallon Islands in California (Brown 1987; Melzian et al. 1987). These studies measured contaminant levels only and did not assess the effects of the contaminants.

At present, it is unknown whether offshore Pacific groundfish habitats have been adversely affected by waste discharges, or to what extent contaminants are entering the groundfish food chain, since very little monitoring of offshore sites and species within the management area has been conducted. In general, contaminant concentrations drop to low levels moving away from depositional urban areas. However, certain contaminants have been found in organisms inhabiting pristine areas at concentrations rivaling those found in species inhabiting contaminated habitats. PCBs, for example, were found in Pacific cod liver in concentrations comparable to levels observed in inshore English sole (Malins 1982). The PCB concentrations in Pacific cod edible tissue, however, were well below federal standards. Levels of PCBs and DDT in sablefish and Dover sole taken at depths of 250 to 500 fathoms near the Farallon Islands, 30 miles off the coast of central California, were reported to be as high or higher than levels recently reported in the same species taken from highly contaminated areas off southern California (Melzian et al. 1987). These species were collected in the vicinity of former low-level and chemical munitions disposal sites located near the Farallon Islands. Although the definitive sources of the contaminants are not known, the disposal sites may be a potential source of one or both of these contaminants.

11.1.5.6 Council Conclusions and Habitat Policy

The level of commercial and recreational harvest in a fishery is in part a function of productivity in the fish stock, which is in turn directly related to the availability and quality of appropriate habitat for both the target species and its food sources. Disturbances that reduce either the availability or quality of habitat will depress production in the fishery, potentially leading to reduced commercial and recreational harvest.

There is no evidence that offshore Pacific groundfish habitat is at this time significantly affected by either onshore or offshore activities, largely because studies to identify levels and effects of contaminants in offshore Pacific groundfish species have not been conducted. Neither is it known whether nearshore groundfish sub-populations are adversely affected by existing sources of habitat alteration, and, if so, if overall stock abundance is affected. If offshore uses expand, pressure on groundfish stocks from habitat alteration would likewise increase. Oil and gas development, marine mining, or expanded use of offshore areas for waste disposal constitute the primary risks to offshore habitat.

Maintaining the current productive capacity of Pacific groundfish habitat will require careful case-by-case, site-specific, and cumulative impact analysis of proposed activities. Until the life histories of Pacific groundfish species are better understood in terms of offshore-inshore distribution of larvae and juveniles and their importance as recruits to the commercial fisheries, the potential impact of habitat alteration from onshore and offshore activities should not be underestimated.

Therefore, it is the policy of the Council that there be no net loss of the productive capacity of any marine or estuarine habitat which sustains Pacific groundfish species. It is the policy of the Council that habitats critical to the reproduction, rearing, and survival of Pacific groundfish species be protected from significant adverse effects of habitat alteration.

Guided by these policies, the Council will pursue its goal of maintaining productive capacity of Pacific groundfish habitats by participating with other agencies in decisions which directly or indirectly affect those habitats, and by working to resolve conflicts regarding uses of the coastal and offshore areas of California, Oregon, and Washington.

Further, in order to better judge potential impacts of expanded use of coastal and offshore areas on Pacific groundfish, the Council will encourage the pursuit of the following areas of research.

- Life histories of Pacific groundfish species, including spawning, rearing, food sources, migrations, etc.
- Inshore/offshore distribution of Pacific groundfish species.
- Importance of nearshore sub-populations to overall stock abundance.
- Short- and long-term impacts of discharged and spilled oil on Pacific groundfish and their food sources.
- Extent and effect of organochlorine contamination in commercial groundfish species.
- Impact of marine debris on Pacific groundfish.

The Council will convey the importance of these research and information needs to NMFS, the U.S. Department of the Interior, the U.S. Environmental Protection Agency, or other federal agencies; Sea Grant institutions; state resource agencies; and other appropriate entities.

11.2 Description of the Fishery

11.2.1 Area and Stocks Involved

Groundfish fisheries regulated under this FMP occur on the continental shelf and upper slope off Washington, Oregon, and California. The continental shelf is rather narrow, varying in width from less than a mile off the Monterey Peninsula in California to as much as 37 miles over Heceta Bank off southern Oregon. The total shelf area (0 to 100 fathoms) is about 30,000 square miles. By comparison, the area of the central and eastern Bering Sea shelf is an order of magnitude larger, extending approximately 200 miles from shore. While the relatively limited continental shelf and upper slope habitat off Washington-California provides a much smaller harvest (about 249,000 mt versus 1,708,000 mt total Bering Sea catch in 1987) (Canada-U.S. Groundfish Technical Subcommittee Reports), productivity is high, and groundfish resources in the region sustain fisheries of major importance to the U.S.

The fishery is prosecuted over a wide range of depths, from 20 fathoms for English sole and sanddabs to as deep as 700 fathoms for Dover sole and sablefish. Similarly, fishing may occur on smooth mud/sand substrates, rocky reefs, pinnacles and canyons.

A wide variety of groundfishes are harvested in the Washington-Oregon-California fishery. A list of fishes discussed in this FMP is presented in Table 3.1. Pacific coast groundfishes range from semi-pelagic types like Pacific whiting,

shortbelly rockfish, and widow rockfish to demersal types like Dover sole, lingcod, and thornyheads. Most species primarily inhabit the continental shelf, but Dover sole, thornyheads, rex sole, petrale sole and some others occur in greatest abundance on the continental slope. The basic character of the fishery and the composition of landings are distinctive in each INPFC area (Figure 3.1). The close spatial relationship of certain species in any given area often results in large catches of non-target species, creating a multi-species fishery. This is particularly true in the case of bottom trawl catches. For example, vessels targeting on Dover sole in the Columbia area also may catch thornyheads, sablefish, and darkblotched rockfish. Several species of rockfish may be caught in a single trawl tow or gill net set, the species composition of which may change from north to south. Widow, yellowtail, and canary rockfishes are particularly important in rockfish catches in the Vancouver and Columbia areas, while bocaccio and chilipepper rockfishes are significant components in the Monterey and Conception areas. Fishermen can exercise some control over the proportions of various species in catches by bathymetric and area shifts in effort as well as modifying the manner in which gear is fished. However, it is often impossible to avoid the catch of some non-target species totally. The fishery's multispecies nature is further complicated by seasonal changes in fish availability, by weather, and by market conditions (prices and poundage limits)-factors which may cause a trawler to fish on several species assemblages in a single fishing trip. Many gear types are used in the fishery, including trawl nets, gill nets, traps, and longlines. However, trawl nets (both bottom and midwater types) account for a major portion of the groundfish catch.

11.2.2 History of Exploitation

Trawling began on the Pacific coast in 1876 (Scofield 1948), when the paranzella net, or two-boat trawl, was introduced in San Francisco Bay and towed by lateen-rigged sailing vessels. The method successfully produced catches which were larger than those by other fishing gear of the era, and trawling within the Bay became prevalent.

During the 1880s, steam-powered vessels began replacing sailing vessels. By 1888, paranzella gear was fished exclusively by paired steam trawlers. In 1906, San Francisco Bay was closed to trawling because of declining fish stock abundances. By this time paranzella fishing had expanded to open ocean areas outside the Bay. In 1884 a small schooner began fishing with a beam trawl (Harry and Morgan, 1963). This was the first type of trawl gear used off the Oregon-Washington coasts. The beam trawl was an effective fishing gear which could be towed by a single vessel. The otter trawl was introduced as early as 1908 but was not used on a regular basis until 1926, when two vessels began fishing the protected waters of Puget Sound. Diesel engines became available during the 1920s as did other technological advances which stimulated rapid growth and expansion of the trawl fishery. World War II created a high demand for food fish and for shark livers used in the production of vitamin A. The trawl fishery expanded to many productive offshore grounds off California, Oregon, and Washington, and by 1944 Washington trawlers were fishing as far north as Queen Charlotte Sound, Canada. In 1978 large productive trawl grounds in British Columbia, Canada were closed to U.S. fishermen. This action forced Washington fishermen to fish exclusively in U.S. waters, primarily off Washington. Foreign fishing fleets have also operated in the Washington, Oregon, and California area. The Soviet Union operated a large trawl fleet as early as the mid-1960s for rockfish and Pacific whiting. Poland, the German Democratic Republic, the Federal Republic of Germany, and the Republic of Korea also sent vessels,

primarily trawlers/processors, to fish in this area prior to the implementation of the MFCMA. Foreign trawl fleets were one of the principal causes for the depletion of the Pacific ocean perch stock.

In the late 1970s and early 1980s the creation of the 200 mile EEZ as part of the MFCMA, the availability of federal low-interest vessel construction funds, significant improvements in electronic navigation and fish-finding equipment, gear advancements, and the growth of a directed widow rockfish fishery helped fuel a broad expansion of the trawl fleet. For example, California's trawl fleet grew from 126 groundfish vessels in 1977 to 195 trawlers in 1983 (Korson 1984, 1986). Similar expansions occurred in the Oregon and Washington trawl fleets. By 1984, fleet over-capitalization had precipitated a substantial (25 percent) decline in fleet size, yet the remaining vessels still possessed tremendous fishing power.

Two other gear types, longline and trap (or pot), historically have participated in the groundfish fishery, primarily harvesting sablefish. Other hook-and-line gear has comprised a minor portion of the fishery and is excluded from discussion here. Longline gear has been utilized for sablefish since the late 19th century. Longline fleet size has varied considerably over the years, but unfortunately accurate records of these vessels in the Washington, Oregon, and California area were unavailable until 1987. In 1987, 137 sablefish longline vessels landed in the Washington, Oregon, and California area. Anecdotal information suggests that longline fleet size increased during the late 1980s as a result of robust foreign sablefish demand, the use of very efficient circle hooks, and reduced halibut and sablefish fishing opportunities in Alaskan waters.

Sablefish traps were developed for commercial use by fishermen and NMFS scientists in the early 1970s and quickly found widespread use by 1974. They proved to be effective and species-specific, and produced a high quality product. The pot sablefish fleet quickly grew from 60 to 207 vessels in 1979, primarily in response to strong market demand for sablefish in Japan as well as high availability of sablefish along the west coast. In 1980, sablefish prices in foreign markets dropped sharply and many trap vessels left the fishery as a consequence. The fleet declined in size continually to a low of 26 vessels in 1987 (Korson 1984, 1988).

The use of set nets in the EEZ is prohibited from 38°N latitude (approximately Point Reyes, California) northward to the U.S.-Canada border. California has historically had a small-scale set net fishery for California halibut, lingcod, rockfishes and certain non-groundfishes in central and southern California. This fishery expanded dramatically in central California in the early 1980s, focusing on rockfishes, white croaker and California halibut. From a very small fleet of set net vessels, the statewide fleet expanded to 186 groundfish set net vessels by 1986. An additional 254 set net vessels targeted effort on California halibut and angel shark. The state of California imposed a moratorium on the issuance of set net permits in 1985 in order to slow the fishery's rapid growth. In addition, an experimental set net fishery for sablefish was conducted in Vancouver and northern Columbia area waters from 1982 to 1985.

11.2.3 Domestic Fisheries

Groundfish are harvested commercially off the coasts of Washington, Oregon, and California by distinct fishing strategies. These units are described by a particular capture method, by gear, depth, or catch composition. There are four

broad categories of gear types (trawl, hook-and-line, trap, and set net) which can be further subdivided into distinct units. In addition, groundfishes, particularly rockfishes and lingcod, support a large coastwide recreational hook-and-line fishery.

11.2.3.1 Trawl

Trawling has dominated the commercial Pacific coast groundfish industry for the past 50 years, typically comprising approximately 80 percent of the total domestic catch. The Pacific coast domestic trawl fisheries are conducted by vessels 30 to 110 feet in length, weighing under 200 gross tons. To date, little at-sea processing of the catch is done, and fish are iced or placed in refrigerated sea water for delivery to processing facilities. Most fishing trips are one to ten days in duration. Trawlers based in northern Washington generally make lengthy trips of six to ten days due to the greater distance to their fishing grounds. These vessels are generally larger than trawlers from more southerly ports. In 1987, 324 trawl vessels individually landed at least 0.5 mt of groundfish. Characteristics of this fleet are discussed further in Section 11.3.

The trawl fishery can be subdivided into the following fishing strategies. Trawl vessels often use two or more trawls and fish multiple strategies in a single trip.

Deepwater Slope. In this strategy, bottom trawls (both conventional and roller trawls), equipped with mudlines between the trawl doors and net footrope to herd flatfish, are fished at depths from 200 to 700 fathoms over mud and sand substrates for several target species, such as Dover sole, arrowtooth flounder, thornyheads (Sebastolobus spp.), and sablefish. Other groundfish, like darkblotched rockfish, grenadiers, and petrale sole, are harvested incidentally as well. Dover sole dominates deepwater slope catches in the Conception to Columbia areas, but is replaced by arrowtooth flounder in the Vancouver area. A significant portion of the trawl sablefish catch is harvested by this strategy.

Bottom Rockfish. Roller trawls deployed in depths less than 200 fathoms for rockfishes typify this strategy. Roller trawls use hard rollers or bobbins to raise the net's footrope off the bottom thus allowing the net to move over irregular, rocky substrates without snagging. Some important components of the bottom rockfish catch are yellowtail and canary rockfishes, Pacific ocean perch, bocaccio, and chilipepper. Lingcod, sablefish, Pacific cod, some flatfishes and skates are captured as well. Over the last 10 years, the fishing power of this strategy and the midwater trawl strategy has increased most dramatically from advances in electronic fish-locating equipment, particularly color sounders and sonar.

Nearshore Mixed. Nearshore mixed trawl tows are conducted using "mud gear" at depths less than 80 fathoms for a variety of flatfishes. Small trawlers typify this strategy, primarily catching petrale, English and rex soles, sanddabs, and starry flounders.

Midwater Trawl. This strategy developed in the late 1970s and is typified by large trawlers towing specialized trawl gear off-bottom over a variety of depths to capture a single species. To date, midwater trawling has focused on widow rockfish and Pacific whiting from the Eureka area northward to the U.S.-Canada border. Shortbelly rockfish are also vulnerable to midwater trawls, but a dearth

of foreign or domestic demand has discouraged targeted effort. Low bycatch levels of non-target species, such as jack mackerel and salmon, characterize this fishery.

11.2.3.2 Trap

The trap fishery harvests sablefish exclusively and has accounted for as much as 52 percent of the total annual domestic harvest of sablefish. The trap-caught sablefish catch peaked in 1979 at 12,333 mt. Fishing is conducted using baited rectangular or conical traps attached to a groundline. The gear typically is set on the continental slope at depths ranging from 200 to 600 fathoms. The catch may be landed whole, in headed-and-gutted form, or processed and frozen at sea. In recent years, the sablefish trap fleet has declined in number, and in 1987, 28 vessels fished off the west coast.

11.2.3.3 Hook-and-Line

11.2.3.3.1 Commercial

Hook-and-line is the only gear unit which has both commercial and recreational aspects. Commercial hook-and-line fishing is carried out using conventional longlines, "Portuguese" or vertical longlines, trolling gear, and fishing poles with 10 or more hooks employing downriggers in some cases, and jigs. Depths fished typically range from one to 300 fathoms.

The commercial hook-and-line harvest is composed primarily of sablefish, rockfish, and lingcod. Fish are landed in whole, bled-and-gutted, and dressed forms. The majority of the sablefish catch is landed in dressed form. In 1987, 8 percent, or 7,500 mt, of the DAP was taken with hook-and-line gear. Longline-caught sablefish has been both the largest and the most valuable component of this catch, accounting for 55 percent of the total hook-and-line harvest during 1987.

11.2.3.3.2 Recreational

Groundfishes provide vast recreational opportunities to citizens of Pacific Coast states. Recreational groundfish fisheries are highly developed in southern and central California and in localized areas in northern California, Oregon, and Washington. Groundfish are caught from commercial passenger fishing vessels from private or rental vessels, from piers and jetties, and from shore. Lingcod and rockfishes are the primary species/species group caught by the recreational fishery, however Pacific cod and pollock are regionally important in Puget Sound. In the Eureka, Columbia, and Vancouver areas, the recreational groundfish fishery is subordinate to the recreational ocean salmon fishery. This may change in the future, as the salmon recreational fishery often witnesses shorter, more restrictive fishing seasons and interest in groundfish grows. The following state catch estimates illustrate the magnitude of the coastwide recreational fishery for groundfish and should be considered underestimates of actual total catches. California's CPFV fleet harvested 1,839,000 groundfish during 1987. Oregon's CPFV and private boat fishery harvested 218,491 groundfish during 1987. Similar data are not available for Washington.

11.2.3.4 Set Net

Set nets are allowed only south of 38°N latitude. Set nets can be classified into two general categories: gill nets and trammel nets. A gill net is a single panel of webbing attached to both float and lead lines which is anchored and fishes on or near the bottom. A trammel net is also anchored and has two or more panels of webbing with vertical slack secured to the same float and lead lines. A trammel net may also be constructed by creating vertical slack in a single panel of webbing by means of "suspenders". Trammel nets have historically been used to capture California halibut, soupfin shark, starry flounder, rays, and skates at depths to 80 fathoms. However, in recent years, the distinction between gill and trammel nets has blurred somewhat, with the result that both types of set nets are now used over a greater bathymetric range (10 to 150 fathoms) for California halibut, rockfishes, lingcod, sablefish, white croaker, flounders, skates, and rays. Rockfishes, lingcod, and California halibut dominate central California set net catches, whereas in southern California halibut, white sea bass, soupfin shark, and angel shark are the principal target species. Set net groundfish catches accounted for 3.8 percent (or 3,403 mt) of the 1987 domestic catch landed shoreside.

11.2.3.5 Joint Ventures

If U.S. processors do not need the entire species quota or harvest guideline, and that species can be caught fairly selecively without negatively impacting other species that are fully utilized by domestic processors, then a joint venture may be authorized. A joint venture is a domestic fishery in which U.S. fishermen deliver their catch to foreign processing vessels at sea. Even though it involves foreign vessels, the joint venture is not the same as the foreign trawl fishery (sometimes called the "directed fishery") in which fish are both caught and processed by foreign vessels (see Section 11.2.4).

Foreign Participants. Only foreign nations having a Governing International Fisheries Agreement (GIFA), ratified by the Congress of the United States, have been eligible to operate in the EEZ. The decision to permit a foreign nation to fish in the directed fishery or to receive U.S.-harvested fish in a joint venture is contingent upon many factors, including that nation's experience and cooperation in the fishery and its willingness to purchase U.S. fish products and promote development of U.S. fisheries. Since 1976, joint ventures off Washington, Oregon, and California involved the Soviet Union, Poland, Bulgaria, Greece, the Peoples' Republic of China, the Republic of Korea, and Japan. Japan and Greece were the only countries that did not also participate in the directed foreign fishery between 1977 and 1988. Eastern-bloc nations predominated in the early years of the fishery simply because other nations were not interested.

Species. Species harvested in the joint venture can be placed into one of three categories: target, incidental, or prohibited species.

Target Species. Pacific whiting is the only species that consistently has been available and requested for joint venture operations. In joint venture fisheries off Washington, Oregon, and California, the target species are not allocated to the individual foreign nations. Instead, all foreign vessels permitted to receive U.S.-harvested fish, and the U.S. vessels delivering to them, compete on a "first come, first serve basis" for the total amount of the target species designated for JVP. This is sometimes called "the Olympic system."

Although some foreign interest has been expressed in shortbelly rockfish and jack mackerel, these fisheries have not developed. A small experimental joint venture for shortbelly rockfish was conducted in 1982 but markets for the product did not evolve and, through 1989, no further joint venture activity has occurred. There was interest in shortbelly rockfish joint ventures in 1989, but closure of much of the desired area for national security reasons discouraged further development of this fishery. Although there were some attempts to catch jack mackerel in the late 1970s and foreign interest was rekindled in 1983, markets for this species failed to appear.

Incidental species. Some species are caught unavoidably in the joint venture fishery for Pacific whiting, and small amounts may be retained by the foreign processing vessel. These catches were not counted against quotas imposed on U.S. landings. In the joint venture, less than five percent of the annual U.S. catch delivered to foreign processing vessels (including species that subsequently were discarded) have been incidental species, and generally less than a quarter of these have been retained by the foreign vessels.

Prohibited species. Salmon, Pacific halibut, and Dungeness crab are prohibited species which means they must not be retained by any vessel, U.S. or foreign, involved in the joint venture fishery. Between 1978 and 1987, the joint venture vessels averaged about one salmon per 7 mt of whiting received (0.146 salmon per mt of whiting). In 1988, the catch rate for salmon was below average, about one salmon in 10 mt of whiting. Generally over 90 percent of the salmon taken in the joint venture are chinook. In the joint venture in 1987, 92.4 percent of the salmon were chinook (average fork length of 55.1 cm) and 6.8 percent were coho (average fork length of 53.2 cm).

Between 1977 and 1987, small numbers of Pacific halibut have been taken in the joint venture fishery, averaging one halibut in 1,800 mt of whiting. The joint venture took one halibut in approximately 2,200 mt of whiting in 1987, close to the 10-year average. In 1988, 131 halibut were taken in the joint venture, which equals one halibut in about 1,000 mt of whiting.

Catch. With one exception, joint venture purchases increased each year since 1978 (Table 11.2). The exception was 1985, when the Soviets were "certified" for their excessive harvest of minke whales off Antarctica. This certification cut the Soviet directed fishing allocations in half. In turn, the Soviets reduced their joint venture purchases by half. A discussion on the development of joint ventures relative to domestic and foreign fisheries appears in Section 11.2.5, and management measures used to regulate the foreign joint venture vessels are listed in Section 12.5. More detailed tables on catch, effort, and allowances in the joint venture are found in the annual SAFE document.

Number of Vessels. In the mid-1970s, well over 100 foreign fishing vessels trawled off the Washington, Oregon, and California coast; joint ventures did not occur until 1978. In contrast, fewer than 50 different foreign trawl or processing vessels have operated in the whiting fishery each year since 1978, and the number operating in any given day is even lower. The number of U.S. trawlers fishing in joint ventures usually is slightly larger than the number of foreign processing vessels (Table 11.3). Because many vessels operated in both the joint venture and foreign trawl fisheries during the same season, they are presented together in the following table.

Table 11.2. Catches in the joint venture fishery for Pacific whiting. [a/]

	Whiting (Mt)	Incidental Catch	% Total	Salmon (No.'s)	No. salmon per mt whiting	Mt whiting per salmon
1978	856	38+	4+	19	0.022	45
1979	8,834	220+	2+	1,623	0.184	5
1980	27,537	933	3	3,602	0.131	8
1981	43,557	1,581	4	6,422	0.147	7
1982	67,465	1,687	2	11,694	0.173	6
1983	72,100	1,146	2	5,143	0.071	14
1984	78,889	765	1	10,192	0.129	8
1985	31,512	341	1	1,315	0.042	24
1986	81,639	1,188	1	26,999	0.331	3
1987	105,997	1,154	1	8,636	0.081	12
1978-1987 Average:					0.146	7
1988	135,781	1,112	1	13,984	0.103	10

[a/] "Catch includes discards from foreign processing vessels but not from U.S. joint venture vessels. Discard data are not available for the first two years of joint venture operations.

Table 11.3. Number of vessels operating in foreign and joint venture fisheries for Pacific whiting.

	Foreign Vessels			U.S. Vessels (Joint Venture Trawlers)
	Foreign Trawlers	Joint Venture Processors	Total [a/]	
1978	36	2	36	2
1979	49	10	49	11
1980	24	11	34	16
1981	31	20	45	21
1982	4	15	15	19
1983	0	15	15	19
1984	17	20	29	21
1985	22	15	27	18
1986	24	23	34	25
1987	33	30	40	31
1988	18	31	38	41

[a/] Because some foreign vessels operated in both foreign and joint venture fisheries, the total may not equal the sum of the two categories. Cargo vessels are excluded. The one foreign processing vessel operating in the experimental joint venture for shortbelly rockfish in 1982 is not included.

11.2.4 Foreign Fisheries

As established by the MFCMA, foreign fishing is permitted only on amounts surplus to domestic processing and joint venture needs.

Foreign Participants. As in joint venture operations, foreign participants in the foreign fishery must have a GIFA (see Section 11.2.3.5 on joint ventures). Since 1976, the Soviet Union, Poland, Bulgaria, the Peoples' Republic of China, and the Republic of Korea have participated in directed foreign fisheries. These countries also operated in joint ventures, although they did not necessarily participate in the same year that they conducted the foreign fishery.

Species. As in the joint venture, species taken in the foreign fishery fit into one of three categories; target, incidental, or prohibited species.

Target species. Even though shortbelly rockfish and jack mackerel have been made available for foreign fishing, directed fisheries have been conducted only for Pacific whiting.

Each nation permitted to fish in the foreign trawl fishery is given an allocation of the target species which must not be exceeded. According to the MFCMA, only half a nation's allocation is released initially, and the other half is released only if that nation complies with the foreign fishing regulations and agreements made with the U.S. government. Although full utilization of the quota may be desirable, the U.S. is not obligated to allocate surplus fish to foreign interests.

Incidental species. Some species that are fully utilized by domestic processors are caught unavoidably in the foreign trawl fishery. These catches were not counted against quotas imposed on U.S. landings, and only small allowances were permitted in order to discourage their harvest. Only once have incidental species accounted for more than two percent of the annual catch in the foreign trawl fishery, in 1980 when six percent were taken.

Prohibited species. As in the joint venture, salmon, Pacific halibut, and Dungeness crab are prohibited species which means they must not be retained by any foreign vessel. Between 1977 and 1987, the average catch of salmon in the foreign fishery was one salmon per 12 mt of whiting (0.082 salmon per mt of whiting). In 1988, the catch of salmon was above average, one salmon per 8 mt of whiting in the foreign fishery. Generally over 90 percent of the salmon taken in the foreign fishery are chinook. In the foreign fishery in 1987, 90.1 percent of the salmon were chinook (average fork length of 61.1 cm) and 8.2 percent were coho (average fork length of 56.7 cm).

Between 1977 and 1987, small numbers of Pacific halibut have been taken in the foreign fishery, averaging one halibut in 1,100 mt of whiting. In 1987, one halibut was taken in approximately 2,500 mt of whiting in the foreign trawl fishery, less than half of the 10-year average. In 1988 only 11 halibut were taken in the foreign fishery, which equals one halibut in 1,600 mt of whiting.

Catch. Catch in the foreign trawl fishery showed a general decline from a high of 127,013 mt in 1977 to no fishery at all in 1983 (Table 11.4). This decline was due largely to political sanctions against the Soviet Union and Poland. In 1980, the Soviet Union was barred from fishing following its invasion of Afghanistan. In 1982, Poland also was prohibited from fishing due to its

imposition of martial law. These sanctions (which were not applied to joint ventures) were not lifted until late in the summer of 1984. In 1985, the Soviet Union again was sanctioned, this time for excessive harvest of minke whales off Antarctica. This sanction continued into 1988. In spite of the loss of Soviet presence, catches in the foreign fishery grew due to participation by new countries (the People's Republic of China and the Republic of Korea in 1987) and increased allocations to Poland. By 1989, however, the foreign fishery was completely displaced by increased joint venture activity. A discussion on the foreign fishery relative to domestic fisheries appears in Section 11.2.5, and the management measures used to regulate the foreign trawl fishery are listed in Section 12.6. More detailed tables on catch, effort, and allowances in the foreign fishery are found in the annual SAFE document.

Table 11.4. Catches in the foreign trawl fishery for Pacific whiting. [a/]

	Whiting (mt)	Incidental Catch	% Total	Salmon (No.'s)	No. salmon per mt whiting	Mt whiting per salmon
1977	127,013	2,799	2	14,627	0.115	9
1978	96,827	1,856	2	5,905	0.061	16
1979	114,910	2,364	2	7,044	0.061	16
1980	44,023	2,905	6	4,831	0.110	9
1981	70,366	941	1	5,052	0.072	14
1982	7,089	164	2	104	0.015	68
1983	No foreign fishery					
1984	14,772	309	2	63	0.004	234
1985	49,853	345	1	703	0.014	71
1986	69,861	891	1	10,178	0.146	7
1987	49,656	738	2	4,649	0.094	11
1977-1987 Average:					0.082	12
1988	18,041	297	2	2,185	0.121	8

[a/] "Catch includes discards from foreign fishing vessels.

Number of Vessels. (See Section 11.2.3.5 on joint ventures.)

11.2.5 Americanization of the Pacific Whiting Fishery

The MFCMA states that the needs of the U.S. fishing industry have first priority. Twice each year, NMFS has surveyed domestic processors to estimate the amounts of Pacific whiting, shortbelly rockfish, and jack mackerel needed in that year. (These are the only species which have been available to joint venture or foreign fisheries since implementation of the MFCMA in 1977.) If domestic processors did not need the entire OY quota, joint venture processing was allowed on the remainder. Foreign fishing was permitted only on amounts surplus to domestic needs (both US processing and joint venture). If amounts were made available to the foreign fishery, a reserve was set aside in case domestic industry needed more fish than initially estimated. After confirmation in the middle of the year that the needs of domestic processors would be met, that part of the reserve not needed by the domestic processors, and any amount of the quota initially designated for domestic processors which was no longer needed, could be made

available for joint venture processing. Any left over then could be designated for foreign fishing.

Consistent with the intent of the MFCMA to encourage development of domestic fisheries ("Americanization"), joint venture and shore-based landings of whiting generally have increased since 1978 (Table 11.5). In spite of the opportunities for joint venture and foreign fisheries, just over half the total whiting quota between 1978 and 1987 was landed. In 1988, 65 percent of the OY was taken, lower than in 1987, largely because the foreign fishery did not harvest its full allocation. By 1989, over 90 percent of the Pacific whiting OY was harvested, and it was taken exclusively by domestic fisheries; the foreign fishery was displaced by the expanding joint venture.

Table 11.5. Landings and quotas for Pacific whiting.

	Foreign Fishery	Joint Venture	Domestic Processing	Totals Landings[a/]	Optimum Yield	Percent of Quota Landed
1978	96,827	856	689	98,372	130,000	76
1979	114,910	8,834	937	124,681	198,900	63
1980	44,023	27,537	793	72,353	175,000	41
1981	70,366	43,557	838	114,761	175,000	66
1982	7,089	67,465	1,024	75,578	175,500	43
1983	0	72,100	1,051	73,151	175,500	42
1984	14,772	78,889	2,721	96,382	175,500	55
1985	49,853	31,692	3,894	85,439	175,000	49
1986	69,861	81,639	3,463	154,963	295,800	52
1987	49,656	105,997	4,795	160,448	195,000	82
1988	18,041	135,781	6,876	160,698	232,000	69

[a/] Slight differences due to rounding.

"Americanization" of the whiting fishery is even more impressive when related to catches of all groundfish species, not just Pacific whiting, off Washington, Oregon, and California (Figure 11.1). In 1988, the joint venture for Pacific whiting accounted for over 54 percent of all groundfish landed that year, assuming a dominant role in the Pacific coast groundfish fishery.

Expansion of Domestic Processing. Although shore-based deliveries of whiting have grown, they have comprised less than five percent of the total foreign and domestic harvest of whiting each year from 1978 through 1988. Domestic at-sea processing for whiting has not occurred to any great extent as of 1989.

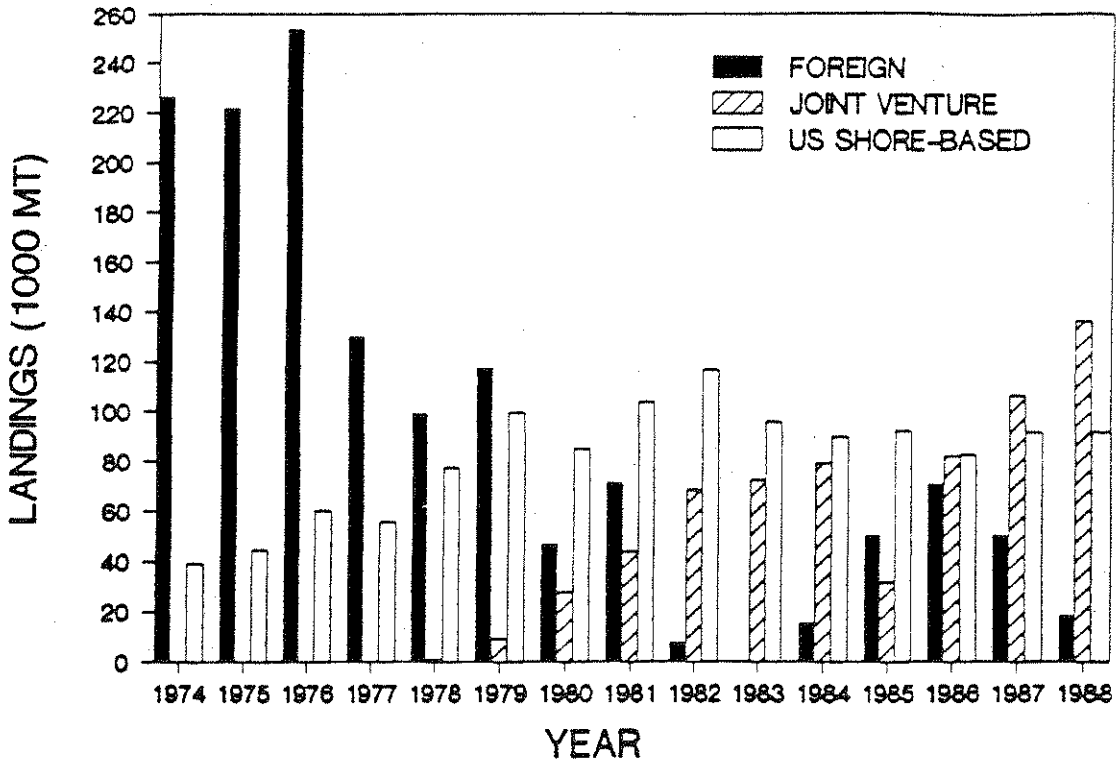

Figure 11.1 - Domestic and Foreign Landings of Pacific Coast Groundfish

Expansion of the Joint Venture Fishery. From its inception in 1978 until 1984, the joint venture fishery for whiting grew steadily, and in 1984 accounted for almost half the domestic landings of all groundfish species. However, in 1985, only 26 percent of the domestic groundfish landings were attributed to joint ventures. This decline occurred from reduced Soviet participation. (When the Soviets were "certified" by the Secretary of Commerce for excessive harvest of minke whales, their potential allocations were cut in half. The Soviets responded by not accepting any allocation for directed fishing in 1985 and reducing their joint venture contracts by half.) However, the trend of increasing proportions of joint venture landings resumed in 1986 and has continued since then. In 1986, joint venture landings virtually equaled the shore-based landings of all groundfish species off Washington, Oregon, and California, surpassing the previous high proportion of 1984. In 1987, for the first time, joint venture landings contributed more than half of all domestic groundfish landings. In 1983, 1984, and again in 1987, joint ventures for whiting accounted for over 40 percent of all groundfish landed, foreign and domestic, off Washington, Oregon, and California. In 1988, joint ventures accounted for more than 54 percent of all groundfish landed from the EEZ off Washington, Oregon, and California.

Expansion of the Domestic Fishery (Joint Venture and Shore-based Processing). The last year of foreign domination of groundfish landings was 1979. Since 1980, domestic landings (joint venture and shore-based processing) annually have contributed at least two thirds of the total groundfish landings, over 90 percent in 1982, 1983, and 1984. In 1985, due to the resurgence of the Polish directed fishery and diminished Soviet joint venture, about 70 percent of the total groundfish landings were made by domestic vessels. This percentage was maintained in 1986; although joint venture landings increased in 1986, foreign trawl landings also increased and shore-based landings declined, probably because U.S. fishermen turned to the more lucrative shrimp fishery that year. The proportion of domestic landings of groundfish increased to 80 percent in 1987 and over 90 percent in 1988.

11.3 Social and Economic Characteristics of the Fishery

The west coast groundfish fishery consists of business firms and recreationists that harvest the groundfish resources of the region. Commercial firms exploiting groundfish include U.S. commercial fishing vessels employing a wide variety of gear, foreign trawl and processing vessels, party/charter vessels for recreational fishing, shoreside fish processing firms, and foreign processing vessels engaged in joint ventures with domestic commercial vessels.

This section focuses on factors affecting economic performance of domestic commercial firms in the west coast groundfish fishery. Many (if not most) commercial and recreational groundfish vessels and groundfish processors catch and process non-groundfish species (e.g., crab, salmon, shrimp, and albacore) or conduct part of their business in Alaska. Consequently, developments in these fisheries which impact the west coast fishery are described. The most recent year for which information is available is 1987. For more up to date information the reader should refer to the most recent SAFE document, which is available from the Council.

11.3.1 Overview of the 1987 Season

Domestic commercial landings of groundfish from U.S. waters off the West Coast increased significantly in 1987, continuing the trend of fuller utilization of the resource. Domestic shoreside and joint venture commercial landings totaled over 197,000 mt. This was a 21 percent increase over the 1986 landings of 164,000 mt (Table 11.6). The exvessel value of the 1987 landings was approximately $83.5 million, about 28.5 percent above the 1986 level.

The increase in commercial groundfish production occurred as a result of increases in both joint venture and shoreside landings, and exvessel value of shoreside and joint venture landings increased 28 and 33 percent, respectively. The exvessel value of shoreside landings was worth $71.9 million and the exvessel value of joint venture landings totaled $11.7 million. Coastwide exvessel prices for sablefish, rockfish, and flatfish increased again in 1987 (Table 11.7). Exvessel prices in the joint venture fishery were roughly the same as 1987, and the increase in total value of joint venture landings was due almost entirely to increased volume.

The geographic distribution of groundfish landings by state and species is given in Table 11.8. In 1987, landings increased in both Washington and Oregon but were unchanged in California. The increase in landings of several species in California was offset by a nearly 30 percent drop in sablefish landings. Higher exvessel prices caused an increase in value in all three states, however (Table 11.9).

The fisheries for principal species/species groups of the west coast commercial groundfish catch are reviewed below and are summarized in Table 11.10.

Table 11.6 Landings and exvessel values of landings in Washington, Oregon, and California, including joint venture deliveries in waters off these states.

	1987	1986	% Change
Shoreside (mt)	92,320	82,298	+12.2
Joint Venture (mt)	106,095	81,855	+29.6
Total WOC Landings	198,415	164,153	+20.8
Shoreside Values $			
Current	71,875,000	56,240,000	+27.8
Real [1]	70,204,100	56,240,000	+24.8
Joint-Venture Value			
Current	11,663,000	8,760,000	+33.1
Real	11,391,900	8,760,000	+30.0
Total WOC Groundfish Landed Value			
Current	83,538,000	65,000,000	+28.5
Real	81,596,000	65,000,000	+25.5

Source: Pacific Coast Fishery Information Network (PacFIN); most current preliminary data as of June 1988
NMFS, Northwest Region

1/ Real values are current values adjusted to eliminate the effects of inflation. This adjustment has been made by dividing current values by the current year GNP implicit price deflator, with a base year of 1986. The GNP deflators are 1.00 in 1986 and 1.0238 in 1987.

Table 11.7 Average annual exvessel prices paid for some commercially important groundfish species from 1977-1987.

	Sablefish		All Rockfish Combined		Widow Rockfish		Dover Sole		English Sole		Petrale Sole	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
1978	.283	.448	.181	.286	-	-	.207	.327	.245	.388	.371	.587
1979	.356	.518	.199	.290	-	-	.215	.313	.286	.416	.447	.651
1980	.199	.265	.159	.212	-	-	.211	.281	.328	.437	.458	.611
1981	.215	.262	.169	.206	.135	.164	.223	.270	.297	.362	.512	.624
1982	.252	.289	.195	.224	.157	.180	.233	.267	.318	.365	.606	.696
1983	.237	.262	.223	.246	.192	.212	.224	.247	.322	.356	.682	.755
1984	.218	.232	.251	.267	.225	.240	.231	.246	.321	.343	.709	.755
1985	.334	.343	.281	.289	.250	.257	.240	.246	.333	.342	.736	.756
1986	.374	.374	.313	.313	.275	.275	.258	.258	.360	.360	.777	.777
1987	.472	.461	.350	.343	.322	.314	.305	.298	.402	.393	.816	.797

Source: PacFIN, Groundfish Report Series

NOTE: Real prices were adjusted for inflation using the GNP implicit price deflator, where 1986=1.00. All prices are weighted averages.

Table 11.8 Commercial landings (mt) of individual groundfish species by state for 1986 and 1987.

Species	California		Oregon		Washington	
	1986	1987	1986	1987	1986	1987
Lingcod	514	929	656	719	714	1,023
Pacific Cod	-	73	31	659	303	1,545
Pacific Whiting	2,982	4,518	420	183	61	95
Sablefish	6,099	4,347	4,653	5,239	2,415	3,144
Pacific Ocean Perch	30	96	669	549	649	332
Widow Rockfish	2,468	2,274	4,329	6,300	2,765	4,113
Other Rockfish	14,414	14,309	6,771	7,856	4,742	4,581
Dover Sole	10,987	10,761	4,822	6,058	1,480	1,622
English Sole	1,074	1,322	552	595	403	560
Petrale Sole	711	824	709	855	313	526
Other Flatfish	1,701	1,771	1,285	1,572	1,982	2,403

Source: PacFIN, Groundfish Report Series

Table 11.9 California, Oregon and Washington shoreside commercial groundfish landings (metric tons) and exvessel values (thousands of dollars) from 1977-1987.

Year	California		Oregon		Washington		Total Coast	
	mt	$	mt	$	mt	$	mt	$
1977	32,082	12,185	10,172	4,150	12,712	4,362	54,966	20,697
1978	36,805	18,457	16,469	7,871	19,285	8,213	72,559	34,541
1979	36,392	19,566	28,935	17,264	22,508	11,112	87,835	47,942
1980	36,862	16,551	28,515	11,425	22,514	9,119	87,891	37,095
1981	42,578	21,448	37,502	14,721	23,093	10,100	103,173	46,269
1982	52,608	27,795	41,023	20,445	25,368	11,405	118,999	59,645
1983	39,498	21,984	35,158	18,345	22,970	11,257	97,626	51,586
1984	40,570	22,914	28,209	15,234	21,080	10,474	89,859	48,622
1985	43,062	26,516	29,023	17,095	19,229	12,449	91,314	56,060
1986	41,246	28,522	24,931	16,813	16,081	10,905	82,298	56,240
1982-86 Average	43,397	25,546	31,669	17,586	20,946	11,298	96,019	54,431
1987	41,410	30,682	30,627	24,328	20,283	16,866	92,320	71,875

Source: State Fishery Agencies
PacFIN, Groundfish Report Series; 1981-1987
Annual data updated and current as of June 1988

Table 11.10 Landings and value of individual groundfish species landed in Washington, Oregon, and California in 1986 and 1987.

Species	1986		1987		% Change	
	mt	$	mt	$	mt	$
Lingcod	1,884	1,317,300	2,586	2,152,800	+37.0	+63.4
Pacific Cod	334	202,200	2,270	1,644,900	+580.0	+713.5
Pacific Whiting	3,463	448,500	4,795	666,100	+38.5	+48.1
Sablefish	13,167	10,867,700	12,730	13,244,600	-3.3	+21.9
Pacific Ocean Perch	1,348	822,700	976	704,400	-27.6	-14.4
Widow Rockfish	9,562	5,803,800	12,687	9,002,300	+32.7	+55.1
Other Rockfish	25,972	18,797,600	26,746	21,477,300	+3.2	+14.3
Dover Sole	17,289	9,821,000	18,441	12,400,400	+6.7	+26.3
English Sole	2,028	1,601,800	2,477	2,195,400	+22.1	+37.1
Petrale Sole	1,733	2,966,500	2,204	3,964,700	+27.2	+33.6
Other Flatfish	4,968	3,003,100	5,747	3,763,500	+15.7	+25.3
TOTAL	81,703	55,652,200	91,659	71,214,400	+12.2	+28.0

Source: PacFIN, Groundfish Report Series

1/ Includes domestic landings from U.S. coastal waters off WOC, but not Puget Sound; A small amount of landings of miscellaneous groundfish species are not included in the totals.

Sablefish. Sablefish was the single most valuable groundfish species landed on the west coast in 1987, as it was in 1985 and 1986. West coast sablefish landings were 12,730 mt, a decrease of 3.3 percent from 1986 due to a more restrictive quota. The exvessel value of the landed catch was $13.24 million. The average real exvessel price was the highest since 1979 (Table 11.7).

Groundfish trawls (bottom, roller, and midwater) accounted for 50.0 percent of sablefish landings, compared to 45.7 percent in 1986 (Table 11.11). The contribution of sablefish to longline and miscellaneous nontrawl gear increased, but dropped from 16.1 to 15.8 percent for pot gear, consistent with the continuing decline in pot gear and the continued growth of the longline fleet.

Widow Rockfish. Widow rockfish landings were 12,687 mt in 1987, an increase of 32 percent over 1986. An increase in the average coastwide exvessel price, in conjunction with the increase in landings, resulted in a 55 percent increase in the exvessel value of these landings to $9 million.

Since 1982, widow rockfish landings have been restricted by trip limits which are triggered when a certain percentage of the OY (now harvest guideline or quota) is landed. The purpose of the limit has been to prevent early closure of the fishery and reduce discard mortality that would occur when the fishery was closed early in the year. The limit has sometimes been greatly reduced (to 3,000 pounds), eliminating the directed fishery for widow rockfish but allowing landing of incidental catches in other fisheries.

Pacific Ocean Perch. Pacific ocean perch landings are restricted to prevent directed fishing and to allow landings only of bycatch in other fisheries. Landings of Pacific ocean perch declined 27.6 percent in 1987 to 976 mt with an exvessel value of $704,400.

Other Rockfish. Total west coast landings of rockfish other than widow rockfish and Pacific ocean perch) were 26,746 mt compared to 25,972 mt in 1986. This was a 3.2 percent increase over 1986 but still below the 1985 harvest of 27,400 mt. The rising exvessel price sent the exvessel value to nearly $22 million, a 14 percent increase over 1986.

West coast rockfish landings stabilized in 1986. Trip poundage and trip frequency limits implemented at the beginning of the year were effective in keeping the harvest of the Sebastes complex of rockfish (all rockfish except Pacific ocean perch, widow rockfish, shortbelly rockfish, and Sebastolobus rockfishes) under the harvest guideline established north of 43°22'N latitude (Coos Bay, Oregon). Trip frequency limits (with three options) were provided for fishermen in that area, while the fishery south of Coos Bay was restricted by a trip poundage limit alone.

Table 11.11 West coast landings and exvessel value of sablefish by gear, 1986 and 1987.[1]

	Total WOC 1987				Total WOC 1986			
	mt		$		mt		$	
Ground trawl	6,430.0	(50.0)	4,625.5	(34.9)	6,007.7	(45.6)	3,554.7	(32.7)
Pot	2,017.0	(15.8)	2,293.7	(17.3)	2,115.9	(16.1)	2,084.6	(19.2)
Longline	4,152.0	(32.6)	6,231.6	(47.0)	3,572.0	(27.1)	4,163.5	(38.3)
Net	36.4	(0.3)	21.1	(0.2)	117.1	(0.9)	55.3	(0.6)
Other	94.7	(0.7)	72.7	(0.6)	1,354.0	(10.3)	1,009.6	(9.3)
Total	12,730.1		13,244.6		13,167.0		10,867.7	

1/ Figures in parentheses are the percentages each gear group contributed to the total landed catch and exvessel value.

Flatfish. Landings of all flatfish species increased to 28,869 mt, an increase of about 10 percent over 1986. The most important single species, Dover sole, accounted for the largest increase in production, totaling 18,400 mt in 1987 compared to 17,300 mt in 1986. Petrale sole showed the largest percentage increase in volume (27.2 percent) while English sole showed the largest percentage increase in exvessel value (37.1 percent). Dover sole remained the second most valuable groundfish landed on the west coast.

Pacific Whiting. Shoreside landings of Pacific whiting by midwater trawl vessels increased 38 percent to 4,800 mt in 1987, the highest year for shoreside production to date. The industry sells primarily frozen, headed-and-gutted whiting in 5 and 10 pound boxes. The total exvessel value of the 1987 shoreside whiting harvest increased 48.1 percent to $666,000.

11.3.2 Description of the Commercial Harvesting Sector

11.3.2.1 Otter Trawl Fleet

The total quantity of groundfish landed with bottom, roller, and midwater trawls increased to 180,800 mt in 1987. The exvessel value of shoreside and joint venture trawl deliveries was $63.9 million, an increase of $19 million over 1986. The volume of shoreside trawl landings increased to 74,720 mt compared to 61,200 mt in 1986 (Table 11.12), reversing a declining trend since 1982. The exvessel value of shoreside trawl deliveries increased 41 percent (Table 11.13). The joint venture trawl production also increased by nearly 30 percent, consistent with the increasing trend in joint venture production since 1979.

The groundfish trawl fleet consists of vessels which either deliver to shoreside processing facilities or participate in joint ventures. These groundfish trawl vessels exhibit a significant amount of geographic mobility. Midwater trawlers may fish in joint venture operations off the west coast or Alaska in spring and summer, and then deliver rockfish to shoreside processors in the winter. Some nearshore trawlers are known to make seasonal shifts between distant ports. Very few trawlers depend on one groundfish species, but rather are multispecies fishing operations, harvesting an array of groundfish and non-groundfish species such as shrimp, crab, salmon, and albacore. Thus the economic performance of groundfish trawlers may be affected considerably by conditions outside of the West Coast groundfish fishery.

In 1987, the number of trawl vessels making one or more shoreside groundfish landings over 1,000 pounds with groundfish trawl gear was 324, up 16 vessels from 1986 and the first increase in six years (Table 11.14). The majority of the trawlers leaving the fleet in recent years was in the 40 to 69 foot size class, reflecting the resurgence in the pink shrimp fishery that diverted trawl effort away from groundfish (Table 11.15).

Table 11.12 West coast groundfish shoreside landings (metric tons) by gear group, 1981-1987.

	Trawl	Trap/ Pot	Setline*/ Longline	Gill/Set** Net	Other/Misc
1981	90,797	3,956	3,997	1,632	2,791
1982	103,299	6,530	4,384	2,077	2,709
1983	81,668	5,423	2,191	2,243	6,101
1984	72,693	3,854	1,989	2,199	9,124
1985	75,352	3,703	4,603	3,918	3,737
1986	61,249	2,216	5,894	4,205	8,734
1987	74,719	2,076	6,952	3,903	4,740

Source: PacFIN, Groundfish Report Series, Annual data updated and current as of June 1988

* Includes commercial pole catch for California landings, because large quantities of sablefish are landed with this gear in PacFIN. Consequently values will differ from previous annual reports.

** Includes gill net, set net, and other net; but not dip, trammel, seine, or miscellaneous nets.

Table 11.13 Exvessel value (thousands of dollars) of west coast groundfish landings by gear group, 1981-1987.

	Trawl	Trap/Pot	Set/Longline*	Gill/Set** Net	Other/Misc
1981	37,855	2,081	3,696	1,468	2,169
1982	46,987	4,863	4,551	1,814	1,430
1983	40,578	3,598	2,091	1,742	3,578
1984	36,885	2,338	2,083	1,955	5,361
1985	41,264	3,154	5,329	3,367	2,946
1986	36,916	2,171	6,811	3,715	6,627
1987	52,162	2,347	9,527	3,806	4,032

Source: PacFIN, Groundfish Report Series, Annual data updated and current as of June 1988.

* Includes commercial pole catch for California landings, because large qantities of sablefish are landed with this gear in PacFIN. Consequently values will differ from previous annual reports.

** Includes gill net, set net, and other net; but not dip, trammel, seine, or miscellaneous.

Table 11.14 Number of shoreside vessels in Washington, Oregon, and California commercial groundfish fleets, 1981-1987.

Year	Otter Trawl	Pot/Trap [1]	Longline [1]
1981	408	66	191
1982	444	82	208
1983	436	59	185
1984	397	34	96 [2]
1985	358	32	129 [2]
1986	308	25	190 [2]
1987	324	26	186 [3]

Source: State Fishery Agencies

1/ Vessels landing fish caught with this gear-type in two or more states are counted in each state for years 1982-83. These numbers therefore are an upper bound for the true number of vessels using this gear-type.

2/ Represents number of longline vessels landing in Oregon and Washington, where double counting has been eliminated; California data unavailable for those years.

3/ Includes count for sablefish longline vessels landing in California and Oregon and all coastal longline vessels in Washington.

Table 11.15 Washington, Oregon, and California groundfish shoreside trawl fleet characteristics, 1983-1987.

	1984	1985	1986	1987
Total Number Landing	397	358	308	324
Frequency by Size (Length) Class				
< 30 feet	2	2	1	1
30-39	20	15	9	10
40-49	100	96	73	74
50-59	108	93	87	87
60-69	104	98	90	96
70-79	44	39	37	39
80-89	11	6	6	10
> 90	8	9	5	7
Vessel Characteristics:				
Average Length	57.41	57.6	58.2	58.8
Average Horsepower	312.4	309.7	310.8	319.6
Average Net Tonnage	45.5	45.8	47.6	49.7
Number Vessels Based in Each State				
California	169	157	126	121
Oregon	146	121	110	120
Washington	82	80	72	83
Vessels Landing in More than One State	61	41	34	35

Source: State Fishery Agencies

In 1986 there was a net loss of 49 groundfish vessels, the result of 77 vessels departing and 28 vessels entering. Of those 77 vessels which left the fleet, 26 (33.8 percent) converted to shrimp trawling (Table 11.16). The remaining 51 vessels either went to Alaska (13 percent), switched to other gears (9.1 percent), were repossessed (2.6 percent), sank or were lost (19.5 percent), became inactive (9.1 percent), or had unknown fates (13.0 percent). Particularly noteworthy is the smaller number of trawlers that left the fleet due to financial difficulties than in 1985.

One measure of economic performance is average gross revenue from groundfish landings per trawl vessel. Shoreside groundfish trawlers earned an average of $161,100 per vessel in 1987, up substantially from the $119,800 in gross revenues per vessel in 1986 (Table 11.17). This was the highest gross revenue output recorded by shoreside trawlers since at least 1981. In the joint venture fishery, gross revenue per trawl vessel improved about 7 percent, averaging $376,200 (Table 11.18).

Several west coast trawlers participate in alternative fisheries to complement groundfish earnings. The Washington, Oregon, and California pink shrimp fishery provided groundfish trawlers with a lucrative source of revenues, since coastwide shrimp landings showed a continued increase. The 1987 coastal pink shrimp landings were nearly 68 million pounds with an exvessel value of $46.1 million, the highest in history. The importance of the pink shrimp fishery to West Coast trawl vessels is reflected by the share of gross revenues each species group contributes to the total fleet's combined production of groundfish and shrimp. In 1987, the revenue share attributed to pink shrimp increased to 39 percent (up from 37 percent in 1986 and 16.5 percent in 1985).

Another source of revenue for some West Coast groundfish trawlers is Alaskan shoreside and joint venture groundfish fisheries. However, with the dramatic increase in the number of large factory trawlers operating in Alaska, joint venture opportunities have been severely curtailed.

11.3.2.2 Pot/Trap Vessels

West coast pot/trap vessels, while fishing for groundfish, harvest sablefish almost exclusively. The total groundfish landings by pot/trap vessels decreased for the fifth straight year, but only slightly from 1986 as the number of vessels stabilized (Table 11.12). The 1987 catch was 2,076 mt, down about 140 mt from 1986 and the lowest total landed by the pot/trap fleet since 1981. Due to the increased average landed exvessel price, however, the total exvessel value of pot/trap landings increased slightly to $2.3 million from $2.2 million in 1986. The decline in pot/trap landings is most significant in Washington, where landings have been nearly eliminated. Another source of revenue for some west coast pot/trap fishermen is Dungeness crab, a species for which traps is the primary legal gear.

A total of 26 pot/trap vessels landed sablefish on the West Coast in 1987. Average landings decreased 10 percent to 80 mt per vessel. Gross revenue per vessel was approximately $90,300, 5 percent higher than in 1986 (Table 11.17).

Table 11.16 Disposition of trawl vessels leaving the fleet, 1986-1987.

Status	Frequency		Relative Percentage	
	1987	1986	1987	1986
Joint Ventures	4	10	16.7	13.0
West Coast Shrimp Fishery	6	26	25.0	33.8
Other Gears (Longline, gillnet, etc.)	7	7	29.2	9.1
Bank Reposession	-	2	-	2.6
Lost at Sea (Sank, Burned)[1]	3	15	12.5	19.5
Idle	-	7	-	9.1
Unknown	4	10	16.7	13.0
TOTAL	24	77		

SOURCE: PacFIN Research Database
State Fishery Agencies

[1] Includes vessels that were damaged, but which may not be permanent losses.

Table 11.17 West coast commercial groundfish shoreside landings, exvessel values (thousands of dollars) and average vessel gross revenues for selected gear groups, 1980-1987.

Year	Groundfish Otter Trawl[1]			Pot/Trap			Longline		
	mt	$	$ per Vessel	mt	$	$ per Vessel	mt	$	$ per Vessel
1981	90,800	37,900	92.9	3,956	2,080	31.5	3,997	3,700	11.3
1982	103,300	47,000	105.8	6,530	4,860	59.3	4,384	4,600	13.2
1983	81,700	40,600	93.1	5,423	3,600	61.0	2,191	2,100	7.2
1984	72,700	36,900	92.9	3,854	2,340	68.8	1,989	2,100	N/A
1985	75,400	41,300	115.4	3,703	3,154	98.6	4,603	5,300	N/A
1986	61,200	36,900	119.8	2,216	2,171	86.8	5,894	6,800	N/A
1987	74,700	52,200	161.1	2,076	2,347	90.3	6,952	9,500	51.1

Source: PacFIN, Groundfish Report Series, data updated and current as of June 1988.

1/ Includes bottom, roller, and midwater trawls.

Table 11.18 Landings and participation in Pacific whiting joint venture fisheries off of Washington, Oregon, and California, 1979-1987.

Year	Landings (mt)	Estimated Dollar Value ($)	Number of Trawl Vessel	Average Revenue Per Vessel ($)
1979	9,054	1,162,000	11	105,600
1980	26,793	3,275,000	15	218,300
1981	43,758	6,345,000	21	302,100
1982	68,420	10,367,000	17	609,800
1983	72,140	10,217,000	19	537,700
1984	79,047	11,841,000	21	563,800
1985	31,567	3,751,000	17	220,700
1986	81,855	8,760,000	25	350,400
1987	106,095	11,663,000	31	376,200

Source: PacFIN, Groundfish Report Series
NMFS, Northwest Regional Office

11.3.2.3 Longline Vessels

The west coast longline fleet landed 6,952 mt of groundfish in 1986, up 18 percent over 1986 landings. This is the largest longline catch recorded since 1981 (Table 11.12). Similarly, the exvessel value of longline landings was $9.5 million, also the highest on record (Table 11.13). The average gross revenue per vessel was approximately $51,100 in 1987 (Table 11.17).

11.3.2.4 Other Gear Vessels

The quantity of groundfish landed by other gears, including set net, troll, jig and shrimp trawl, totaled approximately 8,643 mt in 1987, a decrease of 33 percent from 1986. Landings by set net gear decreased 7 percent from 1986, but the exvessel value increased slightly.

11.3.3 Recreational Harvesting Sector

Groundfish are caught for recreation by anglers who fish from piers, jetties, beaches, banks, party or charter passenger vessels, and private or rental boats. Take by recreational fisheries is substantial for some species (e.g., bocaccio and lingcod). However, data for recreational fisheries are inaccurate and often misleading and not appropriate for management of the fishery. Improvement in sampling and data collection from the recreational fishery are essential for management of this fishery.

11.3.4 Groundfish Processing Sector

Each year NMFS surveys processing plants on the west coast (including Puget Sound in Washington) to determine the volume and value of processed fish products and employment in the fish processing sector. Response rates vary from year to year and from state to state. The response in Washington and Oregon was close to 100 percent in 1986, the most recent year for which data were available. California response was minimal (20 to 25 percent) and therefore not included in this document.

During recent years, groundfish wholesale prices moved upward more rapidly than the general rate of inflation (Table 11.19). Most of the finished flatfish and rockfish products are sold as fresh, raw fillets to wholesalers, brokers, supermarkets, restaurants, and retail fresh fish outlets. A smaller quantity of flatfish and rockfish is sold as frozen fillets. Sablefish are filleted or smoked for the domestic market and dressed for the international market, primarily Japan.

The number of processing plants producing groundfish in 1987 totaled 12 in Oregon, 24 in Washington, and 11 in California (Table 11.20). Several of the Washington plants were at-sea processors operating off Alaska, though not all responded to the survey. The reporting of fishery production becomes more complex as increased at-sea processing takes place. Data can be collected as to the area of the fishery, landing of the product, or location of the firm.

Table 11.19 Average wholesale prices ($-lb.) of west coast groundfish processed products by species groups, 1976-1987.[1]

Year	All Flounders	Dover	English	Petrale	Lingcod	Rockfish	Sablefish
1976	1.062	—	—	—	0.785	0.696	0.581
1977	1.255	—	—	—	0.887	0.800	0.516
1978	1.472	—	—	—	0.878	1.085	0.653
1979	1.608	—	—	—	1.198	1.044	0.797
1980	1.600	—	—	—	1.103	0.906	0.792
1981	1.598	—	—	—	1.157	0.985	0.814
1982	1.812	—	—	—	1.142	1.078	0.891
1983	1.866	—	—	—	1.232	1.276	0.823
1984	1.763	—	—	—	1.296	1.267	0.844
1985	1.776	1.743	1.783	3.183	1.454	1.388	1.158
1986	1.764	1.874	2.069	3.987	1.561	1.477	1.566
1987[2]	2.068	2.006	2.281	4.017	1.643	1.824	1.421

Source: U.S. Dept. of Commerce, NOAA, National Marine Fisheries Service, Fishery Statistics Division, Washington, D.C., U.S. Production of Fish Fillets and Steaks, 1976-85; Unpublished Data from Processed Products Survey, 1986-87.

1/ Average prices computed by dividing total value by pounds of processed product.

2/ Washington, Oregon, and partial California data.

Employment in west coast groundfish processing plants is provided for the years 1986to 1987 (Table 11.21). California is omitted because several major groundfish plants failed to respond to the survey. Average annual monthly employment in Oregon was virtually unchanged from 1,108 in 1986 to 1,111 in 1987, while it increased in Washington from 1,173 in 1986 to 1,299 in 1987.

11.3.5 West Coast Groundfish Markets

The total quantity of west coast domestically caught fresh and fresh-frozen groundfish supplied to west coast markets increased in 1987. This resulted from an increase in shoreside deliveries of groundfish and a dramatic growth in the quantity of frozen-at-sea Alaskan groundfish produce by Washington-based companies. Wholesale prices of groundfish were higher than in 1986, mostly in response to increased demand for fish by consumers switching to more healthful diets. Average wholesale prices of flatfish and rockfish fillets increased by 17 and 23 percent.

West coast supplies of groundfish were higher as domestic landings increased 12 percent and imports rose. The large increase in imports was due to the increased supply of Pacific whiting from Canada, while imports of other groundfish were lower. Imports of fresh, chilled and frozen rockfish fillets from Canada into west coast ports were 16 percent below 1986 but above the 1983 to 1985 levels (Table 11.22). West coast imports of orange roughy from New Zealand were 4,030 mt in 1987, down 15 percent from 1986. This decrease was nearly offset by a sharp increase in orange roughy imports from Australia.

Based on U.S. Bureau of the Census data, the average export price of sablefish increased 23 percent to $1.67 per pound, up from $1.36 in 1986. Much of the increase was due to a decrease in the value of the dollar relative to the yen. Tokyo wholesale prices (in yen) for 5-7 pound and 4-5 pound fish were 13.7 percent and 10.3 percent below 1986 levels (Table 11.23).

Exports of fishery products have greatly benefited from the weaker U.S. dollar relative to the Japanese yen in 1986 and 1987. The average annual value of the dollar relative to the yen fell 14 percent in 1987 to 144.6 yen/U.S. dollar from 168.35 yen in 1986 (Table 11.24). This decline followed the 29.4 percent decrease of the dollar from the previous year.

Table 11.20 Number of reporting plants that processed groundfish on the west coast, 1980-1987.

Year	California	Oregon	Washington	Total
1980	23	13	25	51
1981	21	16	38	75
1982	19	18	37	74
1983	32	16	34	82
1984	32	11	31	74
1985	30	11	32	73
1986	17	12	25	54
1987	11	12	24	47

NA - Not available.

Source: U.S. Dept. of Commerce, NOAA, National Marine Fisheries Service, Fishery Statistics Division, Washington, D.C. 20235, Unpublished Data from Processed Products Survey.

Table 11.21 Monthly employment in west coast groundfish processing plants, 1986-1987.

Year	California		Oregon		Washington		Total	
	1986	1987	1986	1987	1986	1987	1986	1987
Jan.	—	—	918	926	1,021	904	—	—
Feb.	—	—	878	903	1,105	992	—	—
Mar.	—	—	897	900	1,279	1,047	—	—
Apr.	—	—	1,108	1,109	1,042	1,237	—	—
May	—	—	1,163	1,167	1,088	1,318	—	—
June	—	—	1,220	1,199	1,150	1,355	—	—
July	—	—	1,257	1,270	1,176	1,479	—	—
Aug.	—	—	1,238	1,293	1,338	1,593	—	—
Sep.	—	—	1,249	1,238	1,283	1,558	—	—
Oct.	—	—	1,204	1,229	1,304	1,480	—	—
Nov.	—	—	1,000	1,014	1,190	1,386	—	—
Dec.	—	—	1,168	1.086	1,096	1,240	—	—
Ave.	—	—	1,108	1,111	1,173	1,299	—	—

Source: U.S. Dep. Commerce, NOAA, National Marine Fisheries Service, Fishery Statistics Division, Washington, D.C. 20235, Unpublished Data from Processed Products Survey.

Table 11.22 Selected imports (metric tons) of groundfish into west coast ports of entry by country of origin, 1983-1987.

Species	Country	1983	1984	1985	1986	1987
Orange Roughy	New Zealand	1,819	2,547	3,829	4,750	4,030
	Australia	—	—	—	80	755
Rockfish	Canada	2,278	2,566	4,252	8,749	7,340
Flatfish	Canada	408	505	457	645	598
Pacific Whiting	Canada	3,328	4,625	7,091	7,597	12,802

Source: National Marine Fisheries Service, Statistics and Market News, Southwest and Northwest Regions.
New Zealand Trade Commission, New Zealand Consulate Office.

Table 11.23 Average annual exchange rates (currency/dollar) for selected foreign countries, 1980-1987.

Year	Canada	Japan	New Zealand
1980	1.1693	226.63	1.0273
1981	1.1990	220.63	1.1513
1982	1.2344	249.06	1.3315
1983	1.2325	237.55	1.4972
1984	1.2953	237.45	1.7290
1985	1.3658	238.47	2.0100
1986	1.3896	168.35	1.9064
1987	1.3259	144.60	1.6856

Source: Federal Reserve Bulletin, various years, Washington, D.C., p. A68.

Table 11.24 Annual average Tokyo wholesale price of sablefish by size of fish, 1985-1987.

Year	5-7 lb.		4-5 lb.		3-4 lb.	
	$/lb.	Y/kg.	$/lb.	Y/kg.	$/lb.	Y/kg.
1985	2.27	1195	2.12	1117	2.00	1054
1986	2.68	1005	2.39	895	2.01	754
1987	2.72	867	2.51	800	2.37	756

Note: Average exchange rate; 1985 - 238 yen/$, 1986 - 168 yen/$, and 1987 - 144.6 yen/$.

Source: Foreign Fishery Information Release, National Marine Fisheries Service, 300 South Ferry Street, Terminal Island, CA 90731.

11.4 History of Management

11.4.1 Domestic Fisheries

Prior to implementation of the FMP in September 1982, management of domestic groundfish fisheries was under the jurisdiction of the States of Washington, Oregon, and California. State regulations have been in effect on the domestic fishery for about 80 years, and each state acted independently in both management and enforcement. However, many fisheries overlapped state boundaries and were participated in by citizens of two or more states. Management and uniformity of regulation became a difficult problem which stimulated the formation of the Pacific States Marine Fisheries Commission (PSMFC) in 1947. PSMFC had no regulatory power but acted as a coordinating body with authority to submit specific recommendations to states for their adoption.

Early regulations took the form of area closures (e.g., San Francisco Bay was closed to trawling in 1906) because of concerns about stock depletion. Minimum trawl mesh sizes were adopted in the early 1930s in California as the production of flatfish decreased. During 1935-1940, voluntary mesh size limits were adopted by the trawl industry after markets imposed minimum size limits on certain flatfishes and gear-saving studies demonstrated that a larger mesh size (5 inches) caught fewer unmarketable fish. Shortly thereafter, mandatory minimum mesh sizes were adopted by California. Mesh regulations have since been in effect in all three coastal states.

Subsequent to implementation of the MFCMA in 1977 (but prior to the implementation of the FMP in 1982), state agencies worked with the Council to address conservation issues. Specifically, in 1981 the Council proposed a rebuilding program for Pacific ocean perch. To implement this program, the States of Oregon and Washington established landing limits for Pacific ocean perch in the Vancouver and Columbia areas. These limits were revised in January 1982 prior to enactment of the FMP in September, but the 20-year rebuilding program remained unchanged.

Management actions recommended by the Council and implemented by NMFS from September 1982 through October 1988 are summarized in Table 11.25.

1983 Fishery. For all practical purposes, full-time active management of the Pacific coast groundfish fishery under the FMP began in 1983. The Council recommended ABCs; established regulatory management regimes for widow rockfish and sablefish for the entire region, for the Sebastes complex, and for rockfish in the Vancouver and Columbia areas; and continued the rebuilding program for Pacific ocean perch.

A coastwide OY of 10,500 mt was set for widow rockfish and a vessel trip limit of 30,000 pounds was imposed in an attempt to prevent an early closure of the fishery. A harvest guideline of 14,000 mt was established for the Sebastes complex in the combined Vancouver and Columbia areas. The Council had set an ABC of 9,500 mt as the GMT recommended. The Sebastes landings in this area in 1982 were 18,500 mt. In choosing a 14,000 mt harvest guideline halfway between the 1982 landings and the 1983 ABC, the Council acted to bring production gradually without undue economic hardship. In an attempt to spread the landings over the entire year, coastwide vessel trip limits of 40,000 pounds were imposed.

Table 11.25. Council groundfish management/regulatory actions since FMP implementation in 1982.

Regulations in a given year continue until modified, superseded, or rescinded.

Effective October 13, 1982

- Recommended 75,000 pound trip limit on widow rockfish for remainder of 1982 (coastwide OY = 26,000 mt).
- Sablefish OY exceeded; 3,000 pounds trip limit imposed (coastwide OY = 13,400 mt).

Effective November 30, 1982

- Recommended extension of widow rockfish trip limits of 75,000 pounds to January 31, 1983 (effective January 1, 1983).
- Recommended extension of sablefish trip limit of 3,000 pounds for remainder of 1982.
- Sablefish OY increased 30 percent to 17,400 mt for 1982 and recommended this to be the preliminary specification for 1983 (ABC = 13,400 mt).

Effective January 1, 1983

- Recommended extension of widow rockfish trip limits of 75,000 pounds until superseded.
- Adopted policy to continue groundfish fishery over the entire year.
- Recommended coastwide trip limit of 30,000 pounds on widow rockfish; adjust in midseason as necessary so that 10,500 mt OY is not reached prior to year end (the coastwide widow rockfish ABC and OY were 10,500 mt in 1983).
- Recommended 40,000 pound coastwide trip limit on Sebastes complex; adjust as necessary in midseason so that annual catch in the Vancouver and Columbia areas falls about halfway between the 1982 catch and the 1983 aggregate ABC (about 14,000 mt). (Vancouver and Columbia areas ABC = 9,500 mt.)
- Recommended 22 inch total length size limit on sablefish in all areas north of Point Conception (excluding Monterey Bay). Permit incidental trip limit for fish smaller than 22 inches of 333 fish, 1,000 pounds, or 10 percent of weight of all sablefish on board. Adjust as necessary to stay within the 17,400 mt OY (ABC = 13,400 mt).

Effective June 28, 1983

- Recommended increase in Vancouver and Columbia areas Sebastes complex HG for 1983 from 14,000 mt to 18,500 mt; retain 40,000 pounds trip limit; trip frequency in Vancouver and Columbia areas set at one per week; when 18,500 mt quota is achieved, fishery closes (Vancouver and Columbia areas ABC = 9,500 mt).
- Recommended that HGs for the Vancouver and Columbia areas Sebastes complex and all flatfish managed under the FMP shall not be permitted to exceed 130 percent of the respective summed ABCs in 1984.
- Recommended retention of 22-inch size limit on sablefish as before, but set incidental allowance of small fish (<22 inches) at 5,000 pounds per trip.

Effective September 10, 1983

- Recommended 1,000 pounds trip limit on coastwide widow rockfish to avoid reaching OY; if 10,500 mt OY reached, fishery closes.
- Recommended 3,000 pounds trip limit on Sebastes complex in Vancouver and Columbia areas; if 18,500 mt quota is reached, fishery closes. One per week trip frequency limit is removed.
- Recommended continuing 40,000 pounds trip limit on Sebastes complex south of 43°N; no limit on number of trips.

Effective November 10, 1983

- Recommended closure of Columbia Area to Pacific ocean perch fishing until the end of the year as 950 mt OY for this species has been reached; retain 5,000 pounds trip limit or 10 percent of total trip weight on landings of Pacific ocean perch in Vancouver Area.

Effective January 1, 1984

- Recommended coastwide widow rockfish trip limit of 50,000 pounds; trip frequency limited to one per week; if OY of 9,300 mt is reached, fishery closes.

Table 11.25. Council groundfish management/regulatory actions (continued).

- HG for Sebastes complex in the Vancouver and Columbia areas established at 10,100 mt (110 percent of the summed ABCs).
- Recommended 30,000 pounds trip limit on Sebastes complex from Vancouver and Columbia areas; one trip per week north of 43°N (changed to Cape Blanco, 42°50', on February 12, 1984).
- Recommended continuance of 40,000 pound trip limit on Sebastes complex south of 43° changed to 42°50 on February, 12, 1984); no limit on trip frequency.
- Recommended continuance of 22-inch size limit on sablefish as in 1983; retain 5,000 pounds incidental allowance of small fish (<22 inches); fishery closes when coastwide OY of 17,400 mt is reached (ABC = 13,400 mt).
- Continuation of 5,000 pound trip limit or 10 percent of total trip weight on Pacific ocean perch as specified in FMP. Fishery closes when area OYs are reached (see action effective November 10, 1983 above).

Effective February 12, 1984

- Southern boundary of Vancouver and Columbia areas shifted south, from 43°00' to 42°50' for management of Sebastes complex; application of Sebastes complex regulations clarified.

Effective May 6, 1984

- Recommended reduction in coastwide widow rockfish trip limit from 50,000 pounds once per week to 40,000 pounds once per week.
- Recommended reduction in Vancouver and Columbia areas Sebastes complex from 30,000 pounds once per week to 15,000 pounds once per week; fishermen have option to land 30,000 pounds once-every-two weeks with appropriate advance declaration of intent.
- Fishing for groundfish on a Sebastes complex trip may occur on only one side of Cape Blanco (42°50') which allows southern caught fish to be landed north of Cape Blanco using southern trip limit of 40,000 pounds with appropriate declaration of intent.
- Recommended no change in Sebastes complex trip limit of 40,000 pounds in Eureka, Monterey, Conception areas.

Effective August 1, 1984

- Recommended cessation of directed fishing for widow rockfish when 9,200 mt of the 9,300 mt OY is landed. Remaining 100 mt is a quota for incidental landings, to be taken in incidental landing limits of 1,000 pounds per trip. The fishery for this species will close when the 9,300 mt quota is taken.
- Recommended immediate reduction in trip limit for Pacific ocean perch in the Vancouver and Columbia areas to 20 percent by weight of all fish on board, not to exceed 5,000 pounds per vessel per trip. When OY is reached in either area, landings of Pacific ocean perch will be prohibited in that area (Oregon and Washington implemented Pacific ocean perch recommendation in mid-July).
- Recommended reduction in landings of Vancouver and Columbia areas Sebastes complex to 7,500 pounds once each week or 15,000 pounds once-every-two weeks with appropriate advance declaration of intent. When the 10,100 mt HG is reached, a 3,000 pounds trip limit will be imposed.
- Recommended allowing vessel operators on combined groundfish/Sebastes complex trips to fish on both sides of a line at 42°50'N (Cape Blanco) but landing of Sebastes complex in excess of 3,000 pounds to be controlled by the trip limit/trip frequency in effect north of the line (Vancouver and Columbia areas). Appropriate advance declaration of intent is required.

Automatic Closure (effective August 16, 1984)

- Commercial fishing for Pacific ocean perch in Columbia Area closed for remainder of the year. (See items regarding this species effective January 1 and August 1, 1984 above.)

Automatic Action (effective September 9, 1984)

- Recommended cessation of directed fishing for widow rockfish; incidental catch trip limit reduced to 1,000 pounds (based on action effective August 1, 1984), fishery for this species closed on November 28.

Table 11.25. Council groundfish management/regulatory actions (continued).

Effective January 10, 1985

- Recommended coastwide widow rockfish trip limit of 30,000 pounds; trip frequency limited to one per week (or 60,000 pounds once-every-two weeks with appropriate declaration to state in which fish are landed); adjust after first trimester, as necessary (OY = 9,300 mt).
- HG for Sebastes complex in Vancouver and Columbia areas fixed at 10,100 mt.
- For Sebastes complex north of Cape Blanco (42°50'N): recommended 30,000 pound weekly trip limit of which no more than 10,000 pounds may be yellowtail rockfish (or 60,000 pounds once-every-two weeks of which no more than 20,000 pounds may be yellowtail rockfish with appropriate declaration to state in which fish are landed).
- For Sebastes complex south of Cape Blanco: recommend 40,000 pound trip limit without a trip frequency.
- Recommended that if fishermen fish on both sides of the Cape Blanco line during a trip, the northern (more restrictive) limit on Sebastes complex will apply.
- Recommended that landings of Sebastes complex and widow rockfish smaller than 3,000 pounds be unrestricted.
- Recommended continuing 22-inch size limit on sablefish in all areas north of Point Conception (abolishes Monterey Bay exclusion); retain 5,000 pound limit incidental landing limit for sablefish less than 22 inches.
- Recommended Vancouver and Columbia areas Pacific ocean perch trip limit of 20 percent by weight of all fish on board (no 5,000 pound limit as specified in last half of 1984).

Effective April 28, 1985

- Recommended retention of the coastwide widow rockfish trip limit of 30,000 pounds once per week, but rescinded the option to land 60,000 pounds once-every-two weeks.
- Recommended reduction in the coastwide widow rockfish trip limit to 10 percent by weight of all fish on board not to exceed 3,000 pounds if 90 percent of the OY (about 8,400 mt) is reached before the Council's July meeting (under this incidental limit, landings of widow rockfish less than 1,000 pounds will be unrestricted).
- For the Sebastes complex north of Cape Blanco (42°50'N): recommended reduction in the current trip limit to 15,000 pounds once per week of which no more than 5,000 pounds may be yellowtail rockfish (or 30,000 pounds once-every-two weeks of which no more than 10,000 pounds may be yellowtail rockfish). Recommended a third option to land 7,500 pounds twice each week of which no more than 3,000 pounds in each landing may be yellowtail rockfish; landings declaration applies.
- Recommended the Vancouver and Columbia areas Pacific ocean perch trip limit be reduced to 5,000 pounds or 20 percent by weight of all fish on board, whichever is less. Landings of Pacific ocean perch less than 1,000 pounds will be unrestricted. The fishery for this species will close when the OY in each area is reached.

Effective June 10, 1985

- Recommended landings of Pacific ocean perch up to 1,000 pounds per trip will be unrestricted regardless of the percentage of these fish on board.

Effective July 21, 1985

- Recommended reduction of the coastwide widow rockfish trip limit to 3,000 pounds per trip without a trip frequency.

Effective July 25, 1985

- Recommended that "tickler chains" which contact the sea floor ahead of the rollers may not be used with a roller or bobbin trawl.

Effective September 1, 1985

- Recommended changing the management boundary line separating northern and southern trip limits for the Sebastes complex from Cape Blanco (42°50'N) northward 30 miles to the north jetty at Coos Bay (43°22'N).

Table 11.25. Council groundfish management/regulatory actions (continued).

Effective October 6, 1985

- Recommended increasing the Vancouver and Columbia areas Sebastes complex trip limit to 20,000 pounds once per week except that no more than 5,000 pounds may be yellowtail rockfish (or one landing once-every-two weeks of 40,000 pounds of which no more than 10,000 pounds may be yellowtail rockfish, or two landings per week of 10,000 pounds each of which no more than 3,000 pounds per landing may be yellowtail rockfish; landings declaration apply).

Effective November 25, 1985

- Established that 90 percent of sablefish quota had been reached and recommended a trip limit of 13 percent sablefish in all trawl landings containing sablefish.

Effective December 6, 1985

- Established that sablefish quota (OY) had been exceeded on November 22, 1985; recommended that landings of sablefish be prohibited until January 1, 1986.

Effective January 1, 1986

- Recommended coastwide widow rockfish trip limit of 30,000 pounds per week; no biweekly option (coastwide OY = 10,200 mt; ABC = 9,300 mt).
- HG for Sebastes complex north of Coos Bay, Oregon (43°22'N) fixed at 10,100 mt.
- For Sebastes complex north of Coos Bay; recommended 25,000 pound weekly trip limit of which no more than 10,000 pounds may be yellowtail rockfish (or 50,000 pounds biweekly of which no more than 20,000 pounds may be yellowtail rockfish; or 12,500 pounds twice per week of which no more than 5,000 pounds may be yellowtail rockfish---biweekly and twice weekly landings require appropriate declaration to state in which fish are landed).
- For Sebastes complex south of Coos Bay: recommended 40,000 pound trip limit; no trip frequency.
- Recommended landings of Sebastes complex and widow rockfish be unrestricted if less than 3,000 pounds.
- Recommended that fishermen fishing the Sebastes complex on both sides of the Coos Bay line during a trip must conform with the northern (more restrictive) trip limit.
- Recommended continuance of 22-inch size limit on sablefish in all areas north of Point Conception; retain 5,000 pound incidental landing limit for sablefish smaller than 22 inches; coastwide OY = 13,600 mt; ABC = 10,300 mt.
- Recommended the Pacific ocean perch limit in the area north of Cape Blanco (42°50'N) should be 20 percent (by weight) of all fish on board or 10,000 pounds whichever is less; landings of Pacific ocean perch be unrestricted if less than 1,000 pounds regardless of percentage on board; Vancouver Area OY = 600 mt; Columbia Area OY = 950 mt.
- Recommended an ABC and OY of 227,500 mt for Pacific whiting.
- Recommended an ABC of 3,900 mt for yellowtail rockfish.

Effective April 11, 1986

- Recommended increasing Pacific whiting ABC and OY to 295,800 mt, up 30 percent from 227,500 mt established at the beginning of 1986.
- Recommended increasing yellowtail rockfish ABC to 4,000 mt, up 100 mt from 3,900 mt established at beginning of 1986. (Yellowtail rockfish is in the multispecies Sebastes complex and does not have a numerical OY.) The 100 mt increase is assigned entirely to the Columbia Area north of Coos Bay.

Automatic Action (See September 28, 1986 below)

- Recommended in April to impose a 3,000 pound trip limit without a trip frequency to be implemented when the widow rockfish ABC is reached.

Effective August 22, 1986 (Emergency Regulation)

- Recommended allocating the estimated remaining sablefish OY between trawl and fixed gear at 55 and 45 percent, respectively.

Table 11.25. Council groundfish management/regulatory actions (continued).

- Recommended an 8,000 pound sablefish trip limit on trawl gear.
- Recommended retention of the current regulation of a 5,000 pound trip limit on sablefish smaller than 22 inches.
- Recommended prohibition of any further landings of sablefish by trawl gear after trawl quota is reached.
- Recommended prohibition of any further landings of sablefish by fixed gear after fixed gear quota is reached.
- Recommended prohibition of any further landings of sablefish after the coastwide OY is reached.

Effective August 26, 1986 (See August 22, 1986 Emergency Regulation)

- Announced amounts of sablefish quota under emergency regulations (2,915 mt trawl; 2,385 mt fixed gear).

Effective August 31, 1986

- For Sebastes complex north of Coos Bay, Oregon: recommended the following increase in trip limits: weekly—30,000 pounds of which no more than 12,500 pounds may be yellowtail rockfish; biweekly—60,000 pounds of which no more than 25,000 pounds may be yellowtail rockfish; and twice-weekly—15,000 pounds of which no more than 6,500 pounds may be yellowtail rockfish.

Effective September 28, 1986

- Widow rockfish ABC reached; coastwide 3,000 pound trip limit without trip frequency imposed (see Automatic Action above).

Effective October 23, 1986 (See August 22, 1986 Emergency Regulation)

- Fixed gear sablefish quota reached; fixed gear fishery closed.
- Trawl gear trip limit increased to 12,000 pounds for remainder of year or until trawl quota is reached.
- Sablefish quotas revised (2,800 mt trawl; 2,300 mt fixed gear).

Effective November 20, 1986 (See August 22, 1986 Emergency Regulation)

- Extension of sablefish emergency regulation until the end of the year.

Effective December 1, 1986

- OY quota for Pacific ocean perch reached in the Vancouver Area; fishery closed until January 1, 1987.

Effective January 1, 1987

- Recommended a coastwide widow rockfish trip limit of 30,000 pounds per week with no biweekly option. Only one landing per week above 3,000 pounds (coastwide OY = 12,500 mt; ABC = 12,100 mt).
- HG for Sebastes complex north of Coos Bay, Oregon (43°21'34"N) set at 10,200 mt.
- For Sebastes complex north of Coos Bay: recommended 25,000 pound weekly trip limit of which no more than 10,000 pounds may be yellowtail rockfish (or 50,000 pounds biweekly of which no more than 20,000 pounds may be yellowtail rockfish; or 12,500 pounds twice per week, of which no more than 5,000 pounds may be yellowtail rockfish—biweekly and twice weekly landings require appropriate declaration to state in which fish are landed); no restriction on landings less than 3,000 pounds.
- For Sebastes complex south of Coos Bay: recommended 40,000 pound trip limit; no trip frequency limit.
- Recommended allocating the sablefish OY between trawl and fixed gear at 52 (6,200 mt) and 48 percent (5,800 mt), respectively; if the quota for either gear type is reached, sablefish becomes a prohibited species for that gear; coastwide OY and ABC = 12,000 mt.
- Recommended 5,000 pound trawl and 100 pound fixed gear trip limits (round weights) for sablefish smaller than 22 inches total length (16 inches dorsal total length), and apply coastwide.
- Recommended the coastwide Pacific ocean perch limit should be 20 percent of all legal fish on board or 5,000 pounds whichever is less (in round weight); landings of Pacific ocean perch unrestricted if less than 1,000 pounds regardless of percentage on board; Vancouver Area OY = 500 mt; Columbia Area OY = 800 mt.

- Recommended an ABC and OY of 195,000 mt for Pacific whiting.
- Recommended an ABC of 4,000 mt for yellowtail rockfish.

Effective April 5, 1987

- Recommended that the size limit for processed sablefish be changed from 16.0 inches to 15.5 inches (dorsal total length).

Effective April 27, 1987

- Recommended that the trip limit for sablefish smaller than 22 inches (total length) caught by fixed gear be increased from 100 pounds to 1,500 pounds coastwide.

Effective May 3, 1987

- Recommended changing the definition of fishing week from Sunday through Saturday to Wednesday through Tuesday for Sebastes complex and widow rockfish.

Effective July 22, 1987

- Recommended that the weekly trip limit for yellowtail rockfish caught north of Coos Bay be reduced to 7,500 pounds (or 15,000 pounds biweekly; or 3,750 pounds twice weekly).

Effective August 14, 1987

- Coastwide ABCs for widow and chilipepper rockfish increased to 12,500 mt and 3,600 mt, respectively.

Effective October 2, 1987

- Recommended that the trawl trip limit for sablefish be 6,000 pounds or 20 percent of the legal fish on board, whichever is greater, including no more than 5,000 pounds of sablefish under 22 inches.

Effective October 14, 1987

- Recommended that the weekly trip limit for widow rockfish be reduced from 30,000 pounds to 5,000 pounds when 95 percent of the widow rockfish OY is projected to be reached (i.e., at 11,875 mt). Closure of the nontrawl (fixed gear) sablefish fishery because the nontrawl allocation of 5,800 mt was reached.

Effective October 22, 1987

- Closure of sablefish trawl fishery because the trawl allocation of 6,200 mt was reached.

Effective November 25, 1987

- Closure of widow rockfish fishery because 12,500 mt was reached.

Effective January 1, 1988

- Recommended a coastwide widow rockfish trip limit of 30,000 pounds per week. Only one landing per week above 3,000 pounds. No restriction on landings less than 3,000 pounds (coastwide OY/ABC = 12,100 mt).
- HG for Sebastes complex north of Coos Bay, Oregon (43°21'34"N) fixed at 10,200.
- For Sebastes complex north of Coos Bay: recommended 25,000 pound weekly trip limit of which no more than 10,000 pounds may be yellowtail rockfish (or 50,000 pounds biweekly of which no more than 20,000 pounds may be yellowtail rockfish; or 12,500 pounds twice per week, of which no more than 5,000 pounds may be yellowtail rockfish--biweekly and twice weekly landings require appropriate declaration to state in which fish are landed). No restriction on landings less than 3,000 pounds.

Table 11.25. Council groundfish management/regulatory actions (continued).

- For Sebastes complex south of Coos Bay: recommended 40,000 pound trip limit; no trip frequency restriction.
- Recommended allocating the sablefish OY between trawl and nontrawl (fixed gear) at 5,200 mt and 4,800 mt, respectively; if the quota for nontrawl gear is reached, sablefish becomes a prohibited species for that gear; manage the trawl fishery to achieve the trawl allocation, provided that up to an additional 800 mt may be added to the trawl allocation for unavoidable incidental catch; coastwide OY = 9,200 – 10,800 mt; ABC = 10,000 mt.
- For trawl-caught sablefish, recommended trip limit of 6,000 pounds or 20 percent of legal fish on board, whichever is greater, with only two landings above 1,000 pounds allowed per vessel per week; no restriction on landings less than 1,000 pounds.
- Recommended continuance of 22-inch total length size limit (15.5 inch dorsal length) on sablefish in all areas; 5,000 pound trawl and 1,500 pound nontrawl incidental landing limits for sablefish smaller than the minimum size limit.
- Recommended the coastwide Pacific ocean perch trip limit should be 20 percent (by weight) of all fish on board or 5,000 pounds, whichever is less; landings of Pacific ocean perch be unrestricted if less than 1,000 pounds regardless of percentage on board; Vancouver OY = 500 mt; Columbia OY = 800 mt.
- Recommended an ABC and OY of 232,000 mt for Pacific whiting.
- Recommended an ABC of 4,000 mt for yellowtail rockfish.

Effective August 3, 1988

- Recommended the trawl sablefish allocation be increased to 6,000 mt; reduce the trawl trip limit to one landing per week, not to exceed 2,000 pounds (including sablefish smaller than 22 inches).
- Recommended changing the nontrawl trip limit for sablefish smaller than 22 inches to 1,500 pounds or 3 percent of all sablefish on board, whichever is greater.

Effective August 26, 1988

- Closure of the nontrawl sablefish fishery because the nontrawl allocation of 4,800 mt was reached.

Effective September 21, 1988

- Recommended lowering the trip limit for widow rockfish to 3,000 pounds (with no restriction on the number of landings per week) on September 21, the date when just enough of the OY remains to allow continuation of this trip limit through the end of the year.

Effective October 5, 1988

- Recommended lifting the restriction that no more than one landing of sablefish by trawlers may be made during any week; reduce the weekly trip limit for yellowtail rockfish north of Coos Bay from 10,000 pounds to 7,500 pounds (biweekly and twice weekly options to remain in effect).

Effective January 1, 1989

- Recommended a coastwide widow rockfish trip limit of 30,000 pounds per week. Only one landing per week above 3,000 pounds. No restriction on landings less than 3,000 pounds (coastwide OY/ABC = 12,400 mt).
- HG for Sebastes complex north of Coos Bay, Oregon (43°21'34"N) set at 10,200 mt.
- For Sebastes complex north of Coos Bay: recommended 25,000 pound weekly trip limit of which no more than 7,500 pounds may be yellowtail rockfish (or 50,000 pounds biweekly of which no more than 15,000 pounds may be yellowtail rockfish; or 12,500 pounds twice per week, of which no more than 3,750 pounds may be yellowtail rockfish--biweekly and twice weekly landings require appropriate declaration to state in which fish are landed). No restriction on landings less than 3,000 pounds.
- For Sebastes south of Coos Bay: recommended 40,000 pound trip limit; no trip frequency restriction.
- Recommended managing for the low end of the OY range (10,400 – 11,000 mt). After 22 mt are set aside from the 10,400 mt HG for the Makah Indian fishery, the remaining 10,378 mt will be allocated 5,397 mt (52%) for trawl gear and 4,981 mt (48%) for nontrawl (fixed) gear.
- Recommended a coastwide trawl trip of 1,000 pounds or 45 percent of the deepwater complex (consisting of sablefish, Dover sole, arrowtooth flounder, and thornyheads), whichever is greater. Within the 45 percent trawl limit, no more than

5,000 pounds of sablefish smaller than 22 inches (total length) may be taken per trip. If fishing under the 1,000 pound limit, all sablefish may be smaller than 22 inches. The coastwide nontrawl trip limit for sablefish smaller than 22 inches is 1,500 pounds or 3 percent of all sablefish on board, whichever is greater.

- If necessary, the harvest guideline may be increased by up to 600 mt to enable small fisheries to continue operating after a gear allocation is met and to allow for landings of sablefish caught incidentally while fishing for other species. If the upper end of the OY range (11,000 mt) is reached, all further landings will be prohibited. (coastwide ABC = 9,000 mt; OY = 10,400 – 11,000 mt).
- Recommended the coastwide Pacific ocean perch trip limit should be 20 percent (by weight) of all fish on board or 5,000 pounds whichever is less; landings of Pacific ocean perch be unrestricted if less than 1,000 pounds regardless of percentage on board. (Vancouver OY = 500 mt; Columbia OY = 800 mt).
- Recommended an ABC and OY of 225,000 mt for Pacific whiting.
- Recommended an ABC of 4,300 mt for yellowtail rockfish.

Effective April 26, 1989

- Recommended a coastwide weekly trip limit on the deepwater complex (consisting of sablefish, Dover sole, arrowtooth flounder, and thornyheads) of only one landing above 4,000 pounds per week, not to exceed 30,000 pounds. There will be no limit on the number of landings of deepwater complex less than 4,000 pounds. For each landing of the deepwater complex, no more than 1,000 pounds or 25 percent of the deepwater complex, whichever is greater, may be sablefish. If fishing under the 25 percent limit, no more than 5,000 pounds may be sablefish under 22 inches (total length). If fishing under the 1,000 pound limit, all sablefish may be under 22 inches. Biweekly and twice weekly trip limit options for trawl-caught sablefish are available but require appropriate declaration to state in which fish are landed.
- Recommended that the gear quotas be revised for the remainder of the year by reducing the nontrawl quota 400 mt (to 4,581 mt) and increasing the trawl quota by 1000 mt (400 mt from nontrawl gear plus the 600 mt reserve) so it totals 6,397 mt. If either gear quota is reached, further landings by that gear will be prohibited for the remainder of the year.
- Recommended the coastwide weekly trip limit for widow rockfish be reduced to 10,000 pounds.

Effective July 17, 1989

- Recommended a coastwide nontrawl sablefish trip limit of 100 pounds with no frequency limit for the remainder of the year, until the nontrawl allocation is reached, or until OY is reached, whichever occurs first.

Effective July 26, 1989

- Recommended the trip limit for yellowtail rockfish be reduced to 3,000 pounds or 20 percent of the Sebastes complex, whichever is greater.
- Recommended the coastwide trip limit for Pacific ocean perch be reduced to 2,000 pounds or 20 percent of all fish on board, whichever is less, with no trip frequency restriction.
- Recommended the Columbia area Pacific ocean perch OY be increased from 800 mt up to 1,040 mt.

Effective October 4, 1989

- Recommended removal of the overall trawl poundage and trip frequency limits for the deepwater complex, while retaining the separate trip limit for sablefish at 25 percent of the deepwater complex or 1,000 pounds, whichever is greater.
- Recommended increasing the nontrawl trip limit to 2,000 pounds or 20 percent of all groundfish on board, whichever is less. This limit will be applied only if more than 100 pounds of sablefish are on board.

Effective October 11, 1989

- Recommended lowering the trip limit for widow rockfish to 3,000 pounds (with no restriction on the number of landings per week) on October 11, the date when just enough of the OY remains to allow continuation of this trip limit through the end of the year.

The fishery for the Sebastes complex in the Vancouver and Columbia areas and for widow rockfish in the entire region quickly adjusted to the new trip limits by changing traditional fishing patterns. In June the GMT projected that the Sebastes complex landings would reach the 14,000 mt harvest guideline by early August unless action was taken. The Council increased the harvest guideline to 18,500 mt (almost twice the 9,500 mt ABC) and limited vessels to one trip per week, effective June 13. Landings declined somewhat but not to levels that would allow the fishery to continue for the entire year. In September, the Council recommended that the trip limit be reduced to 3,000 pounds, effectively eliminating the directed fishery, and announced that all landings of Sebastes complex caught in the Vancouver and Columbia areas would be prohibited if the 18,500 mt harvest guideline was reached. This action drastically reduced the rate of landings; total 1983 Sebastes complex landings in the Vancouver and Columbia areas were nearly 18,000 mt.

Widow rockfish landings also proceeded at a rapid pace. The directed (target) fishery was closed on September 10 but a 1,000 pound incidental catch per trip was permitted. Total 1983 widow landings were over 10,300 mt, about 1 percent below the OY.

Pacific ocean perch landings in the Columbia area exceeded the 950 mt OY level in November and the fishery was closed beginning December 6. Total 1983 Columbia area Pacific ocean perch landings were 1,205 mt.

Because it was feared that excessive amounts of juvenile sablefish were being landed, a 22-inch size limit was imposed on sablefish caught north of Point Conception (except Monterey Bay). About 14,500 mt of sablefish were harvested in 1983, about 1,100 mt above the 13,400 mt ABC and 2,900 mt below the 17,400 mt OY. A much reduced market in Japan during 1983 helped to reduce the 1983 catch below the 1982 catch.

1984 Fishery. The ABCs for the 1984 fishery were approved by the Council at the November meeting. Management actions in 1984 involved widow rockfish, the Sebastes complex (rockfish), and Pacific ocean perch. The size and trip limits set for sablefish in 1983 continued throughout 1984.

The OY for widow rockfish was reduced to 9,300 mt in 1984 from 10,500 mt in 1983. On January 1, 1984, the trip limit was set at 50,000 pounds. In addition a trip frequency limit was set allowing only one landing of widow rockfish above 3,000 pounds in a week. In early May, the trip limit for widow rockfish was reduced to 40,000 pounds and the trip frequency restriction (one landing per week above 3,000 pounds) was maintained. The Council announced in July that when 9,200 mt of widow rockfish were landed, a trip limit of 1,000 pounds would be imposed (with no frequency restriction) for the remaining 100 mt of the quota. In early September, the 1,000 pound trip limit was imposed, and all landings for widow rockfish were prohibited on November 28 when the quota was expected to be reached.

After having been closed the last two months of 1983 in the Columbia area, the Pacific ocean perch fishery resumed January 1, 1984 in both the Vancouver and Columbia areas under the 5,000 pounds or 10 percent by weight (whichever is greater) trip limit established in the FMP. Projections made in July indicated landings under this limit would exceed the 950 mt Columbia area OY by the first week in August if current landing rates continued.

On July 16, the States of Oregon and Washington changed the Pacific ocean perch trip limits to 20 percent of all fish on board (by weight), not to exceed 5,000 pounds. Despite these restrictions landings were not adequately slowed. The Columbia area was closed for Pacific ocean perch on August 16 when OY was reached. The Vancouver area OY, however, was not reached before year's end.

Management of the Sebastes complex of rockfish was the most complicated groundfish issue facing the Council in 1984. South of the Columbia area, the species' ABCs were unchanged from 1983. The 40,000 pound trip limit (with no trip frequency restriction) was constant throughout 1984 and was the same as in 1983. However, in the Vancouver and Columbia areas, the summed ABCs were lower in 1984 and trip limit and trip frequency restrictions changed twice during the year. The way these limits were applied changed three times.

The sum of the ABCs for the Sebastes complex in the Vancouver and Columbia areas was set at 9,200 mt. The Council acknowledged the industry's difficulty in adjusting to such a sharp decline (from 1983) and set a harvest guideline of 10,100 mt as the goal for 1984 landings from the Vancouver and Columbia areas. On January 1, 1984, a trip limit of 30,000 pounds was imposed and allowed only 1 landing per week above 3,000 pounds for the Sebastes complex in the Vancouver and Columbia areas. The trip limit was reduced by half in May and again in August in an attempt to keep landings from exceeding the harvest guideline in 1984. To soften the impact of these severe restrictions, fishermen were given the choice of reducing either the size or the frequency of their Sebastes landings. (Throughout the year, landings less than 3,000 pounds were not counted toward trip frequency limits to minimize discards of rockfish caught incidentally while targeting on other species.) No further regulations were promulgated for the Sebastes complex in the Vancouver and Columbia areas.

1985 Fishery. The ABCs for the 1985 fishery were approved by the Council at the November 28-29, 1984 meeting in Seattle. OY levels were set equal to ABC for all species except widow rockfish and sablefish. The coastwide widow rockfish OY was set at 9,300 mt, compared with an ABC of 7,400 mt and the sablefish OY was set at 13,600 mt, or approximately 10 percent above the 12,300 mt ABC.

Vessel trip limits were once again the basic regulatory mechanism preferred by fishing industry representatives advising the Council. Accordingly, the Council adopted trip limits in an effort to extend the fishery throughout the year without exceeding quotas or harvest guidelines.

Coastwide widow rockfish trip limits were set at 30,000 pounds once per week with an option to land 60,000 pounds once every two consecutive weeks (biweekly). The biweekly trip limit option was rescinded by the Council effective April 28, 1985 in an attempt to reduce the rate of landings. Effective July 21, 1985 the trip limit for widow rockfish was reduced to 3,000 pounds, without a limit on the frequency of landings. The trip limit was imposed to discourage directed fishing while permitting retention and sale of fish caught incidental to fishing for other species. Total landings of widow rockfish for 1985 were 9,087 mt, slightly below the 9,300 mt quota.

Management of the Sebastes complex was again the most complicated groundfish management issue in 1985. In the Vancouver and Columbia areas more restrictive trip limits were implemented to reduce yellowtail rockfish landings and encourage landings of "remaining rockfish." A Sebastes complex trip limit of 30,000 pounds, one landing per week, was imposed, of which no more than 10,000 pounds could be

yellowtail rockfish. An option of one landing once every two consecutive weeks of double the amount was also adopted, but the fishermen were required to notify in writing seven days prior to fishing the state in which landings would occur.

Effective April 28, 1985, the Council reduced the weekly trip limit to 15,000 pounds, of which no more than 5,000 pounds could be yellowtail rockfish. The biweekly landing option of double the amount was again adopted as was a third option to land 7,500 pounds twice each week (semiweekly) of which not more than 3,000 pounds in each landing could be yellowtail rockfish.

By early September, GMT projections indicated that yellowtail rockfish landings would approximate the ABC and that Sebastes complex landings as a whole would fall about 1,000 mt below the harvest guideline. Effective October 6, the Sebastes complex trip limits were increased to 20,000 pounds per trip with respective biweekly and semiweekly adjustments. Yellowtail rockfish trip limits were not changed.

The size and trip limits specified for sablefish in 1984 continued until November 25. At that time, it was determined that 90 percent OY had been reached October 21. As specified in the plan, the remaining portion of the OY was allocated on a 50:50 basis to the fixed gear and trawl fleets (680 mt to each gear type). The trawl fleet was put on a trip limit of 13 percent total round weight on board. By December 6 the OY had been reached and all landings of sablefish were prohibited.

Pacific ocean perch landings in the Columbia area exceeded the 950 mt quota in 1983 and 1984 under a trip limit of 5,000 pounds or 10 percent of the total weight of fish on board, whichever was greater. Landings of Pacific ocean perch were prohibited during the latter part of both years. Beginning in 1985, the trip limits were changed to a maximum of 20 percent of the total weight of the fish on board in an effort to discourage targeting and thus reduce landings. The regulation was effective in the Columbia area, but not in the Vancouver area. Effective April 28, 1985 the Council modified the Pacific ocean perch trip limit regulation to 5,000 pounds or 20 percent of the total weight of the fish on board, whichever was less, thus prohibiting large landings of these species. This regulation was effective in reducing landings, and total landings of Pacific ocean perch were 424 mt in the Vancouver area and 886 mt in the Columbia area. The 1985 landings of Pacific ocean perch were below OY in both areas.

On September 1, 1985 the management boundary line separating northern and southern trip limits for the Sebastes complex was shifted approximately 30 miles northward to the jetty on the north side of Coos Bay, Oregon. The move was approved by the Council to minimize management and catch reporting problems which arose earlier when the management line was moved to Cape Blanco, Oregon. Coos Bay fishermen testified that moving the line to the north jetty of Coos Bay would simplify and enhance the operations of fishermen who were required to contend with two different trip limits and trip frequencies adjacent to their port of landing.

In March 1985, the Council provisionally approved issuance of up to 18 experimental set net permits for sablefish. Two permits were issued by NMFS in 1983 and three in 1984 despite recommended disapproval by the Council. The expanded experimental fishery was intended to evaluate gear conflicts and the effects of the set net fishery on fully utilized stocks of fish. Twelve vessels actually fished in 1985 with most of the effort centered off northern Washington.

1986 Fishery. The ABCs for the 1986 fishery were approved by the Council at the November 13-14, 1985 meeting in Seattle, Washington. As in previous years, the OY was set at ABC except for widow rockfish and sablefish. The coastwide widow rockfish OY was set at 10,200 mt compared with an ABC of 9,300 mt. The coastwide OY for sablefish was set at 13,600 mt, or about 30 percent above the 10,600 mt ABC.

Management measures established by the Council were similar to those of the past three years. Industry advisors to the Council reaffirmed their support of vessel trip limits for the few species which require regulation to prevent over exploitation. It was their view that vessel trip limits are more likely to achieve the objective of extending the fishery throughout the year without exceeding quotas or harvest guidelines.

Coastwide domestic commercial groundfish landings is projected to be down slightly from 1985. A decline in Dover sole landings accounted for the majority of the decrease but rockfish and lingcod landings also were down. The decrease in rockfish landings was attributed to regulatory actions. Directed effort for Dover sole decreased in 1986 as many trawlers shifted to the rapidly improving coastal pink shrimp fishery. Lack of availability also was a factor in the Vancouver area with many fishermen reporting poor success for Dover sole.

A coastwide widow rockfish trip limit was set at 30,000 pounds once per week. The option to permit one 60,000 pound landing once every two consecutive weeks was rejected because industry advisors and the Council concluded this option would increase landings early in the season and result in a premature closure of the fishery. Good fishing during the early part of the year precluded the intent to extend the fishery throughout the year. GMT landing projections in early April indicated that the ABC would be reached by late summer or early fall. After hearing industry testimony that smaller trip limits were not practicable, the Council opted to retain the 30,000 pound trip limit until the ABC was reached. At that time, the trip limit would be reduced to 3,000 pounds per trip without a limit on the frequency of landings. The Council reaffirmed the regulation at its September 17-18 meeting and the 3,000 pound trip limit was imposed on September 28.

In contrast to previous years, management of the Sebastes complex presented no major problems. Trip limits south of the Columbia area were set at 40,000 pounds for the third consecutive year, with no limit on the frequency of trips. The Vancouver and Columbia areas harvest guideline was set at 10,200 mt. Weekly trip limits were set at 25,000 pounds of which no more than 10,000 pounds could be yellowtail rockfish. Biweekly and semiweekly options in the same proportions were also set to provide fishermen with additional options. From the start of the year, landing rates were down from previous years. Reasons were a more normal weather pattern than the excellent weather encountered early in 1985, poorer availability of rockfish early in the year, and less directed rockfish effort later in the spring as many vessels converted to shrimp fishing or entered the joint venture fishery for whiting. On August 31, after the GMT reported the harvest guideline would not be achieved with the lower trip limits, the Council increased trip limits to 30,000 pounds once per week of which not more than 12,500 pounds could be yellowtail rockfish. Similar adjustments were made to biweekly and semiweekly options.

Several different management measures have been tried for Pacific ocean perch since 1983. The regulations implemented during the past few years have either

resulted in exceeding the OY and closing one area and taking less than the OY in the other; or underharvesting in both areas. The 1986 Pacific ocean perch trip limit was set at 10,000 pounds per trip or 20 percent of the weight on board, whichever was less. This regulation apparently will result in landings less than the OY in the Columbia area. In the Vancouver area, where large landings of other species of groundfish are common, many vessels targeted on Pacific ocean perch to bring their catches up to the maximum allowed under the regulation. As a result the OY is expected to be reached in mid-November and landings of Pacific ocean perch from the Vancouver area will be prohibited for the remainder of the year. It is apparent from the experiences of the past four years that a single trip limit regulation for both the Vancouver and Columbia areas cannot meet conservation and harvest goals for each area. Conversely, regulations which differ between areas may meet the desired objective for each area but cannot be effectively enforced because some vessels commonly fish both areas on a single trip.

The initial 1986 sablefish regulations were unchanged from the past three years. The fishery was unrestricted except that landings of fish less than 22 inches were limited to 5,000 pounds per trip. During the early part of the year landings were similar to 1985 and it was evident that the 13,600 mt quota could be reached before the end of the year. In early April, both trawl and fixed gear fishermen expressed an interest in revising the management regime in the FMP which required that the catch be allocated between fixed and trawl gear when 90 percent of the quota was reached, and established trip limits for trawlers by predetermined formula. There was a common desire to establish shares earlier in the year to permit fixed gear fishermen adequate time to plan vessel operations and to set trip limit regulations for trawlers which would be significantly greater than those which would be set under the FMP scenario. In July, the Groundfish Select Group (GSG) recommended to the Council that the remaining unharvested balance of the 1986 OY be allocated between trawl and fixed gear based on the share of total sablefish landings for a five year (1981-1985) average. The GSG further proposed that fixed gear landings continue without restriction until the fixed gear allocation is reached, and that trawl trip limits be set at levels which would allow trawl fishermen to continue to land sablefish for the remainder of the year without exceeding the trawl allocation. Either gear would be prohibited from further sablefish landings after the gear allocation was reached and all landings would be prohibited when the OY was reached. The rationale for the proposals was that fixed gear fishermen landed only sablefish, had no alternative fishery, and could not operate economically under trip limits. Conversely, sablefish are primarily an incidental species in the multispecies trawl fishery, and wastage would occur if landings were prohibited and catches were discarded at sea.

The allocation proposal was adopted by the Council and implemented on August 22. GMT landing projections developed in early October indicated that the trawl landing rates were at a level which might not reach the trawl allocation by the end of the year. The fixed gear allocation, however, was projected to be reached by late October, at which time landings of sablefish by this gear would be prohibited for the remainder of the year.

The FMP prohibits the use of set net gear for groundfish north of 38°N latitude. In an effort to evaluate the impacts and success of a set net fishery, the director, NMFS, Northwest Region issued experimental permits to harvest groundfish with set nets in the EEZ adjacent to Washington, Oregon, and California each year from 1982 to 1985. In March 1986, the Council reviewed the

results of the experimental fishery and the implications of legalizing set net gear in the prohibited area. The Council reaffirmed its position that set nets should be prohibited north of 38°N latitude and recommended that no experimental permits be issues in 1986. NMFS concurred with the recommendation and the experimental fishery was terminated.

1987 Fishery. For each species managed by a numerical OY, the 1987 OY was set at the estimated ABC. An interim coastwide ABC/OY for sablefish was set at 12,000 mt until a review of all stock assessment data could be completed by an ad hoc stock assessment work group.

Management measures established by the Council were similar to those of the past four years. Industry advisors to the Council reaffirmed their support of vessel trip limits for the species which required regulation to prevent overexploitation. It was their view that vessel trip limits were likely to achieve the objective of extending the fishery throughout the year without exceeding quotas or harvest guidelines. No abnormal or extreme environmental conditions were encountered in 1987 and fishing patterns, fluctuations in landings, and fleet size were well within expectations.

The increased Pacific cod landings in the northern areas and reports of small cod as far south as northern California are encouraging and may indicate that cod abundance is increasing after several years of apparent low abundance.

The decline in Dover sole landings for the second year in a row can be attributed primarily to decreased directed effort, but a lack of availability in the northern areas also impacted the total landings. The reasons for decreases in the other species are less clear but are probably a result of decreased abundance.

Increased widow rockfish landings were directly related to the 3,200 mt increase in OY for 1987. Trip limits were once again set at 30,000 pounds, once per week. Fishing was good coastwide and many vessels consistently landed limits each week until early May when widow rockfish became less available to trawls. At the September Council meeting, the GMT projected the 12,500 mt OY would be reached in late November. The Council approved a 5,000 pound weekly trip limit when 95 percent of the OY (11,875 mt) was landed. The lower trip limit was not effective and landings were prohibited on November 25, 1987.

Management of the Sebastes complex was similar to 1986. South of the Columbia area, trip limits were set at 40,000 pounds for the fourth consecutive year, with no limit on the frequency of trips. The Vancouver and Columbia areas harvest guideline was set at 10,200 mt. Weekly trip limits were set at 25,000 pounds of which no more than 10,000 pounds could be yellowtail rockfish. Biweekly and semiweekly options in the same proportions were also set to provide fishermen with an option which best fit into their overall fishing operations.

Fishing success for the Sebastes complex was improved over 1986. It was reported that because of good catch rates, some fishermen targeted on the Sebastes complex early in the year rather than fishing for widow rockfish. The greatest improvement was noted early in the year in the Vancouver area where fishermen reported excellent availability of yellowtail rockfish and complained that they discarded fish to prevent exceeding the landing limit. In late July, the Council reduced the weekly yellowtail rockfish landing limit from 10,000 pounds

to 7,500 pounds in an attempt to prevent landings from exceeding the ABC for this species in the Vancouver and Columbia areas.

The 1987 ABC for Pacific ocean perch in the Vancouver and Columbia areas was set at zero because stocks were stressed and had not recovered since being overexploited in the late 1960s. The OYs were set at 500 mt for the Vancouver area and 800 mt for the Columbia area to permit retention of fish harvested incidentally while fishing for other species. To discourage directed fishing, the Council established a trip limit of 20 percent of the total weight of legal fish on board, not to exceed 5,000 pounds per trip. Landings of Pacific ocean perch were well below the OY.

Difficulties with sablefish stock assessment and management continued to plague the Council in 1987. Efforts to develop scientifically credible estimates of coastwide sablefish abundance and ABC were unsuccessful, primarily due to the lack of an adequate and comprehensive historical data base. The Council established an interim 1987 ABC/OY of 12,000 mt based on the best information available. Despite several efforts by the GMT and an ad hoc stock assessment work group, no better estimate was developed and the 12,000 mt OY was not revised during the year. Trawl gear was allocated 52 percent of the OY and nontrawl gear 48 percent to assure historical and equitable sharing of the harvest. Landing by both gear types lagged behind 1986. Decreased effort early in the year by nontrawl gear and decreased trawl effort were undoubtedly major factors in decreased landings. Nontrawl fishermen, however, reported fewer large sablefish and indicated that fishing success was generally poorer than in previous years. Although landings were lower, both gear types were projected to achieve their allocation before the end of the year. A trip limit of 6,000 pounds or 20 percent of the total weight of legal fish on board was implemented for trawl gear on October 2 in an attempt to extend the fishery and to prevent discards. In October, the nontrawl fishery was projected to reach its allocation in mid-October, at which time sablefish landings by nontrawl gear would be prohibited for the remainder of 1987. The trawl fishery for sablefish was closed October 22, 1987.

1988 Fishery. The ABCs and numerical OYs for the 1988 fishery were approved by the Council at the November 18-19, 1987 meeting in Portland, Oregon. Most management measures established by the Council were similar to those of recent years. However, for the first time, trawl trip limits for sablefish were implemented on January 1 in order to prevent the trawl fleet from exceeding its allocation quota. Industry advisors to the Council reaffirmed their support of vessel trip limits for the few species which require additional regulation to prevent overexploitation. Vessel trip limits were implemented with the objective of extending the fishery throughout the year without exceeding quotas or harvest guidelines. No abnormal or extreme environmental conditions were encountered in 1988. However, unsteady fishing patterns and landings fluctuations resulted from erratic market conditions. Fleet size was well within expectations.

One major management problem in 1988 was the temporary loss of PacFIN funding for port samplers and data processors. This impaired the accuracy of landings projections and future stock assessments which rely on biological sampling.

The continued increase in Pacific cod landings in the northern areas and reports of cod as far south as northern California were encouraging and may indicate that cod abundance has increased after several years of apparent low abundance.

Widow rockfish landings rates varied greatly through the season as a result of unstable market factors. Trip limits were once again set at 30,000 pounds once per week. Fishing was good coastwide and many vessels consistently landed limits. At the July 13-14 Council meeting, the GMT projected the 12,100 mt OY would be reached in early October. The Council approved a 3,000 trip limit to go into effect when just enough of the OY remained to allow this trip limit to remain in effect until December 31. The intent of the Council was achieved.

Management of the Sebastes complex presented no major problems in 1988. South of Coos Bay, trip limits were set at 40,000 pounds for the fifth consecutive year, with no limit on the frequency of trips. North of Coos Bay, the harvest guideline was set at 10,200 mt. Weekly trip limits were set at 25,000 pounds of which no more than 10,000 pounds could be yellowtail rockfish. Biweekly and semiweekly options in the same proportions were also set to provide fishermen with an option which best fits into their overall fishing operations.

Fishing success for the Sebastes complex was similar to 1987. Increased landings were noted primarily in the Vancouver area where fishermen reported excellent availability of yellowtail rockfish and complained that they discarded fish to prevent exceeding the landing limit. GMT projections in July indicated that ABC would be reached in mid-August unless effort was reduced. Preliminary assessment results indicated that ABC could increase significantly and management action was postponed pending review and approval of the new stock assessment. However, the completed assessment indicated that ABC should be increased only 300 mt. Subsequent to receiving the assessment, the Council reduced the weekly yellowtail landing limit from 10,000 pounds to 7,500 pounds. The Council's intent was to reduce targeted fishing on yellowtail rockfish in the Vancouver and Columbia areas without forcing a significant increase in discards. Despite trip limit reductions, yellowtail rockfish landings exceeded ABC.

The 1988 ABC for Pacific ocean perch in the Vancouver and Columbia areas was set at zero because stocks were stressed and had not recovered since being overexploited in the late 1960s. As in 1987, the OYs were set at 500 mt for the Vancouver area and 800 mt for the Columbia area to permit retention of fish harvested while fishing for other species. To discourage directed fishing, the Council established a trip limit of 20 percent of the total weight of fish on board, not to exceed 5,000 pounds per trip. Landings of Pacific ocean perch were again below OY.

Difficulties with sablefish stock assessment and management continued to plague the Council in 1988. Efforts to develop scientifically credible estimates of coastwide sablefish abundance and ABC were unsuccessful until late in the year, primarily due to the lack of an adequate model to analyze the diverse historical data base. The Council established an ABC of 10,000 mt and an OY range of 9,200 to 10,800 mt based on the best information available. Trawl gear was allocated 5,200 mt and nontrawl gear was allocated 4,800 mt in an attempt to maintain an equitable sharing of the harvest. An additional 800 mt was held in reserve in case the trawl fishery unavoidably exceeded its allocation. To achieve the 5,200 mt allocation, a trawl trip limit of 6,000 pounds or 20 percent of the fish on board, whichever is greater, was implemented on January 1. Due to lack of PacFIN data, landings were difficult to monitor. Early in the year trawl landings were high in spite of the trip limit. The trip limit was reduced to 2,000 pounds once per week on August 3 and the 800 mt reserve was released to the trawl quota to extend the fishery throughout the year. While this trip limit substantially impacted the landing rate, fishermen reported that discards also

increased significantly. Projections by the GMT in September indicated that the 2,000 pound once per week trip limit had slowed landings to the extent that the original 5,200 mt allocation would not be achieved. The Council removed the trip frequency restriction in early October in an attempt to reduce the amount of forced discarding. Nontrawl landings were also substantially above the 1987 rate and the fishery was closed on August 25.

1989 Fishery. The ABCs and numerical OYs for the 1989 fishery were approved by the Council at the November 16-18, 1987 meeting in Portland, Oregon. For those species requiring a numerical OY, levels were set at the estimated ABC, except for Pacific ocean perch and sablefish. Most management measures established by the Council were similar to those of recent years. Industry advisors to the Council reaffirmed their support of vessel trip limits for the few species which require additional regulation to prevent overexploitation. Vessel trip limits were implemented with the objective of extending the fishery throughout the year without exceeding quotas or harvest guidelines.

No abnormal or extreme environmental conditions were encountered in 1989. However, there were some periods of landing fluctuations caused by erratic market conditions. Fleet size was within expectations.

Coastwide domestic commercial groundfish landings were projected to be down slightly from 1988. Lower landings were projected for Dover sole, arrowtooth flounder, yellowtail rockfish, and sablefish, due primarily to regulation changes. Increased landings were expected for thornyheads, even though landings of this species were restricted by regulation. Also in 1989, there was no foreign fishery allocation for Pacific whiting. Joint venture requests exceeded the available supply, thus no TALFF was granted.

Widow rockfish landings rates varied somewhat through the season as a result of erratic market factors. At the beginning of the fishing year, trip limits were once again set at 30,000 pounds per week. Fishing was good coastwide, especially in January and February. The GMT projected in March that a 51 percent reduction in the rate of landings would be required to extend the fishery to the end of the year. On the advice of the GSG, the Council approved a reduction in the trawl trip limit to 10,000 pounds per week or 20,000 pounds per two weeks, effective April 26. On October 11, 1989 the trawl trip limit was further reduced to 3,000 pounds per week to avoid a fishery closure.

Management of the Sebastes complex was much the same as previous years. South of Coos Bay, trip limits were set at 40,000 pounds per trip. North of Coos Bay, trip limits were set at 25,000 pounds once per week of which no more than 7,500 pounds could be yellowtail rockfish. There were biweekly and semiweekly options available upon written notification. At the July 12-13 Council meeting, the GSG recommended that the trip limit on yellowtail rockfish be reduced to 3,000 pounds or 20% of the Sebastes complex on board, whichever is greater, to keep the annual harvest near the ABC of 4,300 mt for the Vancouver and Columbia areas. This restriction became effective on July 26.

Management of Pacific ocean perch in 1989 presented the Council with a challenge. The ABCs were set at 0 but the OYs were set at 500 mt for the Vancouver area and 800 mt for the Columbia area to allow for incidental catch. In July the GMT alerted the Council that the Columbia area OY would be met July 31 at the current landing rate. The Council recommended that the trip limit be reduced to 2,000 pounds or 20 percent (by weight) of all legal fish on board, whichever was

less, from 5,000 pounds or 20 percent (by weight) of all legal fish on board, whichever was less. Concurrently the OY in the Columbia area was increased by 30 percent with the intent of preventing a fishery closure. The intent of the trip limit was to accomodate incidental catches of Pacific ocean perch; it is unclear what effect the reduced trip limit had on catches. These changes were effective July 26. On November 13 the Columbia area fishery was closed when projections indicated OY would be reached.

Sablefish presented the Council with its greatest groundfish challenge in 1989. The stock assessment indicated that ABC should be 9,000 mt. Because the stock was still above MSY, the OY was set at 10,400 mt to 11,000 mt. The intent was gradually fish the stock down to the level that produces MSY by managing for the low end of the OY, but if landings exceeded 11,000 mt, further landings would be prohibited for all gear types.

The initial allocations, excluding 22 mt for the Makah Indian tribe, were 5,397 mt (52%) for trawl gear and 4,981 mt (48%) for nontrawl gear. A 600 mt reserve was established for uncertainties in landing projections, for incidental catches, and continuation of small nontrawl fisheries that operate later in the year. The trawl fishery began the fishing year with a trip limit of 1,000 pounds or 45 percent whichever was greater, of the deepwater complex. The deepwater complex was defined as sablefish, Dover sole, arrowtooth flounder, and thornyheads. The Council, at the April 4-7 meeting, was informed that the sablefish landing rates were such that early fishery closure would occur: June 27 for nontrawl and September 21 for trawl. To minimize discards of sablefish in the trawl fishery and avoid large-scale disruption of the fishery, the Council recommended that the trawl quota be increased by 1,000 mt (400 mt from nontrawl plus the 600 mt reserve) and altered the trawl trip limit. The new trip limit placed a once per week 30,000 pound limit on the deepwater complex of which no more than 1,000 pounds or 25 percent, whichever was greater, could be sablefish. There were also biweekly and twice weekly options available. The complex limit and trip frequency restriction were removed October 4, but the separate limit on sablefish remained in place. Directed fishing by nontrawl gear ended on July 17, when an incidental trip limit of 100 pounds per trip was implemented. On October 4 this limit was relaxed to 2,000 pounds or 20 percent of all groundfish on board, whichever was less.

11.4.2 Foreign Fisheries

11.4.2.1 Regulatory Measures

During the development of foreign trawl fisheries in the Washington, Oregon, and California region, a number of restrictions were agreed to during bilateral fishery negotiations with several nations. These agreements also provided for cooperative research, exchange of fishery statistics, control of discharge of pollutants at sea, and loading zones within the U.S. contiguous fishery zone. Beginning in 1977, the foreign fishery was regulated under the terms of a Preliminary Fishery Management Plan, or PMP. Many of these regulations were incorporated into the FMP, which provided for continued management of the foreign fishery.

11.4.2.1.1 Pre-MFMCA Bilateral Agreements

USSR. The first bilateral fishery agreement affecting trawl fisheries off Washington, Oregon, and California was signed in February 1967 by the United

States and the USSR. In return for privileges to fish and/or load in specified localities within the U.S. 3 to 12 mile contiguous fishery zone, the USSR agreed to certain restrictions on their fishing operations so as to provide U.S. fishermen the opportunity to fish grounds of traditional interest and to reduce gear conflicts between the two countries. This agreement was renegotiated every one or two years prior to the enactment of the MFCMA.

In renegotiating the agreement in 1971, the U.S. for the first time granted limited port call privileges to Soviet fishing and support vessels on the Pacific coast. In return, out of continued U.S. concern for the status of Pacific ocean perch stocks, additional areas were closed to Soviet trawling and the USSR agreed not to conduct a specialized fishery for rockfish south of Cape Flattery, Washington.

In 1973, the USSR agreed to restrict its rockfish harvest and to limit its catch of Pacific whiting to the 1971 level of 150,000 mt. They also agreed not to conduct a specialized fishery for flatfish south of 48°10'N latitude.

The last bilateral agreement with the USSR was July 1975. Principal modifications were designed to provide further protection to Pacific ocean perch and other rockfish and to reduce gear conflicts between Soviet trawlers and U.S. fishermen using sablefish traps.

Japan. The first U.S.-Japan bilateral fisheries agreement was signed in May 1967. This agreement related primarily to the conduct of Japanese fishing operations in the Bering Sea and Kodiak Island regions. Subsequent extensions, modifications, and renewals of the agreement included more and more restrictions in the Washington, Oregon, and California region. In 1970, in exchange for a loading area off Washington, the Japanese agreed not to trawl or longline in a zone off the south Washington coast, an area also closed to Soviet trawling. The latest agreement in 1974 reduced Japanese effort in the Washington, Oregon, and California area and limited the catch of rockfish and sablefish as well as the aggregate catch of all other species.

Poland. Poland, which began fishing off the west coast in 1973, entered into a bilateral fishery agreement with the U.S. in May 1975. The agreement, which was renegotiated in early 1976, was designed to protect the whiting resource, reduce the impact on rockfish and other important domestically harvested species, and minimize gear conflicts. The agreement also dealt with protection of the living resources of the U.S. continental shelf, control of dumping pollutants at sea, cooperative research, and exchange of research and commercial fisheries data.

Other Nations. The U.S. did not negotiate bilateral agreements with the German Democratic Republic, the Federal Republic of Germany, and Bulgaria to regulate their trawling operations. They were late entrants in the trawl fisheries off the west coast and their effort was limited.

11.4.2.1.2 Preliminary Management Plan (PMP) Under MFCMA

Upon the implementation of the MFCMA in 1977, foreign trawl fisheries within the EEZ (then referred to as the Fishery Conservation Zone or FCZ) were regulated under the terms of the PMP for the trawl fishery of the Washington, Oregon, and California region. The PMP established the total allowable catch (TAC), permissible incidental catch levels, species not to be subjected to a directed fishing effort, time-area closures (to protect certain stocks and to reduce gear

conflicts), and effort limitation. In addition, the PMP outlined procedures foreign nations should follow when submitting statistical reports and fleet disposition reports.

The initial 1979 TALFF for Pacific whiting was 109,120 mt. Specific time-area closures for the 1979 foreign trawl fishery are presented in Figure xxx. Directed fishing effort with midwater trawls was permitted for Pacific whiting north of 39°N latitude. A 100 mm (4.0 inch) minimum mesh size was established. Salmon, Pacific halibut, and/or creatures of the continental shelf (shrimp, crab, etc.) taken incidentally during trawling operations could not be retained. The 1979 incidental catch allowance percentages were: jack mackerel, 3.0 percent; Pacific ocean perch, .062 percent; other rockfish, .8 percent; flounders, .1 percent; sablefish, .1 percent; and other species, .6 percent.

Upon implementation of the FMP in 1982, foreign fisheries were managed under the FMP's provisions and implementing regulations. Many of the measures contained in the PMP were included in the FMP and continue to the present.

11.4.2.2 Purpose of Regulatory Measures

Regulatory measures imposed on foreign fishermen were designed to : (1) protect species generally under full or optimum utilization or of special interest to U.S. fisheries; (2) prevent the catch of large numbers of juveniles, and (3) reduce the opportunity for conflict between foreign trawling and U.S. recreational and commercial fishermen.

The major events affecting foreign operations in recent years are summarized below.

1977: Although the MFCMA was passed in 1976, it was not implemented until a year later, resulting in a significant decline in foreign fishing in 1977.

1978: A pilot joint venture for whiting was conducted, involving two Soviet processors and two U.S. trawlers.

1980: The Soviet Union was barred from fishing following its invasion of Afghanistan. However, the Soviet joint venture was not restricted and continued to operate.

1982: Poland was prohibited from fishing due to its imposition of martial law. Although its joint venture was not restricted, Poland chose not to continue this operation.

1983: Even though whiting were available, there was no foreign fishery in 1983. Prohibitions against Soviet and Polish fishing continued.

1984: Sanctions against the Soviet Union and Poland were lifted in the summer, enabling a small foreign fishery by both nations. The Polish joint venture also reappeared.

1985: The Soviets were "certified" for their excessive harvest of minke whales off Antarctica. This cut their foreign fishing allocation in half. The Soviets responded by reducing their joint venture purchases by half.

1986: The Soviet "certification" continued and their request for foreign fishing allocations was denied.

1987: Soviet "certification" continued. Two new participants, the Peoples' Republic of China and the Republic of Korea, entered the joint venture and directed fisheries for whiting.

1988: Japan entered the joint venture fishery for the first time, conducting the first wide-scale surimi operation involving whiting. Because they were certified for "undertaking activities that have diminished the effectiveness of the International Whaling Commission," Japan was not eligible to operate in the foreign fishery in 1988. Soviet "certification" ended. The Soviet Union and Republic of Korea declined their foreign fishing allocations late in the year.

1989: Joint venture allocation requests exceeded the amount of Pacific whiting available for JVP and no foreign fishery was allowed. Achievement of the whiting JVP lead to closure of the fishery for the first time. Requests for shortbelly rockfish joint venture allocations were received for the first time since 1982 as joint venture sought to expand fishing opportunities.

11.4.3 Effectiveness of Management Measures

Prior to implementation of the MFCMA, foreign fisheries off the coast of Washington, Oregon, and California were largely unregulated. Although bilateral agreements were developed with the more important fishing nations, these agreements were in many respects too little too late. Catches were often unreported or under-reported, and the agreements were in response to overfishing that had already occurred. The most serious case was Pacific ocean perch, which has not yet responded to rebuilding efforts which were begun several years ago.

With respect to the domestic fisheries, minimize mesh size restrictions have controlled the age at first capture, which has tended to maximize the yield per recruit for key groundfish species (boccaccio, chilipepper, yellowtail rockfish, Dover sole, and English sole) and reduce the catch of immature fish of most species. Most species are managed solely through mesh regulations, and this management approach has been restrictive enough to prevent overfishing while liberal enough to allow full domestic development of the fisheries for nearly all species. However, in recent years industry growth has made it necessary to implement additional restrictions.

Quotas have been moderately effective in limiting total harvest of several important species, but quotas for the trawl fishery do not by themselves limit total fishing mortality due to bycatch mortality subsequent to closures. The use of harvest guidelines in combination with other effort restrictions has the potential to allow more optimum utilization while limiting fishing mortality.

Trip landing limits have effectively kept landings close to the designated allowable harvests, although this has often been at the expense of increased discards.

Trip frequency limits have been used both to further slow the rate of harvest and to provide more flexible management for fishermen to select their own schedules. In both respects, the management measures have been generally successful.

Prior to implementation of Amendment 4, the FMP did not provide mechanisms to respond to several important Council goals and objectives in the absence of a resource conservation problem. Such goals include maintaining a year round trawl fishery and equitable sharing of the resource among users. Allocation of sablefish among users was a major issue that could be addressed properly only through plan amendment. The framework provisions and clarification of procedures that were included in Amendment 4 provided the authority and flexibility to address a wider range of changing conditions and therefore more adaptable management.

Enforcement of foreign fishing regulations has been the responsibility of the U.S. Coast Guard and the NMFS Enforcement Division. The U.S. Observer Program conducted by NMFS, while not an enforcement activity, has provided better foreign catch data and acted as a deterrent to violations.

11.5 History of Research

11.5.1 United States Research

Research efforts on groundfish occurred prior to 1900, but in many cases were of local nature and largely descriptive. The majority were life history studies. Extensive at-sea surveys did not begin until 1951 when the R/V John N. Cobb (NMFS) began a series of exploratory surveys of the Washington, Oregon, and California region.

A series of extensive flatfish tagging studies by the States of Washington, Oregon, and California were also initiated in the 1950s and extended through the 1970s. These studies, as well as mesh-selection studies conducted by the coastal states were coordinated through the PSMFC. A similar tagging study in 1971 to 1976 on sablefish was initiated by NMFS and various agencies.

Beginning in the late 1960s and early 1970s, resource surveys conducted by various state and federal agencies were broadened significantly. The first attempts to estimate biomass and age composition from trawl/hydroacoustic surveys occurred at this time. Flatfish surveys were carried out by the States of California (1969) and Oregon (1971 to 1976). Whiting surveys were carried out by NMFS during 1969 to 1975. Beginning in 1977, NMFS conducted triennial hydroaccoustic and trawl surveys targeted on whiting and rockfish coastwide.

A series of comprehensive ichthyoplankton (egg and larval) surveys of the California-southern Oregon region have been carried out by NMFS during the 1950s to 1970s, with occasional cooperative ventures with the USSR off Washington, Oregon, and California in the 1970s and 1980s. These surveys produced information on the early life history of whiting and rockfish in the region.

Since the FMP was implemented in 1982, a significant amount of research has been conducted by state and federal agencies and universities throughout the west coast. The NMFS triennial trawl surveys, pot index surveys, CALCOFI surveys and mesh selectivity study (conducted by the University of Washington) are examples. Much of the research has been centered on development of new analytical techniques to refine stock assessments. Each year ABCs are established for all

major species and species groups based on recent stock assessments. Although not every species is reviewed every year, this is a continuing part of the Council's annual process. The states collect logbook data and biological samples from the fisheries to maintain a historic data base for utilization in these and other analyses. The NMFS Tiburon Laboratory has done work in redesigning port sampling strategies in order to maintain and improve the quality of the data collected.

With respect to the anthropological, social and economic conditions of the fishery, the PacFIN research database provides comprehensive data for analysis of fish landings receipts coastwide.

The Council and NMFS have developed a cooperative approach to identifying research needs. Each year the Council, in consultation with the various state agencies and its advisors, develops a list of long term and shor term research and data needs and priorities. NMFS considers these management needs in establishing research priorities.

11.5.2 Foreign Research

During the period 1963 to 1969, the Fisheries Research Board of Canada investigated the rockfish of the Washington, Oregon, and California region. A trawl and echo-sounder survey was conducted using the research vessel G.B. Reid. Objectives of the survey were to examine the distribution, abundance and biology of rockfish with primary emphasis on Pacific ocean perch. This was the most extensive and well-documented series of foreign research surveys undertaken off the west coast. More recently, advances in age determination techniques by Canadian scientists have aided substantially in stock assessments.

Research cruises by the USSR were carried out after 1965, but were largely exploratory in nature. Hydroacoustic estimates of whiting and rockfish biomasses were developed during the cruises, but the methodology used in obtaining these estimates was poorly documented. Significant contributions on the biology of whiting and Pacific ocean perch resulted from Soviet research efforts. The USSR and Republic of Korea both participated in cooperative sablefish tagging programs with NMFS from about 1971 until 1980. The Polish Sea Fisheries Institute participated in the 1977 rockfish survey.

11.6 Weather-Related Vessel Safety

P.L. 99-659 required the Council to consider, and if needed, provide for temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions adversely affecting the safety of the vessels. The Council has always been free to consider the vessel/crew safety implications of alternative and recommended management measures. The available legislative history for P.L. 99-659 indicates that this additional required FMP element reflects specific recognition of safety problems which have arisen in certain fisheries where the a regional council established fishery access rules or regulations on a strict, time-limited, or another similar basis. Regulations in certain fisheries (e.g., east coast surf clam or west coast halibut) have led to highly competitive fisheries which encourage fishermen to take risks they might ordinarily not take, such as fishing under adverse weather conditions, fishing in areas of extreme vessel congestion, or even overloading of vessels.

Purpose of this Discussion. The purpose of this section is to meet the requirement of P.L. 99-659 that any FMP or new amendment contain a "required provision" which considers, and may provide for, temporary adjustments regarding vessel access to the fishery for vessels prevented from harvesting because of weather or ocean conditions affecting vessel safety. This section will summarize vessel safety issues relevant to the existing management measures of the FMP, as well as to the measures of Amendment 3.

Interim NMFS Guidance for Fulfilling the New Section 303 (a)(6) Requirement. NMFS guidance to the Council is fairly general regarding the newly required safety-consideration provision in FMPs/amendments. NMFS indicates that it is important for the Council to use all available expertise when considering safety issues. NMFS has indicated that the assigned U.S. Coast Guard representative will provide technical assistance in evaluating the Council's recommended alternative management measures for their effects on safety, particularly with regard to adverse weather and oceanic conditions. This evaluation is to include the identification of (1) safety concerns caused by a particular management approach, (2) suggested alternatives to minimize safety problems, and (3) mechanisms that allow for flexible modification of management limitations in response to safety and weather concerns. The interim guidance directed that U.S. Coast Guard comments on safety will be included as a separate and independent document in the FMP package forwarded to the Secretary of Commerce for approval. If the Council disagrees with a U.S. Coast Guard evaluation of safety issues, it may choose to address the issues, modify the FMP/amendment, request the U.S. Coast Guard to reconsider the points, or submit the FMP/amendment without further comments. In the case of inseason management under framework FMPs, the U.S. Coast Guard will be available for consultation as needed.

FMP Measures--Relation to Vessel Safety

Review of Existing Information. A recent study has identified a few vessel safety issues associated with the west coast groundfish fishery. In 1985, the National Council of Fishing Vessel Safety and Insurance (NCFVSI), under a Saltonstall-Kennedy grant, examined the effects of fishery management regulations and techniques on the safety of commercial fishing operations. The study's purpose was to develop recommendations for alternative management techniques which might help address vessel and crew safety concerns while maintaining the overall management objectives for a specific fishery. The NCFVSI awarded a subcontract to Natural Resources Consultants (NRC) in Seattle, Washington to conduct the research on the west coast.

After 60 formal interviews and more than 100 informal discussions with Alaska, Washington, Oregon, and California fishermen, vessel owners, captains, and federal and state fishery managers, NRC reported that industry members typically did not raise strong objections to west coast groundfish management regulations on the basis of vessel/crew safety. Some points of concern, however, were raised over trip limit regulations under the FMP, particularly for the more stormy winter season.

The referenced trip limit regulations apply specifically to widow rockfish and the "Sebastes complex" of rockfish. Since 1984, the Council has used trip poundage limits, coupled with trip frequency limits, for these species (species group) to reduce fleet landing rates and spread the fishery out over the year. At industry request, the Council provided the fishermen options for certain trip limits so they could choose, at any time during the year, between weekly or

biweekly limits. Those who favored these options over a single weekly limit indicated that the flexible choice provided better opportunity to catch their trip limit and avoid risky weather or ocean conditions. The Council eliminated the flexible trip limits for widow rockfish landings in 1985 as a means of slowing overall landing rates, preventing a fishery closure, and resolving certain marketing problems associated with the biweekly limit. The Council considered the safety implications of this change, particularly when it decided not to adopt the widow rockfish biweekly option for the beginning of the 1986 and 1987 fishing seasons (a time of year when the weather is poor). The final Council decision was based on balancing the need for flexibility in landing restrictions with the overall management objective of extending the fishery throughout the year and with processor needs for a certain product flow. It was noted by the Council that the biweekly option favored larger vessels, many of which are available (and large enough) to fish in the early season bad weather; many of these vessels are involved in joint ventures later in the year. The trip limit flexibility for the Sebastes complex was expanded to a choice of three options (i.e., one trip per week, one per two weeks, and two per one week). Since excessive landing rates and marketing problems were not a serious issue, the fishing community, including the harvesters and processors, has supported this arrangement and acknowledged the safety benefit of being able to minimize fishing risks when conditions are marginally or clearly not safe.

Generally, the interview summaries in the NCFVSI report suggested that major unresolved safety issues do not remain in the groundfish fishery and the Council has responsibly considered safety issues. There appears to be user recognition and acceptance of the need for trip limits. However, some opponents point out that inflexible limits may encourage fishermen to take risks in poor weather simply to avoid losing one or several trip's catch. Some fishermen interviewed advocated starting the groundfish fishery season later than January 1 because then the season beginning would coincide with better weather. No one argued or presented evidence that the present season, based upon a calendar year, has caused fishermen to take unreasonable risks. Other factors, including market prices, timing of joint venture fishing, and processor requirements have been considered by the Council in setting a season opening date.

The NCFVSI report makes several general observations regarding fishing vessel safety in relation to management approaches. Many "open fisheries," such as the groundfish fishery, where regulations do not limit the number of participating vessels nor establish vessel size categories with individual quotas or allocations, have become overcapitalized--the number of vessels fishing is in excess of the fleet size required to catch the annual quota. These circumstances have resulted in shortened seasons and competitive fisheries where the larger number of fishing units "compete" for proportionately smaller shares of the catch quota. A business environment is stimulated which rewards hard work and innovative fishing methods which improve harvesting efficiency and reduce costs. These competitive benefits may arguably outweigh safety considerations by vessel operators and marginal or poor weather conditions may take second place to the rush to catch limited harvest quotas. Several safety related issues are associated with these fishery conditions. Vessels of widely differing size, seaworthiness, and economic requirements all compete against each other. Management regulations establishing seasons and opening dates do not necessarily resolve the problem of inequitable operational capacities of these vessels. Weather conditions prevailing at a season opening may be safe for larger or more seaworthy vessels, while presenting hazardous or life-threatening conditions to smaller or less seaworthy vessels. This "big boat-small boat" conflict is not

easily resolved and any trip limits established usually represent a compromise between big boat and small boat interests.

NCFVSI also points out that most management systems established by the regional fishery management councils are characterized by catch quotas, season and area restrictions, and inseason closures and/or trip limits which restrict either or both the tonnage of fish landed or the landing frequency. Intensified by increasing numbers of vessels, and often by a cyclical catch quota, these types of management measures tend to foster "derby fisheries." Directly or indirectly, most owner or skipper concerns for vessel or crew safety center around derby fisheries and associated inflexible regulations. NCFVSI concludes that the relationship between fisheries management and vessel safety is more complex than initially appears. Attempts to legislate safety (i.e., recent MFCMA amendment) must strike a reasonable balance between addressing safety concerns and preserving the Council's ability to pursue legitimate conservation and allocation objectives.

It should be noted that the federal groundfish fishery off Washington, Oregon, and California is not regulated by specific seasons (although a fishery is closed when the quota is reached) and only six of the more than 80 species covered by the FMP are managed by quota. Of these, only three species are highly desirable to the shore-based fleet. Pacific ocean perch may be landed only at incidental levels which does not encourage a rush to take the quota. Sablefish currently is allocated between gear types which minimizes at-sea competition between the user groups. Finally, widow rockfish is managed by trip frequency limits which slow landings but give fishermen a choice of when in a given week they would like to fish.

The Council generally agrees with the NCFVSI assessment of safety issues in the groundfish fishery, and also with its recognition that certain types of necessary fishing regulations do not allow for much flexibility in addressing vessel safety concerns without adversely affecting management or conservation objectives. To the extent that quotas are large enough and seasons long enough, fishermen can chose to stay ashore in inclement weather and await better fishing conditions to harvest their allowable catch. It is difficult, if not impossible, to anticipate major adverse weather or ocean conditions during the preseason, measure-setting process. Average weather patterns and existing or predicted unusual ocean conditions, such as an "El Nino," are considered by the Council in establishing preseason management measures. Unusual ocean conditions also affect preseason resource assessment predictions of stock abundance which are a basis for management decisions.

The other recent study of safety implications of FMPs was conducted in 1985 by the Congressional Research Service (CRS) and involved a national survey to identify perceptions of safety problems resulting from FMP provisions. Some 80 marine advisory specialists and agents under the National Sea Grant College Program were questioned. Only one comment was received regarding safety and the west coast groundfish fishery: it indicated that the use of weekly catch quotas has caused trawlers to fish in very bad weather in order to get their "weekly quota." The commenter argued that a monthly quota would be more logical and much safer because the trawlers could wait out bad weather periods (lasting up to two weeks) and pick a calm period to harvest the monthly quota. The CRS study makes the general point that competition in any form may cause harvesters to ignore safety precautions, or to take risks, if they believe it is necessary to maintain or increase profits. Since almost all regulatory systems encourage competition

among harvesters, such systems contribute to the potential for unsafe fishing operations. The CRS study indicates that four regulatory situations, imposed by the regional councils were identified by survey respondents as those contributing to unsafe fishing operations: (1) severely restricted fishing time (seasons), (2) intense harvesting effort concentrated in limited areas, (3) season closures in certain areas while adjacent areas remain open, and (4) catch quotas assigned to short time periods. In general, these conditions no longer apply to the west coast groundfish fishery since the fishery is distributed over wide areas and usually over the entire season. CRS indicates that respondents identified the fourth condition as applying to the groundfish fishery.

The CRS concludes that harvester competition can be substantially reduced or eliminated by only a few regulatory regimes, such as those employing a form of limited access based upon guaranteed harvest shares or individual harvester quotas. Such management systems are more likely to allow fishermen to fish when and where they choose within the conservation limits imposed to protect the resource; a fisherman would be more inclined to remain ashore during risky weather since his share of the resource is still available for harvest. The Council is presently considering the suitability of some form of limited entry system for the fishery.

It should be acknowledged that fishing is, by its nature, an inherently dangerous business. Safety equipment and procedures seem hardly adequate to deal with emergency situations under the best of circumstances. Statistics indicate that fishing is one of the most dangerous occupations in the U.S. The U.S. Coast Guard provided information at 1986 Congressional hearings concerning fishing vessel insurance problems which show that loss rates of large fishing vessels (over 100 gross tons) are five to seven times as great as for U.S. ocean going cargo ships and the death rate for fishermen is seven times the national average for all industrial groups. Between 1981 and 1984, an average of 84 fishermen's lives were lost each year.

Safety during fishing operations, as in any activity, is a compromise between a number of competing interests. The decision as to an acceptable level of safety frequently changes, being reconsidered constantly by the vessel owner or master and revised as circumstances require. In addition to weather and ocean conditions, these circumstances are likely to include factors such as vessel condition and size, product quality and marketing considerations, and financial conditions. Business decisions based principally on profit and loss may possibly override the risk of hazardous weather or seas.

Finally, it is noted that the industry is virtually free from any government inspection and safety regulation. The U.S. Coast Guard has developed voluntary vessel standards and a safety awareness and educational program. The work has been conducted in a cooperative atmosphere with fishing industry groups around the country. While the U.S. Coast Guard's goal has been to reduce the number of major vessel casualties, the increased emphasis on safety has had a positive impact on prevention of minor accidents and injuries as well. One of the difficulties with a completely voluntary program, however, is that while there is a general improvement in safety, specific vessels may continue to operate without even the most fundamental safeguards. Efforts at reducing the frequency and severity of fishing vessel accidents are desirable not only for humanitarian purposes, but also make good economic sense. Accidents resulting in loss of life or property have obvious costs. Accidents resulting in unplanned returns to port for emergency medical treatment of injured crew also cost money in terms of

foregone fishing time and added fuel consumption. The poor safety record of the commercial fishing industry has, in some part, contributed to the high cost of vessel insurance and unavailability or loss of coverage.

Previous Council Considerations of Vessel Safety. The Council believes that it has adequately considered vessel safety issues in its previous formulation of alternative FMP and amendment management measures and in the selection of preferred measures. Certain past management changes were taken by the Council with vessel and crew safety as important considerations. Management adjustment flexibility has been incorporated into the system where the Council thought it appropriate and consistent with the FMP objectives. For example, alternative trip limits were added for certain species; this has had safety-related benefits in giving fishermen greater choice in how or when they take a trip's catch limit. The Council has used its GAP (consisting of representatives of diverse industry sectors) and GSG (composed of industry, state, NMFS, and Council representatives) to identify, and propose solutions to, significant management issues. Furthermore, the Council has established an Enforcement Consultants group (state and federal enforcement agents and U.S. Coast Guard representatives) which considers compliance and safety issues. Specific examples of consideration of safety issues follow.

1. **Establishment of Trip Limits** - This subject was discussed earlier concerning the results of the NCFVSI study. The principal purpose of trip limits established by the Council for the Sebastes complex, widow rockfish, Pacific ocean perch, and sablefish has been to extend fishing throughout the season--to prevent exceeding the OY or harvest guidelines before year-end and avoid fishery closures. This race for the quota encouraged some smaller boats to begin fishing in the winter under weather conditions marginal for them. Where industry was concerned about lost fishing days or opportunities to catch each trip limit, the Council has attempted to provide reasonable flexibility by imposing trip frequency limits in conjunction with trip poundage limits; simply, a fisherman may be limited to one trip per week, but he may choose which days he fishes. Further flexibility is provided by the option to land once every two weeks in the Sebastes fishery which enables vessels to avoid extremely bad weather conditions. (The biweekly trip limit option for widow rockfish was eliminated in 1985 because it contributed to higher than desired landing rates, tended to favor the larger vessels, and posed certain marketing problems for processors.)

2. **Fixed Gear Versus Mobile Gear Conflicts--Gear Marking Requirements** - The original FMP required that trap and longline fishermen mark each mile of groundline with a pole and flag and either a light or radar reflector. These requirements were imposed to prevent longline entanglements with other gear (such as with mobile gear including bottom and shrimp trawls) by marking the longline location. In response to user testimony regarding the safety, among other reasons, of the one-mile markers, the Council reconsidered its gear marking requirements. Fixed-gear fishermen indicated that marking each mile of groundline could be dangerous, especially when fishing in deep water. As the longline gear is retrieved from one end, the mile-marker and marker line drift free and may present a hazard to the propeller of the fishing vessel. A mile-line marker could easily be 3,000 to 8,000 feet long. Smaller vessels also may have too little deck space to hold additional cable without it being in the way of crew hauling in gear.

Based in part on safety considerations, the Council chose to revise its regulations and require markers on both ends of a groundline but not each intermediate mile.

3. **Starting Date for the Fishing Year** - The FMP currently manages all groundfish on a calendar year basis, with new OYs and associated quotas and harvest guidelines effective in January each year. Over recent years, certain fishery segments, particularly the fixed gear sablefish fishermen, have advocated changing the opening and closing dates for the groundfish fishery to April 1 through March 31. Expressed reasons for this proposal included the avoidance of closures at economically disadvantageous times, greater protection for spawning fish, and increased likelihood of closures in the January through March period (when weather is bad) because this would become the "end" of the year. The Council chose not to change the fishing year in its first amendment to the FMP partly because the authority already existed to close the sablefish fishery in January through March for resource conservation reasons. In fact, by applying allocations to fixed and trawl gear in 1987 to slow the achievement of OY (and reduce the catch of incidental sablefish after the OY is reached), the fixed gear fleet did not feel the need to compete against the trawl fleet early in the year. As a result, fixed gear fishermen who earlier were concerned about operating in January through March did not fish during these months because they knew their share could not be taken by trawlers.

Safety Related Statistics on Fishing Vessel Casualties and Personal Injuries/ Lives Lost in the West Coast Groundfish Fishery; Related Weather Information.

1. **General** - Weather and ocean conditions are important safety factors in west coast fishing operations. Operations are primarily from coastal ports which have potentially hazardous bar crossings, and fishing grounds are in ocean waters primarily 3 to 50 miles offshore. Catches are brought aboard, iced in the holds and routinely delivered to shorebased processors within three days of capture. Wind and sea state conditions can be dangerous and bar conditions extremely hazardous, but icing conditions almost never exist, even during winter. Numerous marine advisories are issued by the National Weather Service each year. Information on the number of days per month in which small craft advisories, rough bar advisories, and gale warnings were posted off Washington for the April through October period (1977-1981 and 1985) is presented in Table 1.

The U.S. Coast Guard maintains a vessel casualty file compiled from reports of casualties and accidents submitted to the U.S. Coast Guard by vessel owners and operators. These reports are required to be submitted to the U.S. Coast Guard by 46 Code of Federal Regulations, Part 4. A U.S. Coast Guard review of U.S. commercial fishing fleet casualties from 1970 to 1983, concentrating on cases involving total loss of the vessel and deaths due to vessel loss or damage, provides the following observations.

- The causes or categories of casualties were described as collision, fires and explosion, grounding, flounder-flooding-capsizing, weather damage, material failure, and other.

- The casualty rate for fishing vessels declined from 11.0 lost per 1,000 in 1970 to 6.0 lost per 1,000 in 1980. This improvement did not continue from 1981 to 1983.

- The material used for vessel construction and the vessel's age affect the loss rates. Fiberglass hulled vessels showed a lower loss rate; as age increases so does the loss rate until some age point is reached at which point the loss rate begins to decline.

- Vessels less than 65 feet in length demonstrated significantly lower loss rates than those in the 65 to 100 feet and greater than 100 feet categories.

- Among various causes noted in reviewing casualties, human failure stood out. Such failures include (1) poor watchkeeping practices; (2) navigational errors and rules of the road violations; and (3) lack of understanding of the various forces acting on the vessel, especially as concerns the vessel stability. The human factor plays a role even where the direct casualty cause was equipment failure or bad weather. Required or prudent maintenance may not have been done, or vessel cleanliness was not maintained and led to fire. Poor judgment may have been exercised as to when and where to go fishing.

- Floodings, flounderings, and capsizings present a much greater threat to crew lives and vessel safety than other causes. Of particular concern is the apparent little appreciation by many vessel operators for the number of at-sea hazards, which can seriously reduce vessel stability. The elimination of casualties in these categories depends on the vessel owners and operators: crews must be trained properly, vessels must be equipped and maintained properly, and fishing trips and operations must be conducted safely. Careful risk management is crucial for business success, not to mention survival.

2. **West Coast Groundfish Fishery** - Exact and comprehensive data on the number and extent of at-sea vessel accidents in the west coast groundfish fishery is unknown. U.S. Coast Guard data indicate that out of some 20 U.S. fishing areas, and for the 1972-1979 period, the Pacific Northwest (Washington and Oregon) was third, southern California fourth, and northern California fifth in the number of documented commercial fishing vessels lost at sea (similar order of magnitudes existed for lives lost). U.S. Coast Guard data does not usually specify in which fishery a vessel was participating, but some casualty reports do note the type of fishing or gear used.

The Council has obtained information from U.S. Coast Guard Headquarters on documented commercial vessel casualties (vessels lost and damaged) and crew deaths for territorial and internal waters of, and the EEZ off, California, Oregon, and Washington (for the period 1981-1986) the cause was attributed to adverse weather conditions or where weather was considered a primary or secondary contributing factor. Data were also obtained on all fishing vessel casualties irrespective of the cause. The U.S. Coast Guard data specify vessel name, event date and location, value of total loss or damages, crew deaths, and sea and weather conditions each reported casualty during the six year period. An initial review of the data shows the following.

- Between 1981 and 1986 inclusive, there were reported 51 documented commercial fishing vessels lost at sea, 38 vessels sustaining measurable damage which affected seaworthiness, and 38 lives lost

where adverse weather was considered the cause or primary or secondary contributing factor. Refer to Table 2.

- On the average, for the entire coast, the number of fishing vessel casualties per month (combined number of vessels totally lost or damaged with seaworthiness affected), attributed by the U.S. Coast Guard to all causes, appeared significantly higher during a period from May through August. The number of vessels lost per month did not evidence a clear peak, but was generally lower from January through April and higher from May through December.

- On the average, for the entire coast, monthly fishing vessel casualties (combined number of vessels lost or damaged) attributed by the U.S. Coast Guard to weather as the cause or primary contributing factor, appeared to vary reasonably closely about a mean value from January through October, but rose sharply in November and December. The number of vessels damaged per month was lowest in January and February and rose some (with fluctuations) over the season with a sharp peak in November. The number of vessels lost per month appeared to fluctuate reasonably closely about a mean value from February through October, but peaked sharply in November; December was a high incidence month as was January (although to a lesser degree).

Options Considered in Amendment 3. In its consideration of Amendment 3, the Council reviewed two options for fulfilling the safety-related requirements of P.L. 99-659 and interim NMFS guidance. Both alternatives consider temporary regulatory adjustments for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting vessel safety. P.L. 99-659 requires that any such adjustments be based upon consultation with the U.S. Coast Guard and persons utilizing the fishery.

Option 1 - Status Quo (No Regulatory Changes Needed). Present FMP regulations require public comment and consultation with the Council before preseason or inseason management actions are implemented (except for closures which must occur when quotas are reached). The U.S. Coast Guard is represented on the Council and, therefore, as required by P.L. 99-659, comments on proposed management measures as it sees fit. In addition, the U.S. Coast Guard participates in the Council's Enforcement Consultants group and so has another opportunity to raise or comment on safety concerns. U.S. Coast Guard comments are part of the NMFS' publicly available administrative record and written comments on an FMP or amendment are formally considered and submitted for Secretarial review. In addition, National Environmental Policy Act (NEPA) requires consideration of relevant safety issues in preparation of an EA of an FMP or amendment. Therefore, relevant safety issues already are considered in the current decision-making process and the U.S. Coast Guard is consulted on these issues as required by current FMP and NEPA regulations.

No procedure has been formalized requiring the regional director specifically to consider providing access to the fishery for vessels which could not go fishing because of weather or oceanic conditions. However, if vessels do not go fishing, quotas are not met, and the regional director may liberalize fishing restrictions so the harvest goal may be reached. It should be noted that trip limits are based on the assumption that each vessel will not take the available limit due to bad weather or vessel repair. If each vessel were guaranteed the limit, poundage amounts would have to be significantly lower than current levels. The

industry has been involved in these choices, particularly when discussing the merits of individual vessel or monthly quotas, and the current trip limit strategy has resulted at the request of most industry representatives.

Finally, where significant vessel safety issues have risen (e.g., been expressed by fishery users), the Council has discussed whether such issues were amenable to a regulatory solution, and if so, has taken appropriate and reasonable action to address the identified problems. The conclusions of the NCFVSI study support this finding. Any significant or measurable safety impacts of proposed management measures were discussed by the Council in reaching its final decisions and public views were invited. The Council's consideration of any safety issues and relevant public comment has consistently been reflected in final amendment documents submitted to the Secretary of Commerce. Under the status quo option, this approach to considering safety issues would continue.

Option 2 - Required Consideration of Safety Conditions in Adjustments to Management Measures. Option 2 would have formalized by regulation the current procedure of consulting with the U.S. Coast Guard on safety impacts of alternative management measures. In doing so, weather and oceanic conditions would be specified at 50 CFR 663.22 as one of the factors to be considered when making adjustments to management measures. Also, the U.S. Coast Guard would have been explicitly mentioned as a consultant, and the authority of the regional director would have been more clearly stated for adjusting management measures so that harvest goals might be reached.

Consideration of weather and oceanic conditions could be appropriate when the management action would affect the timing or length of a season, the areas open or closed to fishing or the amount or frequency of a trip limit. Weather and oceanic conditions are expected to have no bearing on other management adjustments such a size, bag, or gear limitations.

Impacts. Interim guidance from NMFS specifies that all FMPs and amendments submitted after January 1, 1987 must contain provisions for evaluating the safety implications of recommended management alternatives, particularly with regard to adverse weather and temporary adjustments to fishery access due to unsafe weather or oceanic conditions. This should include the identification of safety concerns caused by a particular approach, suggested alternatives to minimize safety problems, and mechanisms that allow for flexible modification of specified management limitations. Failure to include these provisions is grounds for disapproval of the amendment. However, both the Council and NCFVSI (in its report) believe that major unresolved safety issues do not exist in the Washington, Oregon, and California groundfish fishery and vessel safety and access considerations have been fully and appropriately addressed under current management procedures (Option 1). The U.S. Coast Guard and industry representatives are involved at both the Council and advisory committee levels in the decision-making process. Regarding vessel access, the trip limits currently in effect already are based on the fact that some vessels will not be fishing due to bad weather (or breakdowns); accordingly trip limits are higher than they otherwise would be if vessels were guaranteed the limit of fish. Inclusion of this vessel safety discussion in the amendment is primarily to clarify current procedures and to ensure that the amendment is in conformance with the MFCMA.

Option 2 would have put current practice into regulatory language. Since the domestic groundfish fishery is not managed by seasons (except when OY is reached)

and management is either coastwide or by the large IPHC statistical areas, there is little that realistically would be changed by imposing these additional regulations. Trip limits or other management measures would still be adjusted so that the quota or harvest guideline could be reached, thus responding to low catch rates due to poor weather. No substantive change is expected in the behavior of the groundfish fishery under any of the alternatives, nor are any biological or physical impacts expected. The amount and kind of fishing mortality imposed on groundfish and non-groundfish species will likely remain unchanged.

Impacts on Fishermen. The Council concluded that no change in access of fishermen to the resource was anticipated under either of the options because currently the fishing season generally lasts the entire year (with occasional exceptions such as the fixed gear sablefish fishery). If fishing opportunities must be restricted due to reduction in the resource or increase in the number of fishermen, the potential for reduced access due to weather could become more important. However, such restrictive measures undoubtedly would result in other more serious disruptive impacts on the fishery than those caused by bad weather.

It is highly questionable whether the action taken under either of the options would have an impact on the number of injuries or vessels lost at sea. Likewise the impact on groundfish fishermen's insurance rates is a matter of conjecture. There is no evidence the insurance industry reacts to losses in one particular fishing activity but rather sets rates based on risks in the fishing industry in general.

Conclusion. The Council concluded that Option 1 was the superior alternative because it is consistent with P.L. 99-659, requires the least cost, and is responsive to the safety issue.

11.7 Relationship of this FMP to Existing Laws and Policies

11.7.1 Other Fishery Management Plans

The Fishery Management Plan for Commercial and Recreational Salmon Fisheries Off the Coast of Washington, Oregon, and California Commencing in 1978 was approved by the Secretary on March 2, 1978, and subsequently has been amended several times. The plan as well as regulations implementing it prohibit net fishing for salmon in the EEZ. Current federal fisheries policy discourages salmon fishing using nets as do state regulations in California, Oregon and Washington. Consistent with these laws and policies, retention of trawl caught salmon is not allowed by this groundfish FMP (see Sections 6.3.2.2, 6.3.5.4, and 6.3.6.4). Some salmon are taken incidentally to normal groundfish fishing operations. The amount of incidental catch by domestic groundfish fishing vessels is not known. However, salmon bycatch in the foreign and joint venture fisheries is recorded by both the foreign vessels and U.S. observers on those vessels (see Sections 11.2.3.5 and 11.2.4).

Regulations implementing the Northern Anchovy Fishery Management Plan were published in the Federal Register on September 13, 1978. The FMP has been amended five times. While there is no direct interaction between groundfish fishing operations and either the anchovy resource or fishery, many groundfish species are predators on anchovy.

11.7.2 Northern Pacific Halibut Act of 1982

The International Pacific Halibut Commission develops regulations for the Pacific halibut fishery which are implemented by the Secretary under the Northern Pacific Halibut Act of 1982. Retention of Pacific halibut taken by net gear, including trawls, is prohibited, and halibut taken by longline gear may be retained only in accordance with seasons and area restrictions. Under this FMP as amended, halibut may be retained by groundfish vessels only in accordance with the halibut fishery regulations.

11.7.3 Act to Prevent Pollution from Ships

The Act to Prevent Pollution from Ships (33 U.S.C.1901 *et seq.*) requires the Secretary in which the Coast Guard is operating to administer and enforce the various Annexes of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78). Annex V of MARPOL is entitled "Regulations for the Prevention of Pollution by Garbage from Ships" and its purpose is to reduce the discharge of ship-generated garbage into the marine environment. A particular focus of Annex V is to prevent discharge of plastics, including synthetic fishing nets, and other debris which persist in the marine environment. The President signed PL 100-220, including Title II, known as the "Marine Plastic Pollution Research and Control Act of 1987" which provides the authority to implement the requirements of Annex V of MARPOL. Annex V and the Act became effective December 31, 1988.

A proposed rule was published in the Federal Register on September 6, 1989 to implement the provisions of Annex V, and an interim final rule was published May 2, 1990. Under the interim rule, discharge of plastic into any waters is prohibited. The discharge of all garbage is prohibited in all navigable waters of the U.S. and in all other waters within three miles of the nearest land. Floating material must not be discharged within 25 miles of the nearest land, and other restrictions also apply. All U.S. ships 79 feet or more in length must keep records of garbage discharges. All ships 40 feet or more in length must maintain written waste management plans. All ships 26 feet or more in length must prominently post informational placards indicating the regulations for crew and passengers. The term "ship" includes fixed and floating platforms and recreational vessels.

11.7.4 Coastal Zone Management Act of 1972 (CZMA)

The CZMA specifies at Section 307(c)(1) that

> Each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs.

The MFCMA specifies at Section 303(b) that

> Any FMP which is prepared by any council or by the Secretary, with respect to any fishery, may . . . (5) incorporate (consistent with the national standards, the other provisions of MFCMA, and any other applicable

law) the relevant fishery conservation and management measures of the coastal states nearest to the fishery.

Both the CZMA and the MFCMA establish policies that affect the conservation and management of fishery resources.

NOAA administers both the MFCMA and the CZMA. Moreover, it is NOAA's policy that the two statutes are fundamentally compatible and should be administered in a manner to give maximum effect to both laws. It is also NOAA's policy that most FMPs (and amendments of FMPs) constitute a federal activity that "directly affects" the coastal zone of a state with an approved coastal zone management program. NOAA recognizes that fisheries constitute one of the key resources of the coastal zone and that the preparation and implementation of FMPs to regulate fisheries in the EEZ could have a direct effect on the state's coastal zone because of the division in the fishery resources between the EEZ and state territorial and internal waters.

The CZMA and the MFCMA establish time frames for consistency review and approval of FMPs and amendments that are approximately equal. However, these time frames may, on occasion, cause procedural problems in coordinating consistency review and approval of FMPs or amendments.

NOAA regulations require that consistency determinations be provided to states with approved programs "at least 90 days before final approval of the federal activity unless both the federal agency and the state agency agree to an alternative notification schedule" (15 CFR 930.54[b]). Similarly, NOAA regulations encourage federal agencies to provide consistency determinations "at the earliest practical time" in the planning of an activity, "before the federal agency reaches a significant point of decision making in its review process" (930.54[b]). A state must indicate its agreement or disagreement with the consistency determination within 45 days. If the state fails to respond within 45 days, the state's agreement may be presumed. However, the state may request one 15-day extension before the expiration of the 45-day period, and the federal agency must comply. Longer extensions may be granted by the federal agency (15 CFR 930.41).

The MFCMA requires the Secretary of Commerce review an FMP or amendment prepared by a council and notify such council of his approval, disapproval, or partial approval within 95 days after he receives the FMP or amendment (P.L. 97-453).

The sections that follow summarize those portions of the Washington, Oregon, and California coastal zone management programs that may be relevant to the FMP and subsequent amendments, and the last section determines consistency between the FMP (through the fourth amendment) and these state programs.

11.7.4.1 Washington State Coastal Zone Management Program (WCZMP)

The Department of Ecology is lead state agency for implementation of the WCZMP. The coastal zone boundary embodies a two-tier concept. The first or primary tier, bounded by the "resource boundary," encompasses all of the state's marine waters and their associated wetlands, including, at a minimum, all upland area 200 feet landward from the ordinary high water mark. The second tier, bounded by the "planning and administrative boundary," is composed of the area within the 15 coastal counties which front on saltwater. The second tier is intended to be

the maximum extent of the coastal zone and, as such, is the context within which coastal policy planning is accomplished through the WCZMP.

Management of the coastal zone is subject to the Shoreline Management Act and implementing regulations, the federal and state clean air act requirements, and the energy facility siting law. Together, these authorities establish priorities for permissibility of uses and provide guidance as to the conduct of uses of Washington's coastal zone. The emphasis of the program includes not only Washington's coastal waters, but the shoreline jurisdiction throughout the 15 coastal counties.

The WCZMP provides a consistency review mechanism for federal activities affecting the coastal zone based on specific policies and standards. For federal activities requiring no permits, but having coastwide implications (such as FMPs), the policies and standards addressed in the Shoreline Management Act of 1971 (RCW 90.58) and the Final Guidelines (WAC 173-16) provide the basis for determining consistency.

11.7.4.1.1 Shoreline Management Act

The management goals in the Shoreline Management Act emphasize a balance between conservation and use of the shorelines. More specific priorities were given to "shorelines of statewide significance" encompassing an area including Washington ocean waters and shoreline from Cape Disappointment on the south to Cape Flattery on the north, including harbors, bays, estuaries, and inlets. Amendment 3 to the FMP is consistent with the following directives contained in the WCZMP concerning shoreline management.

(a) Recognize and Protect the Statewide Interest Over local Interest

The current FMP and issues in this amendment have statewide and region-wide implications for a productive groundfish resource and fisherman success and safety.

(b) Preserve the Natural Character of the Shoreline

This proposed FMP amendment should have no direct impact on the natural character of the Washington shoreline. The current FMP and the issues in this amendment are supportive of this directive where degradation of the natural character of the shoreline also degrades the productive capacity of the environment.

(c) Result in Long-term Over Short-term Benefit

The FMP requires the annual consideration of long-term resource needs and short-term social and economic benefits. The determination of OY balances these competing demands. Under the FMP, management measures may be imposed to address biological conservation of any stock of fish to assure that future productivity is not threatened. Ocean commercial fisheries off Washington have been curtailed in recent years in order to alleviate biological stress on certain stocks of groundfish. Amendment 4 continues the Council's conservative management policy. Thus, no option presented in this amendment would jeopardize the productivity of any stock of fish or would result in significant short-term economic gains at the expense of long-term benefits.

(d) Protect the Resources and Ecology of the Shoreline

The purpose of the FMP and subsequent amendments is to conserve and protect the groundfish resource for current and future use.

(e) Increase Public Access to Publicly-owned Areas of the Shoreline

The amendment to the FMP will not have any direct or indirect affect on public access to publicly-owned areas along the coastal zone.

(f) Increase Recreational Opportunities for the Public in the Shoreline

The FMP amendment will not affect recreational fishing opportunities for the public in the shoreline.

11.7.4.1.2 Washington Department of Ecology Final Guidelines

The concept of preferred shoreline uses has been incorporated in final Department of Ecology guidelines, with water-dependent uses clearly a priority over water-oriented or non water-oriented uses. The guidelines address uses compatible with (1) the natural environment, (2) the conservancy environment, (3) the rural environment, and (4) the urban environment. Of the 21 individual development policies in the final guidelines, three have relevance or potential relevance to the federal activity proposed in this amendment to the FMP.

(a) Commercial Development

Shoreline-dependent commercial development and developments which will provide shoreline enjoyment for a large number of people shall be preferred. New commercial activities shall locate in urbanized areas.

(b) Ports and Water-related Industry

Industry which requires frontage on navigable waters should be given priority over other industrial uses. Prior to allocating shorelines for port uses, regional and statewide needs for such uses should be considered.

Although this amendment does not specifically address development of water-related coastal industry, the protection and enhancement of ocean resources may provide an incentive for shoreside commercial development. Numerous shoreside fish plants process groundfish that are caught in the EEZ. Some of the processors are dependent on the groundfish fishery and will be affected by regulatory decisions made under the FMP and subsequent amendments. Consideration of the economic viability of shoreside commercial developments that are dependent on groundfish fisheries is an important economic factor in the annual determinations of management measures by the Council.

(c) Recreation

Priority will be given to developments which provide recreational uses and other improvements facilitating public access to shorelines. Water-oriented recreation is a preferred use along the shorelines, but it should be located and conducted in a way which is compatible with the environment.

The FMP, including Amendment 4, does not specifically address shoreside recreational development, but again the conservation, protection, and enhancement of ocean resources could provide an incentive for such developments.

11.7.4.2 Oregon State Coastal Zone Management Program

The Oregon program calls for consistency review to activities directly affecting the coastal zone, including air, water, scenic, living, economic, cultural, and/or mineral resources of the coastal zone.

The basis for the Oregon program is the 1973 Oregon Land Use Act, ORS 197. Oregon's program relies on the combined authority of state and local governments to regulate uses and activities in the coastal zone. The principal components of Oregon's program are: (1) 19 statewide planning goals and supporting guidelines adopted by the Oregon Land Conservation and Development Commission (LCDC), the state's coastal zone agency; (2) coordinated comprehensive local plans prepared by local governments and approved by the LCDC; and (3) selected state statutes implemented by various state agencies. Local and state planning decisions must comply with the statewide planning goals, which serve as the program's overriding standards until local comprehensive plans are developed and acknowledged by LCDC. Once acknowledged, the comprehensive plans supersede the goals as standards for state and federal planning and activities in the coastal zone. Coastal zone boundaries are generally defined to extend to the state's seaward limit (three nautical miles offshore) and inland to the crest of the coastal mountain range.

(a) Goal 19 - Ocean Resources

The FMP as amended is consistent with Goal 19 the most pertinent aspect of the Oregon State Coastal Zone Management Program relating to groundfish management. The overall statement of Goal 19 is:

> to conserve the long-term value, benefits and natural resources of the nearshore ocean and continental shelf. All local, state, and federal plans, projects, and activities which affect the territorial sea shall be developed, managed, and conducted to maintain, and where appropriate, enhance and restore, long-term benefits derived from the nearshore oceanic resources of Oregon. Since renewable ocean resources and uses, such as food production, water purity, navigation, recreation, and aesthetic enjoyment will provide greater long-term benefits than will nonrenewable resources, such plans and activities shall give clear priority to the proper management and protection of renewable resources.

Guidelines for Goal 19 reflect concerns for awareness of impacts upon fishing resources, biological habitat, navigation and ports, aesthetic uses, recreation, and other issues. The management objectives that are expressed in the FMP and this amendment are consistent with the objective of Goal 19, the protection and conservation of ocean resources. Goal 19 emphasizes the long-term benefits that would be derived from the conservation and restoration of the renew-able nearshore oceanic resources. The FMP, including Amendment 4, emphasizes the need to provide for the conservation and protection of groundfish stocks and their

habitat. As such the FMP as amended should enhance the protection and conservation of oceanic resources.

(b) Goal 5 - Preservation of Open Space and Natural Resources

Goal 5 also addresses the issue of conservation of natural resources. The guidelines call for fish and wildlife areas and habitats to be protected and managed in accordance with the Oregon Fish and Wildlife Commission's management plans. The FMP was found consistent with the management objectives for groundfish stocks off Oregon that were developed by ODFW and adopted by the Oregon Fish and Wildlife Commission. The habitat conservation provisions in Amendment 3 strengthened this consistency. Amendment 4 continues the consistency of the FMP with Goal 5.

(c) Goal 16 - Estuarine Resources

Goal 16 addresses the protection of estuarine resources. This goal emphasizes the need for protection, maintenance, development, and appropriate restoration of long-term environmental, economic, and social values; diversity, and benefits of Oregon's estuaries. Comprehensive plans and activities affecting estuaries must protect the estuarine ecosystem including its biological productivity, habitat, diversity, unique features, and water quality. However, Goal 16 underscores the need to classify Oregon estuaries and to specify "the most intensive level of development or alteration which may be allowed to occur within each estuary." Neither the FMP nor its amendments has a direct affect on development or alteration of the estuarine environment.

(d) Goal 8 - Recreational Needs

Goal 8 refers to existing and future demand by citizens and visitors for recreational facilities and opportunities. Planning guidelines recommend that inventories of recreational opportunities be based on adequate research and analysis of the resource, and where multiple uses of the resource exist, provision be made for recreational users. The FMP as amended in no way impedes the opportunity for Oregon recreational fishermen to harvest groundfish.

(e) Goal 1 - Citizen Involvement

Goal 1 calls for the coordination of state, regional, and federal planning with the affected governing bodies and citizenry. Guidelines address communication methods, provision of technical information, and feedback mechanisms to assure the opportunity for citizen involvement in planning processes. The FMP process provides for close collaboration and coordination between state and federal management entities and assures citizen involvement in decision making through the forum of the Council and through a series of public hearings that are convened before the Council adopts any fishery management measures. Amendment 4 further clarified the procedures for ensuring opportunity for public involvement.

Lastly, insofar as FMPs and FMP amendments have the potential to indirectly affect the coastal zone by stimulating private development of new markets or development of fish handling and processing facilities, or otherwise influence land-use planning, Goals 2, 9, and 17 may also apply.

11.7.4.3 California State Coastal Zone Management Plan and San Francisco Bay Plan

11.7.4.3.1 Coastal Plan

The California State Coastal Zone Management Plan is based upon the California Coastal Act of 1976, Division 20, California Public Resources Code, Sections 30000, et seq.; the California Urban and Coastal Park Bond Act of 1976, Division 5, CPRC 5096.777 et seq.; and the California Coastal Commission Regulations, California Administrative Code, Title 14.

The California Coastal Act establishes a structure for state approval of local coastal programs (Section 30050). The California Coastal Commission is the state's coastal zone agency (Section 30300). The coastal zone boundaries are generally the seaward limit of state jurisdiction, and inland to 1,000 yards from the mean high tide line.

The general provisions of the California plan that address issues significant to this analysis concern the protection of the ocean's resources, including marine fish and the natural environment. The plan also calls for the balanced utilization of coastal zone resources, taking into account the social and economic needs of the people of the state. Specific coastal zone policies developed to achieve these general goals and which are applicable or potentially applicable to the regulatory measures proposed in the FMP (as amended) have been identified as follows.

(a) Section 30210 - ". . . recreational opportunities shall be provided for all the people consistent with the need to protect natural resource areas from overuse."

This goal is consistent with the FMP which seeks to provide recreational fishing opportunities consistent with the needs of other user groups and the need to protect the resource. Recreational fishing opportunities of California citizens are not expected to be inhibited in any way by this FMP.

(b) Section 30231 - "The biological productivity and quality of coastal waters, streams, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained, and, where feasible, restored . . ."

Any action considered in FMP does not affect the quality of coastal waters. It provides for the conservation and optimum use of groundfish stocks, which are an integral part for the ecology of the coastal waters.

(c) Section 30230 - "Uses of the marine environment shall be carried out in a manner . . . that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes."

The FMP does not jeopardize the reproductive capability of any resource, has no significant environmental impacts, and promotes equitable utilization among user groups with the intent of maintaining the groundfish harvest at levels which provide the long-term MSY.

(d) Section 30234 - "Facilities serving the commercial fishing and recreational boating industries shall be protected, and where feasible, upgraded."

The FMP does not specifically address the development of shoreside facilities that serve the commercial and recreational fishing industries.

(e) Section 30260 - "Coastal-dependent industrial facilities (such as fishing support) shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with the California Coastal Act."

(f) Section 30708 - "All port-related developments shall be located . . . so as to . . . give highest priority to the use of existing and space within harbors for port purposes including . . . necessary (commercial fishing) support and access facilities."

The FMP does not address the location of coastal dependent industry or ports.

(g) Section 30411 - "The CDFG and the Fish and Game Commission are the state agencies responsible for the establishment and control of wildlife and fishery management programs."

The director of California Department of Fish and Game (CDFG) is a voting member of the Council. A representative from CDFG participates on the Council's GMT and helped develop the FMP and each amendment. The MFCMA mandated that all interested individuals, including state fishery management personnel, would have the opportunity to participate in the preparation of FMPs and amendments. This action is consistent with the provisions of Section 30411 because the CDFG has been involved in the planning process for those parts of the amendment that pertain to the management of California and coastwide fisheries.

11.7.4.3.2 San Francisco Bay Plan

The San Francisco Bay Conservation and Development Commission has jurisdiction over the San Francisco Bay itself, as well as any river, stream, tributary, creek, flood control, or drainage channel that flows into San Francisco Bay. The San Francisco Bay Plan was approved by the California legislature in 1969. Part II of the plan describes the Commission's objectives as follows.

1. Protect the bay as a great natural resource for the benefit of present and future generations.

2. Develop the bay and its shoreline to their highest potential with a minimum of bay filling.

Part III of the San Francisco Bay Plan describes the findings and policies of the Commission including fish and wildlife policies for the San Francisco Bay. The adopted policies state:

1. the benefits of fish and wildlife in the bay should be insured for present and future generations of Californians. Therefore, to the greatest extent feasible, the remaining marshes and mudflats around the bay, the remaining water volume and surface area of the bay, and adequate fresh water inflow into the bay should be maintained.

2. specific habitats that are needed to prevent the extinction of any species, or to maintain or increase any species that would provide substantial public benefits, should be protected, whether in the bay or on the shoreline behind dikes . . . .

Part IV of the bay plan presents the findings and policies concerning the development of the bay and the adjacent shoreline. Emphasis is given to the consideration of construction projects on filled lands and the controls over-filling and dredging in San Francisco Bay.

The amendment to the FMP does not address water flows or shoreline development. Amendment 3 expanded the Council's habitat protection policy and provide information on the need to conserve marine fish habitat.

11.7.4.4 Consistency Determination

Based on the above discussions and supported by these determinations, the Council finds that any action likely to result from the FMP (including its four amendments) is consistent, to the maximum extent practicable, with the approved Washington, Oregon, California, and San Francisco Bay coastal zone management plans.

11.7.5 Endangered Species Act of 1973 (ESA)

The purposes of the ESA are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered and threatened species, and to take such steps as may be appropriate to achieve the objectives of the treaties and conventions created for these purposes. Those species listed as endangered under the ESA and which could be encountered in the groundfish fishery are: gray whale (Eschrichtius robustus), blue whale (Balaenoptera musculus), humpback whale (Megaptera novaaeanglie), right whale (Balaena glacialis), fin whale (Balaenoptera physalus), sei whale (Balaenoptera borealis), sperm whale (Physeter macrocephalus), leather back sea turtle (Dermochelys coriacea), northern sea lion (Eumetopias jubatus), and Sacramento River winter-run chinook salmon (Oncorhynchus tshawytscha).

The Council and NMFS have determined that the conservation and management measures proposed in the third amendment to the FMP would have no adverse impact on any listed threatened or endangered species under NMFS jurisdiction, and would not jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of habitat of any such species.

11.7.6 Marine Mammal Protection Act of 1972 (MMPA)

The purpose of the MMPA is to protect marine mammals and prevent certain marine mammal species and stocks from falling below their optimum sustainable population which is defined in Section 3(8) as

> . . . the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element.

Recreational and commercial groundfish fishermen occasionally will have an incidental involvement with marine mammals. Marine mammals are incidentally taken in active fisheries and become entangled in discarded fishing gear. Some of the species potentially affected are decreasing, threatened or endangered. On November 23, 1988, the President signed Public Law 100-711, the MMPA Amendments of 1988. Among other things, this law establishes a five-year program to allow the incidental taking of marine mammals by commercial fishermen and to collect information regarding marine mammal/fishery interactions.

Before enactment of the amendments, the MMPA prohibited the take of marine mammals incidental to commercial fishing unless authorized by an incidental take permit or a small take exemption. Congress added Section 114, which replaced most earlier provisions for granting incidental take authorizations to commercial fishermen with an interim exemption system valid until October 1, 1993. Section 114 gives most commercial fishermen a 5-year exemption from the incidental taking provisions of the MMPA, provided that certain conditions are met. The primary objective of this interim system is to provide a means to obtain reliable information about interactions between commercial fishing activities and marine mammals while allowing commercial fishing activities to continue despite NOAA Fisheries' current inability to make Optimum Sustainable Production (OSP) findings. The information collected in conjunction with the exemption system and information on the sizes and trends of marine mammal populations will be used to develop a long-term program to govern the taking of marine mammals associated with commercial fisheries. All commercial fishing vessels are included in one of the three following categories: (I) a frequent incidental taking of marine mammals; (II) an occasional incidental taking of marine mammals; and (III) a remote likelihood, or no known incidental taking, of marine mammals.

Beginning July 21, 1989, vessel owners must be registered and have proof of an exemption in order to engage lawfully in any category I or II fishery. Owners of vessels must register with the Secretary to obtain an exemption certificate to take marine mammals incidentally, must display or possess physical evidence of exemption, and must submit periodic reports to NOAA Fisheries. In addition, vessels engaged in category I fisheries must take onboard a natural resources observer if requested by the Secretary. Fishing in a category I or II fishery without an exemption is a violation of the MMPA and owners and masters of vessels are subject to penalties. Owners of vessels in category III fisheries are not required to register with the Secretary to obtain an exemption certificate but they must report all lethal incidental takings.

11.7.7 Paperwork Reduction Act of 1980 (PRA)

The major purposes of the PRA of 1980 are: (1) to minimize the federal paperwork burden for individuals, small businesses, state, and local governments; (2) to minimize the cost to the federal government of collecting, maintaining, using, and disseminating information; and (3) to ensure that the collection, maintenance, use, and dissemination of information by the federal government is consistent with applicable laws relating to confidentiality. Catch, effort, biological and other data necessary for implementation of this FMP will continue to be collected by the states of Washington, Oregon, and California. Surveys of the domestic industry will continue to be conducted by the NMFS to determine amounts of fish which will be made available to joint venture and foreign fishing. Federal reporting requirements will be implemented only when the data collection and reporting systems operated by state agencies fail to provide the

Secretary with statistical information for adequate management. This amendment authorizes establishment of such additional reporting requirements, and it is expected that the necessity for such requirements may arise in the near future. At that time, PRA analyses will be done prior to establishment of any additional reporting requirements.

11.7.8 Indian Treaty Rights

Treaties with a number of Pacific Northwest Indian tribes secure to certain treaty tribes certain rights to take fish at their usual and accustomed fishing grounds.

The tribes which presently have been found to have such fishing grounds in areas which are embraced by this FMP are:

Makah Tribe: Marine waters extending from the Strait of Juan de Fuca "out into the ocean to an area known as Swiftsure and then south alon the Pacific Coast to an area intermediate to Ozette Village and the Quileute Reservation."
[384 F. Supp. at 312, 364 (W.D. Wash., 1974)]

Quileute and Hoh Tribes: Tidewater and saltwater areas adjacent to the coastal area that includes the Hoh, Quillayute, Queets, and Quinault Rivers and Lake Ozette.
[384 F. Supp. at 359, 372].

Quinault Tribe: "Ocean fisheries . . . in waters adjacent to their territory" which for fishing purposes includes the area from the Clearwater-Queets River system to Grays Harbor.
[384 F. Supp. at 374].

The Council knows of only one active tribal fishery for species covered by the FMP (that of the Makah Tribe for sablefish). At some time in the future the FMP may have to consider amending the FMP to address these and other tribal fisheries that might develop.

11.8 Management and Enforcement Costs

Implementation of the FMP has and will continue to involve costs incurred by the states of Washington, Oregon, and California, the NMFS, the U.S. Coast Guard, and the Council. Prior to implementation of the FMP in 1982, management of the domestic groundfish fisheries was the responsibility of the three states, which budgeted approximately $750,000 for management and enforcement. Management of the foreign fishery was the responsibility of NMFS, which developed, administered and enforced the PMP at an annual cost of about $100,000 per year. Direct costs incurred by the U.S. Coast Guard specifically attributed to the foreign fishery were roughly $1,250,000 per year (150 vessel days and 200 hours of aircraft time). U.S. Coast Guard costs for the groundfish fishery are especially difficult to estimate, since equipment and personnel are often deployed for more than one purpose at any one time (i.e., enforcement and surveillance of other fisheries, search and rescue missions, drug surveillance, etc., are sometimes conducted in conjunction with groundfish fishery patrols). Between 1978 and 1982 the Council incurred direct costs of about $75,000 per year for development of the FMP.

Since that time, costs have risen considerably due both to inflation and to the growth in the groundfish fisheries. Research and data collection costs have also increased greatly.

The best estimate of groundfish research and data collection costs in the Washington, Oregon, and California area, from FY 1986, was compiled by PSMFC. In that year the total was $8,580,500 with funds coming from the states, NMFS, U.S. Fish and Wildlife Service, PSMFC, and the Council. Approximately $4 million of this was work done by the three states, with the bulk of the remainder being conducted by NMFS. An additional $200,000 of Council money was granted to the States by NMFS through PSMFC for groundfish and salmon data projects.

It is impossible to separate out the additional state costs directly related to groundfish management but not included in the research and data collection figures above. In 1989, the best estimate of direct costs borne by the three states for management of the groundfish fishery was approximately $1.44 million, but a large portion of this was attributed to data collection and processing.

Annual cost incurred by the Council specifically for management of the groundfish fishery was approximately $200,000 in 1989.

The Northwest Region of NMFS expended about $150,000 for groundfish administration and management in FY89, exclusive of data collection, monitoring and grants to the states. Annual enforcement costs incurred by NMFS Northwest Region are approximately $112,000, which is roughly 25 percent of its investigatory budget. Additional costs are incurred by the Southwest Region NMFS Enforcement Division. Coast Guard patrol time in the Washington, Oregon, and California area has increased to approximately 400 vessel days and 300 aircraft hours, for a total cost of over $2 million. As stated above, the amount attributable to groundfish FMP related activities is difficult to assess due to the multi-faceted nature of Coast Guard patrol activities.

11.9 Groundfish Landings Data, 1981 - 1988 from PacFIN
(Individual Area Reports Available on Request from Council office)

Table 11.26. Groundfish landings (metric tons) from the Washington–California region by INPFC areas, 1981–1988.
Source: PacFIN data extracted on February 21, 1989. **Note:** Sebastes Complex consists of all rockfish except Pacific ocean perch, widow, thornyhead, and shortbelly rockfish. The "Other" gear category includes both unspecified and unidentified Domestic Shore-based gears including setnets in the Monterey and conception areas. The "Remaining" species categories include both unspecified and unidentified fish from the species group. These data are preliminary and 1988 data are incomplete.

1981
Coastwide

	Domestic Shore-based									
Species	Trawl	Longline	Pot	ShrimpTrawl	Other	Total	Joint Venture	Total Domestic	Total Foreign	Total (All Sources)
Flatfish										
Arrowtooth Flounder	1066	2	1	6	0	1075	0	1075	1	1076
Dover Sole	16333	0	1	94	14	16442	0	16442	0	16442
English Sole	2687	0	0	3	20	2711	0	2711	0	2711
Petrale Sole	2035	0	0	7	4	2047	0	2047	0	2047
Remaining Flatfish	3578	6	0	11	76	3671	0	3671	1	3672
Rockfish										
Bocaccio	752	0	0	12	0	764	8	772	7	779
Chilipepper	3	0	0	0	0	3	0	3	19	22
Canary Rockfish	2418	0	0	115	0	2533	2	2535	2	2537
Yellowtail Rockfish	7713	0	0	628	0	8341	34	8375	14	8389
Sebastes Complex	13542	5	0	801	14	14362	60	14422	98	14520
Pacific Ocean Perch	1332	0	0	32	0	1364	0	1364	0	1364
Widow Rockfish	24493	0	0	10	0	24502	74	24576	256	24832
Thornyheads	1781	5	0	0	2	1787	0	1787	1	1788
Remaining Rockfish	12629	613	22	712	3240	17216	1	17217	0	17217
Other Species										
Lingcod	2848	62	2	88	319	3319	0	3319	0	3319
Pacific Cod	1248	0	0	14	2	1264	0	1264	0	1264
Pacific Whiting	837	0	0	2	0	839	43557	44396	70365	114761
Sablefish	5438	1910	2009	53	1995	11406	32	11438	115	11553
Remaining Groundfish	945	18	0	2	155	1119	32	1151	453	1604

Table 11.26 Groundfish landings (continued)

1982
Coastwide

Species	Domestic Shore-based						Joint Venture	Total Domestic	Total Foreign	Tal All Sources)
	Trawl	Longline	Pot	ShrimpTrawl	Other	Total				
Flatfish										
Arrowtooth Flounder	2338	0	0	13	0	2352	0	2352	0	1352
Dover Sole	20817	1	1	97	2	20915	0	20915	0	1915
English Sole	2786	0	0	3	1	2789	0	2789	0	1789
Petrale Sole	2620	0	0	6	0	2629	0	2629	0	1629
Remaining Flatfish	3858	3	0	10	52	3923	0	3923	0	1923
Rockfish										
Bocaccio	775	0	0	11	0	785	2	787	2	789
Chilipepper	22	0	0	0	0	22	0	22	1	23
Canary Rockfish	4206	0	0	86	0	4291	5	4296	0	1296
Yellowtail Rockfish	8056	0	0	528	0	8584	132	8716	3	1719
Sebastes Complex	17283	2	0	670	17	17972	144	18116	5	1121
Pacific Ocean Perch	878	0	0	8	0	887	0	887	0	887
Widow Rockfish	25359	0	0	9	2	25370	73	25443	6	1449
Thornyheads	2188	3	0	0	2	2192	0	2192	0	1192
Remaining Rockfish	9530	794	21	396	4272	15013	0	15012	0	1012
Other Species										
Lingcod	3213	41	4	91	480	3829	0	3829	0	1829
Pacific Cod	902	1	0	3	2	909	0	909	0	909
Pacific Whiting	1023	0	0	0	1	1025	67464	68489	7089	1578
Sablefish	10114	1622	4236	79	2498	18546	13	18559	31	1590
Remaining Groundfish	389	32	2	1	190	614	11	625	123	748

Table 11.26 Groundfish landings (continued)

1983
Coastwide

Species	Domestic Shore-based						Joint Venture	Total Domestic	Total Foreign	Total (All Sources)
	Trawl	Longline	Pot	ShrimpTrawl	Other	Total				
Flatfish										
Arrowtooth Flounder	2060	0	0	15	1	2076	0	2076	0	2076
Dover Sole	19691	0	1	65	58	19815	0	19815	0	19815
English Sole	2321	0	0	3	10	2334	0	2334	0	2334
Petrale Sole	2182	2	0	1	7	2193	0	2193	0	2193
Remaining Flatfish	0	0	0	0	0	0	0	0	0	0
Rockfish										
Bocaccio	1014	0	0	2	0	1015	0	1015	0	1015
Chilipepper	18	0	0	0	0	18	0	18	0	18
Canary Rockfish	4168	0	0	27	0	4195	0	4195	0	4195
Yellowtail Rockfish	8063	0	0	140	0	8203	0	8203	0	8203
Sebastes Complex	17260	3	0	304	9	17576	0	17576	0	17576
Pacific Ocean Perch	1770	0	0	9	0	1779	0	1779	0	1779
Widow Rockfish	9827	0	0	9	33	9869	0	9869	0	9869
Thornyheads	2492	0	0	0	17	2510	0	2510	0	2510
Remaining Rockfish	8731	303	8	605	4855	14502	30	14532	0	14532
Other Species										
Lingcod	3345	34	3	102	588	4074	0	4074	0	4074
Pacific Cod	573	1	0	24	0	597	0	597	0	597
Pacific Whiting	1043	0	0	7	1	1051	72100	73151	0	73151
Sablefish	7149	988	2954	63	2950	14102	6	14108	0	14108
Remaining Groundfish	3215	12	0	12	200	3439	1	3440	0	3440

Table 11.26 Groundfish landings (continued)

1984
Coastwide

Species	Domestic Shore-based						Joint Venture	Total Domestic	Total Foreign	Total (All Sources)
	Trawl	Longline	Pot	ShrimpTrawl	Other	Total				
Flatfish										
Arrowtooth Flounder	2376	0	1	2	0	2379	0	2379	0	2379
Dover Sole	18598	0	1	17	588	19202	0	19202	0	19202
English Sole	1683	0	0	5	33	1722	0	1722	0	1722
Petrale Sole	1710	1	0	2	28	1740	0	1740	0	1740
Remaining Flatfish	0	0	0	0	0	0	0	0	0	0
Rockfish										
Bocaccio	2188	0	0	15	749	2951	1	2952	3	2955
Chilipepper	1300	0	0	11	354	1665	0	1665	0	1665
Canary Rockfish	1931	0	0	4	54	1988	2	1990	1	1991
Yellowtail Rockfish	5043	0	0	115	51	5209	82	5291	12	5303
Sebastes Complex	14725	6	0	153	1504	16387	94	16481	34	16515
Pacific Ocean Perch	1611	0	0	3	3	1616	0	1616	1	1617
Widow Rockfish	9559	0	0	2	263	9824	45	9869	146	10015
Thornyheads	2820	1	0	1	99	2921	0	2921	0	2921
Remaining Rockfish	2143	231	8	238	6575	9195	1	9196	0	9196
Other Species										
Lingcod	3177	48	4	55	766	4051	0	4051	0	4051
Pacific Cod	582	1	0	2	2	587	0	587	0	587
Pacific Whiting	2717	0	0	1	3	2720	78889	81609	14772	96381
Sablefish	7928	1022	2837	13	2271	14071	5	14076	1	14077
Remaining Groundfish	3064	34	1	3	302	3404	14	3418	128	3546

Table 11.26 Groundfish landings (continued)

1985
Coastwide

Species	Domestic Shore-based						Joint Venture	Total Domestic	Total Foreign	Total (All Sources)
	Trawl	Longline	Pot	ShrimpTrawl	Other	Total				
Flatfish										
Arrowtooth Flounder	2659	0	0	17	2	2680	0	2680	0	2680
Dover Sole	20479	8	0	30	48	20563	0	20563	0	20563
English Sole	1918	0	0	4	9	1930	0	1930	0	1930
Petrale Sole	1830	0	0	3	7	1839	0	1839	0	1839
Remaining Flatfish	0	0	0	0	0	0	0	0	0	0
Rockfish										
Bocaccio	1381	0	0	2	15	1399	0	1399	0	1399
Chilipepper	1212	0	0	2	101	1313	0	1313	0	1313
Canary Rockfish	2199	0	0	1	7	2207	0	2207	0	2207
Yellowtail Rockfish	3173	4	0	38	0	3214	0	3214	0	3214
Sebastes Complex	13475	4	0	48	191	13716	0	13716	0	13716
Pacific Ocean Perch	1405	0	0	1	0	1406	0	1406	10	1416
Widow Rockfish	8596	1	0	2	488	9087	0	9087	0	9087
Thornyheads	4045	1	0	6	15	4067	0	4067	0	4067
Remaining Rockfish	2838	435	6	324	5720	9323	48	9371	170	9541
Other Species										
Lingcod	2873	119	2	49	839	3882	0	3882	0	3882
Pacific Cod	421	4	0	1	0	427	0	427	0	427
Pacific Whiting	3891	0	0	1	2	3894	31692	35586	49854	85440
Sablefish	7174	2472	2787	35	1804	14272	1	14273	24	14297
Remaining Groundfish	3748	106	0	2	328	4184	6	4190	141	4331

Table 11.26 Groundfish landings (continued)

1986
Coastwide

Species	Domestic Shore-based						Joint Venture	Total Domestic	Total Foreign	Total (All Sources)
	Trawl	Longline	Pot	ShrimpTrawl	Other	Total				
Flatfish										
Arrowtooth Flounder	2179	5	0	47	1	2230	0	2230	0	2230
Dover Sole	16174	2	0	77	1035	17289	0	17289	0	17289
English Sole	1685	0	0	1	340	2027	0	2027	0	2027
Petrale Sole	1569	1	0	4	158	1733	0	1733	0	1733
Remaining Flatfish	0	0	0	0	0	0	0	0	0	0
Rockfish										
Bocaccio	953	4	0	0	55	1014	0	1014	0	1014
Chilipepper	652	0	0	0	17	670	0	670	0	670
Canary Rockfish	1836	16	0	39	1	1890	0	1890	0	1890
Yellowtail Rockfish	3577	9	0	379	10	3972	0	3972	0	3972
Sebastes Complex	10891	162	1	419	360	11834	0	11834	0	11834
Pacific Ocean Perch	1339	1	0	8	0	1348	0	1348	1	1349
Widow Rockfish	8989	1	0	7	564	9561	0	9561	0	9561
Thornyheads	3358	2	0	1	250	3611	0	3611	0	3611
Remaining Rockfish	1594	409	11	891	7499	10404	165	10569	194	10763
Other Species										
Lingcod	1218	75	1	94	495	1883	0	1883	0	1883
Pacific Cod	317	7	0	10	0	333	0	333	0	333
Pacific Whiting	3409	1	0	7	47	3464	81640	85104	69861	154965
Sablefish	6008	2879	1459	51	2725	13122	6	13128	7	13135
Remaining Groundfish	2516	34	0	9	765	3324	44	3368	690	4058

Table 11.26 Groundfish landings (continued)

1987
Coastwide

Species	Domestic Shore-based						Joint Venture	Total Domestic	Total Foreign	Total (All Sources)
	Trawl	Longline	Pot	ShrimpTrawl	Other	Total				
Flatfish										
Arrowtooth Flounder	2772	29	2	28	0	2830	0	2830	0	2830
Dover Sole	18056	3	0	81	291	18431	0	18431	0	18431
English Sole	2267	0	0	5	210	2481	0	2481	0	2481
Petrale Sole	2080	2	0	4	119	2205	0	2205	0	2205
Remaining Flatfish	0	0	0	0	0	0	0	0	0	0
Rockfish										
Bocaccio	1185	9	0	1	43	1238	0	1238	0	1238
Chilipepper	963	0	0	0	7	970	0	970	0	970
Canary Rockfish	2526	20	0	34	7	2586	0	2586	0	2586
Yellowtail Rockfish	3475	10	0	275	43	3804	0	3804	0	3804
Sebastes Complex	13146	287	0	313	292	14036	0	14036	0	14036
Pacific Ocean Perch	969	0	0	6	0	976	0	976	3	979
Widow Rockfish	12320	2	0	10	350	12681	0	12681	0	12681
Thornyheads	3554	8	0	21	81	3663	0	3663	0	3663
Remaining Rockfish	1362	485	13	1048	6061	8969	76	9045	219	9264
Other Species										
Lingcod	1829	77	0	80	599	2584	0	2584	0	2584
Pacific Cod	2221	22	0	22	7	2274	0	2274	0	2274
Pacific Whiting	4742	0	0	6	47	4795	105996	110791	49656	160447
Sablefish	6426	3291	1694	51	1223	12684	3	12687	30	12717
Remaining Groundfish	2942	56	1	10	558	3567	20	3587	485	4072

Table 11.26 Groundfish landings (continued)

1988
Coastwide

Species	Domestic Shore-based						Joint Venture	Total Domestic	Total Foreign	Total (All Sources)
	Trawl	Longline	Pot	ShrimpTrawl	Other	Total				
Flatfish										
Arrowtooth Flounder	1887	10	0	4	9	1911	0	1911	0	1911
Dover Sole	16670	2	4	44	774	17494	0	17494	0	17494
English Sole	1826	0	1	3	197	2026	0	2026	0	2026
Petrale Sole	1863	0	0	1	146	2011	0	2011	0	2011
Remaining Flatfish	0	0	0	0	0	0	0	0	0	0
Rockfish										
Bocaccio	840	0	0	0	16	857	0	857	0	857
Chilipepper	756	0	0	0	5	760	0	760	0	760
Canary Rockfish	1504	0	0	77	3	1583	0	1583	0	1583
Yellowtail Rockfish	4362	2	2	140	34	4540	0	4540	0	4540
Sebastes Complex	11257	60	2	219	182	11718	0	11718	0	11718
Pacific Ocean Perch	756	0	0	1	0	757	0	757	3	760
Widow Rockfish	9919	0	0	1	745	10665	0	10665	0	10665
Thornyheads	4785	20	0	0	425	5231	0	5231	0	5231
Remaining Rockfish	4966	290	9	938	4774	10977	87	11064	148	11212
Other Species										
Lingcod	1820	38	3	36	638	2533	0	2533	0	2533
Pacific Cod	3252	26	3	26	12	3317	0	3317	0	3317
Pacific Whiting	5033	0	0	0	1843	6876	125775	132651	18041	150692
Sablefish	5158	2727	1410	32	1315	10643	9	10652	27	10679
Remaining Groundfish	2574	83	1	2	528	3188	32	3220	120	3340

12.0 MANAGEMENT MEASURES THAT CONTINUE IN EFFECT WITH IMPLEMENTATION OF AMENDMENT 4

The following management measures from the FMP, as amended, or implementing regulations continue in effect with implementation of Amendment 4, but may be modified in the future. The only changes are editorial or technical refinements, most notably: (1) commercial fishing is more accurately defined to include persons required by state law to have a commercial fishing license, but who have not obtained such a license; (2) definitions for fixed gear, nontrawl gear, and commercial vertical hook-and-line gear have been added; and (3) the definitions of gillnet, hook-and-line, and mesh size have been clarified.

12.1 Vessel Identification

Display. The operator of a vessel which is over 25 feet in length and is engaged in commercial fishing for groundfish must display the vessel's official number on the port and starboard sides of the deckhouse or hull, and on a weather deck so as to be visible from above. The number must contrast with the background and be in block arabic numerals at least 18 inches high for vessels over 65 feet long and at least 10 inches high for vessels between 25 and 65 feet in length. The length of a vessel for purposes of this section is the length set forth in U.S. Coast Guard records or in state records if no U.S. Coast Guard record exists.

Maintenance of Numbers. The operator of a vessel engaged in commercial fishing for groundfish shall keep the identifying markings required in the previous paragraph clearly legible and in good repair, and must ensure that no part of the vessel, its rigging, or its fishing gear obstructs the view of the official number from an enforcement vessel or aircraft.

Commercial Passenger Vessels. This section does not apply to vessels carrying fishing parties on a per-capita basis or by charter.

12.2 Gear Restrictions

These definitions and restrictions are taken from the current FMP, as amended, and its implementing regulations. Reasons for their selection are found in the FMP, its amendments, and associated documents. These restrictions have not been substantially changed by Amendment 4.

12.2.1 Commercial Fishing

Commercial fishing is (a) fishing by a person who possesses a commercial fishing license or is required by law to possess such license issued by one of the states or the federal government as a prerequisite to taking, landing and/or sale; or (b) fishing which results in or can be reasonably expected to result in sale, barter, trade, or other disposition of fish for other than personal consumption.

Legal Gear. The following types of fishing gear are authorized, with the restrictions set forth in this section: trawl (bottom, pelagic, and roller), hook-and-line, longline, pot or trap, set net, trammel net, and spear.

12.2.1.1 Trawl

A trawl is a cone or funnel-shaped net which is towed or drawn through the water by one or two vessels. Trawls are used both on-bottom and off-bottom. They may be fished with or without trawl doors (otter boards). They may employ warps or cables to herd fish. Trawl gear includes roller, bottom, and pelagic trawls, and, as appropriate, trawls used to catch non-groundfish species but which incidentally intercept groundfish.

12.2.1.1.1 Mesh Size

Mesh size is the opening between opposing knots. For all net gear, minimum mesh size means the smallest distance allowed between the inside of one knot to the inside of the opposing knot, regardless of twine size.

The minimum trawl mesh size allowed regionwide is 4.5 inches. Exceptions to accommodate biological differences between species, species distribution, and economic concerns are listed below.

Trawl nets may be used if they meet the minimum sizes set forth below. The minimum sizes apply to the last 50 meshes running the length of the net to the terminal (closed) end of the codend. Minimum trawl mesh size requirements are met if a 20-gauge stainless steel wedge, 3.0 or 4.5 inches (depending on the gear being measured) less one thickness of the metal at the widest part, can be passed with thumb pressure only through 16 of 20 sets of two meshes each of wet mesh in the codend.

Minimum Trawl Mesh Size (in inches)

Trawl Type	Subarea				
	Vancouver	Columbia	Eureka	Monterey	Conception
Bottom	4.5	4.5	4.5	4.5	4.5
Roller or Bobbin	3.0	3.0	3.0	4.5	4.5
Pelagic	3.0	3.0	3.0	3.0	3.0

12.2.1.1.2 Bottom (or Flatfish Bottom) Trawl

A bottom trawl is a trawl in which the otter boards or the footrope of the net are in contact with the seabed, including pair trawls fished on-bottom, and Danish and Scottish seine gear.

All trawl nets used for flatfish which have continuous footrope contact with the bottom shall have a minimum mesh size of 4.5 inches or larger throughout the net. At least two continuous riblines must be sewn to the net, extending from the mouth of the trawl net to the terminal end of the codend, if the fishing vessel is simultaneously carrying aboard a net of less than 4.5 inch mesh size.

Riblines are heavy rope or lines that run down the sides, top, or underside of a trawl net from the mouth of the net to the terminal end of the codend to strengthen the net during fishing.

12.2.1.1.3 Roller (or Bobbin) Trawl

A roller trawl has footropes equipped with rollers or bobbins made of wood, steel, rubber, plastic, or other hard material which keep the footrope above the seabed, thereby protecting the net.

In the Eureka, Columbia, and Vancouver subareas, trawl mesh size less than 4.5 inches is permitted provided that: (1) the rollers or bobbins are at least 14 inches in diameter and free to rotate, with at least two rollers or bobbins equally spaced on each side of the footrope within 10 feet of the center of the footrope of the net; and (2) a tickler chain (continuous chain, rope, or cable which contacts the sea floor ahead of the rollers) is not used.

12.2.1.1.4 Pelagic (Midwater or Off-bottom) Trawl

A pelagic trawl is a trawl in which the otter boards may contact the seabed, but the footrope does not. Pair trawls, if fished in midwater, must follow the requirements for pelagic trawls.

Pelagic trawl nets must have unprotected footropes at the trawl mouth (without rollers, bobbins or discs), and codends must be single-walled (one wall of webbing knitted with single or double-ply mesh). Sweeplines, including the bottom leg of the bridle, must be bare. The minimum mesh size is 3.0 inches. (These restrictions apply only to the domestic fishery. Requirements for the foreign trawl fishery appear later in Section 12.5.)

12.2.1.1.5 Codend Chafing Gear

Chafing gear is webbing or other material attached to the bottom (underside) or around the codend of a trawl net to protect the codend from wear. Codend means the terminal, closed end of a trawl net.

On 4.5-inch bottom trawls, encircling chafing gear may not be less than 15 inches minimum mesh. If mesh size is less than 15 inches, only the bottom one-half of the codend may be covered.

On 3-inch pelagic and roller or bobbin trawls, chafing gear is permitted but the upper one-half may not be less than 6-inch minimum mesh.

No chafing gear or chafing gear sections on any trawl may be connected directly to the terminal end of the codend.

12.2.1.1.6 Double-Walled Codends

A double-walled codend is a codend constructed of two walls of webbing.

Double-walled codends must not be used in any pelagic trawl, or in any other trawl with mesh size less than 4.5 inches. The double-walled portion may not be longer than 25 meshes or 12 feet, whichever is greater. Meshes must coincide

knot-for-knot throughout the double-walled portion. Manufactured double-ply mesh (double twine tied into a single knot) is not considered to be double-walled.

12.2.1.2 Fixed Gear

Fixed gear (anchored nontrawl gear) includes longline, pot, set net, and stationary hook-and-line gear. (See following section 12.2.1.3 on nontrawl gear.)

Fixed gear must be marked at the surface, individually or at each terminal end of the set as appropriate, with a pole, flag, light, radar reflector, and a buoy clearly identifying the owner. In addition, fixed gear shall not be left unattended for more than seven days.

Reporting of fixed gear locations is not required, but fixed gear fishermen are encouraged to do so with the U.S. Coast Guard. Reporting of fixed gear will facilitate compensation claims by fishermen who have lost fixed gear.

12.2.1.3 Nontrawl Gear

Nontrawl gear includes all legal commercial groundfish gear other than trawl gear.

12.2.1.3.1 Commercial Vertical Hook-and-Line

Commercial vertical hook-and-line gear is hook-and-line gear that involves a single line anchored at the bottom and buoyed at the surface so as to fish vertically.

12.2.1.3.2 Hook-and-Line

Hook-and-line means one or more hooks attached to one or more lines. Commercial hook-and-line fisheries may be mobile (troll) or stationary (anchored).

12.2.1.3.3 Longline

A longline is a stationary, buoyed, and anchored groundline with hooks attached.

12.2.1.3.4 Set Net A set net is a stationary, buoyed, and anchored gillnet or trammel net.

Fishing for groundfish with set nets is prohibited north of 38°00'N latitude (Point Reyes, California).

12.2.1.3.5 Gillnet

A gillnet is a rectangular net which is set upright in the water.

12.2.1.3.6 Trammel Net

A trammel net is a gillnet made with two or more walls joined to a common float line.

12.2.1.3.7 Traps (or Pots)

A trap or pot is a portable, enclosed device with one or more gates or entrances and one or more lines attached to surface floats.

Traps must have biodegradable escape panels constructed with number 21 or smaller untreated cotton twine in such a manner that an opening at least 8 inches in diameter results when the twine deteriorates.

12.2.2 Recreational Fishing

Recreational fishing is fishing with authorized gear for personal use only, and not for sale or barter.

Legal Gear. The only types of fishing gear authorized for recreational fishing are hook-and-line and spear.

12.2.2.1 Hook-and-Line

The definition is the same as above for the commercial fishery. Currently, there are no gear restrictions on recreational use of hook-and-line gear to harvest groundfish.

12.2.2.2 Spears

A spear is a sharp, pointed, or barbed instrument on a shaft. Spears may be propelled by hand or by mechanical means.

12.3 Species Managed with a Harvest Guideline or Quota

As described in Chapter 5, those species or species groups managed with a harvest guideline or quota at the time Amendment 4 is implemented will continue to be managed with a harvest guideline or quota until changed. These species and species groups initially are as follows:

Harvest Guideline:

- Sebastes complex - north of Coos Bay, Oregon
- Yellowtail rockfish - north of Coos Bay, Oregon

Quota:

- Sablefish - coastwide
- Pacific ocean perch - for Columbia and Vancouver areas separately
- Widow rockfish - coastwide
- Pacific whiting - coastwide
- Shortbelly rockfish - coastwide
- Jack mackerel - north of 39°N latitude

12.4 Catch Restrictions

Groundfish species harvested in the territorial sea (zero to three nautical miles) will be counted toward the catch limitations in this section. These catch

restrictions apply only to domestic fisheries off Washington, Oregon, and California.

12.4.1 Commercial Fishing

California Rockfish. The trip limit for a vessel engaged in fishing with a pelagic trawl with mesh size less than 4.5 inches in the Conception or Monterey subareas is 500 pounds or 5 percent by weight of all fish on board, whichever is greater, of the species group composed of bocaccio, chilipepper, splitnose, and yellowtail rockfishes per fishing trip.

Other Species. Both annual and inseason catch restrictions have been imposed on the species listed below after implementation of the FMP in 1982. The catch restrictions implemented at the beginning of 1990 were published in the Federal Register at 55 FR 1036 (January 11, 1990), 55 FR 3747 (February 5, 1990), and 55 FR 11021 (March 26, 1990). These catch restrictions are likely to change as necessary before Amendment 4 is implemented. Further adjustments are expected when Amendment 4 is implemented, but cannot be announced with certainty at this time. The following general types of restrictions were effective during 1989 and 1990.

Widow Rockfish. Managed by species quota, beyond which landings are prohibited; trip landing and frequency limits, based on weekly landings; options for biweekly and, rarely, twice-weekly landings if state agencies notified in advance; limits generally have been reduced during the year, reaching incidental levels (3,000 pounds) per trip near the end of the season.

Pacific Ocean Perch. Managed by species quota beyond which landings are prohibited; very small trip landing limits to allow only incidental catches in other fisheries to be landed.

Sebastes Complex (Including Yellowtail Rockfish). The Sebastes complex includes all rockfish managed by the FMP (see Table 3.1) except widow rockfish, Pacific ocean perch, shortbelly rockfish, and thornyheads (also called idiot or channel rockfish).

North of Coos Bay, Oregon: managed by a harvest guideline that equals the summed ABCs of the species in the complex, with primary goal of not exceeding the ABC for yellowtail rockfish (as it applies north of Coos Bay); trip landing and frequency limits, based on weekly landings; options for biweekly and twice-weekly landings if state agencies notified in advance; trip limits reduced during the year, reaching incidental levels near the end of the season, to minimize landings above the harvest guideline.

South of Coos Bay, Oregon: trip landing limit.

Sablefish. Trawl fishery: managed by species quota and gear allocation, beyond which landings are prohibited; trip landing and rarely trip frequency limits with biweekly and twice-weekly options; trip limits intended to allow landing predominantly of incidental catch; includes a trip limit on sablefish smaller than 22 inches (total length).

Nontrawl fishery (fixed gear including troll): managed by species quota and gear allocation beyond which landings are prohibited; trip limit on sablefish smaller

than 22 inches (total length) unless incidental trip limit is imposed; otherwise no restriction until an incidental trip limit is imposed near the end of the season.

Deepwater Complex (which consists of sablefish, Dover sole, arrowtooth flounder, and thornyheads). Managed to achieve species quota or trawl allocation for sablefish; for about five months in 1989, trawl trip landing and frequency limits imposed on the complex, including separate landing and frequency limits for sablefish (including a trip limit on sablefish smaller than 22 inches).

12.4.2 Recreational Fishing

The current bag limits for each person engaged in recreational fishing are 3 lingcod per day and 15 rockfish per day. Amendment 4, at Section 6.2.1, establishes bag and size limits for the recreational fishery as "routine" management measures. As "routine" management measures, Amendment 4 intends for bag and size limits for lingcod and rockfish to be adjustable by the single meeting, single Federal Register "notice" process described in Section 6.2. Multi-day limits are authorized by a valid permit issued by the State of California and must not exceed the daily limit multiplied by the number of days in the fishing trip.

12.4.3 Restrictions on the Catch of Groundfish in Non-Groundfish Fisheries

12.4.3.1 Pink Shrimp

The trip limit for a vessel engaged in fishing for pink shrimp is 1,500 pounds (multiplied by the number of days of the fishing trip) of groundfish species, excluding catches of Pacific whiting, shortbelly rockfish, or arrowtooth flounder which are not limited.

12.4.3.2 Spot and Ridgeback Prawns

The trip limit for a vessel engaged in fishing for spot or ridgeback prawns is 1,000 pounds of groundfish species per fishing trip.

12.5 Joint Ventures

These provisions reflect the latest restrictions (as of March 1990) on joint venture fisheries. Many of these restrictions may be modified, as explained in Chapter 6.

12.5.1 Pacific Whiting

Target Amount. JVP is announced with the annual specifications on January 1 each year. (At the beginning of 1990, the JVP for Pacific whiting was 161,000 mt.)

Incidental Allowances. In the Pacific whiting joint venture, the incidental retention limits currently are applied to 5,000 mt increments of whiting received. If a retention limit is reached, further amounts of that species may not be retained until the full 5,000 mt increment of whiting is received.

Current incidental retention percentages for the Pacific whiting joint venture are:

Pacific ocean perch	0.062 percent
Other rockfish (excluding Pacific ocean perch)*	0.738 percent
Sablefish	0.173 percent
Flatfish	0.1 percent
Jack mackerel (north of 39°N latitude)	3.0 percent
Other species	0.5 percent

* Unless otherwise specified, shortbelly rockfish are included in the "other rockfish" category.

Prohibited Species. Prohibited species means salmonids, Pacific halibut, Dungeness crab, and any species of fish which that vessel is not specifically authorized to retain, including fish received in excess of any authorization.

Season. Currently no restriction on season.

Area. No U.S.-harvested whiting may be received or processed south of 39°N latitude.

12.5.2 Jack Mackerel (North of 39°N Latitude)

Target Amount. JVP is announced with the annual specifications on January 1 each year. (In 1990, the JVP for jack mackerel was 5,000 mt.)

Incidental Allowances. If a joint venture for jack mackerel north of 39°N latitude were to develop, incidental retention allowances provisionally would be the same as for the Pacific whiting joint venture, but could be modified if better information becomes available, and thus could differ from the incidental percentages in the whiting joint venture. Unless otherwise specified, the incidental percentage for Pacific whiting taken in a joint venture for jack mackerel is 3 percent, the same as for jack mackerel taken in the Pacific whiting joint venture.

Prohibited Species. The same as for the Pacific whiting joint venture.

Season. Currently no restriction.

Area. As long as the FMP manages only that portion of the jack mackerel stock north of 39°N latitude, a joint venture for jack mackerel south of 39°N latitude cannot be authorized.

12.5.3 Shortbelly Rockfish

Target Amount. JVP is announced with the annual specifications on January 1 each year. (The JVP for shortbelly rockfish in 1990 was 12,500 mt.)

Incidental Species. To be determined.

Prohibited Species. The same as for Pacific whiting joint venture.

Season. Currently no restriction.

Area. No U.S.-harvested shortbelly rockfish may be received or processed south of 39°N latitude.

Shortbelly rockfish are most concentrated south of 39°N latitude. A request to conduct a joint venture for shortbelly rockfish south of 39°N latitude in 1989 resulted in a finding that much of the area needed for the fishery would be closed for reasons of national security.

12.6 Foreign Fishery

These provisions reflect the latest restrictions (as of March 1990) on the directed foreign fishery. Many of these restrictions may be modified, as explained in Chapter 6.

12.6.1 Pacific Whiting

These provisions would have been in effect for a directed foreign fishery for Pacific whiting in 1990 if there had been a TALFF and foreign interest.

Target Amount. TALFF is announced with the annual specifications on January 1 each year, and subsequently may be divided into national allocations which may not be exceeded. (In 1990, there was no TALFF for Pacific whiting.)

Incidental Allowances. Current incidental catch percentages for the Pacific whiting directed fishery, if there were such a fishery in 1990, are:

Pacific ocean perch	0.062 percent
Other rockfish (excluding Pacific ocean perch)*	0.738 percent
Sablefish	0.173 percent
Flatfish	0.1 percent
Jack mackerel (north of 39°N latitude)	3.0 percent
Other species	0.5 percent

* Unless otherwise specified, shortbelly rockfish are included in the "other rockfish" category.

Prohibited Species. Prohibited species means salmonids, Pacific halibut, Dungeness crab, and any species of fish which that vessel is not specifically permitted to retain, including fish received in excess of any allocation.

Season. June 1 through October 31.

Closed Areas.

a. 47°30'N latitude to the U.S.-Canada boundary;

b. U.S.-Mexico border to 39°N latitude;

c. area landward of 12 nautical miles;

d. "Columbia River Recreational Fishery Sanctuary"--that area between 46°00'N latitude and 47°00'N latitude and east of a line connecting the following coordinates in the order listed: 46°00'N latitude, 124°55'W longitude; 46°20'N latitude, 124°40'W longitude; and 47°00'N latitude, 125°20'W longitude;

e. "Klamath River Pot Sanctuary"--that area between 41°20'N latitude and 41°37'N latitude and east of a line connecting the following coordinates in the order listed: 41°20'N latitude, 124°32'W longitude, and 41°37'N latitude, 124°34'W longitude.

Gear Restrictions. Pelagic trawls with a minimum mesh size of 100 mm (3.94 inches, between opposing knots, stretched when wet) must be used. Codend liners or other devices which have the effect of reducing mesh size or improving ability to fish on the bottom are prohibited. Fishing on the seabed is prohibited.

Chafing gear may be used but must be of a mesh size greater than or equal to two meshes of the codend; i.e., a minimum of 200 mm. The chafing gear must be tied to the straps and riblines and connected so that it is aligned to the codend knot-to-knot. Chafing gear must not be connected directly to the terminal end of the codend. Thread size of the chafing gear shall not be more than four times the diameter of that used in the codend.

12.6.2 Jack Mackerel (North of 39°N Latitude)

Target Amount. TALFF is announced with the annual specifications on January 1 each year, and subsequently may be divided into national allocations which may not be exceeded. (In 1990, the TALFF for jack mackerel was 4,600 mt.)

Incidental Allowances. To be determined.

Prohibited Species. The same as foreign fishery for Pacific whiting.

Area. North of 39°N latitude.

Gear Restrictions. The same as foreign fishery for Pacific whiting.

12.7 Prohibitions

The following prohibitions apply and may be expanded, modified, or removed as needed to implement the FMP, as amended.

Nationwide. It is unlawful for any person to do any of the following:

a. Possess, have custody or control of, ship, transport, offer for sale, sell, purchase, land, import, or export any fish or parts thereof taken or retained in violation of the MFCMA or any regulation or permit issued under the MFCMA.

b. Transfer or attempt to transfer, directly or indirectly, any U.S.- harvested fish to any foreign fishing vessel, while such vessel is in the EEZ, unless the foreign fishing vessel has been issued a permit under Section 204 of the MFCMA which authorizes the receipt by such vessel of U.S.-harvested fish.

c. Fail to comply immediately with enforcement and boarding procedures specified in the implementing regulations.

d. Refuse to allow an authorized officer to board a fishing vessel, or to enter areas of custody for purposes of conducting any search, inspection, or seizure in connection with the enforcement of the MFCMA.

e. Dispose of fish or parts thereof or other matter in any manner, after any communication or signal from an authorized officer, or after the approach by an authorized officer or an enforcement vessel.

f. Forcibly assault, resist, oppose, impede, intimidate, threaten, or interfere with any authorized officer in the conduct of any search, inspection, or seizure in connection with enforcement of the MFCMA.

g. Interfere with, delay, or prevent by any means, the apprehension or of another person, knowing that such person has committed any act prohibited by the MFCMA.

h. Resist a lawful arrest for any act prohibited under the MFCMA.

Washington, Oregon, and California. In addition to the nationwide prohibitions listed above, it is unlawful for any person to:

a. Sell, offer to sell, or purchase any groundfish taken in the course of recreational groundfish fishing.

b. Retain any prohibited species caught with legal groundfish gear unless authorized by other applicable law. Prohibited species must be returned to the sea as soon as practicable with a minimum of injury when caught and brought aboard.

c. Falsify or fail to affix and maintain vessel and gear markings.

d. Fish for groundfish in violation of any terms or conditions attached to an EFP.

e. Fish for groundfish using gear not authorized under the FMP or under an EFP.

f. Take and retain, possess or land more groundfish than specified under any regulation, notice, permit, or experimental fishing permit implemented under this FMP.

g. Violate any other provision of the implementing regulations at 50 CFR Parts 620, 663 or 611, the MFCMA, any notice, or any other regulation or permit promulgated under the MFCMA.

h. Make any false statement, oral or written, to an authorized officer concerning the taking, catching, harvesting, possession, landing, purchase, sale, or transfer of any fish.

i. Interfere with, obstruct, delay, or prevent by any means a lawful investigation or search conducted in the process of enforcing the MFCMA.

j. Refuse to submit fishing gear or fish subject to such person's control to inspection by an authorized officer, or to interfere with or prevent, by any means, such as inspection.

k. Falsify or fail to make and/or file any and all reports of groundfish landings, containing all data, and in the exact manner, required by the applicable state law, provided that person is required to do so by the applicable state law.

l. Fail to sort, prior to the first weighing after offloading, those groundfish species or species groups for which there is a trip limit, if the weight of the total delivery exceeds 3,000 pounds (round weight or round weight equivalent).

m. Possess, deploy, haul, or carry onboard a fishing vessel subject to the implementing regulations (50 CFR Part 663) a set net, trap or pot, longline, or commercial vertical hook-and-line that is not in compliance with the gear restrictions, unless such gear is the gear of another vessel that has been retrieved at sea and made inoperable or stowed in a manner not capable of being fished. The disposal at sea of such gear is prohibited by Annex V of the International Convention for the Prevention of Pollution from Ships, 1973 (Annex V of MARPOL 73/78).

12.8 Facilitation of Enforcement

The following provisions currently are included in the FMP's implementing regulations (as of March 23, 1990) and may be expanded, modified, or removed as necessary to facilitate enforcement of the provisions of the FMP, as amended, and the MFCMA.

General. The operator of, or any other person aboard, any fishing vessel subject to the FMP must immediately comply with instructions and signals issued by an authorized officer to stop the vessel and with instructions to facilitate safe boarding and inspection of the vessel, its gear, equipment, fishing record (where applicable), and catch for purposes of enforcing the MFCMA and this FMP.

Communications.

1. Upon being approached by a U.S. Coast Guard vessel or aircraft, or other vessel or aircraft with an authorized officer aboard, the operator of a fishing vessel must be alert for communications conveying enforcement instructions.

2. VHF-FM radiotelephone is the preferred method for communicating between vessels. If the size of the vessel and the wind, sea, and visibility conditions allow, a loudhailer may be used instead of the radio. Hand signals, placards, high frequency radiotelephone, or voice may be employed by an authorized officer, and message blocks may be dropped from an aircraft.

3. If other communications are not practicable, visual signals may be transmitted by flashing light directed at the vessel signaled. U.S. Coast Guard units will normally use the flashing light signal "L" as the signal to stop. In the International Code of Signals, "L" (.-..) means "you should stop your vessel instantly".

4. Failure of a vessel's operator promptly to stop the vessel when directed to do so by an authorized officer using loudhailer, radiotelephone, flashing light signal, or other means constitutes prima facie evidence of the offense of refusal to permit an authorized officer to board.

5. The operator of a vessel who does not understand a signal from an enforcement unit and who is unable to obtain clarification by loudhailer or radiotelephone must consider the signal to be a command to stop the vessel instantly.

Boarding. The operator of a vessel directed to stop must:

1. Guard Channel 16, VHF-FM if so equipped;

2. Stop immediately and lay to or maneuver in such a way as to allow the authorized officer and his party to come aboard;

3. Except for those vessels with a freeboard of four feet or less, provide a safe ladder, if needed, for the authorized officer and his party to come aboard;

4. When necessary to facilitate the boarding or when requested by an authorized officer or observer, provide a manrope or safety line, and illumination for the ladder; and

5. Take such other actions as necessary to ensure the safety of the authorized officer and the boarding party.

Signals. The following signals, extracted from the International Code of Signals, may be sent by flashing light by an enforcement unit when conditions do not allow communications by loudhailer or radiotelephone. Knowledge of these signals by vessel operators is not required. However, knowledge of these signals and appropriate action by a vessel operator may preclude the necessity of sending the signal "L" and the necessity for the vessel to stop instantly.

1. "AA" repeated (.- .-) is the call to an unknown station. The operator of the signaled vessel should respond by identifying the vessel by radiotelephone or by illuminating the vessel's identification.

2. "RY-CY" (.-. -.-- -.-. -.--) means "you should proceed at slow speed, a boat is coming to you." This signal is normally employed when conditions allow an enforcement boarding without the necessity of the vessel being boarded coming to a complete stop, or, in some cases, without retrieval of fishing gear which may be in the water.

3. "SQ3" (... --.- ...--) means "you should stop or heave to; I am going to board you."

{Note: Period (.) means a short flash of light; dash (-) means a long flash of light.}

12.9 Penalties

Any person committing or fishing vessel used in the commission of a violation of the MFCMA or any regulation issued under the MFCMA, is subject to the civil and

criminal penalty provisions and civil forfeiture provisions of the MFCMA, to Part 621 of this chapter, to 15 CFR Part 904 (Civil Procedures), and to any other applicable law.

13.0 REFERENCES

Adams, P. B. 1986. Status of lingcod (Ophiodon elongatus) stocks off the coast of Washington, Oregon and California. 60 p. In Pacific Fishery Management Council. Status of Pacific coast groundfish fishery in 1986 and recommended acceptable biological catches for 1987. (Document prepared for the Council and its advisory entities.) Available Pacific Fisheries Management Council, Metro Center, Suite 420, 2000 S.W. First Avenue, Portland, OR, 97201.

Adams, P. 1987. Personal communication. NMFS, Southwest Fisheries Center, Tiburon Laboratory.

Adams, P. B. 1987. The diet of widow rockfish Sebastes entomelas in northern California. In W. H. Lenarz and D. R. Gunderson (editors), Widow rockfish. Proceedings of a workshop, Tiburon, California, December 11-12, 1980., p. 37-41. U.S. Dep. Commer., NOAA Tech. Rept. NMFS 48.

Allen, M. J., and A. J. Mearns. 1976. Life history of the Dover sole. South. Calif. Coastal Water Res. Proj. Annu. Rep., 223-228 p.

Allen, M. J., and G. B. Smith. 1988. Atlas and zoogeography of common marine fishes in the Bering sea and northeast Pacific Ocean. U.S. Dep. Commer., NOAA Tech. Rept. NMFS 66, 151 p.

Alverson, D. L., and W. T. Pereyra. 1969. Demersal fish explorations in the northeastern Pacific Ocean - an evaluation of exploratory fishing methods and analytical approaches to stock size and yield forecasts. J. Fish. Res. Bd. Canada 26:1985-2001.

Alverson, D. L. 1960. A study of annual and seasonal bathymetric catch patterns for commercially important groundfishes of the Pacific Northwest Coast of North America. Pac. Mar. Fish. Comm., Bull. 4. 66 p.

Alverson, D. L., A. T. Pruter, and L. L. Ronholt. 1964. A study of demersal fishes and fisheries of the northeastern Pacific Ocean. H. R. MacMillian Lectures in Fisheries, Inst. Fish., Univ. B.C., 190 p.

Anderson, P. J., and W. E. Albers. 1985. Diet of Pacific cod, Gadus macrocephalus, and predation on the northern pink shrimp, Pandalus borealis, in Pavlof Bay, Alaska. Fish. Bull., U.S. 83(4): 601-610.

Archibald, C. P., W. Shaw, and B. M. Leaman. 1981. Growth and mortality estimates of rockfishes (Scorpaenidae) from B.C. coastal waters, 1977-1979. Canadian Technical Report of Fisheries and Aquatic Sciences 1048, Pacific Biological Station, Nanaimo, British Columbia, Canada.

Arora, H. L. 1951. An investigation of the California sanddab, Citharichthys sordidus (Girard). Calif. Fish and Game, 37: 3-42.

Bailey, K. M. 1982. The early life history of the Pacific hake (Merluccius productus). Fish. Bull., U.S. 80(3): 589-598.

Bailey, K. M., R. C. Francis, and P.R. Stevens. 1982. The life history and fishery of Pacific whiting, Merluccius productus. Calif. Coop. Fish. Invest. Rep. 23: 81-98.

Barss, W. H., R. L. Demory and N. Ten Eyck. 1977. Marine resource surveys on the continental shelf off Washington, 1975-76. Oregon Depart. of Fish and Wildl., Completion report. 34 p.

Barss, W. H., and T. W. Echeverria. 1987. Maturity of widow rockfish Sebastes entomelas from the northeastern Pacific, 1977-82. In W. H. Lenarz and D. R. Gunderson (editors), Widow rockfish. Proceedings of a workshop, Tiburon, California, December 11-12, 1980., p. 13-18. U.S. Dep. Commer., NOAA Tech. Rept. NMFS 48.

Beamish, R. J. 1979. New information on the longevity of Pacific ocean perch (Sebastes alutus). J. Fish. Res. Board Can. 36:1395-1400.

Becker, D. S. 1984. Resource partitioning by small-mouthed pleuronectids in Puget Sound, Washington. Ph.D. disseration. Univ. Wash., Seattle, WA. 138p.

Beverton, R. J. H., and S. J. Holt. 1957. On the dynamics of exploited fish populations. U.K. Min. Agric. Fish., Fish. Invest. (Ser. 2) 19:533 p.

Boehlert, G. W. 1982. (Citation available from PFMC on request)

Boehlert, G. W. 1980. Size composition, age composition, and growth of canary rockfish, Sebastes pinniger, and splitnose rockfish, S. diploproa, from the 1977 rockfish survey. Mar. Fish. Rev. 42(3-4): 57-63.

Brown, D. 1987. Personal communication. Southern California Coastal Water Research Project. Los Angeles, CA.

Carlson H. R., and R. E. Haight. 1976. Juvenile life of Pacific ocean perch, Sebastes alutus, in coastal fiords of southeastern Alaska: their environment, growth, food habits, and schooling behavior. Trans. Am. Fish. Soc. 105: 191- 201.

Center for Environmental Education. 1987. Plastics in the Ocean: More Than a Litter Problem. Washington, DC:128.

Chatwin, B. M. 1956. Further results from tagging experiments on lingcod. Fish. Res. Bd. Canada, Pacific Prog. Rept. 107: 19-21.

Chilton, D. E., and R. J. Beamish. 1982. Age determination methods for fishes studied by the Groundfish Program at the Pacific Biological Station. Can. Spec. Publ. Fish. Aquat. Sci. 60: 102 p

Clausen, D. M. 1980. Summer food of Pacific cod, Gadus macrocephalus, in coastal waters of southeastern Alaska. Fish. Bull., U.S. 78: 968-973.

Clemens, W. A. and G. V. Wilby. 1949. Fishes of the Pacific Coast of Canada. Fisheries Research Board of Canada, Ottawa. Bulletin Number LXVIII.

FINAL

SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

AND

REGULATORY IMPACT REVIEW/INITIAL REGULATORY FLEXIBILITY ANALYSIS

FOR AMENDMENT 4

TO THE FISHERY MANAGEMENT PLAN FOR

PACIFIC COAST GROUNDFISH

FOR REVIEW BY
THE PACIFIC FISHERY MANAGEMENT COUNCIL
APRIL 1990

Prepared by the Staff of the Pacific Fishery Management Council
and NOAA Fisheries Northwest Region
and the Groundfish Management Team

JULY 1990

COVER SHEET

( ) Draft

(X) Final Supplemental
Environmental Impact Statement

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PROPOSED ACTION:

Approval and implementation of Amendment 4 to the Fishery Management Plan for the Washington, Oregon, and California Groundfish Fishery.

Abstract:

The proposed action is to implement an amendment to the fishery management plan (FMP) for the groundfish fisheries off the coast of Washington, Oregon, and California under the provisions of the Magnuson Fishery Conservation and Management Act of 1976 as amended. Nine major issue are addressed in the amendment. The amendment substantially revises the original FMP by reorganizing and updating major sections. The non-numerical optimum yield (OY) for the groundfish resource is revised to include the six species formerly managed under individual numerical OYs. A more flexible framework approach for establishing and adjusting management measures is designed to streamline the management system while maintaining opportunity for public participation. Provision is made for implementation of catch reporting requirements when state data collection systems are insufficient for management of the fishery. The procedure to review and approve applications for experimental fishing permits is streamlined. A procedure is established to review state regulations to determine if they are consistent with this FMP and federal fishing regulations. A description of the affected marine, coastal and human environments is included. This supplement supports the conclusion in the earlier Statements that the proposed action will protect the long-term productivity of the groundfish resources and will involve no irreversible or irretrievable commitments of these resources.

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1.0 INTRODUCTION

The domestic and foreign groundfish fisheries in the EEZ of the United States (3 to 200 miles offshore) in the Pacific Ocean off the coasts of California, Washington, and Oregon are managed under the "Pacific Coast Groundfish FMP and EIS for the California, Oregon, and Washington Groundfish Fishery." The FMP was developed by the Council under the MFCMA. It was approved by the Assistant Administrator for Fisheries, NOAA on January 4, 1982 and became effective on September 30, 1982. Implementing regulations were published in the Federal Register on October 5, 1982 (at 47 FR 43964) and appear at 50 CFR 663 and Part 675. Three amendments to the FMP have been implemented. This document describes and assesses the potential effects of changes that constitute Amendment 4 to the FMP.

In 1987 the Council began a comprehensive review of the FMP, its federal implementing regulations, state regulations, and current Council management practices. This review identified several management, definition, and other problems. Some of the identified problems are technical/bookkeeping in nature (such as updating and reorganization of the descriptive portions of the FMP document), some are procedural (such as the procedure for reviewing applications for experimental fishing permits), and others relate to management of the fishery to obtain maximum benefits to the nation. The Council determined that a comprehensive amendment to the FMP was necessary to incorporate the previous amendments into a single document, update and reorganize the descriptive sections of the FMP, and correct several inadequacies of the current management program.

The amendment document was developed by a small drafting committee with assistance from the GMT and an oversight committee of Council members, industry representatives, and state, NMFS and NOAA General Counsel personnel. In November 1989 the Council, its industry advisors, GMT and SSC reviewed a document that summarized issues and alternative management measures that could be adopted. The Council adopted the first draft of the Amendment 4 "public hearing" package, which analyzes the biological, ecological, and socioeconomic effects of these management measures, for consideration by the public, the fishing industry, and management agencies. At its March and April meetings, the Council made substantial revisions to the amendment. This document has been revised to reflect those changes.

1.1 List of the Management Measures

The Council is considering nine major changes to the FMP to resolve problems in the current management regime. Four major inadequacies of the annual and inseason management program have been identified: (1) numerical OYs are always considered quotas or ceilings beyond which no fishing is allowed; (2) the species selected for numerical OYs can not be changed without FMP amendment; (3) once acceptable harvest targets have been established, there is no mechanism to adjust regulations to achieve Council objectives to maximum benefits, etc., from those amounts of fish; and (4) inseason management actions for biological conservation requires a determination of biological stress, which is poorly defined and difficult to document and/or predict. This amendment proposes to revise the current non-numerical OY to include all managed species and to establish a framework procedure for setting target harvest levels for any species needing active management.

With respect to annual and inseason procedures for establishing and modifying management measures, the amendment clarifies the procedures the Council will follow, including a provision to make certain changes to management measures at a single meeting. The point of concern procedure would be revised so that determination of biological stress is no longer required. And a "socio-economic framework" for making adjustments for non-biological reasons is expanded. To provide clearer guidance to the Council and the Secretary of Commerce in using the new framework procedures to make social, economic and biological decisions, the amendment also proposes revision of the FMP's goals and objectives. The overall intent of these frameworks is to promote more responsive management.

Specifically. the nine management measures included in this amendment are

1. Revise the management goals and objectives, update the descriptive sections, and reorganize the chapters of the FMP.

2. Revise the operational definition and use of Optimum Yield (OY), establish a procedure to specify allowable harvest levels (harvest guidelines, quotas or OYs) for any species, including the management measures to achieve them. Procedures for establishing and adjusting management measures (trip landing limits and trip frequency limits) are clarified, including authority to establish "routine" measures which may be adjusted at any time during the year. Current regulations pertaining to Pacific ocean perch trip limits, recreational bag limits, and sablefish allocation would be rescinded.

3. Establish a procedure for making adjustments to management measures (seasons, quotas, gear restrictions, allocations, etc.) for social and economic reasons. This is the socio-economic framework which includes and expands the gear regulation adjustment framework.

4. Revise the point of concern provision by eliminating the requirement to declare biological stress.

5. Revise the use of the harvest reserve for species for which a joint venture or directed foreign fishery is conducted.

6. Provide for implementation of reporting requirements when state data collection systems are insufficient for management of the fishery, including for vessels which process fish at sea. This includes regulations to implement specific reporting and recordkeeping requirements for certain vessels.

7. Streamline the procedures to review and approve applications for experimental fishing permits.

8. Establish procedures for reviewing state regulations to determine if they are consistent with the FMP and federal fishing regulations. This includes possible termination of current federal regulations which establish recreational bag limits for various groundfish species.

9. Establish procedures for setting and adjusting restrictions on the landing of groundfish caught in non-groundfish fisheries (to be accomplished through the socio-economic framework.

In order to provide a clearer picture of the Council's overall management program, the Amendment 4 document has been drafted to include only the Council's "preferred alternative" for each issue. The reader should reference that document in reviewing this document. References to the pertinent sections of the amendment are provided at the beginning of the discussion of each issue below.

1.2 Purpose of the Public Hearing Package

1.2.1 Supplemental Environmental Impact Statement

One part of this public hearing package is the Supplemental Environmental Impact Statement (SEIS) that is required by NOAA in compliance with the National Environmental Policy Act of 1969 (NEPA). The purpose of the SEIS is to supplement the Environmental Impact Statement (EIS) which was prepared in conjunction with implementation of the FMP in 1982. The SEIS analyzes the impacts of major federal actions on the quality of the human environment. It serves as a means of determining if significant environmental impacts could result from a proposed action and describes those potential impacts. An SEIS must be prepared if the proposed action may be reasonably expected to: (1) jeopardize the productive capability of the target resource species or any related stocks that may be affected by the action; (2) allow substantial damage to the ocean and coastal habitats; (3) have a substantial adverse impact on public health or safety; (4) affect adversely an endangered or threatened species or a marine mammal population; or (5) result in cumulative effects that could have a substantial adverse effect on the target resource species or any related stocks that may be affected by the action. This SEIS is prepared to analyze the possible impacts of management measures and their alternatives that are contained in Amendment 4.

Certain management measures are expected to have some impact on the environment. Such measures are those directed at harvests of stocks and may occur either directly from the actual harvests (e.g., removals of fish from the ecosystem) or indirectly as a result of harvest operations (e.g., effects of bottom trawling on the benthos [animals and plants living on, or in the bottom substrate]). Environmental impacts of management measures may be beneficial when they accomplish their intended effects (e.g., prevention of overharvesting stocks as a result of harvest limitations). Conversely, such impacts may be harmful when management measures do not accomplish their intended effects (e.g., overharvesting occurs when management measures do not adequately control fishing mortality). The extent of the harm is dependent on the amount of risk of overfishing that has occurred. For purposes of this SEIS, the term "overfishing" is that which is described in the "Guidelines for Fishery Management Plans" [50 CFR 602.11.c(9)] and incorporated into the FMP by this amendment. It is "a level or rate of fishing mortality that jeopardizes the long term capacity of a stock or stock complex to produce MSY on a continuing basis." Environmental impacts that may occur as a result of fishery management practices are categorized as changes in predator-prey relations among invertebrates and vertebrates, including marine mammals and birds, physical changes as a direct result of on-bottom fishing practices, and nutrient changes due to processing and dumping of fish wastes. If more or less groundfish biomass is removed from the ecosystem, then oscillations occur in the ecosystem until equilibrium is again established.

A detailed description of each major species is provided in Section 11 of the amendment, along with a discussion of the habitat requirements and the Council's habitat preservation policy.

1.2.2 Regulatory Impact Review (RIR)

Another part of the package is the RIR that is required by NMFS for all regulatory actions or for significant Department of Commerce/NOAA policy changes that are of public interest. The RIR: (1) provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems; and (3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

The RIR also serves as the basis for determining whether any proposed regulations are major under criteria provided in Executive Order 12291 and whether or not proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act (P.L. 96-354, RFA). The primary purpose of the RFA is to relieve small businesses, small organizations, and small governmental jurisdictions (collectively, "small entities") of burdensome regulatory and recordkeeping requirements. This Act requires that if regulatory and recordkeeping requirements are not burdensome, then the head of an agency must certify that the requirement, if promulgated, will not have a significant effect on a substantial number of small entities.

The RIR analyzes the impacts that Amendment 4 would have on the Pacific coast groundfish fisheries. It also provides a description and an estimate of the number of vessels (small entities) to which regulations implementing amendment would apply.

1.3 Description of the 1987 Domestic Groundfish Industry Operating in the Washington, Oregon, and California Area

Section 11.3 of the Amendment 4 document (Social and Economic Characteristics of the Fishery) provides a more detailed discussion of the business firms that directly utilize the groundfish resources of the region. U.S. commercial firms exploiting groundfish include commercial fishing vessels employing a wide variety of gear and delivering product to shoreside processors and processing vessels, party/charter vessels for recreational fishing, and shoreside fish processing firms. In addition, other industries provide materials and equipment to support these businesses.

1.3.1 Fishing Fleet

There is no federal groundfish permit requirement in the Washington, Oregon, and California fishery, so an accurate count of vessels landing groundfish is often difficult to develop. The numbers below are taken from the 1989 annual stock assessment document produced by the Council and a NMFS Southwest Fisheries Center Administrative Report Number LJ-88-01, titled "Importance of Selected Limited Access Criteria for Pacific Coast Groundfish Fleet Configuration" by Dale Squires. A total of approximately 531 vessels made substantial landings of groundfish in 1988, the most recent year for which data are available. This includes 349 trawl vessels delivering to shore plants, 156 longline vessels, and 26 pot/trap vessels. There may be a few additional trawl vessels (two in 1986) which operate in joint ventures, delivering to foreign processing ships, but make no deliveries to shore plants. A total of 40 trawl vessels engaged in the joint

venture fishery in 1988. Vessels using certain other legal gear, such as salmon troll vessels and vessels using Portuguese (vertical) longlines or gill/set nets, may also land groundfish taken incidentally or intentionally. The most recent readily available information on the number of vessels in these categories is for 1985. In that year 226 vessels derived a plurality of their income from troll and jig gears, 21 vessels from gill and dip nets, 111 from other nets, and 288 from other gears. A total of approximately 1,179 vessels participated in the west coast groundfish fishery in 1985.

1.3.2 Processing

1.3.2.1 Offshore Processing

Prior to 1989, there were no domestic vessels that both harvested and processed their catches (catcher/processor vessels) with the exception of a few pot vessels fishing for sablefish. However, early in the 1989 season, management agencies received word from the State of Alaska that a large landing of sablefish caught off Washington, Oregon, and California had been made. In compliance with Alaska state law and federal regulations for the Gulf of Alaska groundfish fishery, a vessel operator had submitted a fish landings receipt when his fish were offloaded in an Alaskan port. Because the vessel had apparently not landed any of the sablefish until he reached Alaska, none of the three west coast states had any record of either the vessel's activities or catches. Although this is the first case of its kind, there were 81 longline vessels, 12 pot vessels, and 67 trawl vessels operating as catcher/processors in Alaska in 1989. It is unlikely that trawl catcher/processors will enter the Washington, Oregon, and California fishery as long as it is more profitable to operate in Alaska. However, because sablefish fishing and offshore processing could be profitable at this time for pot and longline vessels, additional vessels can be expected to enter this fishery in the immediate future.

There are currently no U.S. vessels that only process fish (mothership/processor vessels) operating in the west coast management area.

1.3.2.1 Shoreside Processing

In 1989, 121 potential groundfish processors were identified by port samplers and NMFS Fishery Market News Service. Of these, 106 were independent of the others (52 in Washington, 23 in Oregon, and 31 in California). In answer to a subsequent survey administered by the Council, 81 percent (60 of 74) of those responding identified themselves as groundfish processors. The break down by state was 31 of 39 in Washington, 13 of 18 in Oregon, and 16 of 17 in California.

1.3.3 Support Industries

In 1989, in response to a Council request, Sea Grant extension agents in Washington, Oregon, and northern California identified 276 firms directly involved in groundfish fishery support activities (exclusive of processors). Another indicator of numbers of firms which may supply inputs to the fishing industry is the NYNEX Commercial Marine Directory. This directory lists 1,284 firms for Washington and Oregon and includes suppliers of absorbants, cable and rope, steel, and valves, as well as accountants and architects who cater to the commercial marine industries. Some of these firms may cater more to commercial marine industries other than fishing. There is currently no commercial marine directory for California.

2.0 ISSUE 1: REVISE THE MANAGEMENT GOALS AND OBJECTIVES, UPDATE THE DESCRIPTIVE SECTIONS, AND REORGANIZE THE CHAPTERS OF THE FMP.

Amendment 4 References: Goals and Objectives - Section 2.1
Definitions - Section 2.2

2.1 Description of and Need for this Action

The Pacific Coast Groundfish FMP became effective in 1982. Managers have since identified the FMP's strengths and weaknesses and have learned that routine management actions are most efficiently handled through framework measures. In order to develop effective framework provisions, the Council's management goals and objectives must be clearly reflected in the FMP. These goals and objectives should be as specific as possible in order to provide the proper guidance in establishment of management measures. Experience has shown that several of the goals and objectives were less specific than desirable, and some recent Council policies had not been incorporated into the FMP document. These shortcomings are addressed in this section.

Since 1982, the FMP has been amended three times to modify regulations, establish new framework management measures and to make administrative changes to conform with the amendments to the MFCMA. Little effort has been spent to incorporate these amendments into the FMP document, to update the descriptive sections of the FMP or to make improvements in the FMP's format. Thus, the FMP is terribly out of date, difficult for managers and the public to read and use, and as a result has lost some of its effectiveness as a management tool. This amendment completely updates the descriptive sections of the FMP (i.e., description of groundfish life histories, stock status, characteristics of the fishery, etc.) to reflect current knowledge. The FMP will be reorganized to make the document easier to read and use and to update in the future. Technical revisions to the text and regulations to reflect Council policy with regard to gear restrictions and working definitions will be incorporated and fully analyzed where necessary. Revisions which have no management implications, such as reorganization of the FMP chapters and updating figures and tables, need not be analyzed.

2.2 The Alternatives

2.2.1 Alternative 1: Do nothing (status quo). Adoption of this alternative would leave the FMP's descriptive sections unchanged. It would also leave unaddressed the other problems discussed in the above statement of need. Use of framework procedures would continue to be frustrated since goals and objectives are not clearly stated.

2.2.2 Alternative 2 (Preferred): Revise the goals and objectives, update the descriptive sections, and reorganize the chapters of the FMP.

Approval of this alternative would fully address the problems described above. Most of the amendment focuses on the descriptive sections of the FMP. Since these sections are only descriptive, no implementing regulations or accompanying regulatory analysis is necessary. This amendment does, however, make several changes to the FMP with some requiring regulatory revisions. These few changes are described below.

2.2.2.1 Management Goals and Objectives

This amendment introduces specific objectives to attain the FMP's goals in order to provide additional guidance for development of management measures (see Chapter 2 of Amendment 4). The goals, which are essentially unchanged, are listed below in order of priority.

Goal 1 **Conservation.** Prevent overfishing by managing for appropriate harvest levels. Prevent any net loss of habitat of living marine resources.

Goal 2 **Economics.** Maximize the value of the groundfish resource as a whole.

Goal 3 **Utilization.** Achieve the maximum biological yield of the overall groundfish fishery and promote the year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

To accomplish these management goals, a number of objectives will be considered and followed as closely as practicable:

Conservation

Objective 1: Maintain an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs.

Objective 2: Adopt harvest specifications and management measures consistent with resource stewardship responsibilities for each groundfish species or species group.

Objective 3: For species or species groups which are below the level necessary to produce MSY, consider rebuilding the stock to the MSY level and, if necessary, develop a plan to rebuild the stock.

Economics

Objective 4: Attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

Objective 5: Identify those sectors of the groundfish fishery for which it is beneficial to promote year round marketing opportunities, and establish management policies that extend those sectors' fishing and marketing opportunities as long as practicable during the fishing year.

Objective 6: Gear restrictions to minimize the necessity for other management measures will be used whenever practicable.

Utilization

Objective 7: Develop management measures and policies that foster and encourage full utilization (harvesting and processing) of the Pacific coast groundfish resources by domestic fisheries.

Objective 8: Recognizing the multispecies nature of the fishery, establish a concept of managing by species and gear, or by groups of interrelated species.

Objective 9: Strive to reduce the economic incentives and regulatory measures that lead to wastage of fish.

Objective 10: Provide for foreign participation in the fishery, consistent with the other goals, to take that portion of the OY not utilized by domestic fisheries, while minimizing conflict with domestic fisheries.

Social Factors

Objective 11: When conservation actions are necessary to protect a stock or stock assemblage, attempt to develop management measures that will affect users equitably.

Objective 12: Minimize gear conflicts among resource users.

Objective 13: When considering alternative management measures to resolve an issue, choose the measures that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures and environment.

2.2.2.2 Definitions of Acceptable Biological Catch (ABC) and Overfishing.

The current definition for "ABC" reads as follows:

> ABC is a seasonally determined catch that may differ from MSY for biological reasons. It may be lower or higher than MSY in some years, because of fluctuating recruitment. ABC may or may not be set at equilibrium yield which is the harvest that would maintain a stock at its current level, apart from the effects of environmental conditions. It may be set lower than MSY in order to rebuild depleted stocks.

The following alternative would bring this definition into closer conformity with that used by the SSC and North Pacific Fishery Management Council:

> ABC is a biologically based estimate of the amount of fish that may be harvested from the fishery each year without jeopardizing the resource. It is a seasonally determined catch that may differ from MSY for biological reasons. It may be lower or higher than MSY in some years for species with fluctuating recruitment. The ABC may be modified to incorporate biological safety factors and risk assessment due to uncertainty. Lacking other biological justification, the ABC is defined as the MSY exploitation rate multiplied by the exploitable biomass for the relevant time period.

In addition, this alternative would define "overfishing" as follows:

> Overfishing is a level or rate of fishing mortality that jeopardizes the long-term capacity of a stock or stock complex to produce MSY on a continuing basis.

Amendment 4 also introduces definitions of quota and harvest guideline, and revises the definition of optimum yield. These changes have management implications which are discussed under Issues 2 and 3 later in this document.

2.3 Impacts

There will be few direct or immediate biological or physical impacts from either alternative. The impacts will be related to the degree of understanding and availability of information to the Council and public, and be primarily economic and social in character.

2.3.1 Alternative 1: Do nothing - status quo

Under the status quo, confusion within management and the fishing industry with regard to terminology would continue. Specific objectives of the management program would not be adopted, and the Council's management policies and intentions would remain unclear. Informal objectives which currently serve as a basis for decision-making would continue to lack an integrated structure of priorities that promotes public anticipation and evaluation of Council action. In addition, the FMP document would continue to be an outdated and incomplete description of the resource and current management agenda.

2.3.2 Alternative 2 (Preferred): Revise the goals and objectives, update the descriptive sections, and reorganize the chapters of the FMP.

The social and economic impacts of this action would be indirect and result from enhanced public understanding of Council actions and more effective Council decisions. Better public understanding of Council processes and objectives may result in more informed and constructive public comment, lower public frustration levels, and more public cooperation. The quality of Council decisions may benefit from enhanced public input, and specific objectives which provide consistent criteria for evaluating alternative policies.

2.3.2.1 Revise the Goals and Objectives

This alternative clarifies the Council's objectives for management of the west coast groundfish fisheries. The goals of the FMP remain essentially unchanged, but are now listed in order of priority. In addition, the operational objectives relied upon to achieve those goals would, for the first time, be formally identified within the fmp. Formal inclusion of these objectives in the FMP will facilitate greater understanding of Council actions by the fishing industry and interested public and will also provide a basis for public and governmental evaluation of Council decisions. The priorities embodied in the list of goals will also provide guidance to the Council and the Secretary in the development of measures to manage the fisheries.

The objectives are difficult to examine in detail because of the diversity of problems to which they might be applied. In general it will be impossible to maximize accomplishment of all objectives simultaneously, and in certain situations the objectives may directly contradict each other. The benefits anticipated from this alternative relate not only to the formal exposition of previously informal objectives, but also to the Council having ranked the goals.

These objectives state the Council's intention to meet its resource stewardship responsibilities, as stated in the national standards of the MFCMA. The primary emphasis is on increasing or maintaining maximum benefits to the nation while ensuring that the resources are properly protected and preserved.

Objective 1 Maintain an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs.

Following implementation of the FMP, the Pacific Coast Fishery Information Network (PacFIN) program was developed to ensure that adequate fishery data are collected and available to meet the information needs of the Council and federal government. Funding for this program has occasionally been threatened by budget cuts, and in 1988 a temporary interruption in the port sampling program occurred. Disruption of this PacFIN management data base could have serious implications with respect to inseason management and stock assessments. This data base and the PacFIN research data base are also relied upon for historical evaluation of the fisheries. Failure to maintain the high standards of this data network could jeopardize the ability of staff to conduct reliable and informative evaluations of proposed management actions in a timely manner. The Council considers maintenance of the PacFIN program its highest priority. NMFS also conducts trawl surveys throughout the management area which provide important baseline measurements of stock abundance.

Objective 2 Adopt harvest specifications and management measures needed to achieve OY, on an annual basis and consistent with resource stewardship responsibilities, for each groundfish species or species group.

Each year the Council reviews the status of major species and species groups and establishes harvest specifications where appropriate. This process begins with preparation of the stock assessment document or SAFE document which provides the Council with the biological information and recommendations of the GMT for setting ABCs for each major species and species group. Once the ABCs have been specified, the Council considers whether any species require individual management attention and, if so, the type of harvest specification appropriate (harvest guideline or quota). Harvest specifications may be set equal to ABC or may deviate from the purely biological basis because of social or economic considerations. Issues relevant to this review are presented in the fishery evaluation section of the SAFE document. Identification of the management measures which will be used to achieve the desired harvest levels (e.g., quotas, gear restrictions, or allocations) is an integral part of the determination of OY. This process is presented in detail in the revised FMP and is discussed more thoroughly under Issue 2 below.

Objective 3 For species or species groups which are below the level necessary to produce MSY, consider rebuilding the stock to the MSY level and, if necessary, develop a plan to rebuild the stock.

Most species are expected to fluctuate above and below MSY during the course of normal management. Therefore, being below the stock size which produces MSY is not necessarily harmful or unwise. This objective recognizes that stocks which are below their MSY biomass level are worthy of special attention to determine whether their depressed condition is only a cyclical variation, or whether the level of fishing activity threatens the stock's future ability to return to the MSY biomass. The objective also indicates the Council's intention to monitor the major species and periodically reassess stock condition. If the best information available indicates that action is necessary to prevent or correct the occurrence of overfishing, the Council's intention is to take corrective action in a timely manner.

Objective 4 Attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

This objective specifically addresses Council goal two and the NOAA directive on compliance with Executive Order 12291 which establishes policy requirements for rules issued by federal agencies: "Regulatory objectives and priorities should be established with the aim of maximizing the net benefits to the United States . . . ." After the maintenance of stocks and the information needed to evaluate them, the foremost concern of the Council is in fostering efficient use of available fishery resources for the provision of benefits to the nation as a whole. As noted in National Standard 5, when viewed in terms of the aggregate costs of providing a given level of product to consumers, efficiency is actually a conservation issue, one which seeks to conserve all of the resources that contribute to the fishery. These include factors such as labor, capital and fuel, as well as fish.

Objective 5 Identify those sectors of the groundfish fishery for which it is beneficial to promote year round marketing opportunities, and establish management policies that extend those sectors' fishing and marketing opportunities as long as practicable during the fishing year.

Fish processing industry representatives as well as certain fishing groups have repeatedly reminded the Council of the importance of a continuous (and if possible steady) supply of fresh fish. In the highly competitive market for fresh fish, continuous supply is essential for the maintenance of markets for west coast fish. For markets which rely on frozen product, season length may not be as critical.

For consumers, shorter seasons lead to higher fresh seafood prices out of season and market gluts during the fishing season. Although consumers may face lower inseason prices, product quality may deteriorate as the compressed season extends infrastructures for holding and processing seafood beyond their capacities. A higher percentage of fish are likely to be frozen for later sale under these conditions, which may also lower the total value of the fish harvested.

Distributing fishing opportunities throughout the year or during different times of year is also important to fishermen, since factors such as weather and equipment maintenance could add significant constraints to the activity of many vessels during a short open season. In the wholly domestic and joint venture fisheries alike, the evolution of faster, high-pressure seasons may lead vessel operators to continue fishing in unsafe conditions, endangering not only the vessel but also the crew.

The economic implications of loss of market share and other situations are discussed in detail in Section 4.0 below (Procedure for Making Adjustments to Fishing Restrictions for Other than Biological Conservation Reasons).

Objective 6 Gear restrictions that minimize the necessity for other management measures will be used whenever practicable.

As with most industries, fishery participants would prefer that the Council's efforts to achieve its goals produce a management regime that is as simple and unobtrusive as possible. The industry has supported studies of gear efficiency, particularly that of trawl gear, with the hope that restrictions

on the size or shape of mesh alone will provide adequate protection for the stocks. Although it appears unlikely that gear restrictions alone will adequately protect the fishery resources, they may, nonetheless, play an important and perhaps simplifying role in the overall management scheme. The Council will strive to develop gear restrictions that reduce the need for continual readjustment of other management measures.

Objective 7 Develop management measures and policies that foster and encourage full utilization (harvesting and processing) of the Pacific coast groundfish resources by domestic fisheries.

This objective is a statement of the Council's intent to increase the benefits from the fishery through full exploitation of fishery resources by U.S. fishermen and processors and to promote development of the domestic harvesting and processing sectors.

Objective 8 Recognizing the multispecies nature of the fishery, establish a concept of managing by species and gear, or by groups of interrelated species.

In several fisheries for groundfish, two or more species may be caught concurrently using a particular gear. The Council recognizes the need to consider the implications that management measures imposed for one species may have on jointly harvested species. If controls are placed on only one component of an assemblage, efforts to land more of the remaining species may produce an increase in fishing mortality on the control species, through higher amounts of catch and discard. Additionally, increases in unreported discards of a depleted species may lead to considerable uncertainty regarding total mortality. In these types of circumstances, the Council will attempt to identify management alternatives that effectively address problems specific to a species group and gear, and that recognize their interdependent nature in the particular fishery.

Objective 9 Strive to reduce the economic incentives and regulatory measures that lead to wastage of fish.

This objective expresses the Council's interest in promoting management methods, and harvesting and processing practices that do not waste the fish resource. Fishing operations, especially those using nonselective gears such as trawl gear, are inherently prone to wasting fish because it is impossible to avoid all unmarketable fish. This is particularly true for undersized fish of marketable species and for undesired species. Some regulations, such as vessel trip limits, also tend to increase the amounts of discards of otherwise marketable fish during the season. Because trip limits encourage fishermen to land as much as the limit will allow and because it is impossible to know while fishing exactly when the limit has been reached, the tendency will be for fishermen to catch more than the limit and then discard the overage. On the other hand, season quotas that prohibit retention of a species late in the year may result in large amounts of discard mortality if fisheries for other jointly caught fish remain open. This objective indicates the Council's desire to develop management measures and promote fishing techniques that allow fishing mortality to be controlled within desired limits while avoiding significant revenue loss through discards.

Objective 10 Provide for foreign participation in the fishery, consistent with the other goals, to take that portion of the OY not utilized by domestic fisheries, while minimizing conflict with domestic fisheries.

In circumstances where domestic harvesting or processing capacities are not able to handle the entire OY, catch will be allocated to foreign or joint venture operations, to the extent this is consistent with other objectives of the FMP. The determination of OY, itself, may include consideration of whether foreign participation will reduce the current or future profitability of the fishery to American interests. In this way, foreign participation can be included at levels that will not reduce long-run American benefits from the fisheries. Foreign participation need not always represent a subtraction from American interests. The development of foreign and joint venture fisheries is often an important transitional phase in the emergence of domestic fisheries and consumer markets for their products. Additionally, the observers required aboard these vessels are likely to provide valuable scientific information regarding emerging U.S. fisheries which have previously not been a focus of research activity.

Objective 11 When conservation actions are necessary to protect a stock or group of stocks, attempt to develop management measures that will affect users equitably.

This objective stresses the Council's intention that conservation burdens arising from stock declines or increased fishing effort should be shared by all participants. The determination of proportionate and equitable burdens will be made relative to and in consideration of other Council objectives. This objective specifically addresses the "fair and equitable" intent of National Standard 4. It should be recognized that nearly any potential management measure will produce different effects on vessels of different size or gear or on different ports. Thus the Council cannot, as a matter of course, impose management measures in such a way that the effects are felt with equal significance by all fishery participants. The costs that are imposed must be balanced against the degree to which imposing them is necessary in order to achieve the desired management end. In cases where the costs appear to be borne primarily by a small group of users, this objective conveys the Council's desire to actively consider alternatives for achieving the same ends.

Objective 12 Minimize gear conflicts among resource users.

The loss or damage of gear, resulting from the interaction of gear on the grounds, is not only a source of inefficiency, reducing the net benefits of the fishery; it can fan animosity between user groups and in so doing detract from the Council's ability to manage the fishery through the cooperative exchange of ideas and effort.

Objective 13 When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures and environment.

Any action to control fishing activities causes some degree of disruption. This objective clearly states that if two measures are expected to accomplish the same resource protection or overall economic benefit, the Council will

choose the alternative that is expected to cause less disruption to current fishing practices. However, this objective is not intended to prevent implementation of management measures that would disrupt the industry. The Council understands that the only effective measure to solve certain issues may result in major disruption, but less disruptive measures would be less effective. This objective applies only in cases where two alternatives are roughly equal in their overall effectiveness.

2.3.2.2 Definitions of acceptable biological catch (ABC) and overfishing.

This amendment addresses an administrative correction and will have no effect on the environment. The FMP defines ABC as a biological reference point when making management decisions. It is not a specified harvest level. The proposed definition of ABC more closely conforms to the definition provided in the federal guidelines as well as with other groundfish FMPs. Use of the term "ABC" does not imply that exceeding it is the equivalent of overfishing. Overfishing relates to the long term productivity of the resource, while ABC is an annual reference point. Exceeding ABC over a period of years, or exceeding ABC by too great an amount in a single year, could result in overfishing, however. The revision of this definition is not expected to result in a change in Council policy or procedure. It is intended to clarify the term so that its use is less confusing.

2.3.3 Benefit-Cost Conclusion

Adoption of Alternative 2 should result in improved public understanding of the Council's fishery management, both from a clearer statement of goals and objectives and from updating and revising the FMP into a more useful document. If this clarity produces a greater ability to achieve the aims of the FMP, the end result should be greater economic returns to the industry and increased availability of seafood products to consumers.

The definition of overfishing will, in the long run, result in the consumption of considerable government resources in the identification of population sizes or conditions that constitute overfishing of important groundfish stocks, consistent with 50 CFR Part 602 guidelines. Overfishing is the subject of an upcoming FMP amendment which will be approved by the Council later in 1990.

2.3.4 Regulatory Flexibility

While large numbers of small entities may be affected (described in Section 1.3) the discussion of benefits and costs demonstrates no significant economic impacts on small entities are expected.

3.0 ISSUE 2: REVISE THE OPERATIONAL DEFINITION AND USE OF OPTIMUM YIELD (OY) AND ESTABLISH A PROCEDURE TO SPECIFY ALLOWABLE HARVEST LEVELS [HARVEST GUIDELINES, QUOTAS or OYs] FOR ANY SPECIES, INCLUDING MANAGEMENT MEASURES TO ACHIEVE THEM

Amendment 4 References: Definition of OY - Section 4.0
Specify Allowable Harvest Levels - Sections 5.0 - 5.6
Establish Management Measures - 6.2 - 6.2.1

3.1 Description of and Need for this Action

Current management of the groundfish fishery combines all species except six into a single, non-numerical OY, and the remaining six are given individual numerical OYs. There is no provision in the FMP to add species to (or remove them from) the list of those managed with individual OYs, although the point of concern framework has been used to establish harvest guidelines and quotas for other species for resource conservation reasons. The FMP and regulations state that numerical OYs are quotas, and further landings of a species are prohibited when its OY is reached. This results in discards and mortality of fish caught unintentionally by fishermen targeting on other species. A related problem is the limited authority to set and adjust management measures so that harvest limits are not reached or exceeded prematurely. Management measures may be established through the point of concern framework only when a finding of biological stress has been made; the use of this provision is restricted to addressing specific biological needs. Issue 2 considers establishment of a single OY for all species and a general procedure to adjust management measures in a timely manner without reliance on a point of concern. Additional problems considered under this issue include (1) a provision in the FMP and regulations that restricts increases in ABCs and OYs to 30 percent per year; (2) allocation of the last 10 percent of the sablefish OY between trawl and fixed gear, and (3) the trip limit for Pacific ocean perch which was set at 5,000 pounds or 10 percent of all groundfish on board, as adjusted to achieve the 20 year rebuilding schedule. The restriction on increases to ABCs makes no biological sense, since ABC is a technical evaluation of the size of the harvestable biomass. The limit on OY increases was established to stabilize the harvest in order to prevent the boom and bust nature of some fisheries. The provision allocating the last 10 percent of the sablefish OY was never effective in addressing the management problems it was intended to solve, and in fact has been superseded repeatedly to prevent severe disruption of the competing fisheries. And the Pacific ocean perch provision would no longer be necessary under the revised management frameworks of Alternatives 2, 3, and 4.

More than 70 of the 80+ species governed by the groundfish FMP are not managed by numerical OYs (and the automatic prohibition against landings once the OY has been reached). These species have generally been managed by gear regulations and their (non-numerical) OY is all the fish that can be legally caught under the FMP's restrictions. These species are protected by the "point of concern" mechanism that provides for imposition of management measures in accordance with the conservation standards established by the FMP. Under this mechanism, quotas may be imposed, but this decision may be made by the Council and NMFS only to prevent or alleviate biological stress.

Numerical OYs have been established for six groundfish species and retention of those species is automatically prohibited when OY is reached. Of these, three species (Pacific whiting, jack mackerel, and shortbelly rockfish) are not fully

utilized by domestic processors and so have amounts potentially available for JVP and/or directed foreign fishing (TALFF). OY has not yet been achieved for jack mackerel or shortbelly rockfish, and not until 1989 was the OY for Pacific whiting nearly attained. The other three species (sablefish, widow rockfish, and Pacific ocean perch) are fully utilized by the domestic industry, and have been managed by trip limits (landing and/or frequency) under the point of concern framework to avoid early closure of the fishery. Increasingly OYs are being reached before the end of the year, which creates more times when certain species may not be landed. Following attainment of a quota, discards are likely to occur if those species are caught incidentally while fishing continues for other species. Even when trip limits successfully delay attainment of a quota until the end of the year, they may produce a stream of discards throughout the period when they are in effect. Because management records for the domestic fleet generally focus on landings, ignoring catch, the amounts of discards attributable to these measures are not well documented. In some instances they are believed to be substantial.

Some members of the fishing industry object to quota management regardless of the intent or need. Others believe that uncertainties in estimating the status of the resource or in projecting landings during the year makes the use of quotas unnecessarily burdensome to the industry.

There is probably no "perfect" number of fish that could be taken from the population, and if there were, it would be impossible to determine with our limited knowledge of the current condition of the stocks and future production. Resource surveys measure relative abundance of fish populations rather than absolute numbers. Records of landings provide a measure of absolute removals and these are used in stock assessments to provide estimates of absolute abundance. As more information on the stocks and their harvest becomes available, assessments are refined. The fact that considerable uncertainty may attend the modeling of some stocks, however, is not a good argument for allowing on a continual basis harvests to exceed the best scientific estimate of the amount of fish that is acceptable for removal from the stock. Such uncertainties may result in over- as well as under-estimates of ABC and OY. Thus if an OY were already higher than it would have been set with perfect information, it would not be desirable to permit further harvest. In recognition of such uncertainty, the Council may choose to include a "safety factor" in setting an ABC, resulting in a more conservative harvest level to avoid errors that would threaten the commercial survival of species. In such instances, occasional harvests above that amount will constitute less of a potential problem than if ABC is not set conservatively.

It is apparent that species other than the currently specified six may require at least general harvest limits in order to prevent excessive removals and, in fact, two other species/species groups (yellowtail rockfish and Sebastes complex) have been managed with harvest guidelines under the point of concern framework. With the large amount of fishing power available to the groundfish fisheries, fluctuations in the biomass of the various species, along with changes in market conditions, and the availability of other individually-managed species may necessitate more assertive management of additional species. The point of concern mechanism has been used repeatedly for individually-managed west coast species, but its use has been criticized in some cases where social and economic rationale have been relied upon to support the use of a tool ostensibly reserved for resource conservation. Because of these types of shortcomings, the current

OY system has frequently presented obstacles to effective management of the fishery.

This issue addresses the problem that numerical OYs are presently considered quotas or ceilings beyond which no fishing is allowed. The alternatives below consider eliminating numerical OYs altogether or specifying that they are not automatically quotas. If numerical OYs were eliminated, however, there would still be a need for numerical guidelines or limits to control harvest of some species. A procedure would also be required for establishing and modifying other management measures in order to achieve but not exceed harvest limits. There is no mechanism under the current FMP for allowing harvest above a specified numerical OY except through a plan amendment.

3.2 The Alternatives

3.2.1 Alternative 1: Do nothing (status quo). Maintain numerical OYs for the six specified species and the non-numerical OY for the remaining species. The non-numerical OY would continue to be defined as "all the fish that are harvested under regulations established by the Council." There would be no provision for actively managing harvest of other species except through the point of concern mechanism. All OYs take the form of quotas. The 30 percent limit on increases to ABCs and OYs would remain in effect, as would the provision which allocates the last 10 percent of the sablefish OY between trawl and fixed gears and the provision which set the trip limit for Pacific ocean perch at 5,000 pounds or 10 percent of all groundfish on board.

3.2.2 Alternative 2 (Preferred): (Please refer to identified sections of Amendment 4 for complete details of this alternative) Redefine the multispecies OY to include the six species currently managed with numerical OYs (Section 4.0). Establish a procedure for identifying species/species group for individual management, choosing whether to use a harvest guideline or quota, and specifying harvest levels for those species or species groups (Sections 5.2 - 5.6). (NOTE: The 30 percent limit on increases to ABCs and OYs would be rescinded.) Implement a general procedure for establishing and adjusting management measures to achieve the designated harvest guidelines and quotas (Sections 6.2 and 6.2.1). [NOTE: The following provisions would be rescinded: (1) allocation of the last 10 percent of the sablefish OY between trawl and fixed gear, and (2) the trip limit for Pacific ocean perch which was set at 5,000 pounds or 10 percent of all groundfish on board, as adjusted to achieve the 20 year rebuilding schedule.]

3.2.3 Alternative 3: This alternative is essentially the same as Alternative 2 except that numerical OYs are re-defined to be non-binding limits (same as harvest guidelines in Alternative 2) unless designated as binding (same as quotas in Alternative 2). The framework procedure would be used to identify species for numerical OY management and to determine whether the OY should be treated as a quota rather than harvest guideline. The same procedure identified in Alternative 2 to establish management measures to achieve OYs is included. As in Alternative 2, the 30 percent limit on increases to ABCs and OYs, the sablefish allocation and Pacific ocean perch trip limit provisions would be rescinded

3.2.4 Alternative 4 (Proposed by the SSC): Each year or for some other time period, the Council sets OY as an adjustment to ABC for social or economic reasons. If an ABC is not available, or the Council believes it to be unreliable, or does not wish to use it for some (social or economic) other reason, a non-numeric OY may be proposed. (The Council's scientific advisory groups, specifically the SSC and GMT, have responsibility for reviewing the reliability of ABC estimates.) The OY may be set for individual species or species groups. All OYs are assumed to be non-binding (harvest guidelines) unless they are specifically designated as binding (quotas). As in Alternative 2, the 30 percent limit on increases to ABCs and OYs, the sablefish allocation and Pacific ocean perch trip limit provisions would be rescinded.

3.3 Biological and Physical Impacts

3.3.1 Alternative 1 (status quo)

The status quo alternative relies upon the cumbersome plan amendment process for changing which species are managed by numerical limits. If a species no longer fits the numerical OY criteria, an FMP amendment is the only way to terminate the use of an OY for that species. Similarly, an amendment is required to add a new species to the numerical management category. The impacts of this inflexibility are discussed under Alternatives 2 and 3. In addition, there is no other procedure (besides the point of concern procedure, which currently requires a finding of biological stress) to establish or revise management measures either annually or inseason.

The 30 percent limit on increases to harvest guidelines (interpreted to include ABCs, OYs and the new, clearer definition of harvest guideline) has caused certain ABCs and OYs to be set lower than the levels recommended by stock assessment scientists. It has caused certain ABCs to be set at levels inconsistent with the best scientific information available. In addition, OYs may be constrained so that the maximum benefit to the nation is not achieved. While this restriction in contrary to the intent of the MFCMA and the objectives, it would remain in the FMP under the status quo.

Under the status quo, current regulations state that fishermen may not land a species after its OY is reached. Thus OYs are always quotas. There are several potential problems with quotas. A quota is absolute and implies precision that may not exist. Discards may occur if OY for a species is reached early and if the species is taken incidentally while fishing for other species. Also, since there is no record of fish discarded after landings are prohibited, there is a loss of biological data with respect to at least the total mortality of the species. Lack of knowledge about actual mortality rates may lead to reduced biomass levels over a period of time.

Use of quotas limits the amount of fishing mortality on a species more than the use of harvest guidelines does, if mortality from unavoidable bycatch subsequent to closure is less than the mortality due to exceeding a harvest guideline. However, it is impossible to accurately predict the total mortality unless there is an accurate measurement of unavoidable mortality. The use of quotas may tend to discourage fishermen from fishing practices that tend to have high incidental catches, thus providing a degree of protection from overfishing that may not be provided by non-quota management.

3.3.2 Alternative 2

Optimum Yield.

Redefine the multispecies OY. Under Alternative 2, all species would be included in the non-numeric OY, and individual species would be identified for more individual management attention. It is anticipated that at least two species/species groups (yellowtail rockfish and the Sebastes complex) would be managed by some form of harvest specification in addition to the six currently managed by numerical OYs. However, under this alternative at least a few of the species currently managed under quotas are likely to be managed with harvest guidelines. This speculation is based on the fact that those two species/species groups have been managed with harvest guidelines under the point of concern framework, and some of the impetus for removing numerical OY management has been to reduce the restrictive nature of quota management. Quota management has been the primary means available to restrict harvests, even when a less restrictive target would have been preferable. Conversely, the improved flexibility to designate species for management with harvest guidelines will allow for more individual management attention to some species for which a quota was clearly too extreme.

Species which meet the criteria for closer management attention could be more easily and quickly added to the numerical management category. Additionally, a broader array of management tools would be available for regulating fishing mortality. Species no longer meeting the criteria could be more efficiently removed from numerical quota management. With continued increases in effort, however, it is expected that the Council will be more likely to increase the number of species with harvest targets rather than to remove species from that category.

Setting Harvest Levels.

Establish a procedure for identifying species/species group for individual management, choosing whether to use a harvest guideline or quota, and specifying harvest levels for those species or species groups. Under this alternative, harvest guidelines or quotas would be assigned to a species or species group amenable to separate management. The criteria to be used in deciding which species or species groups should have harvest guidelines or quotas would be the same criteria currently used in the FMP for designating numerical OY species--e.g. the extent to which it is selectively caught, the degree of commercial or recreational interest, considerations that warrant special protection or cautious exploitation, or expectations that a JVP or TALFF allocation will be made. Under this definition, harvest guidelines or quotas would be immediately anticipated for Pacific ocean perch, sablefish, widow rockfish, shortbelly rockfish, jack mackerel, Pacific whiting, yellowtail rockfish, and the Sebastes complex. It is possible that species assemblages such as the deepwater Dover sole complex might also be managed as a unit. Harvest guidelines or quotas would be specified in accordance with the procedures identified in the FMP and implementing regulations. They would be based on the ABCs as modified for social and economic reasons.

The potential impacts of this process to identify species/species groups for individual management should lead to more attentive management for some species because it will be easier for the Council and the Secretary to respond to new information about the various stocks. On the other hand, the Council could

potentially remove some species from individual management and lump them back in with the majority of the species for which little information is available. This is an extremely remote possibility, however, based on the Council's resource conservation objectives and management philosophy. Through Alternative 2 the Council is seeking the flexibility to be more responsive to resource needs rather than less responsive.

Through the use of harvest guidelines, alternative 2 would provide a means of reducing the discard mortality of incidentally caught species for which the fishery would otherwise be closed, though there would be no guarantee that total fishing mortality would be reduced. Some concern has been expressed that liberal use of harvest guidelines instead of quotas would not provide sufficient incentive to avoid some species. If, for example, trip limits are not set properly after the attainment of a harvest guideline, the reduction of discard-waste may be achieved at a cost of increased total fishing mortality on the species. Existing safeguards of the system--i.e. the SAFE document, the point of concern procedure, and the revised regulations pertaining to overfishing--limit the potential for this phenomenon to deplete stocks over the long-run. However, if the Council is forced to invoke the point of concern mechanism to restrict fishing mortality beyond a harvest guideline, the result may be little different from a quota.

A significant increase in the catch of any species is not anticipated with this alternative. It would allow some amount of a species caught as incidental catch under a harvest guideline to be landed. During periods when landings approach or have reached a harvest guideline, management measures would, at a minimum, attempt to restrict continued landings of that species to the lowest reasonable bycatch levels. Any increase in mortality attributable to the use of harvest guidelines during such periods would arise from two sources: 1) fish that would have survived if they had been discarded rather than retained, and 2) fish that would have been avoided had a quota prohibition on landing been in effect.

The use of harvest guidelines could, therefore, result in small increases in total mortality on a given species in some years. If catches were permitted to exceed the guideline to the extent that biomass was driven below optimum levels, ABC would ideally decrease, and the harvest level specification could be adjusted to allow rebuilding of the stock. Several factors should caution against assuming that the process of setting ABCs will provide a prompt correction when higher than desired fishing mortality begins to compromise stock health. First, surveys of the West Coast fishing grounds are not conducted annually, so delays could exist between a problem's inception and its recognition. Second, if uncertainty in the modeling process becomes accepted as a rationale for allowing more harvest, it may also be used as a means of initially discounting the significance of predictions that support reductions in ABC. Additionally, continued use of the "guideline" approach in subsequent years could compound this tendency to overshoot the desired level of mortality.

Having acknowledged these concerns, it remains unlikely that harvest guidelines would continually be exceeded by large amounts, especially since the Council would have the authority to invoke measures to slow the fishery even before a guideline was reached. The introduction of harvest guidelines, by themselves, is not expected to produce reductions in biomass which would seriously compromise a stock or require long periods of rebuilding. Additionally, modest amounts of revenue could be generated by landings of fish that would have been discarded under quota management. The provisions for moving species between quota and

harvest guideline designations (without an FMP amendment) under Alternative 2 would provide for quicker response to changing resource and fishery conditions, and therefore facilitate more responsible, efficient management.

Rescind the provision that limits increases to ABCs and OYs to no more than 30 percent per year. Alternative 2 would remove the regulation that limits harvest guideline increases to not more than 30 percent. This provision has been interpreted to include ABCs, although they are not directly management targets. Application of the 30 percent limit to ABCs was probably not intentional in the FMP and in retrospect is contrary to setting ABCs based on the best scientific information available. There have been cases where ABCs and harvest guidelines (including numerical OYs) have been restricted because of this provision. For example, both the shortbelly rockfish ABC and OY were restricted in 1990. Although the GMT recommended increasing ABC from 10,000 mt up to a range of 13,900 - 47,000 mt the regulation prohibited an increase above 13,000 mt. The OY, which establishes the actual limit on landings, was constrained also. The Council may have chosen to limit OY to near this amount since there is limited interest in harvesting shortbelly rockfish and concerns were expressed about reducing the abundance of this fish as important forage for sea birds and other fish. However, since ABC is the biological basis for numerical OYs and harvest guidelines, it should provide the most accurate assessment of the biological condition of the stock. This provision has acted as an artificial constraint on the Council in its OY/harvest guideline decisions. While this probably has resulted in lower fishing mortality to some species, there are no discernible benefits from reducing harvests below biologically acceptable levels. To the extent that harvest guideline decisions would be based on more accurate information, Alternative 2 is superior to the status quo.

Measures to Achieve Specified Harvest Levels.

Implement a general procedure for establishing and adjusting management measures to achieve the designated harvest guidelines and quotas. Alternative 2 would clarify and expand the general processes for establishing management measures to reduce fishing effort. The four general processes are: (1) automatic actions, which are non-discretionary and may be taken by the regional director on his own initiative, the impacts of which having already been analyzed; (2) "notice" actions, which are all management actions other than "automatic" actions that are either non-discretionary or for which the scope of probable impacts has been previously analyzed. These actions are intended to have temporary effect and the expectation is that they will need frequent adjustment; (3) abbreviated rulemaking actions, which include all management actions intended to have permanent effect, which are discretionary and for which the impacts have not been previously analyzed; and (4) full rulemaking actions, which include any proposed management measure that is highly controversial or any measure which directly allocates the resource.

Of these four processes, the second and third are somewhat unique to this amendment. They are intended to reduce the time needed to take actions to protect the resource and respond to the needs of the fishing industry while still accomplishing the federal requirements for analysis and public participation. The notice procedure (number 2 above) would provide for implementation of management adjustments at a single meeting if the analysis of the probable impacts had already been prepared and adopted, and the intent and scope of the action had been reviewed at a public meeting in advance of the actions, thus eliminating the need to repeat the procedures when the management actions are

actually taken or adjusted. Process 3 (abbreviated rulemaking) would authorize the Secretary to find the Council's public participation and analysis procedures were adequate to ensure the public welfare. This would provide the basis for a determination that the Council's process has achieved the intention of the Administrative Procedures Act (APA) and therefore provided just cause for waiving the additional public review process usually provided by the Secretary prior to implementation of the proposed measure. This procedure, which is further discussed under Issue 3 below, would be used to establish which measures may thereafter be established or adjusted by notice after a single Council meeting.

The Secretary could not waive the notice and comment provisions, however, if the measure were controversial or proposed direct allocation of the resource. In that case, the full rulemaking process (number 4) would be followed.

Under this alternative, certain measures could be declared "routine," which would mean the Secretary acknowledged the APA requirements had been met and that such measures could be proposed and acted upon at a single Council meeting. Management measures implemented under this procedure would generally be intended to either (1) extend fishing and marketing opportunities for identified fisheries, or (2) reduce discards resulting from fishery closures. The Council intends that other management measures (such as area closures) could also be implemented after a single Council meeting if (1) the management objectives were clearly specified; (2) the use of those measures had been clearly defined; (3) the probable impacts had been analyzed; and (4) the need for periodic adjustment was anticipated. The Secretary would then announce the measure with a single notice in the Federal Register. The management measures that have been used in the past that will be immediately considered as routine include trip limits for all gears for widow rockfish, Sebastes complex, yellowtail rockfish, Pacific ocean perch, and sablefish, and recreational bag limits and size limits for lingcod and rockfish. Trip limits have been used primarily with the trawl fishery to delay attainment of harvest guidelines or quotas for several species/species groups, with the intention of reducing fishing effort during the season so the harvest limit is not reached prematurely (i.e., before the end of the year). This has the potential effect of reducing mortality from discards occurring after the attainment of a quota. However, changes in markets, the number of vessels, and other factors cause harvest rates to vary from year to year and within the season, so management measures require occasional adjustment. This alternative would provide a mechanism for revising trip landing and frequency limits at a single Council meeting, and would authorize implementation of these management measures immediately following the Council's conveyance of its recommendations to NMFS.

Rescind the provision setting the trip limit for Pacific ocean perch at 5,000 pounds or 10 percent of all groundfish on board, as adjusted to achieve the 20 year rebuilding schedule. In its deliberations prior to approving the FMP for implementation, the Council established a 20 year rebuilding schedule for Pacific ocean perch, a species which had been overfished by foreign fishermen prior to enactment of the MFCMA. Harvest was restricted to minimal bycatch amounts. Adoption of the procedures established by Alternative 2 would make this provision for Pacific ocean perch no longer necessary. The Council has not changed its commitment to the 20 year rebuilding schedule, and there would be no change in the biological and physical impacts from the status quo.

Rescind the bag limit regulation for lingcod and rockfish for the recreational fishery, and establish limits hereafter by Federal Register notice. The FMP originally specified bag limits for lingcod and rockfish, and changes to those limits may be made only by FMP amendment. Amendment 4 rescinds that portion of the FMP and the implementing regulation. However, this does not imply that management measures for the recreational fishery are no longer needed. Amendment 4 classifies these bag limits as routine measures which may be adjusted periodically as needed, based on changes in the biological characteristics of the resource, changes in the recreational fishery, and changes in regulations within state waters. The original EIS considered a range of ling cod bag limits from three to five fish per day and concluded that any value within that range would be acceptable. In choosing a limit of three, the Council expected that California would modify its limit in state waters to be consistent. California maintained a five fish limit with a size limit, however, and the conflict between the regulations has caused social concerns in certain areas. By rescinding the federal regulation, the Council will be able to consider changes to federal recreational management measures in a timely manner, consistent with the goals and objectives of the FMP and the National Standards of the MFCMA. Any such restrictions will be established in accordance with the appropriate procedures established by Amendment 4, and bag limits for lingcod and rockfish will be announced by notice in the Federal Register. Until specifically modified by the Council, however, the announced bag limits will be the same as those currently in effect.

3.3.3 Alternative 3

The biological and physical impacts of Alternative 3 would be identical to those of Alternative 2. Under this alternative, numerical OYs would be assigned to a species or species group amenable to separate management. The criteria to be used in deciding which species or species groups should have numerical OYs would be the same criteria currently used in the FMP--e.g. the extent to which it is selectively caught, the degree of commercial or recreational interest, considerations that warrant special protection or cautious exploitation, or expectations that a JVP or TALFF allocation will be made. Under this definition, OYs would be immediately anticipated for Pacific ocean perch, sablefish, widow rockfish, shortbelly rockfish, jack mackerel, Pacific whiting, yellowtail rockfish, and the Sebastes complex. OYs would be designated either as binding or non-binding limits (the equivalent of quotas and harvest guidelines in Alternative 2) and would be specified in accordance with the procedures identified in the FMP and implementing regulations. They would be based on the ABCs as modified for social and economic reasons.

As with Alternative 2, significant increases in the catch or mortality of any species are not anticipated. Modest additional revenue could be generated by fish landed under a harvest guideline that would be discarded under stricter quota management. Alternative 3 would also allow for quicker response to changing resource and fishery conditions, and therefore facilitate more responsible management.

As specified in Alternative 2, the limit on increases to ABCs and OYs would be rescinded, as would the provisions specific to Pacific ocean perch trip limits.

3.3.4 Alternative 4

The biological and physical impacts of Alternative 4 are anticipated to be identical to those of Alternatives 2 and 3. Under this alternative, numerical OYs would be assigned to a species or species group amenable to separate management on a case by case basis. The criteria to be used in deciding which species or species groups should have numerical OYs would probably be the same criteria currently used in the FMP--e.g. the extent to which it is selectively caught, the degree of commercial or recreational interest, considerations that warrant special protection or cautious exploitation, or expectations that a JVP or TALFF allocation will be made. However, the criteria have not been clearly defined in this alternative. Assuming similar criteria, OYs would be immediately anticipated for Pacific ocean perch, sablefish, widow rockfish, shortbelly rockfish, jack mackerel, Pacific whiting, yellowtail rockfish, and the Sebastes complex. OYs would be designated as non-binding limits (i.e., harvest guidelines) unless specified as quotas. OYs would be based on the ABCs as modified for social and economic reasons.

As with Alternatives 2 and 3, significant increases in the catch or mortality of any species are not anticipated. Modest additional revenue could be generated by fish landed under a harvest guideline that would be discarded under stricter quota management. Alternative 4 would also allow for quicker response to changing resource and fishery conditions, and therefore facilitate more responsible management as compared to the status quo.

As specified in Alternatives 2 and 3, the limit on increases to ABCs and OYs would be rescinded, as would the provisions specific to Pacific ocean perch trip limits.

3.4.5 Biological and Physical Impact Conclusions

Based on the above discussion, significant changes in the biological and physical impacts are not anticipated from any of the alternatives. No increase in total harvest of any species above biologically acceptable levels is anticipated; increased use of harvest guidelines as opposed to quotas may or may not change the fishing mortality associated with bycatch and discard. Rescission of the 30 percent limit on increases to harvest levels may result more fish being landed. However, as long as landings do not exceed the specified levels there would be no anticipated negative impacts.

Rescission of the Pacific ocean perch trip limit provision will have no impact since the authority to make adjustments has been incorporated elsewhere in the FMP.

Rescission of the recreational bag limit regulation may allow more fish to be caught per individual if the Council modifies the limit to conform with California state regulation. However, the original EIS concluded that, for ling cod, the difference between a three fish limit and a five fish limit was insignificant biologically. Changing the limit to five fish may or may not result in greater total harvest, since most fishermen do not achieve the three fish limit currently in effect.

At least two additional species would be designated for individual management attention, thereby reducing the possibility that excessive harvest will be allowed or go unnoticed. The proposed changes would authorize rapid adjustments

to management measures and, if effective, would help ensure that harvest levels are not exceeded either by landed amounts or discarded amounts of fish caught incidentally to normal fishing operations. Changes in the amount of modification to the ocean floor from deployment of fishing gear are not anticipated.

3.4 Social and Economic Impacts

3.4.1 Fishery Costs and Benefits

To the extent that harvest guidelines will allow additional catch to be landed without increasing total mortality, segments of the fishery will be better off under either Alternatives 2, 3, or 4 than under the status quo. If total fishing mortality were to increase under the more flexible provisions of harvest guidelines, the immediate gains in revenue might be offset by longer-term reductions in available harvest and/or the imposition of stricter quota provisions. However, the Council's recommended management measures to achieve either a quota or harvest guideline would be essentially identical, with the exception that further landings of a species would not be allowed when its quota was reached. Harvest guideline management provides only the flexibility to allow small additional landings in the event that management measures fail to achieve the established target harvest.

In addition to the nature of harvest specifications--whether or not they are binding in all cases--the management measures that are available to constrain the fishery, as well as the purposes for which they may be invoked, vary amongst the alternatives. Under the status quo, without amending the FMP the Council is authorized to invoke the points of concern mechanism, whereby management measures may be implemented to alleviate stock stress, or to implement gear restrictions which would result in substantial improvements in the groundfish fishery. Substantial improvements are defined in the FMP to mean (1) sustainable landings are increased; (2) the value of landings is increased; (3) gear conflicts are reduced; or (4) fishing efficiency is increased. It is not clear under Alternative 4 whether the measures readily available to the Council will be restricted to existing measures or whether this list will be expanded to include a wide range of alternatives. The intent of Alternative 4 is to give considerable authority to the Council to address problems as they emerge.

Alternatives 2 and 3 each establish a series of measures that may be designated as routine and subsequently implemented or modified using a single meeting procedure, as well as a framework procedure for implementing new measures within a two-meeting schedule. Importantly, these measures may be used to improve the social and economic performance of the fishery, in addition to conserving the fishery resource. Means by which new measures not previously used in a fishery could be implemented for socio-economic purposes are discussed under Issue 3. That section also addresses how such measures might be designated as "routine" by the Council.

The rationale for establishing routine measures is based on the need for adjustments to be made regularly in their use if they are to be effective in promoting the FMP's objectives. Measures eligible for this designation are those which are commonly used under the current management regime and those approved for use under the provisions of the frameworked, two-meeting procedure outlined in this amendment. Measures falling into either of these categories would not automatically be considered routine, but would require an additional finding by

the Council that the measure was likely to be one which would require periodic adjustment.

3.4.2 Landings and Revenues

3.4.2.1 Effects From Different Possible Harvest Specifications

Use of numerical guidelines under Alternatives 2, 3, and 4 instead of rigid quotas will tend to increase vessel revenue during the current season and reduce the wasted mortality which occurs when otherwise marketable fish must be discarded after a quota is reached. Allowing retention may result in some small increases in mortality if some of the discarded fish would have survived after being discarded, or if actual bycatch rates are higher with retention and any additional landing limits than they would have been without retention. This increase in mortality could result in reduced biomass and reduced harvest in the future. However, as was pointed out in the above section on physical and biological impacts, if small increments of harvest over the guideline resulted in a decline of biomass to sub-optimal levels, the process of revising ABCs and harvest level specifications would be expected under most circumstances to compensate for such a decline relatively quickly.

3.4.2.2 Management Measures Available to Achieve Harvest Goals

3.4.2.2.1 Historical Use of Trip Restrictions

Although Alternative 4 would provide the Council with the authority to implement the provisions of Alternatives 2 and 3, the specifics of what procedures would be used are not clearly defined. For this reason, attention is focused on the anticipated effects of designating routine measures under Alternatives 2 and 3.

The west coast groundfish fishery has more vessels and fishermen than necessary to take the amount of most species that can be harvested without jeopardizing the long term viability of the resource. Therefore, restrictions on fishing opportunity, in the form of harvest limitations, seasons, gear restrictions, and other measures, are necessary to ensure adequate protection from overfishing. The most frequently used tools used since the FMP was implemented have been trip landing limits and trip frequency limits. There is little at-sea enforcement capability for the west coast domestic fisheries, and enforcement is done primarily at the dock. Bycatch and discard are not restricted by regulation because there are no records kept by the fishermen and no means of at-sea inspection. In addition, many fish are not marketable and are discarded immediately. Harvest is therefore only indirectly limited; regulations address the landing (offloading and/or sale) of fish rather than the actual harvest. A fishing trip ends when a vessel begins to unload fish, and all fish must be offloaded at the same time. Trip landing limits specify the maximum amount of fish that may be on board when the offloading process begins. A fish ticket (landing receipt) given to the fishermen by the processor/buyer is the record of that trip, and it must accurately record the amount of the transaction. Trip frequency limits specify the maximum number of trips that may be made during a specified period. These are the major (but not the only) management measures that would be designated as "routine" upon implementation of Alternatives 2, 3, and 4. Because no additional analysis would be required of the Council in making this determination, a description of the recent use of trip restrictions and the general ways in which they affect fishery participants are discussed below.

A trip landing limit may take the form of an absolute poundage limit or may refer to the percentage of total, or assemblage, catch that may be constituted by the species. It may apply to a particular gear type or to all vessels. Trip landing and frequency limits have been used by the Council in the management of several species: widow rockfish, sablefish, Pacific ocean perch, the Sebastes complex in conjunction with yellowtail rockfish, and the deepwater Dover sole complex. Trip landing limits have often been implemented together with constraints on the frequency of landings, occasionally in rather complex fashion. Other than some specific sablefish limits, the trip restrictions implemented by the Council have been primarily intended to constrain the trawl fishery, rather than fixed gear fleet.

A complete listing of Council management actions since implementation of the groundfish FMP in 1982 is provided in Section 11.4 of the Appendix to the amendment proposal. An overview of the trip limits and the species or assemblages for which they have been imposed is presented in Table 3.1. In an effort to achieve Council objectives, these restrictions have been subject to change not only between years, but within years. In order to illustrate these changes, Table 3.1 shows both the trip limit first imposed each year as well as the final trip limit in effect prior to the end of the season for that species.

The historical use of trip limits for these species/complexes would allow the Council to designate any future trip limits for the same species as routine. The Council would not be restricted in future applications to the numerical range of previous applications. For instance, the Council has employed widow rockfish limits ranging from 75,000 lb per trip to 3,000 lb per trip. If the Council exercised its option to designate the use of trip limits for widow rockfish as routine, they would be free to set a limit for this species outside the historical range, at 90,000 lb or at 1,000 lb, for instance. Accordingly, the Council would have the flexibility to adjust the frequency with which deliveries could be made.

3.4.2.2.2 Rationale for and Impacts of Various Trip Restrictions

A principal motivation for the use of trip restrictions derives from the Council's objective to extend certain fisheries throughout the calendar year, whenever doing so will improve the marketing position of the west coast fishing industry or provide significant social or economic benefits to communities dependent on fishing revenue. Achieving either of these objectives is, as outlined above in the discussion pertaining to priorities for objectives, subservient to conservation of the resource.

Another important reason for imposing trip restrictions is evidenced when a species that is unavoidably caught as part of an assemblage requires management by quota while other members of the assemblage do not. In such a case, if the restricted species reaches the point where landings of it should be curtailed but fishing continues on the remaining assemblage, then discard of the species will result in total mortality in excess of the quota. This overrun could be substantial if the rate of coincident catch is high and several months of fishing remain before the end of the year. Even if the harvest specification assumes the form of a guideline, and not a quota, the volume of removals of the restricted species which are in excess of the guideline amount may be unacceptably high.

Table 3.1.--A general overview of the use of trip landings and frequency restrictions by the Pacific Fishery Management Council, by species and year.

Species	Year	Month of first use	Nature of limitation	Limitation at End of Fishing Season (if different)
Widow rockfish	1982	Oct.	75,000 lb/trip	
	1983	Jan.	75,000 lb/trip	1,000 lb/trip
	1984	Jan.	50,000 lb/trip: 1 trip/week[1]	1,000 lb/trip
	1985	Jan.	30,000 lb/trip; 1 trip/week[1]	3,000 lb/trip
	1986	Jan.	30,000 lb/week[4]	3,000 lb/trip
	1987	Jan.	30,000 lb/week[2,4]	5,000 lb/week
	1988	Jan.	30,000 lb/week[2,4]	3,000 lb/trip
	1989	Jan.	30,000 lb/week[2,4]	3,000 lb/trip
Sablefish	1982	Oct.	3,000 lb/trip	
	1983	Jan.	1,000 lb/trip on small fish (<22")	5,000 lb/trip on small fish
	1984	Jan.	5,000 lb/trip on small fish	
	1985	Jan.	5,000 lb/trip on small fish	Maximum of 13% of groundfish landed[6]
	1986	Jan.	5,000 lb/trip on small fish	& 12,000 lb/trip[6]
	1987	Jan.	5,000 lb/trip on small fish[6]	& 6,000 lb/trip[6]
	--	Jan	100 lb/trip on small fish[7]	1,500 lb/trip on small fish[7]
	1988	Jan.	5,000[6](1,500[7]) lb/trip small fish	2,000 lb/trip[6]
	1989	Jan.	5,000[6](1,500[7]) lb/trip small fish	& 1,000 lb or 25% of deepwater complex[6] & 20% of groundfish up to 2,000 lb[7]
Sebastes complex (south of 43°; 42°50' after Feb. 12, 1984; 43°22' after Sep. 1, 1985)	1983	Jan.	40,000 lb/trip	
	1984	Jan.	40,000 lb/trip	
	1985	Jan.	40,000 lb/trip	
	1986	Jan.	40,000 lb/trip	
	1987	Jan.	40,000 lb/trip	
	1988	Jan.	40,000 lb/trip	
	1989	Jan.	40,000 lb/trip	
(north of 43°; 42°50' after Feb. 12, 1984; 43°22' after Sep. 1, 1985)	1983	Jan.	40,000 lb/trip	
	1984	Jan.	40,000 lb/trip	
	1985	Jan.	30,000 lb/trip:1 trip/week[1,3]	20,000 lb/trip[3]
	1986	Jan.	25,000 lb/trip:1 trip/week[3,4]	30,000 lb/trip[3]
	1987	Jan.	25,000 lb/trip:1 trip/week[3,4]	
	1988	Jan.	25,000 lb/trip:1 trip/week[3,4]	
	1989	Jan.	25,000 lb/trip:1 trip/week[3,4]	
Pacific ocean perch	1983	Nov.	5,000 lb or 10% of groundfish/trip in Van. area	
	1984	Jan.		
	1985	Jan.	20% of all groundfish on board	20% of groundfish up to 5,000 lb
	1986	Jan	20% of groundfish up to 10,000 lb[5]	
	1987	Jan	20% of groundfish up to 5,000 lb[5]	
	1988	Jan	20% of groundfish up to 5,000 lb[5]	
	1989	Jan	20% of groundfish up to 5,000 lb[5]	20% of groundfish up to 2,000 lb
Yellowtail rockfish (north of 42°50'; 43°22' after Sep. 1, 1985)	1985	Jan.	10,000 lb/Sebastes-trip[1,3]	5,000 lb/Sebastes-trip[3]
	1986	Jan.	10,000 lb/Sebastes-trip[3]	12,500 lb/Sebastes-trip[3]
	1987	Jan.	10,000 lb/Sebastes-trip[3]	7,500 lb/Sebastes-trip[3]
	1988	Jan.	10,000 lb/Sebastes-trip[3]	
	1989	Jan.	7,500 lb/Sebastes-trip[3]	3,000 lb or 20% of Sebastes landed
Deepwater dover sole complex	1989	Jan.	1,000 lb or 45% of gfish./trip[6]	Only 1 trip > 4,000 lb/week & it < 30,000 lb

[1] Includes option for 1 delivery every 2 weeks at twice the weekly rate.
[2] Only 1 landing per week allowed in excess of 3,000 lb.
[3] Includes option for 1 delivery every 2 weeks at twice the weekly rate, and for 2 deliveries per week at half the weekly allowance.
[4] Vessels whose weekly landings totalled less than 3,000 lb were exempted from trip frequency restrictions.
[5] Landings of less than 1,000 lbs were exempted from the percentage restriction.
[6] Trip limit applied to trawl vessels only.
[7] Trip limit applied to longline vessels only.

If the restricted species is allowed to reach its quota in midseason, there is no easy resolution to the situation. Closing the assemblage fishery will solve the discard mortality problem, but will not allow attainment of harvest targets for the remaining species and may represent a tremendous short-run loss of revenue to fishermen. Simply allowing the restricted species to be discarded allows the revenue from continued harvest of the other species to be realized, but may lead to overfishing and eventual loss of commercial productivity for the restricted species. Fishermen also lose revenue in this scenario, but they lose the revenue more gradually, and from a single species. It has also been argued that if fishermen are allowed to continue fishing on the assemblage, they might as well be allowed to continue landing the restricted species, since trawl-caught fish returned to the sea have a very low survival rate. This would compensate their long-run revenue loss from the restricted species with increased current revenue they would not have received under a landing prohibition. Unfortunately, this approach provides an economic reward for fishermen who catch more of the restricted species than if discard were required. As a consequence, allowing continued landings of the restricted species along with the remainder of the assemblage carries the potential for accelerating its decline. Assuming the Council has placed a high priority on conserving the stock in question, then encouraging catch beyond what would otherwise be a quota or guideline target is not desirable.

With respect to this problem, the object of employing trip limits is to successfully avert the moment of dilemma, through delaying the attainment of the harvest specification in a manner which avoids discard throughout the year. This latter point is crucial. If fishermen are capable of landing the restricted species at or below the trip limit level, without discard, then the harvest objective for the species and its assemblage may be achieved. If, on the other hand, catch rates throughout the year result in a continuous stream of discards, then the imposed trip limit may exchange 120 mt of discarded fish in December for 10 mt of discard, or potentially more, in each month of the year. Thus, imposing a trip limit at a level that allows landings to be made throughout the year, within the quota, will not guarantee a reduction in discard or total mortality, relative to the case of unrestricted landings prior to a quota closure for that species.

The factors that contribute to trip-limit related discard may be classified into three categories: the average rates of coincident catch, the variability in these rates of catch, and the returns available from various fishing strategies.

To illustrate the first issue, if the rate of coincident catch of a restricted species is constant, at say 30% of an assemblage total, but the trip limit is set at 25%, then 17%--one sixth--of the catch of that species must be discarded. If rates of catch are relatively constant, however, a small amount of data gathering will reveal a level at which trip limits may be set in order to eliminate nearly all of the discard problem. Setting a limit at 30% might not extend that species' quota throughout the entire year, but a trip limit imposed on a single species can at most attempt to reduce the incidental catch of the species to a minimum, given that the other species continue to be fished. If a single species limit is not effective in meeting these multiple objectives, it may be necessary to place additional limits on the other species involved.

If fishermen exercise only moderate or little control over species mix and the variability of catch rates is large, or is skewed so that the modal rate of bycatch is greater than the mean, setting the trip limit near the mean will not

guarantee an insignificant amount of discard. Vessels making multiple tows during each trip may, of course, find that a high catch in one tow is balanced by a low catch in the next, but it is still quite possible that many complete trips will involve discard. Some variability in bycatch rates may be correlated with various oceanographic and seasonal factors, and may therefore be reducible, theoretically, through the use of area- or season-specific trip limits.

If the restricted species is significantly more valuable than other components of the assemblage or if the distribution of bycatch rates varies considerably with area or season, setting the trip limit at the mean bycatch rate may not even provide an accurate indicator of total removals .

The degree to which trip limits are successful will also depend on the relative value of assemblage components and the degree to which species of higher value can be targeted. If fishermen exercise some influence over the rate of bycatch and the restricted species has a higher price, fishermen would be expected to try to catch an amount greater than or equal to the trip limit, and discard as necessary. Alternatively, if catch per unit of effort for the most valuable unrestricted species of the assemblage happens to be highest in areas with high bycatch rates for the restricted species, fishermen may find it more profitable to fish there, even if it means spending more time discarding down to the trip limit for the restricted species. These circumstances would produce average mortality greater than the trip limit amount.

Another consideration which complicates the setting of trip limits so that a quota is exhausted at the end of the year is the extent to which fleet capacity and the harvest specification change from year to year. Of these two, capacity is the most problematic. The quota (or harvest guideline) is, of course, known at the beginning of the season, and managers can attempt to adjust previous limits proportionally with any change that has been made in the harvest specification.

The amount of the fleet's combined fishing power that will be directed towards a particular species or assemblage, however, is not easily anticipated. The number of total vessels registered in any of the three coastal states is not a particularly good indicator of even the fishing vessel days spent on the grounds. Within the Council's management area, neither the amount nor the timing of effort directed at particular species or assemblages is likely to be known before or even during the season. Much of this uncertainty stems from the fact that many of the vessels fishing west coast groundfish also participate at various times in other west coast fisheries, such as salmon, crab, shrimp, or tuna, or in the fisheries outside the PFMC's boundaries. The extent to which these vessels rely upon west coast groundfish in any given year will depend upon the relative productivity and profitability of all of the alternatives.

Because the harvesting capacity of the fleet and species' harvest specifications will change from year to year, it is reasonable to expect that trip limits may vary considerably between years and may involve inseason adjustment. Particularly in a management environment where observer data concerning discards are scarce, effective implementation of trip limits requires a certain amount of trial and error, and the ability to respond rather quickly when it becomes apparent that a limit needs to be changed. The ability to invoke or change routine measures in a single meeting, before a point of concern has been reached, is essential if this method of regulation is to be effective. Additionally,

routine future usage of existing trip restrictions, if it is to be effective, may fall outside the range of previous applications.

In response to the complexities involved in setting trip restrictions to achieve the discard and season length objectives, several approaches have been employed by the Council for trawl fisheries. At the simple end of the spectrum, the Sebastes complex south of Coos Bay has, for several years, been subject to a 40,000 lb/trip limit on landings with no restriction on the frequency of landings. North of Coos Bay, Sebastes deliveries have been restricted to one trip per week of 25,000 lb, with the option of landing two trips per week at half the amount, or one trip every two weeks at twice that amount. For widow rockfish, the season in recent years has opened with a limit on the amount that could be landed per week (30,000 lb), with only one trip greater than 3,000 lb allowed during that period. During parts of 1989, both sablefish and yellowtail rockfish landings were subject to a fixed limit per trip or a percentage of their trip assemblage onboard, whichever was greater. Trip limits for Pacific ocean perch have expanded this approach by including an upper poundage limit on the amount that can be landed under the "percentage of catch" condition. In addition, the sablefish fishery has been subject to trip limits on the amount of fish smaller than 22 inches that can be landed.

Each of these applications is apt to have different impacts on the vessels participating in those fisheries. Although a thorough accounting for all of the changes in fleet activity that have accompanied implementation of these varied restrictions is beyond the scope of this document, it is appropriate to review, generally, the kinds of effects these approaches might have on participation.

Theoretically, placing restrictions on the poundage of fish that may be landed per trip imposes a cost that increases with the size of the vessel. In its pure form, this type of restriction encourages an increase in the number of trips. Any vessel whose catching and storage capacities exceed what can be landed with the restriction will experience an increase in marginal cost and a reduced rate of return on the investment their owners have made in vessel capacity. In addition to the likelihood that the effort of large vessels will have to be redirected to other, perhaps less valuable species, they may also expend time and labor resources estimating and discarding the control species.

If a vessel faces these problems of excess capacity for enough important species, they may be forced to leave the fishery. Alternatively vessels might increase their discards of the controlled species even more as they attempt to gather more of the few remaining unmanaged species. Vessels are likely to have to diversify their fishing activities to a greater extent with a trip limit. Placing landings restrictions on species that have size-differentiated pricing may promote highgrading, particularly in the absence of observers. Processors may be forced to develop more arrangements with more vessels in order to meet their needs. Finally, it should be noted that the trawl fishery is most familiar with this type of limit, as they have been imposed by processors, for some species, even before being instituted in the form of Council management measures.

Placing restrictions only on the frequency of landings that can be made generally has the opposite effect. In its pure form, this restriction encourages the enlargement of vessel capacity so that the limited landings that are allowed will be as large as possible. This provides an advantage to large vessels which have been designed for that mode of operation. Trip frequency limits placed on enough key species could easily drive boats with smaller hold capacities out of the

fishery, because they would be unable to generate enough profit from their reduced numbers of small-volume trips.

Trip landing limits may also be implemented in the form of percentages of total or assemblage catch. When implemented relative to an assemblage, they may be used to acknowledge a level of bycatch in the assemblage fishery, and to the extent possible, encourage vessels to avoid targeting on the control species. By replacing an assemblage amount with the total poundage of all species onboard, this approach may also be used as a means of slowing the harvest of a more isolated species or one occurring in several different assemblages. The use of percentages, as opposed to absolute limits, is more neutral in its redistribution of landings between large and small vessels, when compared to the open fishery solution. Accordingly, vessels with large holding capacities are able to land a proportionally similar amount to smaller boats. If a vessel's mode of operation is different from the norm, however, conforming to an average percentage may force a significant change in activity. With either of the landing limits, processors may mandate that vessels fill their limit of the species--even if they did not previously fish for it-- in order to secure adequate supplies for the processors' customers.

Small day boats may be hampered by a strict percentage landing limit, because they often make fewer numbers of tows. Thus when they happen to exceed the percentage on a single tow, they will be more likely to have to throw fish overboard, even if the amount of fish is small. This is part of the rationale for establishing an amount below which the percentage is unimportant. With POP, for example, any landing of less than 1,000 lb is acceptable, regardless of percentage, whereas landings above 1,000 lb--and below the upper limit--can constitute no more than 20% of the total catch on board.

At one time or another the Council has chosen to manage several groundfish fisheries using the concept of a weekly limit. As it has been practiced most commonly by the Council, weekly limits have offered vessels the flexibility of landing half the amount twice per week or twice the amount once every two weeks. This flexibility allows vessel operators an opportunity to scale the size of their deliveries to their vessel capacities. Vessels at the ends of the size spectrum are still subject to reduced profitability. Vessels capable of landing more than the two-week total in a single trip will forfeit some of their extra capacity, while a vessel too small to land the half-week amount in a single trip will lose some of what it could have landed through making more frequent trips. One of the stipulations that has accompanied this approach is that vessels must declare beforehand what schedule they will deliver on. Thus the system does not offer complete flexibility in allowing fishermen to work around weather or mechanical problems.

The situation for the nontrawl fishery is somewhat different, although there are several similarities, especially with respect to sablefish. Many longline fishermen have indicated their preference for allowing unrestricted fishing during a short season rather than implementing restrictions to extend the season. This has resulted in the nontrawl sablefish quota being reached earlier each year, causing closure of the fishery. However, bycatch of sablefish in other longline fisheries occurs after the fishery closes. Although the mortality of sablefish taken with nontrawl gears is believed to be less than associated with trawl gear, some mortality certainly occurs. To further minimize this, small incidental catch allowances have been used after the main sablefish fishery has been closed. Certain small vessels have used this bycatch allowance to continue

their directed sablefish fishing operations, which is consistent with the Council's goal of making fresh fish available over as much of the year as possible. But the primary intention is to avoid incidental mortality after the harvest limit has been reached.

3.4.3 Effects on Markets

If a species which has a numerical target harvest level is closed to fishing because the number is interpreted as an absolute limit, the total absence of fresh groundfish on the wholesale market may result in the complete diversion of marketing channels to other suppliers. Once diverted, these channels are often difficult to re-establish. When the fishery is reopened, the result may be reduced demand and prices until the wholesale trading patterns can be re-established from west coast suppliers of the species. However, if allowing harvest above a guideline leads to reduced acceptable harvests in subsequent years, it is not clear that sustaining supplies of fish in the current year will have a net positive impact on the maintenance of marketing channels over a longer time frame.

3.4.4 Economic Benefit from Flexibility

There is an opportunity to increase benefits by providing the flexibility to select different species for closer management attention as needed and by establishing a mechanism to establish or adjust management measures to achieve specified social and economic objectives (to extend the season and to reduce discards). If potential or probable economic benefits from controlling harvest rates or amounts were identified for a species, under Alternatives 2, 3, or 4, the Council could establish numerical targets (either as OYs, harvest guidelines or quotas) as needed without the delays entailed in development and implementation of an FMP amendment. Additionally, as it might become apparent that species were in need of more or less rigid targets, species could be moved between categories of species regulated by harvest guidelines and quotas. (Under Alternative 3 this effect is achieved through Council statements as to whether OYs are to be treated as quotas or harvest guidelines.) In this way, species that were beginning to experience significant fishing pressure could be gradually introduced to the management regime in such a manner that imposition of a strict quota could be delayed or perhaps avoided.

In addition to greater flexibility in classifying harvest specifications, Alternatives 2 and 3 would provide greater flexibility for imposing or adjusting routine measures throughout the season, which could improve the Council's ability to meet the goals and objectives of the FMP.

3.4.5 Social Impacts

Several social benefits may result from adoption of Alternatives 2, 3, or 4. One is related to the discards which occur when numerical targets must be interpreted as rigid quotas, and another is related to increased public understanding of Council intent and opportunity to comment on guidelines and quotas.

The first is associated with members of the industry having to throw valuable fish overboard after a quota has been reached, knowing that most if not all of those caught have been killed. Fishermen complain, often bitterly, about having to waste a resource in order to conserve it. It is often difficult for them to understand how throwing dead fish overboard is going to preserve future fishing

opportunities. Management measures which force such discards decrease the Council's credibility and make it more difficult to obtain the acceptance of other management measures. When new management measures are proposed, the counter arguments of many will often turn to the amount of waste the Council is allowing to occur through discards. It should be noted that this general argument also applies to the required discard of species that are normally prohibited in the groundfish fishery, such as halibut and salmon. Rejection of the status quo alternative will not, by itself, solve the prohibited species problem, nor will it entirely eliminate the discard of some species that must be managed with quotas. To the extent that quota management can be reduced or forestalled through the use of harvest guidelines, trip limits, and other measures, the other alternatives will ease this problem.

Second, support for Alternative 2 has been expressed by fishermen who appreciate the terms "quota" and "harvest guideline." They feel that this clear expression at the beginning of the year improves their understanding of the Council's intention and provides information for planning the season's fishing strategies. Under Alternative 3 the same effects could be achieved if the Council clearly stated which OYs were treated as quotas and which were treated as harvest guidelines. Currently ABCs for species such as yellowtail rockfish and Sebastes are used as de facto harvest guidelines for which the Council manages under the points of concern mechanism. These alternatives would make the Council's use of harvest guidelines explicit and provide better opportunity for public comment, and would identify the management objectives for which management measures will be established and/or adjusted.

Also, to the extent that the provisions of Alternatives 2, 3, or 4 would promote longer seasons for groundfish, communities relying on fisheries-related income might be less prone to seasonal "boom town" economic cycles, and the well-documented social problems that accompany them. Given the existing fishing power of the groundfish fleet, however, it may be unrealistic to expect that any proposal which does not include significant limitations on fishery participation will be capable of producing a year-round fishery for groundfish. Since coastal communities already face a concentrated peak of activity in the tourism industry during the summer, any extension of the fishing season to other months may improve the situation. If a fishery lasting at least 8-9 months is not achievable, however, it may be preferable to rely on a seasonal influx of workers for a peak summer season without an expectation of providing the community infrastructure necessary to support those workers throughout the remainder of the year, when many may be without work for 3-4 months.

3.4.6 Impact on Consumers

Implementation of Alternatives 2, 3 and 4, by allowing numerical targets to be used as guidelines rather than quotas, and by establishing a more flexible, responsive management regime may benefit consumers by making small quantities of high quality fresh West Coast seafood products available at times of the year when they would otherwise be completely absent from the markets, or present only in frozen form. These benefits will occur only if consumers differentiate between and prefer fresh west coast fish to fresh fish from other sources or frozen fish, at the prices that would prevail for these products in the marketplace.

Although the length of seasons has socio-economic implications in addition to fish quality, such as community employment fluctuations, from the standpoint of

consumers, quality is the only major factor of interest. And, though it may seem obvious in discussing impacts on consumers, "improvements" in fish quality are only important to the extent that consumers recognize them and are willing to pay more for them. It may be useful, in this context, to envision fish quality as arising not from the fish itself, but from the consumer's perception of the fish--perception which is influenced by his own tastes and preferences. If a consumer cannot tell the difference between a meal containing a fish that was frozen for three months and one prepared using a freshly caught fish of the same species, then he will not generally be willing to pay more for the latter.

Alternatively, a consumer may receive greater satisfaction from eating fresh fish than from eating frozen, but not feel that the difference in pleasure is adequate to justify the additional expenditure required to obtain the fresh product, given the constraints of his budget and alternative goods that may be purchased. If all consumers were accurately described by either of these characterizations, there would be no benefit to consumers of providing what someone in the industry perceived as being a higher quality product.

Clearly, however, some consumers derive greater satisfaction from and are willing to pay a premium for fresh fish. But without considerable research beyond the limits of this review, it should not be assumed that all consumers will benefit from a greater availability of fresh fish throughout the year. Although it is most likely that consumers, in general, will be better off, this is not a necessary outcome.

3.4.7 Administrative, Enforcement and Information Costs and Benefits

Adoption of Alternative 2, 3, or 4 should reduce management and administrative costs by eliminating the need for plan amendments to change the list of species for which numerical harvest limits are established and the management measures to achieve them. However, for species that would otherwise be managed with a binding constraint, the use of a harvest guideline may increase the management attention required after the goal amount has been reached. Council and NOAA Fisheries staff time would be reduced, freeing this labor for other management needs and services. One goal of these alternatives is to establish a Council procedure that fulfills the requirements of the Administrative Procedures Act, including administrative record, so that the Secretary does not have to duplicate the entire procedure prior to the measures becoming effective. Alternative 2, 3, or 4 would maintain such an open process with prior public notice and comment opportunity. Alternatives 2 and 3 anticipate the Council making routine changes to management measures in a single meeting, with implementation by Federal Register notice a few days later. Monies saved by streamlining routine changes to management measures would likely be used to provide additional staff time for other issues. There would be no change with regard to enforcement and reporting costs.

3.4.8 Benefit-Cost Conclusion

None of the alternatives is expected to produce a significant increase in the mortality of any species. However, under Alternatives 2, 3, and 4 fishermen may be allowed to retain and sell a larger percentage of their catch than they would if those species were managed strictly by quotas. This would only occur if landings were not adequately controlled to prevent premature attainment of the specified allowable harvest level. Any increase in ex-vessel revenues would be equivalent to the amount of fish that would otherwise have been discarded, plus

any additional fish that fishermen are allowed and motivated to catch under the restrictions governing landings following attainment of the guideline amount.

In addition, Alternatives 2, 3, or 4 could assist in maintaining a market presence for west coast groundfish products, improving availability of quality products to the consumer and increasing the prices received by fishermen. There may be some costs associated with increased mortality on a stock related to the use of harvest guidelines. However, the small amounts by which optimum harvest levels would be exceeded (if they are exceeded at all), and the opportunity for recovery if biomass declines slightly below optimum size minimize the risk involved with use of a harvest guideline rather than a quota. For some species (yellowtail rockfish and Sebastes complex) ABCs are already used as de facto harvest guidelines under the point of concern mechanism.

Alternatives 2 and 3 would provide benefits in the form of streamlined procedures and potentially greater effectiveness for implementing routine management measures to enhance the fishery's attainment of the goals and objectives of the FMP. The Council would be allowed to take action to achieve potential social or economic benefits as soon as the value of such action becomes apparent, rather than having to wait to impose a quota or harvest guideline for conservation reasons under the points of concern framework.

Adoption of Alternative 2 should result in improved public understanding of the Council's annual fishery management program from a clearer statement of whether any given species is managed by harvest guideline or quota. This benefit might also accrue under Alternatives 3 or 4 if adequate steps were taken to clarify to the industry the type of management strategy being pursued.

A major benefit of Alternatives 2, 3, or 4 would be increased administrative efficiency in making adjustments to protect species for which individual management was previously not needed, in reducing the need for plan amendments, and in reducing redundant procedures followed by the Council and Secretary. These will all decrease administrative costs. While management measures would be the same under the plan amendment process, they would be less expensive to implement.

3.4.9 Regulatory Flexibility

While large numbers of small entities may be affected (described in section 1.3) the discussion of benefits and costs demonstrates no significant economic impacts on small entities are expected.

4.0 ISSUE 3: ESTABLISH A PROCEDURE FOR MAKING ADJUSTMENTS TO FISHING RESTRICTIONS (SEASONS, QUOTAS, GEAR RESTRICTIONS, ETC.) FOR OTHER THAN BIOLOGICAL CONSERVATION REASONS (includes and expands the gear regulation framework of Amendment 2).

Amendment 4 References: List of Management Measures - Section 6.1
General Procedures for Establishing and Adjusting Management Measures - Section 6.2
Socio-Economic Framework - Section 6.2.3

4.1 Description of and Need for the Action

The FMP contains no mechanism for implementing inseason management measures, even if desired, unless biological stress has occurred or is anticipated. Issue 2 presents alternatives that allow certain routine measures to be invoked or changed within or between seasons, in a single meeting on the basis of socio-economic or conservation rationale. Issue 3 (this issue) establishes a more comprehensive authority to develop or modify management measures for social or economic reasons.

Action taken under this socio-economic framework would require the Council to announce its intention to consider a management change, followed by at least two Council meetings, analysis of impacts prior to implementation of any measures, and opportunities for public involvement at several stages. Issue 3 is an expansion of the gear modification framework implemented by Amendment 2. That framework was limited to making changes to gear regulations (such as trawl mesh size, type of nets, etc.) to achieve specific benefits, whereas Issue 3 proposes establishment of any type of management measure (seasons, area closures, etc.) to better achieve the social and/or economic objectives of the FMP. Implementation of measures through this framework would also provide a means by which the Council could qualify a measure for routine status for future use.

Allocation is an example of the need for this expanded authority. The Council currently lacks a process for making allocation decisions which are not based upon conservation issues. Allocation of sablefish has occurred under the point of concern mechanism, but given the uncertainties surrounding the condition of the sablefish resource, basing this largely socio-economic decision upon a finding of biological stress is tenuous. Although National Standard 5 states that economic allocation cannot stand as the sole basis for instituting a management measure, economic efficiency and social considerations can serve as the principal reasons for affecting a change.

The MFCMA national standards dictate that the fishery resources of the EEZ be managed to generate the "maximum benefit to the nation." By themselves, however, fish are not benefits, and thus the mandate of the MFCMA goes beyond simply maximizing the annual physical yield from a fishery. In this context, it may be useful to envision benefits not as qualitative attributes of objects, but as characteristics arising from relationships, from interactions. The most commonly thought of benefits derived from fish are related to their consumptive uses by man--although other values relating to their role in a marine ecosystem or even man's appreciation of their existence are also legitimate concerns, albeit less quantifiable ones. Put somewhat differently, a fish has no intrinsic "market" value; one emerges only from the interaction of industry supply with consumer demand, which is in turn derived from the preferences of consumers for the spectrum of obtainable products and their available budget. Consumers may prefer

to have increased availability of fresh fish throughout the year rather than having the predominantly frozen product provided by a temporally concentrated fishery. Even with these underlying preferences, however, consumers may choose to purchase frozen fish if the price is low enough, relative to those of fresh fish and other products.

Consumers are not the only beneficiaries of optimal fishery management. Producers of fishery products--fishermen and processors--also benefit financially from a management regime that is premised upon making the allowable catch of the fishery resources available for their highest and best consumptive uses, while striving to facilitate the most cost-effective means of supplying those uses.

Because timing is such an important part of fishery product quality--at all levels of production--and because the users and uses of fish are varied, matters of when, where, and how a given amount of fish is harvested can have a significant impact upon the eventual amount of benefits produced by it. To ignore this fact in the determination of OY, and the management measures appropriate for achieving it, is contrary to the spirit of the MFCMA. Issue 3 is intended to provide the Council and the Secretary with the authority to implement alternative management practices, following appropriate review, when they are expected to increase fishery-related benefits. The review process will focus on analysis of the social and economic implications of proposed actions, although previous analysis of similar issues may be relied upon the basis for findings.

4.2 The Alternatives

4.2.1 Alternative 1: Status quo (Do nothing) The gear framework provides the only authority for imposing management measures for social or economic reasons.

4.2.2 Alternative 2 (Preferred): Establish a procedure for making adjustments to fishing restrictions (seasons, quotas, gear restrictions, etc.) for other than biological conservation reasons (includes and expands the gear regulation framework of amendment 2). Examples of management objectives for this procedure include but are not limited to increasing economic yields, through reducing discards, improving fish quality or marketing potential, and reducing costs resulting from gear conflicts. Measures adopted under this framework could be declared as "routine", under Alternatives 2 or 3 of Issue 2, if the Council anticipated periodic adjustment of measure specifications. Prior to initial implementation of routine measures, the Council would analyze the need for the measures, their impacts and the rationale for their use. Once a management measure has gone through the two meeting process, has been classified as routine, and has been implemented, it may be modified thereafter in one meeting only if (1) the modification is proposed for the same purpose as the original measure, and (2) the impacts of the modification are within the scope of the impacts analyzed during the two step process.

Some examples of the types of measures that might be considered under the provisions of this framework include:

1. Allocation of the sablefish resource, including trip limits on the deepwater assemblage. Allocation decisions, however, would never be considered routine.
2. Imposition of a different fishing season.

4.3 Biological and Physical Impacts

4.3.1 Alternative 1

No significant biological impacts are anticipated under maintenance of the status quo.

4.3.2 Alternative 2

The provisions of Alternative 2 specify that action will not be imposed under this framework if it is expected to cause a point of concern. Some circumstances may exist where achievement of conservation objectives would be made easier if measures were taken under this framework to relieve economic pressure on a species.

4.4 Social and Economic Impacts

4.4.1 Fishery Costs and Benefits

Since our ability to evaluate the economic impacts of various allocation schemes is still in the developmental stage, it is appropriate that a flexible allocation mechanism be available. Allocating quota under the provisions of this amendment may be more cumbersome than with use of the points of concern mechanism, but the scope of potential actions will be enlarged to include those based primarily on socio-economic rationale. The proposed framework would openly channel issues of this type through a more extensive review process, rather than encouraging them to be thinly veiled as matters of conservation importance under the points of concern provisions, considered as plan amendments, or abandoned altogether. Since economic considerations are likely to have a greater bearing than biological ones on who should harvest what amount of a quota, Alternative 2 provides a more sensible forum for discussion of the relevant allocation issues than does the points of concern mechanism. Because factors that affect the economic performance of the fishery are continually changing, a plan that allows allocation to be adjusted within a frameworked process is superior to one which requires changes to be accomplished through continual plan amendments. The framework approach reduces demands on managerial resources and also facilitates the designation of "routine" measures, which may subsequently be implemented or adjusted in a single meeting for socio-economic reasons.

Time/area closures may provide desirable means for controlling incidental catch of some species in a way that allows an extended season for the target species. Logbook data from the deepwater Dover sole fisheries, for example, has indicated considerable variability in the percentage of sablefish caught. More detailed examination of this type of information may suggest that implementation of some time/area closures would facilitate a longer fishery on the deepwater complex, while reducing that fishery's need for sablefish as a bycatch. Under Alternative 2, implementation of time/area closures would not require a biological rationale or a plan amendment. As discussed above, a framework affords greater ease in responding to changing fishery conditions, as well as reduced administrative workload, by comparison to use of plan amendments.

Alternative 2 allows for the implementation of numerous other policies which would have primarily economic rather than biological rationale. There are many ways in which economic or social rationale may serve as the basis for meeting the charge of providing the maximum benefits to the nation. Extension of the fishing season for many species may serve several purposes, as discussed in Issue 2. When large quantities of fish are harvested rapidly, domestic markets cannot always handle the product in a fresh form. Storage of the residual fish adds to the cost of supply and usually results in lower prices (and perceived quality) for frozen products in consumer markets, thus lowering the profitability of the fishery. Additionally, anecdotal evidence suggests that when West Coast suppliers are unable to provide fresh fish to clients over long periods, other sources of supply will be sought. This may lead to the permanent loss in demand from some regional markets.

There may also be societal advantages associated with moderating excessively large seasonal swings in income and employment opportunities in coastal communities. Additionally, where species groups such as the deep-water Dover sole complex contain individual species that are experiencing differing degrees of biological concern under existing fisheries, it may be possible to use mechanisms such as trip restrictions to promote a fuller utilization of the complex, while reducing discards. Mesh size modifications that relieve bycatch problems or enhance economic yields either through increases in physical yield or in price (due to the size composition of catch) are also not likely to be justifiable strictly on grounds of conservation. (However, the authority to modify mesh restrictions already exists in the FMP, although the definition of benefits to be achieved is too narrow to address several FMP objectives.)

In areas where the FMP is currently silent, this framework could be used to invoke fishing restrictions consistent with those of the states. Gear conflicts may not produce significant biological problems, but may add to both the cost of executing the fisheries and the level of frustration experienced by fishery participants. In this context, it may be useful to consider gear conflicts in a broader view, including preemption of a gear type due to premature attainment of a quota by another gear type and animosity arising from acute competition for a limited resource. Beyond the direct economic consequences of such problems, it should be noted that successful management of the fisheries requires the cooperation of all participants. Failure to implement measures that reduce gear conflicts and conflicts between gear user groups is only likely to close off avenues of discussion for solving other fisheries problems. Successful implementation of restrictions such as these may require experimentation, feedback and revision. This process is more easily facilitated through a framework than with a series of plan amendments.

If the Council's rationale for action outside the plan amendment process is limited to questions of stock conservation, it may have difficulty responding to legitimate concerns of fisheries participants. While a successful commercial fishery requires fish, it also requires consumer demand and a fishing industry capable of supplying that demand. Changing technologies, consumer preferences, and international trade conditions imply that responsible management of the fishery must go beyond ensuring continued stock health. If the most benefit is to be obtained from our limited fish resources, it is important that the Council convey to the fishing industry and consumers that their cooperation in the management process will be translated into policies that promote the best use of those fish. The opportunity for public involvement is, if anything, enhanced through the establishment of a more open consideration of matters essentially

economic in nature, and their appropriate removal from the single-meeting point-of-concern process. Having provided an opportunity for more review and public input on such measures, Alternative 2 would also provide a mechanism for designating "routine" management measures under Alternatives 2 or 3 of Issue 2.

Concern has been expressed regarding the establishment and use of "routine" measures. The Council has expressed its preference that any measure (except allocation) could be established as routine, allowing adjustments at a single meeting. However, certain types of management measures may have substantial social or economic impacts on either the industry as a whole or particular user groups. Alternative 2 would require that each type of management measure be evaluated individually for each species, and should designated as routine on a species by species basis rather than as applicable to all species. The rationale for use of the measures must be the same each time, and each modification must result in impacts within the range anticipated and evaluated when the measure was classified as routine. The analysis of impacts need not be repeated when the measure is subsequently modified if the Council determines that they do not differ substantially from those of the original measure.

4.4.2 Impacts on Consumers

In general, it will be easier to institute measures that provide increased benefits to consumers under Alternative 2 than would be the case under the status quo.

4.4.3 Administrative, Enforcement and Information Costs and Benefits

Implementing similar regulatory provisions under the Alternative 2 framework is likely to place a lesser administrative burden on resource managers than under the plan amendment process. This is particularly true if the measures are ones which are likely to require further review and adjustment following initial implementation. The research and analysis that would form the basis for decisions is not expected to be different under either alternative. The provisions of Alternative 2 do not jeopardize opportunities for the industry or the public to participate in the review process, whether they are exercised between or within seasons. Once a management measure is established and generally accepted by the public, a streamlined process to periodically fine tune the measure is likely to be viewed as responsive and responsible government. Alternative 2 requires comprehensive evaluation of impacts prior to single meeting modification. This may result in an increase in the administrative burden of analyzing impacts prior to taking action. Because economic impacts are often difficult to anticipate and evaluate, certain adjustments to management measures might be disallowed, resulting in additional meetings and potential loss or delay of economic benefits.

4.4.4 Benefit-Cost Conclusion

There are several anticipated benefits associated with the implementation of a framework for addressing socio-economic concerns. Perhaps foremost among these is an improved ability to institute policies in a timely manner that are justified on their ability to extract the greatest public benefit from the limited fisheries resources available. The framework would provide a rationale for instituting allocation measures, establishing trip restrictions and rules for reducing gear conflict, and other measures which would serve to increase the economic benefits derived from the groundfish fishery, without the need to

develop a plan amendment. Additionally, the framework would provide the basis for greater public involvement in discussion of these important economic issues, which could promote increased responsiveness of the Council to public concerns and improved relations between the Council and the public.

A framework procedure would provide a much greater Council ability to respond to the changing needs of the fishery than the current amendment process. Also, since the modeling of many economic aspects of the fishery is still very much in the developmental stages, the framework process, as opposed to the amendment cycle, provides the Council with a better means of incorporating into regulations the most current understanding of fishery operations and market conditions. Although prospective regulatory changes would continue to receive thorough analysis and review, staff time devoted to proposal development would be less under the socio-economic framework than that needed to address similar problems through the amendment process. The proposed framework alternative contains safeguards to insure that measures would not be adopted using a socio-economic rationale that would be expected to precipitate a biological point of concern.

4.4.5 Regulatory Flexibility

While large numbers of small entities may be affected (described in section 1.3) the discussion of benefits and costs demonstrates no significant economic impacts on small entities are expected.

5.0 ISSUE 4: REVISE THE POINT OF CONCERN PROVISION BY ELIMINATING THE REQUIREMENT TO DECLARE BIOLOGICAL STRESS OR THE LIKELIHOOD THEREOF

Amendment 4 References: Point of Concern - 6.2.3

5.1 Description of and Need for the Action

The FMP requires that the Groundfish Management Team (GMT) make a finding of biological stress or the likelihood of stress on a species or species complex prior to the implementation of trip limits or other fishing restrictions under the points of concern mechanism. However, there is no definition of biological stress in the FMP, and the definition in the regulations is the same as the definition for points of concern in the FMP (i.e., an ABC is likely to be reached prior to the end of the year, etc.). The GMT has had difficulty defining biological stress and in determining when it has occurred or is likely to occur.

5.2 The Alternatives

5.2.1 Alternative 1: Do nothing (status quo). A declaration of biological stress is required in order to impose management measures inseason.

5.2.2 Alternative 2 (Preferred): Revise the point of concern provision by eliminating the requirement to document biological stress or the likelihood thereof before taking management actions.

5.3 Biological and Physical Impacts

5.3.1 Alternative 1

Under current management conditions it is difficult to identify when a stock has deteriorated to the point where it can be considered to be stressed. The eventual determination of overfishing specifications for species, in accordance with the 602 guidelines, may clarify this issue somewhat, but the Council may still have difficulty justifying action taken in anticipation of the occurrence of overfishing. Whether overfishing levels are defined in terms of biomass or exploitation rate, there will be comparatively little inseason basis for making a determination that a critical point has been reached.

5.3.2 Alternative 2

It is certainly preferable that in all situations where necessary and possible, ABCs and harvest level specifications be changed before, rather than during the season, to provide the industry ample opportunity to anticipate fishing opportunities. If it is adopted, Issue 2 would enhance the Council's ability to make changes between seasons. Even with this additional authority, however, circumstances may arise inseason which suggest immediate action. The Council's ability to respond quickly to biological changes that merit inseason attention is an important first line of defense against the threat of unanticipated stock decline. This ability would be improved by removal of the need to document "biological stress" in favor of the point of concern mechanism, and the likelihood that the ABC will be taken before the end of the year. The establishment of overfishing levels, which will be required within 18 months, does not eliminate the desirability of allowing the Council greater freedom to act before a condition of stress or overfishing has actually occurred.

If the socio-economic framework is approved, the point-of-concern mechanism would be employed less frequently than is the case currently. This framework would allow action to be taken by the Council in one or two meetings, depending on the urgency of the situation.

5.4 Social and Economic Impacts

5.4.1 Fishery costs and benefits

The benefits which society receives from fisheries activities are obviously dependent upon the continued health of the fish resource. By providing a mechanism through which the Council has broader authority to protect the resource, the opportunity to extract the greatest long-run benefits from the resource is more likely to be preserved.

5.4.2 Impacts on Consumers

To the extent that protection of the long-term health of the stocks is improved, consumers are likely to benefit from greater availability of West Coast species.

5.4.3 Administrative, Enforcement and Information Costs and Benefits

Less staff time will be necessary to document a "point of concern" than is required for a determination of "biological stress". This greater ease, however, may mean that more situations are assessed for possible change during the season than is currently the case. However, if the expanded framework for non-biological actions is adopted, reliance on the point of concern framework is likely to be greatly reduced.

5.4.3 Benefit-Cost Conclusion

Alternative 2 enhances the Council's ability to act quickly to maintain stocks at levels above those where commercial viability of the species is severely threatened. The status quo relies upon the need to document that a species has reached a condition of "biological stress" before action can be taken. Because surveys are not conducted annually, the inability to adequately document stress may lead to delays in the implementation of conservation measures. Even if stress can be identified accurately in a timely manner, effective resource management under the status quo is hampered by the need for this stressed condition to have already been reached for inseason action to be justified.

The point of concern framework has been used to address a variety of issues in the past because it was the only mechanism in the FMP through which harvest could be restricted, short of closing the fishery. Adoption of the routine management measures and the socio-economic framework in Issues 2 and 3 will allow the point of concern to return to its intended purpose of use in circumstances where there is concern over stock protection. Alternative 2 would provide the Council with an improved ability to adopt measures in anticipation of a serious problem in a stock's health, rather than having to wait until a crisis has arrived before action can be taken. Demands placed on staff resources are expected to be less, due to elimination of the need to document "biological stress", although the broader definition of authority under Alternative 2 could result in more potential applications being considered in detail than would otherwise have been the case.

5.4.4 Regulatory Flexibility

While large numbers of small entities may be affected (described in section 1.3) the discussion of benefits and costs demonstrates no significant economic impacts on small entities are expected.

6.0 ISSUE 5: APPORTIONMENT OF SPECIFIED HARVEST LEVELS (HARVEST GUIDELINES AND QUOTAS) AMONG DAH, DAP, JVP, RESERVE AND TALFF

Amendment 4 Reference: Establishing and Adjusting Apportionments (including the Reserve) - Section 5.7
Annual Procedure - Section 5.8
Inseason Procedure - Section 5.9.3

6.1 Description of and Need for the Action

The FMP states that DAH, DAP, JVP, the reserve and TALFF are set at the beginning of the year and may be adjusted only after July 1. There is no provision to reassess the needs of the domestic industry at other times. The FMP also states that the reserve set aside at the beginning of the year will equal 20% of each species' numerical OY for which a "total allowable level of foreign fishing," or TALFF is assigned. The reserve was devised to provide a buffer in case of unanticipated expansion of the domestic industry (both harvesting and processing) within the year, to insure that foreign fishing activity did not actually reduce the amount that was caught and/or processed by domestic fishermen. With respect to the timing of reapportionments and release of the reserve, it is possible that a portion of a numerical OY could go unharvested due to the July 1 limitation. With respect to the amount of the reserve, two potential problems result from the current arrangement. First, the reserve currently applies only if TALFF is designated. However, even if TALFF is 0, the processor preference provision of the MFCMA provides a rationale for maintaining a buffer between the fully domestic (DAP) fishery and a joint venture (JVP) fishery on the species. Clearly, foreign processing should not reduce the amount of fish that is actually processed by domestic firms. However, if TALFF is quite small, it may not always make sense to have a reserve that is a full 20% of OY. The problem presented by this requirement becomes apparent when the estimate for total domestic annual harvest (DAH) equals or exceeds 80% of OY. In such cases, the current 20% reserve requirement precludes any foreign fishing until well into the season, often mid-summer, when the Council determines that the reserve can be released.

It should be noted that if the Council adopts an alternative under Issue 3 that replaces OYs with quotas or harvest guidelines, the references to OY in this issue would be adjusted accordingly.

6.2 The Alternatives

6.2.1 Alternative 1: Do nothing (status quo) Adjustment of apportionments (DAH, DAP, JVP, Reserve and TALFF) will be made once each year, and only after July 1. The reserve will equal 20% of the OY/harvest guideline/quota and is set only for species with TALFF. If DAH exceeds 80% of the OY/harvest guideline/quota, TALFF would not be released until sometime during the season. Likewise, a portion of JVP might be withheld pending reserve release. No reserve would exist to buffer DAP from JVP if no TALFF was assigned.

6.2.2 Alternative 2: A reserve will be set aside at the beginning of the year for any species with a JVP or TALFF. The reserve will equal 20 percent of the OY/harvest guideline/quota for a species unless DAH is greater than 80 percent of the OY/harvest guideline/quota. In that case, the reserve will be the one half of the difference between the OY/harvest guideline/quota and DAH. When DAP is greater than 80 percent of the OY/harvest

guideline/quota, the reserve will be half the difference between the OY/ harvest guideline/quota and DAP. When estimates for JVP or TALFF are less than 1,000 mt or 5% of OY/harvest guideline/quota, they may be rounded to zero. Adjustments to apportionments, including release of the reserve to DAP, JVP, or TALFF, may be made at any time during the year.

6.2.3 Alternative 3 (Preferred): A reserve will be set aside at the beginning of the year for any species with a JVP or TALFF. The reserve will equal 20 percent of the quota or harvest guideline for a species unless DAP is greater than 80 percent of the harvest guideline or quota. In that case, the reserve will be the difference between the OY/harvest guideline/quota and DAP. Adjustments to apportionments, including release of the reserve to DAH (either DAP or JVP) or TALFF, may be made at any time during the year.

6.3 Biological and Physical Impacts

6.3.1 Alternative 1

The intention of the reserve is to allow unanticipated increases in domestic harvest during the season by withholding 20 percent of the harvest specification. It also acts as a buffer to ensure that the total harvest does not exceed the harvest specification. Under the status quo alternative, there is no reserve to act as a buffer between DAP and JVP when no TALFF is assigned, there may be a higher than necessary risk that an OY/harvest guideline/ quota) will be exceeded.

6.3.2 Alternative 2

This alternative would increase the safeguards that an OY/harvest guideline/quota would not be exceeded when DAP and JVP fisheries are ongoing and no TALFF has been assigned. The reserve under this alternative would be slightly smaller in circumstances where DAP constitutes 80% or more of the OY/harvest guideline/ quota. The reserve could be released at any time during the year under the proposed procedures.

6.3.3 Alternative 3

Under this alternative a reserve of up to 20 percent is maintained when either JVP or TALFF are anticipated during the year. The reserve will be 20 percent until DAP exceeds 80 percent of the specified OY/harvest guideline/quota, at which point the reserve will be the difference between the harvest specification and DAP (i.e., OY/harvest guideline/quota - DAP = reserve). Although the likelihood of exceeding an OY/harvest guideline/quota may not be significantly different between any of these alternatives, Alternative 3 affords the highest level of protection. However, because the reserve may be released at any time, this slight advantage may be negated.

6.4 Social and Economic Impacts

6.4.1 Fishery Costs and Benefits

The principal rationale for setting aside reserves is to ensure that domestic participants in a fishery do not have their actual participation reduced because of the activity of a foreign counterpart in that fishery. A reserve acts as protection for domestic interests against two types of errors. The first is that

managers may not always be able to shut down foreign operations so that they do not exceed their apportionment. If this excess occurred before the OY was reached, the domestic fishery would lose catch if OY were strictly adhered to. The other type of error is that managers may not always accurately estimate the amount of catch which domestic operations will be capable of and interested in taking. If managers underestimate the level at which DAP should be set, even if foreign harvest effectively restricted to be precisely the amount of the TALFF apportionment, domestic operations will be unable to take as much of the OY/harvest guideline/quota as they were entitled. The status quo, by establishing a reserve whenever TALFF is anticipated, prevents the foreign directed fishery from having such an impact. However, there is no such protection when DAP and JVP share the entire harvest specification.

Both Alternatives 2 and 3 would modify existing procedures to establish a reserve whenever a JVP apportionment was made or anticipated, regardless of whether TALFF was also assigned. By extending the coverage of the reserve to these situations, domestic processors would be extended the same sort of protection that has been afforded domestic fishing vessels in the past. Under both of these alternatives, if DAP were less than 80%, and the remainder were entirely JVP, a 20% reserve would be set aside, just as if TALFF had been assigned under the current plan. Although this extends protection to domestic processors, domestic catcher boats in the JV fleet may be more restricted. Extending the basis for setting aside a reserve is unlikely to have widespread or significant impacts because of the limited number of fisheries that would be affected. In 1989, Pacific whiting was the only species for which there was a directed JVP fishery.

It is important to note that under the status quo, if TALFF is greater than 0 and DAH is greater than 80%, the reserve is set at a fixed value of 20%. If DAP were apportioned 90% and TALFF were given 10%, DAP would be limited to only 80% of the OY/harvest guideline/quota until the reserve was released. While no foreign fishery would be allowed until that time, it is conceivable that domestic operations could be curtailed by this technicality. Under Alternative 3, only the remaining 10% above DAP would be placed in reserve. There may be good reasons why a reserve should be maintained, even in fisheries that are wholly DAP. But until such time as that policy were applied uniformly by the Council, there would appear to be little basis for restricting the OY/harvest guideline/ quota available to DAP operators simply because there also happen to be foreign interests that are also in line for some of the available catch at mid-season. This may be minimized by authorizing inseason release of the reserve at any time.

At present, significant problems may not be associated with forcing wholly foreign enterprises to wait throughout a substantial part of the season before being allowed to fish when DAP is greater than 80% of OY, but it may be less desirable to impose those same conditions on domestic catcher boats participating in JV fisheries. If DAP were 80% and JVP were 20%, none of the JVP allotment would be available until the release of the reserve. This may have undesirable impacts on the scheduling of JV fisheries. Alternative 2 provides a compromise to this problem by placing half the difference between DAP and the OY into the reserve and allowing the other half to be available for JVP or TALFF at the beginning of the season.

To the extent that the second type of error described above--that of not accommodating greater DAP harvest than expected--is the primary concern, then Alternative 3 affords the greatest protection. Particularly by the time a domestic fishery has developed sufficient capacity to take 80% of a quota, the

remaining portion of the OY would only represent 25% of the anticipated fishery. If, on the other hand, the principal objective is to make certain that the foreign or JV fisheries do not exceed their allotment, then Alternative 2, appears to afford more than adequate protection, with a fewer negative impacts on domestic boats in the JV fisheries. The ability of the Council and NMFS to release all or part of the reserve at any time and reapportion to JVP will serve to negate the potential difference between alternatives 2 and 3.

6.4.2 Impacts on Consumers

Domestic consumers would receive added benefits from Alternatives 2 or 3 only to the extent that overruns of JVP catch which would reduce DAP landings were avoided.

6.4.3 Administrative, Enforcement and Information Costs and Benefits

The administrative aspects of managing the fishery would not be altered significantly. However, technical difficulties in the current regulations would be remedied by the clearer guidance under those alternatives. Very few species are likely to be affected at all by the changes included in Alternatives 2 or 3.

6.4.4 Benefit-Cost Conclusion

In the few fisheries for which JVP allotments would be made, Alternative 3 provides the greatest safeguards for the financial interests of U.S. processors. However, domestic participants in JV fisheries might face reduced harvest flexibility under this alternative. If fishery managers can accurately gauge the upcoming year's DAP demands, Alternative 2 would appear to provide ample safeguard of the resource. Particularly if DAP is greater than 80% of OY, this alternative would also allow JVP or TALFF harvest of half of their allocation to be carried out before the release of the reserve. However, by authorizing release of all or part of the reserve at any time during the year, the potential differences between Alternatives 2 and 3 may be minimal.

6.4.5 Regulatory Flexibility

While large numbers of small entities may be affected (described in section 1.3) the discussion of benefits and costs demonstrates no significant economic impacts on small entities are expected.

7.0 ISSUE 6: PROVIDE FOR IMPLEMENTATION OF REPORTING REQUIREMENTS WHEN STATE DATA COLLECTION SYSTEMS ARE INSUFFICIENT FOR MANAGEMENT OF THE FISHERY, INCLUDING FOR VESSELS WHICH PROCESS FISH AT SEA

Amendment 4 Reference: Reporting Requirements - Section 6.3.2.4

7.1 Description of and Need for the Action

Currently, catch, effort, biological and other data necessary for implementation of this FMP are collected by the states of Washington, Oregon, and California under existing state data collection provisions. Surveys of the domestic industry are conducted biannually by the NMFS to determine amounts of fish which will be made available to JVP and foreign fishing. As set forth in the FMP, federal reporting requirements will be implemented only when the data collection and reporting systems operated by state agencies fail to provide the Secretary with statistical information adequate for management.

Two major instances where state reporting requirements may be insufficient have been identified. The first is where a vessel harvests fish within the management area adjoining Washington, Oregon, and California management area but lands outside the area. The second case is where a domestic vessel processes catch at sea. In this instance, reporting of the harvest may be delayed several weeks or even months. Delayed reporting could seriously hamper inseason monitoring efforts and could lead to overshooting quotas, harvest guidelines or OYs.

To date, the only offshore processing of groundfish in the area off Washington, Oregon, and California occurs on foreign vessels that process Pacific whiting and on a few large U.S. pot vessels harvesting sablefish. Foreign vessels have both stringent reporting requirements and U.S. observers on board. No additional reports are necessary for these vessels. The domestic pot vessels have agreements with the states in which they offload the fish to report their landings on a state fish receipt. To date, none of these pot vessels are known to have landed outside the management area or offloaded at sea. But, even if harvest by these vessels is properly reported at the time of landing, if the landings are made around the close of the season, their magnitude could still contribute to overshooting a harvest specification.

It is very likely that under open access conditions, new vessels capable of processing at sea will enter this fishery. The number of domestic catcher/processor trawl vessels in the fisheries off Alaska, increased from 28 to 47 between 1986 and 1988. The number of motherships has also increased. Even if no such vessels are built specifically for operation off the West Coast it is reasonable to expect that increased competition in Alaskan fisheries will eventually lead some of them to participate in the west coast fishery for part of the year. The states have jurisdiction only over vessels registered under their own laws, vessels operating within state waters, and over landings in their ports or waters. It is unlikely that current reporting procedures and requirements will provide adequate information for inseason management of all fisheries covered by the groundfish FMP.

It should be noted that if the Council adopts an alternative under Issue 3 that replaces OYs with quotas or harvest guidelines, the references to OY in this issue would be adjusted accordingly.

7.2 The Alternatives

7.2.1 Alternative 1: Do nothing (status quo). No reporting requirements would exist in addition to those of the states. State reports would be required only for shoreside landings, and the states would lack authority to require reports for fish offloaded at sea or landed outside of the management area.

7.2.2 Alternative 2 (Preferred): Provide authority to implement reporting requirements for vessels which process their catch or the catch of other vessels at sea or do not land their catch in Washington, Oregon or California (catcher/processor vessels and mothership processors). Check in and check out procedures could also be implemented.

7.3 Biological and Physical Impacts

7.3.1 Alternative 1

In fisheries regulated by quotas, the timeliness of inseason landings information is likely to be of considerable importance for conservation of the species. This is particularly true if unexpected overruns happen to occur during several consecutive years. Even if harvest guidelines have been established for a species, the Council may believe that more stringent trip restrictions are imperative following attainment guideline amount. Although the presence of large catcher/processor or mothership operations has not been common in the domestic west coast fisheries, Alaskan fisheries have experienced a rapid increase in the number of these vessels in recent years. It is probable that some of these vessels will participate in some west coast fisheries in the future, particularly if competition among DAP vessels in Alaskan fisheries continues to increase.

Few vessels currently land catch outside of the management area. However, some sablefish has been landed in southeast Alaska by vessels that have fished off the West Coast just prior to the Alaskan opening. If the availability of west coast sablefish continues to place increasing restrictions on the deepwater trawl fishery and reduce the amount available to fixed-gear vessels, this type of activity may be expected to increase. Incomplete reporting of landings may also adversely affect the quality of stock assessments.

7.3.2 Alternative 2

Alternative 2 provides an opportunity not only to improve data gathering in small segments of the existing fishery, but also to anticipate and avoid future problems that are potentially of greater magnitude. Inseason management in the Alaskan fisheries, where at-sea processing is more common, relies heavily on weekly reports provided by vessels that process. The ability to institute reporting requirements for the types of vessels that characteristically spend long periods at sea between landings is vital for effective use of quotas and harvest guidelines. This alternative may also improve the data available for stock assessments.

7.4 Social and Economic Impacts

7.4.1 Fishery Costs and Benefits

Catcher/processor vessels that typically remain at sea for several weeks at a time would face minor increases in cost, due to these reporting requirements, but most of the information that would be reported is typically maintained in log books already. If observers on such vessels were deemed necessary for data gathering, an additional expense of roughly $6,000 per month would be incurred. Vessels that would be required to file reports under this alternative are not expected to constitute a large percentage of the fleet within the next 5 years, though they might represent a substantial amount of harvesting potential for some species. Deliveries outside the EEZ to foreign motherships or transport vessels are not thought to be a problem, currently, and only a few species with strong overseas demand, such as sablefish, would likely be subject to such evasive activity.

Even in fisheries where these requirements are not needed to ensure conservation objectives, they may be important for maintaining stocks at levels that allow achievement of the greatest long-term benefits. Particularly in species that are managed by quota, allowing continual overruns of OY due to delays in reporting catch may have a detrimental effect on long-run economic yield. Also, delays in reporting at earlier points during the season may restrict the Council's ability to anticipate what measures may be necessary to achieve season-length objectives. Finally, data available for assessment of economic impacts from proposed management changes may be improved under Alternative 2.

7.4.2 Impacts on Consumers

Alternative 2 is not likely to produce significant changes in the benefits received by consumers from fisheries products, though some improvement may be achieved. If Alternative 2 allows the Council to more accurately gauge effort and take action that will promote an improved supply of high quality fish, consumers will be better off.

7.4.3 Administrative, Enforcement and Information Costs and Benefits

The provisions of Alternative 2 could increase the reporting costs of a small number of vessels. Additional government infrastructure may be required for processing the data acquired from vessels. Additional information useful for management of the fishery and post-season enforcement may be available under Alternative 2. Without this alternative, certain vessels would only be subject to at-sea enforcement, which is expensive.

7.4.4 Benefit-Cost Conclusion

Alternative 2 would provide additional safeguards against harvest specifications being exceeded by large amounts. Although its provisions would impose some costs on vessels in order to gather necessary information. Most, if not all, of the required information would be easily compiled by the vessels, therefore these reporting costs are not likely to represent an unreasonable burden relative to the benefits accruing to those vessels from participation in the fishery. The data obtained from vessels under the provisions of Alternative 2 would promote improved scientific evaluation of the fisheries and enforcement of federal management measures.

7.4.5 Regulatory Flexibility

While large numbers of small entities may be affected (described in section 1.3) the discussion of benefits and costs demonstrates no significant economic impacts on small entities are expected.

8.0 ISSUE 7: STREAMLINE THE PROCEDURES TO REVIEW AND APPROVE APPLICATIONS FOR EXPERIMENTAL FISHING PERMITS

Amendment 4 Reference - Section 7.0

8.1 Description of and Need for the Action

The EFP process needs fine-tuning so that (1) blanket permits may be issued (i.e. one permit to an individual or agency responsible for a number of vessels), (2) certain applications may be denied without involving the full Council process, (3) reference to issuing permits within 5 working days after Council consultation is deleted, and (4) participants agree to release information gathered while fishing under the permit.

8.2 The Alternatives

8.2.1 Alternative 1: Do nothing (status quo). No change to current procedures.

8.2.2 Alternative 2 (Preferred): Revise EFP process to allow issuance of blanket permits; enable to Regional Director to reject applications under certain conditions; remove the deadline for issuing EFPs within 5 days of consultation with the Council; stipulate that participants must agree to release of information obtained while fishing under the EFP.

8.3 Biological and Physical Impacts

8.3.1 Alternative 1

No significant biological or physical impacts are expected with maintenance of the status quo

8.3.2 Alternative 2

No significant biological or physical impacts are expected with adoption of Alternative 2.

8.4 Social and Economic Impacts

8.4.1 Fishery costs and benefits

The primary advantages of Alternative 2 to the fishing industry accrue from streamlining the permit procedures. Under Alternative 2 prospective participants need only file one application for all of the vessels that will participate, which may reduce paperwork of some applicants. Since the RD would have the authority to reject an application on the grounds that the Council had previously rejected a comparable proposal, the processing of some applications would be expedited, increasing the amount of lead time for owners or other applicants to develop alternate fishing plans. Development of the fisheries may also be benefitted by the stipulation that data from experimental fisheries be made available for scientific use.

8.4.2 Impacts on Consumers

It is unlikely that the two alternatives would produce significantly different effects among consumers.

8.4.3 Administrative, Enforcement and Information Costs and Benefits

As with fishery participants, fishery managers would benefit from the streamlining of application procedures for experimental fisheries under Alternative 2. The Council would not be forced to consider permit applications that are essentially the same as ones they had recently rejected. Staff would not have to spend time handling multiple applications from a single owner or other applicant. And, access to data from such fisheries would be clearly established.

8.4.4 Benefit-Cost Conclusion

Alternative 2 is not expected to have a recognizable impact on the development of experimental fisheries. However, the procedural advantages over the status quo would allow for reductions of effort in both the industry and management components of the fishery.

8.4.5 Regulatory Flexibility

Only those few small entities applying for EFPs would be affected by the proposed action, and the discussion of benefits and costs demonstrates no significant economic impacts are expected.

9.0 ISSUE 8: ESTABLISH PROCEDURES FOR REVIEWING STATE REGULATIONS TO DETERMINE IF THEY ARE CONSISTENT WITH THE FMP AND FEDERAL FISHING REGULATIONS

Amendment 4 Reference - Section 10.0

9.1 Description of and Need for the Action

Each coastal state on the Pacific coast implements regulations for groundfish fishermen operating within state waters, and their regulations also apply to vessels licensed by that state when operating outside state waters. State regulatory procedures allow frequent adjustment to regulations, and these may or may not conflict with the FMP and federal regulations in adjacent waters. There is no procedure for determining whether state regulations are consistent with federal management measures. In some cases the FMP may be silent on a particular issue. In other cases the regulations may be consistent with the Council's intent, but there has been no formal statement to that effect. A fisherman cited for violation of state regulation might be able to argue successfully that he was operating in the EEZ and therefore not subject to state regulation. The proposed amendment seeks to reduce the possibility of this by establishing a procedure whereby a state may ask the Council to pass judgement on whether or not a state regulation is consistent with the FMP and other applicable federal law. Also, if necessary, the Council could propose a similar management measure for the EEZ which would also apply to fishermen and vessels not licensed in the adjacent state.

Regulations pertaining to set net fishing in California provide an example of this situation. Currently, federal regulations governing fishing for groundfish in the EEZ prohibit the use of set nets (trammel nets and gillnets) in the ocean north of 38° N. latitude (Pt. Reyes, California). This prohibition was intended to prevent the incidental catch of salmon. Use of set net gear in the EEZ south of 38° N. latitude is legal under federal regulations so long as they are consistent with regulations of the State of California. When originally approved by the Secretary of Commerce, the groundfish FMP contained a provision which made then current California state law regarding use of set nets in state marine waters applicable in the federal EEZ as long as the state law remained consistent with the FMP, its implementing regulations, the Magnuson Act and other applicable law. The Council acknowledged in the FMP that the state of California was regulating the set net fishery off central and southern California and, as part of the FMP implementation process, reviewed the relevant state regulations for consistency with the goals of the FMP and the national standards of the Magnuson Act. The Council determined that it was not necessary or desirable for the FMP, or federal regulations implementing the FMP, to duplicate state management and establish a separate management regime for the set net fishery in the EEZ south of 38° N. latitude. However, since then, incidental mortalities of sea birds and marine mammals have prompted California to modify its set net regulations to impose area, depth and other restrictions. It is reasonable to expect that there will be changes in these and other state regulations in the future. Council and federal response to changes in state regulations subsequent to implementation of the FMP may be handled in several ways.

9.2 The Alternatives

9.2.1 Alternative 1: Do nothing (status quo) Inconsistencies between the FMP and current California regulations for set nets; no process for review of changes in state regulations.

9.2.2 Alternative 2: Incorporate a policy statement that establishes a presumption that all state regulations (both current and future) are consistent with the FMP and National Standards unless and until consistency is challenged; California manages the set net fishery in the EEZ, and California recreational bag limits for lingcod apply to the EEZ.

9.2.3 Alternative 3 (Preferred): Framework procedure for reviewing and endorsing current and future state regulations; consistency of state regulations is not presumed; if appropriate, state regulations may be adopted as federal management measures.

9.3 Biological and Physical Impacts

9.3.1 Alternative 1

No significant biological or physical impacts are anticipated with maintenance of the status quo.

9.3.2 Alternative 2

No significant biological or physical impacts are anticipated with adoption of Alternative 2.

9.3.3 Alternative 3

No significant biological or physical impacts are anticipated with adoption of Alternative 3.

9.4 Social and Economic Impacts

9.4.1 Fishery Costs and Benefits

The status quo does not provide a process for Council review of consistency between state fishing restrictions and the FMP, other than through amendment of the plan. Where both federal and state restrictions exist, the federal restrictions supersede those of the state within the EEZ. In the absence of federal restrictions, a state may impose its restrictions on vessels or individuals fishing in the EEZ, when they have been licensed by that state. However, if the Council has not reviewed the state regulations and found them to be consistent with the FMP, the state law is at considerable risk of being effectively challenged in court. This latter circumstance may also create uncertainty for fishermen as to whether the state law applies to them while fishing in the EEZ.

The adoption of Alternative 2 could lead to considerable confusion for fishermen and the courts, if circumstances arise wherein federal and state restrictions are dissimilar, or where state restrictions appear to contradict the intent of the FMP and the Magnuson Act. Assuming, as a matter of official policy, that consistency exists, without requiring that a review of the regulations be undertaken, does not appear to be an effective or appropriate means reducing the potential conflict between state and federal restrictions that does or could exist under the status quo.

Alternative 3 provides a framework procedure through which states may request that the Council review state regulations for consistency with the FMP and

existing federal rules. By filing a brief summary of the problem and arguments supporting consistency, the states could initiate Council review of regulations where consistency might be disputed in court. The Council would prepare any additional analysis that might be necessary to determine consistency.

If, in the absence of federal management measures, the Council finds consistency, it may simply acknowledge the appropriateness of the state's enforcement of its law in the EEZ for vessels or individuals licensed by the state, or it may elect to address the issue with new management measures. This latter option may be preferred when the Council anticipates that problems may arise because differences exist between the regulations of the three states. If the state regulations are not found to be consistent, the Council may, similarly, develop specific new rules pertaining to that fishery, or may simply declare the state regulations to be inconsistent, casting serious doubt over their enforceability. Regardless of the finding by this review, state enforcement authority and acceptable fishing activity within the EEZ would be clarified.

In preparing federal management measures, the Council would follow the procedures of Section 6.2 of this amendment.

9.4.2 Impacts on Consumers

Consumers are not expected to be noticeably affected by any of the alternatives.

9.4.3 Administrative, Enforcement and Information Costs and Benefits

Alternative 3 provides a mechanism for clarifying the consistency of state regulations with federal objectives. This review will identify whether state regulations, in the absence of federal ones, are sufficient to achieve the objectives of the FMP, or whether new federal restrictions should be developed. The procedure will provide the states with an easy means of ascertaining consistency and thereby more clearly defining their own enforcement position. By establishing a 2-meeting process for review of state regulations, Alternative 3 would avoid the added costs and time inherent in developing the review as a plan amendment.

9.4.4 Benefit-Cost Conclusion

The status quo provides no means other than plan amendment by which the Council may review consistency between state regulations and federal policy and take appropriate action. Alternative 2 may actually compound the potential for confusion and legal expenditures by providing a blanket assumption of compatibility, without a formal review process. Alternative 3 provides a straightforward means of addressing state concerns regarding consistency through a review process. If utilized by the states, this process should reduce confusion over applicable regulations and related litigation.

9.4.5 Regulatory Flexibility

While large numbers of small entities may be affected (described in section 1.3) the discussion of benefits and costs demonstrates no significant economic impacts on small entities are expected.

10.0 ISSUE 9: ESTABLISH PROCEDURES FOR SETTING AND ADJUSTING RESTRICTIONS ON THE LANDING OF GROUNDFISH CAUGHT IN NON-GROUNDFISH FISHERIES

Amendment 4 Reference - Section 9.0

10.1 Description of and Need for the Action

The FMP specifies what gear is legal for harvesting groundfish, and gears not listed may not land any fish taken either accidentally or intentionally. The FMP makes exception for two non-groundfish fisheries: pink shrimp, and spot and ridgeback prawn. The only way to allow landings of groundfish caught incidentally in other non-groundfish fisheries is by plan amendment or emergency rule. There may be times when this is too cumbersome a process. Some fishermen have complained that it is not fair when the trip limits for non-groundfish fishermen are more liberal than those imposed on groundfish fishermen. Landings of groundfish in non-groundfish fisheries count against the OY, harvest guideline or quota.

Another concern is that experimental fishing permits, which were designed to explore new methods of fishing (especially development of underutilized species/fisheries), are being used to circumvent the prohibition against retention of groundfish in non-groundfish fisheries.

Non-groundfish fishery is defined as: "A fishery which lands groundfish from a trip using gear that is not authorized by the groundfish plan but is legal for another fishery." Because legal groundfish gear is used, a salmon troller who catches and lands a rockfish is considered a groundfish fisherman.

Incidental catch in a non-groundfish fishery is defined as: "the catch of groundfish taken in a non-groundfish fishery."

10.2 The Alternatives

10.2.1 Alternative 1: Do nothing (status quo). Incidental limits are established in the FMP for the pink shrimp fishery, and the spot and ridgeback prawn fishery. Change requires an FMP amendment.

10.2.2 Alternative 2 (Preferred): Rescind the regulation setting incidental trip limits for the pink shrimp and ridgeback and spot prawn fisheries. Authorize the setting and adjusting incidental trip limits in non-groundfish fisheries through the procedures of Section 6.2 of this amendment. Maintain current trip limits in the pink shrimp, and ridgeback and spot prawn fisheries unless changed.

10.2.3 Alternative 3: Rescind the regulation setting incidental trip limits for the pink shrimp and ridgeback and spot prawn fisheries. No groundfish may be landed from non-groundfish fisheries.

10.3 Biological and Physical Impacts

10.3.1 Alternative 1

No significant adverse impacts on stocks are anticipated through maintenance of the status quo. If incidental catch rates are set higher than they need to be and if fishing in non-groundfish fisheries continues after the groundfish species quota has been reached, some unnecessary mortality may occur.

10.3.2 Alternative 2

No significant biological impacts are anticipated with this alternative. It would provide the Council with a greater ability to adjust the legal landing rates of incidental catch, in accordance with the best information available, without having to institute a plan amendment.

10.3.3 Alternative 3

This alternative would remove all incentive for non-groundfish fishermen to catch groundfish. Especially since they would incur a cost from having to discard all that were caught, incidental catch rates should be the lowest under this option. However, landings records would no longer provide any information on the incidental catches that were still occurring in these other fisheries. Inadequate information on these other sources of mortality could also lead to OY being exceeded.

10.4 Social and Economic Impacts

10.4.1 Fishery costs and benefits

The principal motivation behind the introduction of incidental catch allowances was for the shrimp and prawn fisheries was to allow fishermen to sell small amounts of groundfish taken incidentally to their normal fishing operations, rather that to require disposal and associated waste. At the same time, the allowances were considered small enough to prevent intentional harvest. Other non-groundfish fisheries (such as the gillnet fishery for thresher sharks) are known to take groundfish (e.g., soupfin shark) incidentally. The objective of not forcing fishermen to waste dead groundfish, while disallowing all but unavoidable bycatch, can be achieved only by making allowances for landing of bycatch. Alternative 2 allows not only for establishing limits on new fisheries, but also for adjusting allowances as new information becomes available.

Alternative 3 is only an effective means of meeting these objectives if all groundfish can be avoided in these other fisheries. If not, wastage will occur and less information will be available to judge the magnitude of groundfish mortality caused by these fisheries. This could lead to declines in affected groundfish stocks, if this mortality were not taken into consideration, or a reduction of the value generated by the groundfish resource, if it were considered.

It should be noted that if all incidental catch was, at this time, believed to be avoidable, the provisions of Alternative 3 could be implemented under Alternative 2, without the need of a plan amendment. Implementing this more general framework would provide the Council with a greater ability to maintain coincident catch limits that achieve both purposes as much as possible.

10.4.2 Impacts on Consumers

Consumers should face no significant change in the availability of groundfish under either alternative to the status quo, although some reduction in supply might accompany a ban on groundfish landings in other fisheries if the available OY continued to be reduced by the same amount of anticipated groundfish mortality in those other fisheries.

10.4.3 Administrative, Enforcement and Information Costs and Benefits

Alternative 2 provides the easiest means of implementing the policies that will achieve the objectives of the FMP. If information on groundfish catch rates in non-groundfish fisheries were to be obtained under Alternative 3, additional expense would be required to do so.

10.4.4 Benefit-Cost Conclusion

Alternative 2 will allow the Council to select rates for groundfish landings in other non-groundfish fisheries that discourage targeting and reduce discard wastage to the greatest extent practical. Under this alternative, new information could be used to adjust these rates without the need of a plan amendment. The other two alternatives are less satisfactory, in that they are only appropriate insofar as the existing allowable landing rates (under the status quo) or a zero rate (under Alternative 3) best achieve the Council's objectives. Both of these alternatives would require a plan amendment should new information or evaluation suggest changes in those rates.

10.4.5 Regulatory Flexibility

While large numbers of small entities may be affected (described in section 1.3) the discussion of benefits and costs demonstrates no significant economic impacts on small entities are expected.

11.0 CONCLUSIONS

11.1 Impacts of the Alternatives on Small Entities

The Regulatory Flexibility Act (RFA) requires that impacts of regulatory measures imposed on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions with limited resources) be examined to determine whether a substantial number of such small entities will be significantly impacted by the measures. Fishing vessels are considered to be small businesses. A total of 1,179 vessels may fish for groundfish off Washington, Oregon, and California in 1990. While these numbers are considered substantial, regulatory measures will only affect a smaller proportion of the fleet.

Executive Order 12291 requires that the following three issues be considered:

(a) Will the amendment have an annual effect on the economy of $100 million or more?

(b) Will the amendment lead to an increase in the costs or prices for consumers, individual industries, Federal, State, or local government agencies or geographic regions?

(c) Will the amendment have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of U.S. based enterprises to compete with foreign enterprises in domestic or export markets?

Regulations do impose costs and cause redistribution of costs and benefits. Management measures authorized by this amendment are not expected to result in significant costs relative to total operational costs.

The amendment will not have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of U.S. based enterprises to compete with foreign enterprises in domestic or export markets.

The amendment should not lead to a substantial increase the price paid by consumers, local government, or geographic regions since no significant quantity changes are expected in the groundfish markets. Where more enforcement and management effort are required, costs to state and federal fishery management agencies will increase.

This amendment will not have an annual effect of $100 million, since the total value of the domestic catch of all groundfish species is generally under $100 million. This amendment is not expected to substantially alter the amount or distribution of this catch.

11.2 Effects on Endangered Species and on the Coastal Zone

The Endangered Species Act is discussed in Section 11.7.2 of the Amendment 4 document. It is possible that alternatives being considered would constitute actions that "may affect" endangered species or their habitat within the meaning of the regulations implementing Section 7 of the Endangered Species Act of 1973. The Council has requested a consultation under Section 7 on the final actions and their alternatives.

11.3 Consistency with Coastal Zone Management Act

The relationship of this amendment to the Coastal Zone Management Act of 1972 is discussed in Section 11.6.1 of Amendment 4. Each of the alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the coastal zone management programs of Washington, Oregon, and California within the meaning of Section 307(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

11.4 Effects on Habitat and Vessel Safety

None of the alternatives would result in identifiable increases in adverse impact on habitats of the Washington, Oregon, and California region. There is no apparent difference among alternatives with regard to vessel safety or reduced access to the fishery for weather-related safety reasons.

12.0 COORDINATION WITH OTHERS

The preparers of this supplemental environmental impact statement consulted extensively with members of the Groundfish Management Team (GMT) which includes representatives from the California Department of Fish and Game, Washington Department of Fisheries, Oregon Department of Fish and Wildlife and NOAA Fisheries. Ed Ueber, economist with NMFS Tiburon Laboratory and former GMT member, was also consulted. In addition, an oversight committee of Council members, Groundfish Advisory Subpanel members, NOAA General Counsel, and NMFS Northwest Regional Office personnel reviewed numerous drafts of the amendment and provided guidance in the development of the amendment and analysis.

Joe Terry, economist with the NMFS Alaska Fisheries Science Center, reviewed this amendment package.

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North Pacific Fishery Management Council
U.S. Army Corps of Engineers
U.S. Coast Guard
Environmental Protection Agency
Department of the Interior
  U.S. Fish and Wildlife Service
Department of State
Washington Department of Fisheries
Oregon Department of Fish and Wildlife
California Department of Fish and Game
Pacific States Marine Fisheries Commission
Northwest Indian Fisheries Commission
Conservation Organizations
Sportfishermen's Organizations
Seafood Industry
State Clearinghouses
Other Organizations and Individuals

15.0 COMMENTS ON THE DSEIS/AMENDMENT

This section summarizes oral and written testimony on the three draft SEIS/Amendments submitted for public review. The first draft dated December 1989 was reviewed at a public hearing in Seattle, Washington on March 7, 1990 in conjunction with regularly the scheduled Council meeting. A second draft SEIS/ Amendment, dated March 29, 1990 and released at the April 3-6 Council meeting, was prepared to address public comments and NMFS policy guidance received prior to March 15. Significant changes were included in the second draft SEIS/Amendment, and further revisions were recommended at a public hearing on April 4. A third draft, dated June 1990, was subsequently prepared and submitted for further public comment. One hearing was held on this draft. No letters wee submitted on this draft.

Section 15.1 below summarizes comments, oral and written, provided during the two review periods. The Council's response follows each comment. Sections 15.2 and 15.3 list individuals who testified at hearings and those who submitted letters.

15.1 Summary of Public Comments with Responses

1. Comment: The first draft document is poorly organized and difficult to understand.

   Commenters: NMFS, various reviewers.

   Response: Agreed; management sections of the first draft have been reorganized and clarified, and the procedures the Council must follow are presented in a more concise and understandable manner.

2. Comment: The procedures in the first draft for making management changes are not clear.

   Commenters: NMFS, various reviewers.

   Response: The final draft amendment clearly identifies four procedures for establishing or making changes to management measures. The first, automatic actions, may be initiated without prior public notice, opportunity to comment, or a Council meeting. These actions are nondiscretionary. For example, a fishery closes when a quota its reached.

   The second is a "notice" procedure, which authorizes publication of a notice in the Federal Register for actions proposed at a single Council meeting. These actions are intended to have temporary effect and the expectation is they will need frequent adjustment. Extensive notice and opportunity for comment on these types of management measures along with the scope of their impacts must have already been provided. An example is routine adjustment to trip limits to achieve a harvest guideline.

   The third category is an abbreviated rulemaking procedure requiring at least two Council meetings and one Federal Register rule. The Council will develop and analyze the proposed management actions over the span of at least two meetings and provide the public advance notice and opportunity to comment on both the proposals and the analysis prior to and at the second meeting. This is the procedure which will generally be used for measures having more permanent effect and to classify a type of measure as "routine." Under this

procedure, the regional director may find for good cause that the Council has provided adequate opportunity for public participation in the decision-making process.

The fourth category is the full rulemaking procedure, which requires at least two Council meetings and publication of two Federal Register rules (i.e., proposed and final). This process will be used for any management measure that is highly controversial or any measure which directly allocates the resource. This procedure is the same as the third category above except that the Secretary will provide an additional opportunity for public comment after the Council forwards its recommendation for action.

Any management measures other than those contemplated in the amended FMP will be established by plan amendment.

3. Comment: The provisions of Amendment 4 for expediting management changes that are socio-economic in nature to a two-meeting process will not provide adequate time for government analysis nor public review.

   Commenters: Fishing Vessel Owners Association

   Response: As explained in the response to comment 3, the intent is to provide full opportunity for public participation in the decision-making process. There may be occasions where the necessary analysis and opportunity for public comment cannot be completed before the scheduled second meeting in the process. In such cases, the second meeting would probably be delayed rather than diminish public participation.

4. Comment: The new process would implement regulations before the end of public comment.

   Commenters: Fishing Vessel Owners Association

   Response: See response to comment number 2.

5. Comment: The full amendment procedure for allocation should be preserved.

   Commenters: Fishing Vessel Owners Association

   Response: Direct allocation measures will be established or adjusted through the full rulemaking procedure. The amendment procedure is available for may also be used if the Council chooses.

6. Comment: The description and discussion of "routine measures" is unclear.

   Commenters: various reviewers

   Response: The final draft includes an improved discussion of routine measures, their establishment, and adjustment.

7. Comment: More stringent safeguards against overharvest should be built into the amendment.

   Commenters: Fishing Vessel Owners Association

Response: Amendment 4 maintains the procedure for establishing acceptable biological catch (ABC), harvest guideline and quota specifications to set management targets for any species. The points of concern procedure is also maintained but made more flexible so the Council can use it without having to wait for a determination of "biological stress." These two elements are central to achievement of the Council's conservation goal and objectives. While there are no arbitrary limits on harvest, a mandatory scientific review is required when harvest is expected to exceed a biological guideline or if any major problem with a stock is identified.

8. Comment: The Council needs to be able to provide to the public a specific management regulation in a timely manner and provide Council analysis of the regulation in a timely manner to the public.

   Commenters: Fishing Vessel Owner's Association

   Response: See response to comment 2.

9. Comment: The concept of using harvest guidelines, which would allow retention of species after the acceptable harvest has been reached, is dangerous. It will make it more difficult for the Council to tell fishermen to stop fishing.

   Commenters: Fishing Vessel Owners Association, James G. Norris, numerous longline fishermen

   Response: The Council's management system is based on establishment of biologically sound harvest targets, and the amendment strives to make adjustments to management measures controlling fishing activities so that those targets are achieved but not exceeded. Many fisheries take several species at the same time, and in some cases it would be impossible to completely avoid harvest of a limited species without eliminating the catch of other species also. The use of harvest guidelines is intended to allow only limited retention of a species rather than closing the entire fishery or forcing fishermen to discard unavoidable bycatches. The Council's intention is slow the fishery as the harvest guideline is approached and then to remove any incentive for further targeting on the species. This should be as effective as the use of quotas, which prohibit further landings but may not reduce the actual mortality any more than a harvest guideline would. Exceeding a harvest guideline triggers a points of concern review to evaluate whether further harvest is expected to damage the resource.

10. Comment: The underlying problem is that trawl gear is non-selective. Gear selectivity could be improved if appropriate incentives were provided. Rather than develop a regulatory framework that will provide incentives to improve the selectivity of bottom trawls the amendment 4 package, particularly the shift from quota to harvest guideline management, simply makes it easier for the trawl industry to maintain business as usual.

    Commenters: James G. Norris

    Response: All fishing gear is non-selective to some degree, but many catches can be adjusted through gear or fishing technique modifications. Much of this depends on the individual experience and expertise of the fisherman. Since trawls harvest the largest volume of fish at a single time there is at least

an appearance that they are more non-selective than certain other gears, but mandating "cleaner" (i.e., less selective) harvest is generally ineffective unless there is some means of documenting bycatch. Without on-board observers it is doubtful that incentives to improve selectivity would be effective. The issue of incentives may be addressed through the socio-economic framework procedures as effective ideas are developed. The use of harvest guidelines rather than quotas should not encourage non-selective operations because there is no incentive to exceed the established landing limit. Also, harvest guidelines provide the opportunity to offset some of the cost of experimenting with equipment and techniques. Also, since several species may be part of a particular market category, a level of non-selectivity increases the overall value of the resource without serious biological impact.

11. Comment: Amendment 4 should (1) indicate that the Council is serious about controlling bycatch rates and (2) give the Council legal authority to reward fishermen who can meet desired bycatch rates and penalize fishermen who cannot. . . . As a first step, I recommend that the Council add a new objective (Objective 13) to Amendment 4 as follows: "The Council will strive to enact regulations that will provide economic incentives for fishermen to improve the species specific selectivity characteristics of their fishing gear and gear deployment."

    Commenters: James G. Norris

    Response: The Council chose not to add an additional objective. See response to comment 9.

12. Comment: Revise Objective 7 to reflect that the goals of full utilization and conservation cannot be achieved simultaneously in the trawl fishery, and that conservation takes precedence and some stocks will go underutilized.

    Commenters: James G. Norris

    Response: The conservation goal (number 1) has precedence over the other goals. This is implicit in objective 7, and the Council chose not to revise it.

13. Comment: The Council cannot practically address all three goals simultaneously.

    Commenters: Various fishermen

    Response: The Council recognizes that conflicts will arise among the goals, and therefore they are listed in order of priority.

14. Comment: Objective 5 should be revised to indicate that not all fisheries should be managed for year-round fishing opportunity.

    Commenters: Numerous nontrawl fishermen

    Response: Agreed. Objective 5 has been revised to indicate the Council will identify those sectors of the groundfish fishery for which it is beneficial to promote year round opportunities. See Section 2.1.

amendment states that nothing prevents the Secretary from exercising the right to not waive the opportunity for prior noted and comment in the Federal Register, if appropriate, but presumes the Council process will adequately satisfy that requirement.

25. Comment: We suggest that if the Council wishes to implement an expedited rulemaking procedure, it should narrowly define the types of rules which may be implemented on an expedited basis and the specific basis for any good cause exemption.

Commenters: American High Seas Fisheries Association

Response: The "notice action" procedure for routine management measures has been clarified and limited more narrowly than originally envisioned by the Council. First, the measure will have to be classified as routine through one of the rulemaking procedures. Second, the measure may be modified through the single-meeting procedure only if (1) the modification is proposed for the same purpose as the original measure, and (2) the impacts of the modification are within the scope of the impacts analyzed when the measure was classified as routine. Landing limits, for example, must be for the same gear type and species identified, and to achieve the same purpose (generally to slow the harvest so a harvest guideline/quota is not reached prematurely or to allow for landing of incidental bycatches). Specific ranges of landing limits may not be appropriate, however, because they are generally roughly proportionate to the specified harvest target and number and type of vessels participating. At the most conservative extreme, landings might be prohibited, especially for species under quota management. At the more liberal extreme, landing limits might be very large if demand drops or the fish population increases substantially.

15.2 Individuals Testifying at Hearings

Seattle, Washington
Date: March 7, 1990
Individuals Testifying:
James G. Norris, fisherman/consultant Port Angeles, Wa.
Bruce Jackson, Deep Sea Fishermen's Union (longline fisherman)
Dennis Reynolds, attorney (Williams, Castle, and Griggs, Seattle??) for Coast Draggers Association
Robert Eder, pot fisherman, Newport, Oregon
Rick Malsed, Fishing Vessel Owner's Association, Seattle, Washington
Harold Holme, Longliner, Washington and Oregon
Robert Smith, longline fisherman, Fishing Vessel Owner's Association
Neil Sandvick, longline fisherman, Deep Sea Fishermen's Union
Steve Seals, longline fisherman, Fishing Vessel Owner's Association
Tom Ghio, pot fisherman, Conception area of California
Roger Davies, longline fisherman

Eureka, California
Date: April 4, 1990
Individuals Testifying:
Robert Eder, pot fisherman, Newport, Oregon
Rick Malsed, Fishing Vessel Owner's Association, Seattle, Washington
Dennis Kruteau, Shelter Cove

Portland, Oregon
Date: July 11, 1990
Individuals Testifying:
Rick Malsed, Fishing Vessel Owner's Association, Seattle, Washington

15.3 Individuals and Organizations Submitting Written Comments

Alverson, Robert D. Fishing Vessel Owner's Association, Seattle, WA.
Norris, James G. Marine Resources Consultants, Port Townsend, WA.
Gordon, Douglas B. American High Seas Fisheries Association, Seattle, WA.