M E M O R A N D U M

TO: Council, AP and SSC Members

FROM: Jim H. Branson
Executive Director

DATE: May 15, 1985

SUBJECT: Gulf of Alaska Groundfish Fishery Management Plan

ACTION REQUIRED

I. Council Approval of Amendment 14.
   (a) Identify preferred alternatives for Amendment 14.
   (b) Plan Team analyzes chosen alternatives.
   (c) Final Council approval of Amendment 14 for Secretarial review.

II. Council review of draft regulatory amendment for single species OY.

BACKGROUND

In March the Council approved Amendment 14 and the associated draft Regulatory Impact Review/Initial Regulatory Flexibility Analysis (RIR) and draft Environmental Assessment (EA) for public review. The amendment contains seven issues and their management alternatives:

1. Establish a gear and/or area restriction in the sablefish fishery.
2. Establish rockfish areas and quotas.
3. Implement new optimum yields for pollock, Pacific ocean perch, rockfish, Atka mackerel and other species.
4. Implement reporting requirements for catcher/processors.
5. Establish measures to control the Pacific halibut bycatch.
6. Implement the NMFS habitat policy.
7. Sablefish fishing seasons.

Thirty-four comments were received during the comment period from April 4 to May 3 and sent to you in Council mailings. An Overview of Comments by Issue and a Comment Summary are provided in D-2(a)(1) and D-2(a)(2), respectively. The latest versions of the RIR and EA under D-2(a)(3-4) respond to comments received from the Council, SSC, AP, NMFS, ADF&G and the public.

Final action on Amendment 14 should be taken in three steps: First, the Council should identify their preferred alternative for each of the seven amendment topics. Second, the Plan Team and NOAA General Counsel will analyze the chosen alternatives and prepare the "Changes to the FMP" document and draft implementing regulations. Third, the Council will consider the recommendations of the Team and General Counsel and give final approval to send Amendment 14 to Secretarial review.

These documents (with minor editing of the RIR and EA) will constitute most of the formal Amendment 14 package submitted to the Secretary. The remaining transmittal documents, preamble, etc. will be prepared as soon as possible. The amendment should be implemented by November 1985.

Single Species OY Regulatory Amendment

During the March meeting, the Council discussed the continuing problem of regulatory areas closing when a single groundfish species OY is reached. There was concern that in Southeast Alaska for example, the taking of the sablefish OY would close the area for the remainder of 1985, thereby precluding the rockfish fishery. As an interim measure, the Council recommended that the NMFS Regional Director manage the directed groundfish fisheries in the Gulf of Alaska to a harvest below OY and use the remainder for bycatch purposes in other non-target fisheries. We heard from NMFS that the single species OY problem can be addressed through a regulatory amendment.

The Council directed the Gulf of Alaska Groundfish Plan Team to review the regulation and develop alternatives for Council review. The Team prepared a discussion paper which presents four alternatives [item D-2(a)(5)]. They are:

ALTERNATIVE 1. Amend the current domestic and foreign fishing regulations as follows:

(A) Exempt certain fisheries that are known to take negligible amounts of certain species from area closures when the OY for those species is reached.

(B) Exempt certain gear types used in target fisheries that are known to take negligible amounts of certain species from area closures when the OY for those species is reached.

(C) Authorize the Regional Director to manage the OY for each target species such that the directed fishery is closed short of a percentage of the OY to allow a buffer amount as a bycatch in other target fisheries.

(D) Subsequent to a closure when the OY is reached, authorize the Regional Director to reopen a fishery by field order on the basis of the most recent scientific and technical information available after he has considered all of the following criteria in descending order of priority:

(1) The need to protect a groundfish species for biological and other conservation reasons;

(2) The impact that additional fishing mortality might have on other target fisheries that depend on the species being protected if the closed fishery were reopened;

(3) The impact that a continued closure might have on the development and operation of domestic fisheries; and

(4) The impact that a continued closure might have on foreign groundfish fisheries.

ALTERNATIVE 2. Establish prohibited species catch limits (PSCs) for species such that bycatches in other target fisheries would be authorized, after the OY had been achieved, up to an amount not to exceed the PSC.

ALTERNATIVE 3. Designate a species for which the OY had been reached as a prohibited species, authorizing other target fisheries to continue without further accounting for the prohibited species.

ALTERNATIVE 4. Maintain the status quo.

NMFS-Alaska Region is willing to prepare a Regulatory Amendment following Council selection of the most appropriate alternative to address the single species OY problem and submit it for Secretarial Review.

5/24/85

North Pacific Fishery Management Council
GULF OF ALASKA GROUNDFISH
FISHERY MANAGEMENT PLAN
Amendment 14

CHANGES TO THE FMP

1. SABLEFISH

Table of Contents

Section 3.2.1.1.1 Vessels and Gear, 3-11

DELETE all text and replace with the following:

In 1984 about 200 vessels harvested sablefish with 89% of the catch being taken by hook and longline gear. Technological advances are presently changing the fishery for sablefish. Within recent years Alaskan fishermen have switched from J-hooks to circle-hooks and have shortened their spacing along the ground line. Most of the fish are dressed at sea and packed in ice. Some vessels process and freeze their catch on board.

Section 3.2.1.2 Sablefish Setline Fishery, 3-11.

DELETE all text and replace with the following:

The sablefish fishery began about 1906, and was relatively unimportant until about 1935 when the catch began to increase. The historic peak was reached in 1946 when slightly more than 2,800 mt were landed. Since then the harvest has fluctuated from low levels to as high as the 1985 OY of 8,980 mt. The fishery has expanded to all areas of the Gulf of Alaska and the entire quota is now taken by domestic fishermen. As a result of increasing effort, the sablefish harvest can now be taken in a relatively short period. Currently, the three forms of legal gear for this fishery are hook and longline, pots, and trawl. Harvest, due to increasing gear conflicts between longline and pot gear, time/ area restrictions and gear regulations have been implemented which will eventually phase out the use of pot gear.

Section 3.3.1.1., Regulatory Measures, Page 3-25

DELETE the last sentence in the first paragraphand replace it with:

"The most substantive regulations on groundfish fishing in the Gulf of Alaska are for sablefish where OYs, OY apportionment, time/area restrictions and gear regulations are in effect."

Section 3.3.1.2., Purpose of Regulatory Measures, Page 3-26

REPLACE the second paragraph with the following:

"The sablefish quota which is specified for every regulatory area or district in the Gulf was established originally upon the request of fishermen and management in an attempt to reduce the decline of the sablefish stocks. The equilibrium yield (EY) is based on the most recent biological information on the status of stocks. In recent years the quota, or optimum yield (OY) has been set lower than the estimated EY as a rebuilding measure. For the most part, gear, and season restrictions for the sablefish fishery are based on economic or social considerations. Given the existing domestic fleet's capability to harvest the entire OY, seasons have been set to schedule the fishery when weather and product quality is reportedly the best. Apportionments of OY to specific gear types has recently been used to reduce gear conflict, provide necessary amounts of sablefish as a bycatch to support the developing domestic trawl fisheries, and to stabilize the economic environment of local communities dependent on this fishery."

Section 8.3.1.1. Season, Gear, Area, and Catch Restrictions, page 8-2.

DELETE the text under Item (D) and add the following:

(D) SABLEFISH FISHING SEASONS. The trawl fishery shall open January 1 of each year, and the directed pot longline (when permitted) and hook and longline fisheries shall commence on April 1 of each year.

The Regional Director of NMFS shall use field orders to regulate the taking of sablefish to provide for the full achievement of the optimum yields for sablefish and other species. The use of field order authority may include the designation of sablefish as a bycatch-only species in any legal fishery once a specified fraction of the OY for that fishery has been taken, and any other measures that may be necessary to prevent the achievement of the sablefish allocation for a particular gear from closing other fisheries with the same gear which depend on incidental amounts of sablefish.

(E) Sablefish Gears and Allocations.

(1) Eastern Area

(a) Legal Gear. Legal gears for the taking of sablefish are trawls and hooks and longlines;

(b) Allocation of Sablefish Between Gears. From 1986 forward, vessels using hook and longline gear shall be permitted to take up to 95% of the OY for sablefish. Vessels using trawl gear shall be permitted to harvest up to 5% of the Optimum Yield for sablefish.

(2) Central Area

(a) Legal Gear. In 1986, legal gears for the taking of sablefish are trawls, hooks and longlines, and pot longlines. In 1987, and thereafter, legal gears shall be trawls and hooks and longlines.

(b) Allocation of Sablefish Between Gears. In 1986, vessels using hook and longline gear shall be permitted to take up to 55% of the sablefish OY; vessels using pot-longline gear shall be permitted to take up to 25% of the OY; and trawl vessels shall be permitted to take up to 20% of the OY. In 1987 and thereafter, vessels using hook and longline gear shall be permitted to take up to 80% of the sablefish OY; and vessels using trawl gear shall be permitted to take up to 20% of the OY.

(3) Western Area.

(a) Legal Gear. In 1986, 1987, and 1988, legal gears for the taking of sablefish are hooks and longlines, pot longlines, and trawls. In 1989 and thereafter, legal gears shall be trawls and hooks and longlines.

(b) Allocation of Sablefish Between Gears. In 1986, 1987, and 1988, vessels using hook and longline gear shall be permitted to take up to 55% of the OY for sablefish; vessels using pot longline gear shall be permitted to take up to 25% of the OY; and vessels using trawls may take up to 20% of the OY. In 1989 and thereafter, vessels using hooks and longlines may take up to 80% of the OY; and vessels using trawls may take up to 20% of the OY.

Section 8.3.1.1.(H), Page 8-3:

Beginning line 24, DELETE:

> (H) "Issuance of Field Orders. The Council finds that the Optimum Yields in this plan, which are based upon projections of the status of stocks, economic and other conditions several months in advance of the actual conduct of the fishery, may be found to be mis-specified in light of unpredicted and unanticipated adverse or favorable stock conditions which are revealed in-season. Under such circumstances, the Council further finds it appropriate for conservation purposes only, "

Beginning line 24, ADD:

> The Council finds that inseason management actions may be necessary to permit the attainment of optimum yields for sablefish and other species. This may occur because of new information about a stock revealed inseason which suggests revision of OY is necessary, or because catches of a particular species by individual vessels or classes of vessels threaten to cause premature closure of the fishery for that or other species. Under such circumstances, the Council finds it appropriate. . ."

Section 8.3.1.1.(E), Page 8-2:

DELETE: "Gear Restrictions. None"

ADD: "Gear Limitations. All sablefish pots must have a biodegradeable escape panel, with an opening in the webbing equal in perimeter to the tunnel eye opening. This opening must be laced on otherwise secured with untreated cotten twine or other natural thread no larger than 120 thread."

2. OTHER ROCKFISH.

Section 8-3 Management Measures and Rationale

Section 8.3.1. Domestic

Section 8.3.1.1 Season, Gear, Area, and Catch Regulations

ADD NEW SECTION:

(J) State Regulation of Shelf Rockfish.

The State of Alaska's management regime for demersal shelf rockfish is directed at managing these rockfish stocks within smaller management units than are provided for by the FMP. Such State regulations are in addition to and stricter than Federal regulations. They are not in conflict with the FMP as long as they are (1) consistent with specific provisions of the FMP and (2) limited to establishing smaller areas and quotas, which would result in a harvest of demersal shelf rockfish in each FMP management area at levels no greater than that provided for in the FMP. Such State regulations may apply only to those vessels registered/licensed under the laws of the State of Alaska.

Section 3.0 DESCRIPTION OF THE FISHERY

3.1 Areas and Stocks Involved

3.5.1 Output of Subject Domestic Commercial Fishery, Page 3.40

ADD:

"shelf demersal rockfish" as an FMP category.

DELETE:

Pacific ocean perch

Pacific Ocean Perch Category

Pacific ocean perch
Northern rockfish
Rougheye rockfish
Shortrater rockfish
Sharpchin rockfish

DELETE: Rattail

ADD: Demersal Shelf Rockfish

Yelloweye rockfish
Quillback rockfish
Canary rockfish
China rockfish
Rosethone rockfish
Tiger rockfish
Redstripe rockfish
Silvergrey rockfish
Bocaccio rockfish

ADD: Other rockfish

Unspecified Sebastes sp.

Section 3.5.1.3, Markets, Domestic and Imports, Page 3-57

Domestic Markets

After "... rockfishes will consist primarily of outlets for consumer() outlets." ADD:

"Specialized markets for fresh rockfish and sablefish account for an increasing amount of U.S. sales."

Section 4.7 Current Status of Stocks

Section 4.7.3. Other Rockfish

Sections 4.7.3.1, Maximum Sustainable Yield, and 4.7.3.2, Equilibrium Yield, page 4-21.

DELETE all existing text and REPLACE with the following:

The original MSY for other rockfish was set at 7,600 to 10,000 mt Gulf-wide. This level was established as the lower end of the "other rockfish" species catch in the foreign fisheries for Pacific ocean perch (POP) during the period 1973-1975.

A review of observer data collected during the 1973-75 period indicates that the dominant bycatch species in the POP fishery have been incorporated into the POP complex (northern rockfish, rougheye rockfish, sharpchin rockfish) or have been established as another category with a separate OY (shortspine thornyhead).

The foreign and joint venture catches of other rockfish reached 300 mt and 400 mt, respectively, in 1984. The domestic catch approached 800 mt. However, that fishery concentrates on a nearshore species group that has not been previously addressed in the FMP.

Preliminary results of the 1984 trawl survey showed that only one species of "other rockfish" other than those in the POP and Sebastolobus sp. groups was present in significant numbers. Biomass of dusky rockfish was estimated to be between, 5,000 and 28,000 mt in the Western and Central Gulf. They were encountered primarily on the shallow water zone inside the area where the commercial fishery currently operates. Other species occurred in trace amounts with densities of well below one pound per hectare.

For these reasons, the MSY for other rockfish needs to be reevaluated. Because of the removal of predominant species from the other rockfish category, the 7,600 to 10,000 mt MSY in the FMP for MSY is no longer appropriate. The average harvest of other rockfish in the foreign and joint venture fisheries during the period 1982-84 was approximately 1,500 mt. With the poor showing in the trawl survey, there is no evidence that a greater harvest can be sustained.

Section 4.7.3.2. Equilibrium Yield (EY)

DELETE current language and REPLACE with:

Equilibrium Yield (EY) has not been established in the FMP for this species complex.

3. IMPLEMENT NEW OPTIMUM YIELDS FOR POLLOCK, PACIFIC OCEAN PERCH, ROCKFISH, ATKA MACKEREL, AND OTHER SPECIES.

Section 3.0 DESCRIPTION OF THE FISHERY

3.1 Areas and Stocks Involved, page 3-3

DELETE the following two paragraphs:

The relative abundance of fishes in the cod family (Gadidae) is also different in the Gulf of Alaska compared to the other regions. Pacific hake (Merluccius productus), the most abundant of the cod-like fishes off Washington-California, is present only in the southern portion of the Gulf and generally not in commercial quantities. Pollock (Theragra chalcogramma), the dominant "cod" and largest element in the bottomfish biomass of the Bering Sea, is much less abundant in the Gulf of Alaska and becomes progressively scarcer to the south until it is practically absent off Oregon. However, the abundance of pollock in the Gulf of Alaska has increased by perhaps an order of magnitude during the past decade or so coincide with a reduction in the abundance of Pacific ocean perch and sablefish (Anoplopoma fimbria). Pollock now appear to comprise the largest exploitable biomass within the gadoid community in the Gulf, approaching perhaps that of Pacific hake in the Washington-California region but far smaller than that of pollock in the Bering Sea. Pacific cod (Gadus macrocephalus) may reach its greatest level of abundance in the Gulf.

Other abundant groundfishes which have been the target of fisheries in the Gulf include sablefish and the so-called Atka mackerel, a member of the greeling family (Hexagrammidae). Little is known about the distribution and abundance of Atka mackerel because it has only recently become the target of foreign fisheries and the U.S. surveys were not designed to estimate its abundance. Sablefish are found from California waters northward into the Gulf of Alaska and Bering Sea, but reaches its greatest abundance in the Gulf of Alaska.

REPLACE the above two paragraphs with the following:

The relative abundance of fishes in the cod family (Gadidae) is also different in the Gulf of Alaska compared to the other regions. Pacific hake (Merluccius productus), the most abundant of the cod-like fishes off Washington-California, is present only in the southern portion of the Gulf and generally not in commercial quantities. Pollock (Theragra chalcogramma), the dominant "cod" and largest element in the bottomfish biomass of the Bering Sea, is much less abundant in the Gulf of Alaska and becomes progressively scarcer to the south until it is practically absent off Oregon. However, the abundance of pollock in the Gulf of Alaska has increased by perhaps an order of magnitude during the past decade coincident with a reduction in the abundance of Pacific ocean perch and sablefish (Anoplopoma fimbria). The abundance of pollock now appears to be declining primarily as the result of poor recruitment from the 1980 and 1981 year classes. Pollock currently comprise the largest exploitable biomass within the gadoid community in the Gulf, approaching perhaps that of Pacific hake in the Washington-California region but far smaller than that of pollock in the Bering Sea. Pacific cod (Gadus macrocephalus) may reach its greatest level of abundance in the Gulf.

Other abundant groundfishes which have been the target of fisheries in the Gulf include sablefish and Atka mackerel, a member of the greenling family (Hexagrammidae). This species supported a targeted foreign fishery in the Central regulatory area over the past decade, but now has declined to negligible quantities. The 1984 survey indicates that the total biomass for Atka mackerel is 39,000 mt with 38,000 mt being available in the Western Area and 1,000 mt in the Central Area. Length frequency information suggests that the population consists mostly of large fish. Recruitment in the Central Area appears nonexistent. The absence of catches in the Eastern area indicates stocks are not sufficiently abundant to support a commercial fishery. The low abundance of Atka mackerel may be due to a westward shift in the distribution of stocks or to excessive fishing mortality. Sablefish are found from California waters northward into the Gulf of Alaska and Bering Sea, but this species reaches its greatest abundance in the Gulf of Alaska.

Section 3.0 DESCRIPTION OF THE FISHERY

3.1 Areas and Stocks Involved, page 3-1

ADD to the third paragraph beginning on page 3-1:

For management purposes Pacific ocean perch is considered to be a complex of five species that have been harvested by the foreign trawl fleet fishing along the continental slope and shelf edge. The four other species included in the complex are:

northern rockfish	S. polyspinus
rougheye rockfish	S. aleutianus
shortraker rockfish	S. borealis
sharpchin rockfish	S. zacentrus

These four species are generally less common than S. alutus in the rockfish trawl fishery. In recent years target fisheries for rockfish have occurred in the nearshore areas of the Eastern Gulf. Two assembleges or species groups occur in the nearshore area and 15 additional species have been identified.

Section 4.7 Current Status of Stocks

DELETE AND REPLACE TABLE 4.2.

Section 4.71 Alaska Pollock

DELETE Section 4.7.1.1., Maximum Sustainable Yield (MSY), Pages 4-19 and 4-20. and REPLACE with the following:

Maximum sustained yield were initially estimated for the Gulf of Alaska from results of trawl surveys conducted by the National Marine Fisheries Service during 1973-77. These surveys indicated the total exploitable biomass in the Gulf of Alaska to be 1,041,000 - 2,081,000 mt. The exploitable biomass was distributed (among the regulatory areas) according to results of the trawl surveys as follows:

Western	357,000 mt - 713,000 mt
Central	595,000 mt - 1,191,000 mt
Eastern	89,000 mt - 177,000 mt

MSY for the Gulf of Alaska was originally estimated to be 168,800 -334,000 mt, using the relationship discussed in Section 4.7. On the basis of biomass distribution, MSY was distributed among the regulatory areas as follows:

Western	57,000 - 114,000 mt
Central	95,200 - 191,000 mt
Eastern	16,610 - 29,000 mt

The estimates of biomass and MSY have been updated based on recent resource surveys and analysis of fisheries data. Acoustic surveys have been conducted by NMFS to estimate pollock biomass in the Shelikof Strait Region of the Gulf of Alaska during the years 1980, 1981, 1983 and 1984. On the basis of five surveys conducted during March and April, 1984, total pollock biomass is now estimated to be between 1,574,634 and 2,034,857 mt with a mean estimate of 1,789,186 mt. This estimate is believed to represent all of the exploitable biomass in the central and western regulatory areas combined, because few

TABLE 4.2

The Derivation of Optimum Yield (OY) for
Gulf of Alaska Groundfish Resources (1,000s mt)

		Pollock[a]	Pacific Cod	Flounders	Pacific Ocean Perch	Sablefish	Atka Mackerel	Other Rockfish	Squid	Sebastolobus Sp.	Other Species
Exploitable Biomass	WESTERN	1,574-2,035	40-79	220	53	unknown	38	unknown		unknown	
	CENTRAL				120	"	1	"		"	
	EASTERN	89-177			94	"	0	"		"	
	TOTAL	1,663-2,212			267		39		(110)[b]		
Maximum Sustainable Yield (MSY)	WESTERN	344-408									
	CENTRAL										
	EASTERN	16.6									
	TOTAL	360.6-424.6	88-177	67	31	22-25		unknown	5.0	3.75	
Equilibrium Yield (EY) (When stock incapable of producing MSY)	WESTERN				1.7	2.225					
	CENTRAL				5.2	4.075					
	EASTERN				4.5	4.665-6.330					
	TOTAL	N/A	N/A	N/A	11.4	10.965-12.630	N/A	N/A	N/A	N/A	
Allowable Biological Catch (ABC)	WESTERN	350.0	16.5	20.8		1.67	4.7				
	CENTRAL		33.5	30.6		3.06	0.5				
	EASTERN	16.6	10.0	16.6		3.5-4.75	0.1				
	TOTAL	516.6	60.0	68.0		8.23-9.480	5.3	5.0	5.0[c]	3.75	22.435
Optimum Yield	WESTERN	305	16.6	10.4	1.302	1.67	4.7	----------	(OY apportioned Gulf-wide)		----------
	CENTRAL		33.5	14.7	3.906	3.06	.5	"	"	"	"
	EASTERN	16.6	9.9	8.4	0.875	3.5-4.75	.1	0.6[d]	"	"	"
	TOTAL	321.6	60.0	33.5	6.083	8.23-9.480	5.3	5.0	5.0	3.75	22.435

a/ For purposes of pollock management, OY for the Western and Central Regulatory Areas are combined.
b/ From unsubstantiated Soviet reports.
c/ Apportioned equally to each INPFC area.
d/ The harvest of demersal shelf rockfish limited to 600 mt in Eastern area between 56°N. and 57°30'N. latitude.

pollock were found elsewhere in the western/central areas while surveying during the spawning period. Results of the 1984 survey indicate that total biomass continues to decrease from its peak level in 1982. A cohort analysis of the 1976-82 catch-at-age data provided revised estimates of exploitable biomass and exploitable annual surplus production (ASP). Estimates of average exploitable biomass increased from 1,040,000 mt for 1976-1981 to 1,430,000 mt for 1976-1982. The corresponding average ASP values are 344,000 mt (± 328,000 mt, 95% C.I.), and 408,000 mt (± 206,000 mt, 95% C.I.). These average ASP values which have not been updated since 1983 can be considered as current estimates of MSY for the western and central areas. There is no data to update the eastern area.

Section 4.7.1.2, Equilibrium Yield (EY), Page 4-20:

DELETE: ". . . MSY attainable."

Section 4.7.2 Pacific Ocean Perch

Section 4.7.2.1, Maximum Sustainable Yield (MSY), Page 4-20:

DELETE TEXT AND REPLACE WITH:

> Results of a recently concluded comparison of research vessel catch rates during cruises conducted in 1961-62 (prior to the development of the large foreign trawl fisheries in the area) and cruises conducted in 1975 indicate that the perch stocks in the central Gulf of Alaska were no more than 20% of their virgin abundance (Hughes, eta al, 1976). The results from the 1984 Gulf of Alaska biomass survey indicate the current exploitable biomass of the Pacific ocean perch complex are 53,400 mt, 120,150 mt and 93,450 mt in the Western, Central, and Eastern Regulatory Areas. The estimate of MSY for S. alutus has been reduced from an earlier estimate of 125,000 mt to 31,000 mt. This latter estimate was derived by a re-analysis of the foreign fishery data using stock reduction method and assuming M=0.05 rather than M=0.15 used in previous analyses.

Section 4.7.2.2., Equilibrium Yield (EY), Page 4-21

DELETE last paragraph and replace with:

> This low level of abundance has remained relatively stable in recent years, and there are no signs of strong year classes entering the fishery. United States scientists have noted in INPFC meetings that even though a reduction in the catch of Pacific ocean perch was attained in 1974, the downward trend in stock condition, as inferred from Japanese CPUE values, continued unabated. Based on the estimates of biomass from the 1984 trawl surveys for the species complex and the MSY for S. alutus, the EY for the complex are estimated to be 1,736 mt, 5,208 mt, and 4,530 mt in the Western, Central and Eastern areas, respectively.

Section 4.7.8 Atka Mackerel

Section 4.7.8.1, Maximum Sustainable Yield (MSY), Page 4-31:

DELETE the existing text and REPLACE with the following:

Biomass estimates for Atka mackerel, based on a 1979 US-USSR cooperative trawl survey was 32,500 mt for the Gulf of Alaska between 148° to 164°W longitude and 69,000 and 89,000 mt based on a CPUE analysis. Preliminary biomass estimates from the 1984 trawl survey are 38,000 mt in the Western area and 1,000 mt in the Central area. The 95% confidence interval for the 39,000 mt total is $\pm$ 115%, indicating that this estimate is not very reliable. The catches for 1984 were 1,047 mt in the Western Area and 65 mt in the Central Area, and near zero in the Eastern Area. Length frequencies have shifted to larger sizes in the Western and Central Areas with no apparent recruitment occurring in the Central Area.

Section 4.7.8.2 Equilibrium Yield (EY) Atka Mackerel, Page 4-31:

DELETE: "Not Applicable -- MSY Attainable"

REPLACE WITH:

Given the apparent collapse in the Atka mackerel stocks in the Gulf of Alaska and the westward shift in the fishery and the stock distribution, the EY is near zero in the Central and Eastern areas.

Section 6.0 Optimum Yield Concept

DELETE AND REPLACE TABLE 6.3.

Section 6.1 Departure from MSY to ABC for Biological Reasons, Page 6-1:

DELETE the first paragraph and REPLACE with the following:

> Of the ten species categories which support the Gulf of Alaska groundfish fishery, MSY and EY were evaluated in Section 4.7, MSY and EY do not apply to the tenth category -- "Other Species." Pacific ocean perch, other rockfish, sablefish and Atka mackerel in the Central and Eastern areas are incapable of producing MSY.

DELETE the fourth paragraph and REPLACE with the following:

> Accordingly, ABCs for cod, flounders, and squid, are considered equal to the low end of the MSY range (Table 4.2). Until those findings can be verified, ABC for these species should be no more than 85% of the reported EY (Table 4.2), again preferring the risk of short-term underexploitation to the risk of long-term effects of overharvest. This value (25,000 mt) is near the 1975-76 average catch of 24,200 mt and will not result in a decrease in production.

TABLE 6.3

1984 GULF OF ALASKA GROUNDFISH OY, DAH, DAP, JVP, RESERVES AND TALFF BY AREA (MT).

GULF OF ALASKA

Initial Groundfish Apportionments (mt), 1985

Species		OY	DAH	DAP	JVP	Reserve	TALFF
Pollock	W/C	305000	256871	44371	212500	23129	25000
	E	16600	13280	13280	0	3320	0
Pacific cod	W	16860	5748	2539	2209	3312	7500
	C	33340	24332	19701	4431	6708	2500
	E	9900	7920	7920	0	1980	0
Flounders	W	10400	8320	7398	922	1880	200
	C	14700	11760	8292	3468	2690	250
	E	8400	6720	6720	0	1680	0
POP	W	1302	1302	1302	53 *	0	39 *
	C	3906	3906	3906	98 *	0	16 *
	E	875	875	875	-	0	0
Sablefish	W	1670	1670	1670	243 *	0	180 *
	C	3060	3060	3060	345 *	0	21 *
	W.YK	1680	1680	1680	-	-	-
	E.YK	1135	1135	1135	0	0	0
	SE	1435	1435	1435	0	0	0
Atka mackerel	W	4678	3742	50	3692	836	100
	C	500	380	380	70	100	20
	E	100	80	80	0	20	0
Rockfish	C-W	5000	4733	4600	133	267	25 *
Thornyhead	C-W	3750	3000	2990	10	700	50
Squid	C-W	5000	4000	3990	10	950	50
Other sp	C-W	22160	17944	16544	1400	4191	325
W/C total		305000	256871	44371	212500	23129	25000
Western total		34610	20782	12959	7823	6028	7800
Central total		85706	43438	35509	7929	9498	2770
Eastern total		40125	33125	33125	0	7000	0
C-W total		36210	29677	28124	1553	6108	425
TOTAL		471651	383893	154088	229805	51763	35995

Footnote: * = prohibited species catch limits, which are not part of the above totals.

Section 6.1, Departure from MSY to ABC for biological Reasons, Page 6-6:

DELETE the remainder of the paragraph beginning with "ABC in 1985 will depend on the magnitude . . ."

And REPLACE with the following:

that the acceptable biological catch for 1984 is at least 400,000 mt and could be as high as 500,000 mt. ABC in 1985 was reevaluated on the basis of acoustic surveys conducted in the Shelikof Strait region of the Gulf of Alaska during March and April, 1984. Total pollock biomass in 1984 is estimated to be between 1,574,634 mt and 2,034,857 mt with a mean estimate of 1,789,186 mt. This mean represents the known exploitable biomass in the Central and Western Regulatory Areas combined, since few pollock were found elsewhere in these areas while surveys were conducted in Shelikof Strait during the spawning period. Similar surveys have been conducted in Shelikof Strait during 1980, 1981, and 1983. Results of the 1984 survey indicate that total biomass continues to decrease from its peak level in 1982. Length and age composition and hydroacoustic survey data from 1984 joint venture fisheries confirm that the 1980 year class (age 4 fish) is weak. The 1981 year class (age 3 fish) also appears to be weak. The abundance estimate of age 3 fish in 1984 is about the same as age 3 fish (1980 year class) in 1983. It is estimated that the 1985 exploitable biomass of pollock will decline from the 1984 level by some 500,000 mt to fall within a range of 1,200,000-1,270,000 mt. An exploitation rate of 28.5% provides a range for the maximum ABC 342,000 mt and 358,000 mt, with a mean of 350,000 mt.

Section 6.1 Departure from MSY to ABC for Biological Reasons, Page 6-6:

INSERT between 3rd and 4th Paragraphs on Page 6-6:

The ABC for the Pacific ocean perch complex is set at 75% of estimated EY. This will provide for some rebuilding of the stocks in the Pacific ocean perch complex.

The ABC for Atka mackerel was set at bycatch levels in the Central and Western areas. In the Western area, ABC was set using a exploitation rate between 10% and 15% of 38,000 mt biomass estimate, 3,800-5,700 mt respectively.

Section 6.2 Departure from ABC for Socioeconomic Reasons, Page 6:

DELETE:

> Pollock -- The 1984 OY has been set at the lower end of the ABC range, or 400,000 mt of pollock. This value was selected as the amount of fish needed to meet the requirements of the fishery. The lower end of the ABC range was also chosen because of concerns that a higher pollock OY might lead to unacceptable catches of incidentally caught species.

REPLACE WITH:

> Pollock -- The 1985 OY in the Western and Central area has been set at 305,000 mt of pollock, 45,000 mt lower than the average maximum ABC of 350,000 mt. This value was selected as the amount of fish needed to meet the requirements of the fishery, recognizing the dependency of the fishery on only two year classes and continuing poor recruitment. This lower value was also chosen because of concerns that a higher pollock OY might lead to unacceptable catches of incidentally caught species.

DELETE:

"Pacific ocean perch -- current EY for this species is believed to be about 50,000 mt, or only 33-40% of MSY. To rebuild the stock(s) to a level that"

REPACE WITH:

"Pacific ocean perch -- current EY for this species is believed to be about 11,474 mt, or 37% of MSY. To rebuild the stock(s) to a level that"

Page 6-10:

On the top of page 6-10, DELETE the paragraph:

The Pacific ocean perch resource needs strong conservation measures if it is ever to recover. Therefore, ABC for the Eastern Regulatory Area is set at 875 mt, and OY for the Gulf of Alaska is set equal to ABC. Total OY is therefore equal to 11,475 mt.

REPLACE it with:

The Pacific ocean perch resource needs strong conservation measures if it is ever to recover. Therefore, ABC for the Eastern Regulatory Area is set at 875 mt, and OY for the Western and Central areas in the Gulf of Alaska is set equal to 75% of EY. Total OY is therefore equal to 6,083 mt.

Section 6.2 Departure from ABC for Socioeconomic Reasons. Page 6-10:

ADD at end of Flounders paragraph:

Atka Mackerel -- the OY for Atka mackerel in the Western area is 4,678 mt, within the ABC range of 3,800 mt and 5,700 mt. Therefore the OY was not changed. The OY for the Central and Eastern area was set at 500 mt and 100 mt respectively to provide for bycatch levels in other fisheries.

4. IMPLEMENT REPORTING REQUIREMENTS FOR CATCHER/PROCESSORS

Section 8.5.1, Page 8-15. DELETE:

"..., DNP" at end of first sentence of paragraph (B) Processor Reports.

DELETE:

(C) "In addition to the above requirements domestic fishermen who fish in the FCZ off Alaska and deliver groundfish outside of Alaska must report their catch or advise the management agencies of their departure by radio or telephone."

ADD:

(C) "Catcher/processors.

(1) Reporting requirements.

Vessels that catch and process groundfish at sea (catcher/processors) often do not land their catch for periods of several weeks. The NPFMC considers such catcher/processors to be those vessels that have the capacity to freeze their catch at sea and are able, therefore, to remain at sea for periods of more than two weeks before returning to port.

Thus, while they are required to complete and submit a fish ticket upon landing their catch to the appropriate management agency within a period prescribed by regulation, catch information supplied by a fish ticket may not reach the management agencies in time to affect inseason management decisions concerning time/area adjustments or apportionments of surplus groundfish among the various users. Hence, those vessels that catch and process at sea and do not land their catch within two weeks from the date of catch are required to report the hail weights of their catch within a period

prescribed by regulation. Such report must be in writing and must be submitted to the Director, Alaska Region, National Marine Fisheries Service. The NPFMC intends that each vessel operator be responsible for submitting the written report by whatever means are available to him. The NPFMC does not intend that a catcher/processor, which lands its catch within two weeks from the date of catch, provide a written catch report in addition to the required fish ticket.

(2) Check In and Check Out Report.

Catcher/processors are required to check in and check out of any regulatory area or district for which an optimum yield is established within a time period prescribed by regulation. This report may be by radio through the U.S. Coast Guard to the Director, National Marine Fisheries Service. The NPFMC intends that this requirement will enhance the National Marine Fisheries Service's ability to monitor the timeliness of the written catch reports described in (1) above and to assess the total harvest capacity in a regulatory area/district for purposes of projecting dates when an optimum yield will be reached.

5. ESTABLISH MEASURES TO CONTROL PACIFIC HALIBUT BYCATCH.

Section 8.3 Management Measures and Rationale

Section 8.3.1. Domestic

Section 8.3.1.1., Season, Gear, Area, and Catch Regulations

INSERT NEW SECTION:

FRAMEWORK ALTERNATIVE (3)

I. Time-area Closures and Gear Restrictions to Control Pacific Halibut Bycatch

Further fishing with specific types of gear or modes of operation during the year is prohibited in a fishery and area once that fishery takes its prohibited species catch (PSC) limit in that area.

For each of three areas (Eastern, Central, and Western) separate PSC limits will be established for the wholly domestic fishery and the joint venture fishery.

The halibut PSC limit and the number of limits for each fishery and area and types of gear or modes of operation to be prohibited once a PSC limit is taken will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will make recommendations to him for each fishery and area based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not make recommendations by December 15, the halibut PSC measures already established shall automatically constitute the Council's recommendations to the Regional Director.

The Regional Director may change the PSC measures during the year for which they were set if, as new information becomes available, it is apparent to him that his initial determination has become inappropriate with respect to meeting FMP objectives. The Council may recommend such inseason changes based on new information.

The Council's recommendations on the levels and numbers of PSC limits and the types of gear or modes of operation prohibited once a PSC limit is taken will be based on the following types of information:

1. estimated bycatch in years prior to that for which PSC limits are being set;

2. expected change in groundfish catch;

3. estimated change in groundfish biomass;

4. estimated change in halibut biomass and stock condition;

5. potential impact on halibut stocks;

6. potential impacts on domestic halibut fishery;

7. methods available to reduce bycatch;

8. the cost of reducing bycatch; and

9. other biological and socioeconomic factors that affect the appropriateness of specific PSC limits in terms of FMP objectives.

For the first fishing year for which this section is effective, the Regional Director will determine the levels and numbers of PSC limits and the prohibitions imposed when a PSC limit is taken using the best information available if the Council does not make recommendations prior to October of the year preceding the year for which they are established.

Section 8.3.2. Foreign

Section 8.3.2.1.(1), Page 8.8. INSERT NEW SECTION

(d) Further specific types of gear or modes of operation during the season is prohibited in a foreign fishery and area once that fishery takes its prohibited species catch (PSC) limit in that area.

PSC limits will be established for two areas (Central and Western). The method to be used to establish and make inseason adjustments to the PSC limits, the number of gear or modes of operation to be prohibited once a PSC limit is taken are the same as specified for domestic fisheries in Section 8.3.1.1.I.

ESTABLISH MEASURES TO CONTROL PACIFIC HALIBUT BYCATCH.

If Alternative 3' is implemented instead of Alternative 3, the following additional changes would have to be made to the FMP, Section 3.2.1.1:

FRAMEWORK ALTERNATIVE (3')

The areas for which PSC limits are established will also be determined by the Regional Director and the Regional Director may determine that PSC limits will be allocated to individual operations. The mechanism used in such determinations and in determining what methods of allocation will be used will be the same as that used for the other halibut PSC measures. The mechanism for inseason changes is also the same.

ESTABLISH MEASURES TO CONTROL THE PACIFIC HALIBUT BYCATCH.

Section 8.3.1.1.D, Page 8.2. REPLACE WITH:

PSC ALTERNATIVE (2a)

(D) Time-area Closures.

(1) June 1 - November 30. None.

(2) December 1 - May 31. When the total domestic trawl catch of halibut in any statistical area exceeds that amount listed below, that statistical area shall be closed to domestic on-bottom trawling for the remainder of this period.

Western - 270 mt
Central - 768 mt
Eastern - 32 mt

ESTABLISH MEASURES TO CONTROL THE PACIFIC HALIBUT BYCATCH.

PSC ALTERNATIVE (2b)

Section 8.3.1.1.D, Page 8.2 REPLACE WITH:

(D) Time-area Closures.

(1) June 1 - November 30. None.

(2) December 1 - May 31. When the joint venture domestic trawl catch of halibut in any statistical area exceeds that amount listed below, that statistical area shall be closed to on-bottom joint venture trawling for the remainder of this period.

Western - 120 mt
Central - 330 mt
Eastern - 31 mt

AMENDMENT 14:
OVERVIEW OF COMMENTS
BY ISSUE

1. ESTABLISH A GEAR AND/OR AREA RESTRICTION IN THE SABELFISH FISHERY.

The following individuals or associations supported the following alternatives.

Alternative 1 - maintain the status quo.

Al Burch, Fisherman, Kodiak
Barry Collier, North Pacific Fishign Vessel Owners' Assn.
John Coyne, Fisherman, Homer
Tim Longrich, Fisherman, Kodiak
Mark Maring, Fisherman, Kodiak
Walter Pereyra, Coalition for Open Ocean Fisheries
Erling Skaar, Fisherman, Seattle

Alternative 2 - Allocate the sablefish OY to specific gear types.

NO SPECIFIC COMMENTS

Alternative 3 - Establish hook and longline-only areas.

3a - Waters east of 147°W longitude.

James Chesnut, Fisherman, Sitka
Lonnie Chesnut, Fisherman, Sitka
Elwin Cox, Fisherman
Dick Griffin, Chamber of Commerce, Sitka

3b - Waters east of 159°W longitude.

Steven Fish, Fisherman, Petersburg

3c - Waters east of 170°W longitude.

Don Iverson, Fisherman, Seattle
Ben Grussendorf, State Representative, Sitka
David Clemens, Fisherman, Kodiak
Walt Cothran, Processor, Pelican
Mark Lundsten, Fisherman, Seattle

Alternative 4 - Place a ceiling on the number of vessels harvesting sablefish sablefish using pot gear.

Ben Grussendorf, State Representative, Sitka

Alternative 5 - License limitation.

James Chesnut, Fisherman, Sitka
Paul Clampitt, Fisherman, Bellingham (with legal gear being hook and longline)

New Alternatives:

A. By Richard White, Processsor and Fisherman, Seattle:

(1) Open waters east of 147°W to pot gear only on January 1.
(2) After 20% of OY is taken, or on March 15, whichever occurs first, close the area to pot fishing.
(3) On March 15, open the area to longline-only.

B. By Kathryn Kinnear, Kodiak Longline Assn.:

(1) Put a cap on the 6 pot vessels that were active in the Gulf before March 31.
(2) With the exception of these 6 pot vessels designate the sablefish as a longline only fishery in all waters east of 170°W longitude.
(3) Set concurrent season openings on March 15.
(4) All pot longline vessels must remove gear from the grounds when delivering or arriving in port.

C. By Tim Longrich, Fisherman, Kodiak:

(1) Clearly marked and defined hook and longline and pot gear using radar reflectors, lights on the end of buoys, end-markers, etc;
(2) Staggered longline-only and pot-only fishery periods;
(3) A geographical division of the Gulf in half, each half representing approximately one-half of the sablefish OY, allocating 50% of OY to longline and 50% to pot gear, or restricting one-half of the Gulf to longline gear and the other to pot gear.
(4) Limit number of pots;
(5) Require removal of gear from grounds when leaving area;
(6) A cap on the number of pot vessels permitted to harvest sablefish.

D. By Karen Adler, Fishing Company of Alaska, Seward:

Designate waters east of 137°W longitude as hook and longline only for sablefish.

E. By Robert Alverson, FVOA:

(1) Designate all waters east of 170°W longitude as longline-only;
(2) Designate 5% of OY for bycatch purposes in trawl operations and provide 3% of the OY for incidental purposes by other gear types;
(3) The directed sablefish quota would be 92% of the OY.

2. ESTABLISH ROCKFISH AREAS AND QUOTAS.

Alternative 1 - Maintain a Gulfwide OY for other rockfish.

NO SPECIFIC COMMENTS

Alternative 2 - Set the Southeast District shelf demersal rockfish OY at 600 mt between 56°N and 57°30'N latitudes with the remainder of the Gulfwide 5,000 mt OY (4,400 mt) to be taken elsewhere in the Gulf.

NO SPECIFIC COMMENTS

Alternative 3 - Set the Southeast District shelf demersal rockfish OY at 600 mt between 56°N and 57°30'N latitudes and set the OY for the pelagic and slope rockfish species within the Southeast-East Yakutat district at 880 mt for a combined other rockfish OY of 1,480 mt. The remaining 3,520 mt of the other rockfish resource would be harvested from the other areas of the Gulf. (Recommended by the Alaska Board of Fisheries).

Walt Cothran, Processor, Pelican

3a - Change the accounting year to October 1 through September 30 as part of this alternative. (Board recommendation).

NO SPECIFIC COMMENTS

3b - Retain January 1 - December 31 as the accounting year.

NO SPECIFIC COMMENTS

Alternative 4 - Set the shelf demersal rockfish OY at 600 mt for the area where the 1984 domestic fishery was concentrated and establish separate OYs for slope, shelf pelagic, and shelf demersal rockfish species groups by Gulf of Alaska management area based on the best available data.

NO SPECIFIC COMMENTS

Alternative 5 - Set the OY for shelf demersal rockfish at 600 mt between 56°N and 57°30'N latitudes. Subtract this amount from the Gulfwide OY of 5,000 mt and apportion the remaining 4,400 mt by regulatory area as follows: Southeast-East Yakutat - 880 mt, West Yakutat - 880 mt, Central Gulf - 1,760 mt, and Western Gulf - 880 mt.

NO SPECIFIC COMMENTS

Alternative 6 - Remove the Southeast Alaska shelf rockfish fishery (depths less than 200 m) from the Gulf of Alaska Groundfish FMP, giving full control of the fishery to the State of Alaska.

Kathryn Kinnear, Kodiak Longline Assn.
Ben Grussendorf, State Representative, Sitka

3. IMPLEMENT NEW OPTIMUM YIELDS FOR POLLOCK, PACIFIC OCEAN PERCH, ROCKFISH, ATKA MACKEREL, AND OTHER SPECIES.

POLLOCK

Alternative 1 - Reduce the OY for pollock to 305,000 mt in the Western/Central Area.

Kathryn Kinnear, Kodiak Longline Assn.

Alternative 2 - Maintain the OY at 400,000 mt (status quo).

New Alternative:

A. By Government of Japan; Stephen B. Johnson, Japan Deep Sea Trawlers' Assn. and the Hokuten Trawlers' Assn., Rodney E. Armstrong, Korean Fishing Fleet:

(1) Recommend a Western/Central Area. 360,000

PACIFIC OCEAN PERCH

Alternative 1 - Reduce the OY for POP to 1,302 mt and 3,906 mt in the Western and Central Areas, respectively.

Kathryn Kinnear, Kodiak Longline Assn.

Alternative 2 - Maintain the OY for POP at 2,700 mt and 7,900 mt in the Western and Central Areas, respectively (status quo).

NO SPECIFIC COMMENTS

OTHER ROCKFISH

Alternative 1 - Reduce the Gulf of Alaska-wide OY for rockfish to 5,000 mt.

Kathryn Kinnear, Kodiak Longline Assn.

Alternative 2 - Reduce the OY to an amount that would provide for a bycatch only.

NO SPECIFIC COMMENTS

Alternative 3 - Maintain the OY at 7,600 mt (status quo).

New Alternative:

A. By Pat Travers, NOAA General Counsel:

(1) Reduce the Gulfwide other rockfish OY to protect this resource until more is known.

ATKA MACKEREL

Alternative 1 - Reduce the OY in the Central and Eastern Areas to an amount that would provide for a bycatch only.

Kathryn Kinnear, Kodiak Longline Assn.

Alternative 2 - Maintain the OY at 20,800 mt and 3,200 mt in the Central and Eastern Areas, respectively (status quo).

NO SPECIFIC COMMENTS

OTHER SPECIES

Alternative 1 - Reduce the Gulf of Alaska-wide OY for "other species" to its framework amount of 22,435 mt (i.e., 5% of the total OYs for each of the other groundfish categories).

Kathryn Kinnear, Kodiak Longline Assn.

New Alternative:

A. By Pat Travers, NOAA General Counsel:

(1) The Council may want to re-evaluate the equation in the FMP and change it if necessary.

4. IMPLEMENT REPORTING REQUIREMENTS FOR CATCHER/PROCESSORS.

Alternative 1 - Maintain the current reporting requirement (status quo).

NO SPECIFIC COMMENTS

Alternative 2 - Require an FCZ processing permit with check-in/check-out and weekly report.

Karena Adler, Fishing Co. of Alaska, Seward
Don Collinsworth, Alaska Dept. of Fish & Game
Ed Evans, Alaska Factory Trawlers' Assn.
Walter Pereyra, Coalition for Open Ocean Fisheries

Alternative 3 - Require an FCZ processing permit with a weekly catch report, but without check-in/check-out.

NO SPECIFIC COMMENTS

Alternative 4 - Place observers aboard a small sample of catcher/processor vessels and mothership/processors and extrapolate the catch from the vessels to the entire fleet.

NO SPECIFIC COMMENTS

Alternative 5 - Place observers aboard all catcher/processors and mothership/processor vessels.

Walt Cothran, Processor, Pelican

5. ESTABLISH MEASURES TO CONTROL THE PACIFIC HALIBUT BYCATCH.

Alternative 1 - Maintain the Western and Central Gulf PSC limits of 29 mt and 52 mt, respectively (status quo).

NO SPECIFIC COMMENTS

Alternative 2 - Raise the Western and Central Gulf PSC limits to 270 mt and 768 mt, respectively.

NO SPECIFIC COMMENTS

Alternative 3 - Develop a framework procedure for the annual adjustment of PSC limits.

Karena Adler, Fishing Co. of Alaska, Seward
Robert Alverson, Fishing Vessel Owners' Assn. (also favors elimination of the on-deck sorting exemption)
Barry Collier, North Pacific Fishing Vessel Owners' Assn.
Don McCaughran, International Pacific Halibut Commission (also favors elimination of the on-deck sorting exemption)

Alternative 4 - Establish bycatch fees.

New Alternative:

A. By Alvin Burch, Fisherman, Kodiak:

(1) Proposes that a halibut PSC limit be set within the range of 3,687-6,015 mt. This incidental harvest by the foreign fleet was observed during the period 1973-83. With the foreign fleets being excluded from the FCZ, he believes the domestic PSC should fall between these two figures.

6. IMPLEMENT THE NMFS HABITAT POLICY.

Alternative 1 - Amend the FMP to address habitat considerations.

1a - Include habitat policy and proposed text in the FMP.

Walt Cothran, Processor, Pelican

1b - Include a habitat goal in the FMP but not specific sections and detailed text. Detailed habitat discussion would be provided in a Council document as an annex or appendix to the FMP.

Barry Collier, North Pacific Fishing Vessel Owners' Assn.
Ed Evans, Alaska Factory Trawler Assn.
Kathryn Kinnear, Kodiak Longline Assn.

Alternative 2 - Do not amend the FMP to address habitat considerations.

NO SPECIFIC COMMENTS

7. SABLEFISH FISHING SEASONS.

Alternative 1 - Maintain the current sablefish fishing season of January 1 through December 31 (status quo).

Barry Collier, North Pacific Fishing Vessel Owners' Assn.
Steve Fish, Fisherman, Petersburg
Walter Pereyra, Coalition for Open Ocean Fisheries

Alternative 2 - Change the opening date of the sablefish fishery in the Southeast and East Yakutat Districts from January 1 to March 15.

Lonnie Chesnut, Fisherman, Sitka
Walt Cothran, Processor, Pelican
Dick Griffin, Sitka Chamber of Commerce
Ben Grussendorf, State Representative, Sitka

Alternative 3 - Change the opening dates of the Southeast-East Yakutat and West Yakutat-Central area sablefish fisheries to March 15 and May 1, respectively.

David Clemens, Fisherman, Kodiak

New Alternatives:

A. By Robert Alverson, Fishing Vessel Owners' Assn.:

(1) Favors concurrent season openings throughout the Gulf and proposes February 21 as the opening date.

B. By James Chesnut, Fisherman, Sitka:

(1) Favors a May 1 opening for the sablefish fishery in Southeast Alaska.

C. By Kathryn L. Kinnear, Kodiak Longline Assn.; Tim Longrich, Fisherman, Kodiak:

(1) Proposes concurrent season openings throughout the Gulf of Alaska set later than March 15.

D. By Tom Thompson, Processor, Sitka:

(1) Proposes an April 1 opening date for sablefish in the Eastern Regulation Area (Southeast, East-Yakutat, West-Yakutat Districts).

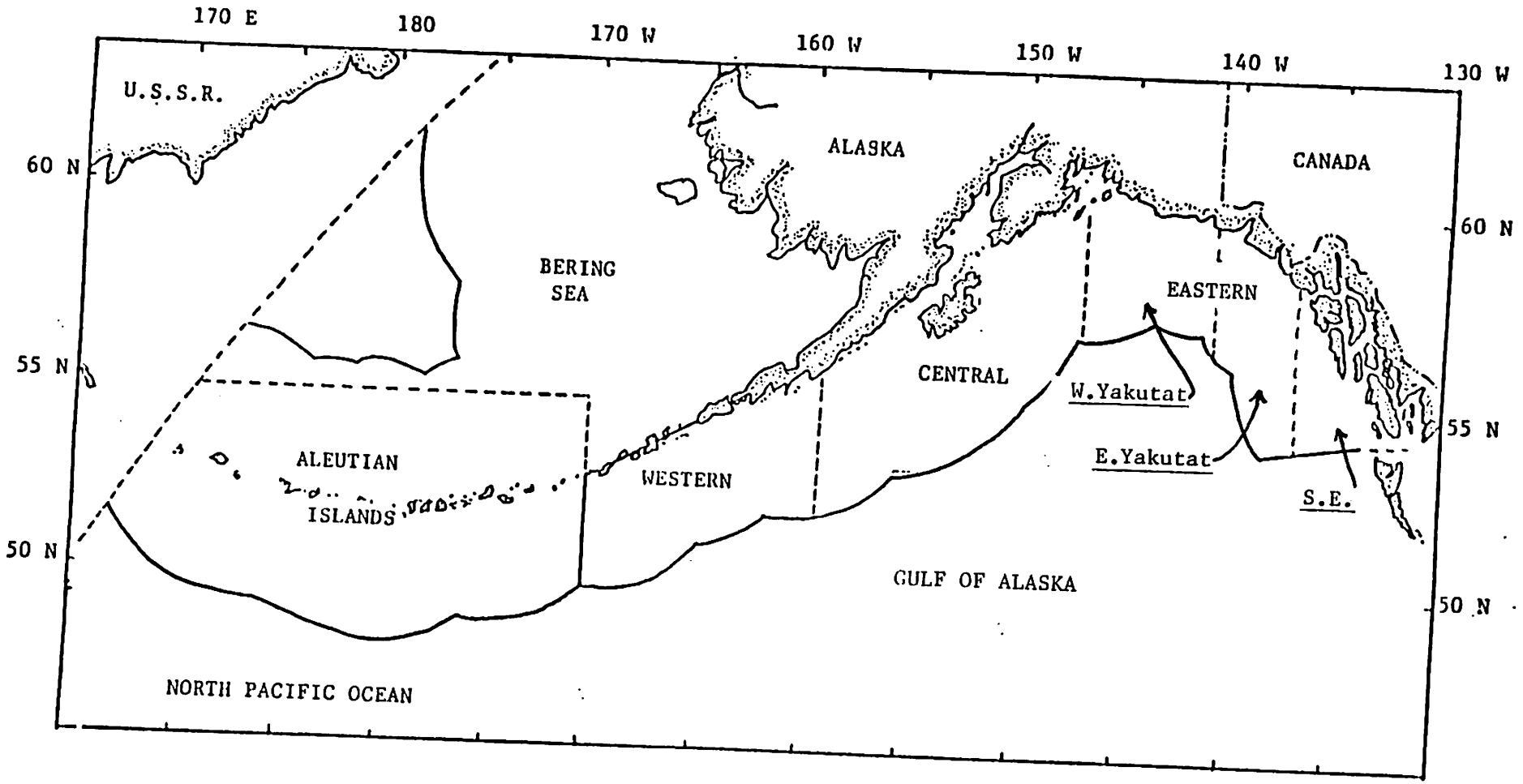
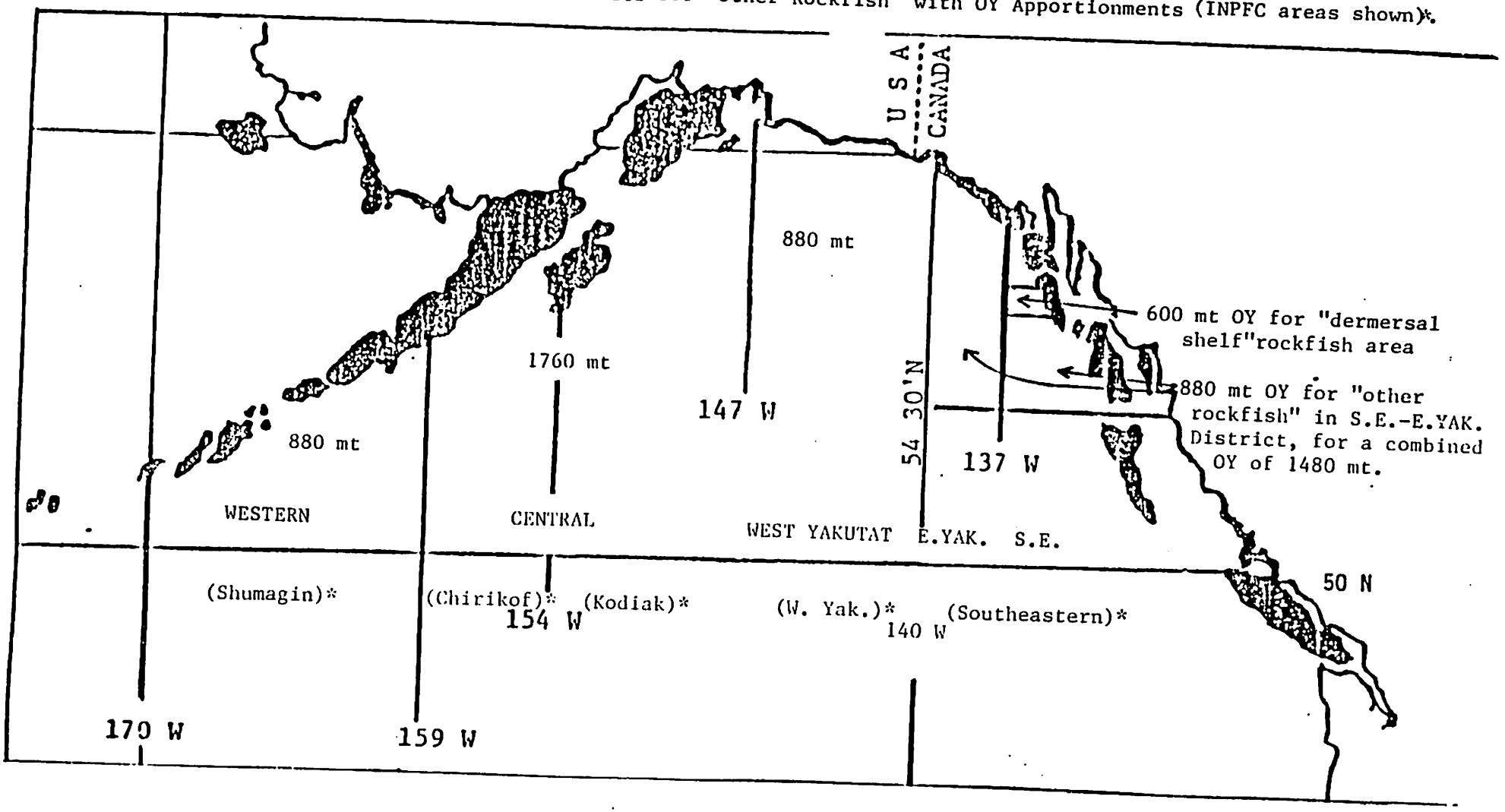


Fig. 1 Major regulatory areas of the Bering Sea and Aleutian Islands Groundfish and Gulf of Alaska Groundfish FMP's.

Figure 2. Proposed FMP Regulatory Areas/Districts for "Other Rockfish" with OY Apportionments (INPFC areas shown)*.



GULF OF ALASKA GROUNDFISH AMENDMENT 14

PUBLIC COMMENT SUMMARY

INTRODUCTION

During the March 1985 meeting, the North Pacific Fishery Management Council approved the Amendment 14 package to the Gulf of Alaska Groundfish Fishery Management Plan for public review. The 30-day review period began on April 4 and ended on May 3, 1985. During the review period, 34 comments were received from fishermen, processors, fishermen's organizations, U.S. and Alaska government agencies, and foreign nations or their representatives. These comments have been circulated to the Council, its Scientific and Statistical Committee, its Advisory Panel, and to the Gulf of Alaska Groundfish Plan Team. The comments have been used to make revisions to the amendment documents. This summary of the comments was prepared to serve as a reference during the Council meeting. It is not a substitution for the original comments and it only summarizes the major points of each submission. If details are desired, the reviewer should refer to the original comments.

The comments are summarized below in alphabetical order by commenter. The name of the author, his or her occupation or association are provided. Comments directed to specific management alternatives are indicated. New alternatives being proposed for Council consideration are also indicated. Several copies of the original comments are available for reference.

Karena Adler, Fishing Co. of Alaska, Seward - Urges that the Council not establish gear or area restrictions which would prohibit vessels from retaining sablefish in trawl operations in the Gulf of Alaska. A gear restriction which would require trawlers to discard sablefish to enable another gear type to harvest OY is an inefficient use of fishery resources. If a hook and longline-only measure is adopted, the company prefers the restriction be limited to waters east of 137°W. long. (New Alternative).

Ms. Adler supports the requirement for weekly catch reporting by catcher/processors (Alternative 2, under "Implement Reporting Requirements for Catcher/Processors"). She is opposed to singling out catcher/processors for complete observer coverage.

In reference to measures to minimize halibut bycatch, she favors Alternative 3 to develop a framework procedure for setting annual PSC limits.

Robert D. Alverson, Fishing Vessel Owners' Assn., Seattle - The FVOA is in favor of establishing a hook and longline-only fishery for sablefish in the Gulf of Alaska (Alternative 3c, under "Gear Restrictions...for Sablefish Fishery"). Mr. Alverson recognizes that the Amendment 14 package does not provide a comprehensive alternative to accommodate the total multispecies issue if sablefish becomes a longline-only fishery. Therefore, the FVOA recommends the following amalgamation of Alternatives 2 (i.e., allocate to specific gear types) and 3c to accommodate the overall comprehensive problems (New Alternative):

That the Council designate the area east of 170°W. long. as a hook and longline only area for sablefish which is Alternative 3c and designate 5% of the OY for incidental trawl operations in the Gulf of Alaska and provide 3% of the OY for incidental operations of other gear types that may take place after the directed portion of the sablefish quota has been obtained. This OY apportionment is basically the formal implementation of the Council's emergency rule adopted last March.

The FVOA provided detailed justification, accompanied with photos, in support of this proposal.

In reference to sablefish fishing seasons, Mr. Alverson supports a later opening date than January 1. He believes that February 21 opening would avoid some of the poor weather, optimize product quality, and be early enough to avoid the sablefish fishery from conflicting with the herring fishery (New Alternative). He mentions that the FVOA is opposed to split seasons and recommends concurrent openings throughout the Gulf.

The FVOA supports development of a framework procedure for the annual adjustment of halibut PSC limits, except for the provision that would exempt on-deck sorting operations (Alternative 3, under "Measures to Control Halibut Bycatch"). Every fishing vessel has a deck on which fish are sorted. This exemption would effectively negate any compliance to the PSC limit.

Alvin R. Burch, Fisherman, Kodiak - Believes that in the course of addressing the longline vs. pot issue, the trawler has been ignored. Mr. Burch would like to see a study on the value of groundfish resources in the Gulf including sablefish, Pacific cod, pollock and flounder. He claims that while sablefish and the longliner will play a part in the domestic utilization of FCZ resources, only the trawler is capable of catching and delivering the large volume of lower priced fish available.

Mr. Burch says that he is unaware of any gear conflict between longline fishermen and trawlers, yet trawlers may be excluded from this fishery. While an alternative exists to place a ceiling on the number of pot vessels, there is no provision for trawlers.

In reference to the management of "Other Rockfish," he comments that management of this species complex must be done with the utmost caution. He recognizes that the long life cycle and slow growth of this species make management difficult.

Mr. Burch favors a weekly reporting system for catcher/processors and floating processors but is opposed to onboard observers until the issue of funding and insurance is addressed.

On the subject of halibut PSC limits, Mr. Burch notes that incidental catch of halibut in IPHC Areas 2 and 3 have ranged from 3,687-6,015 mt during the period 1973-1983. He believes that with the foreign fleets being phased out, the domestic PSC should fall somewhere within this range (New Alternative).

Mr. Burch concluded his comments with a recommendation to overhaul the Gulf of Alaska Groundfish FMP. He notes that the groundfish fisheries have changes since implementation of the FMP and that for it to provide the management guidance for fisheries in the 1980s or beyond, the plan must be rewritten.

James A. Chesnut, Fisherman, Sitka - Favors a May 1 opening for the sablefish fishery in Southeast Alaska although he could live with a season opening no earlier than March 1; a longline-only sablefish fishery east of 147°W. long. (Alternative 3a, under "Gear Restrictions...for Sablefish Fishery"); and the development of a limited entry program for this fishery. He also supports measures to protect Southeast Alaska rockfish stocks.

Lonnie R. Chesnut, Fisherman, Sitka - Supports a longline-only measure for sablefish east of 147°W. long. due to gear conflicts and the rapid harvest of the OY by pot boats (Alternative 3a, under "Establish Gear Restrictions in the Sablefish Fishery"). The end result is a loss of income to local fishermen (SE) and communities. Mr. Chesnut supports a March 15 opening in SE/W Yakutat to improve product quality (Alternative 2, under "Sablefish Fishing Seasons").

Paul Clampitt, Fisherman, Bellingham - Voiced his support for a limited entry system for sablefish with the legal gear being hook and longline. He claims that this fishery will soon resemble the "derby-day" type fishery as seen with halibut. His proposal is based on the concept that management of this fishery will improve with this approach.

David Clemens, Fisherman, Kodiak - Has fished with both pot and hook and longline gear. However, given high probability of gear conflicts in the sablefish fishery, he supports the designation of all waters east of 170°W. long. as a hook and longline-only area (Alternative 3c, under "Gear Restrictions...for Sablefish Fishery"). He favors hook and longline gear since it can be fished by small vessels with a small capital outlay when compared to pots.

Mr. Clemens supports the designation of areas and quotas for rockfish. He believes that these measures are necessary so as not to deplete the resource to a point of low or no sustained yield.

In reference to sablefish fishing seasons, he favors a later season opening date, citing improved weather and higher fish quality. He believes an opening at March 15 and May 1 in the Eastern and Central Regulatory Areas would accomplish this objective (Alternative 3, under "Sablefish Fishing Seasons").

Barry D. Collier, North Pacific Fishing Vessel Owners' Assn., Seattle - The NPFVOA supports the continuation of a mixed gear fishery for sablefish (Alternative 1, under "Gear Restrictions...for Sablefish Fishery"). They are opposed to exclusion of gear types in favor of a single gear type.

In reference to establishing rockfish quotas and areas, NPFVOA believes there is strong justification for establishing rockfish OYs by shelf areas based on the best scientific information available. NPFVOA is

strongly opposed to removing demersal shelf rockfish from the FMP, citing the confusion this action would create in regards to management by state and federal agencies.

Mr. Collier notes that as with rockfish, all groundfish OYs should be based on the best scientific information available. However, NPFVOA questioned whether or not there is sufficient information to support a reduction in the Atka mackerel OY from 20,836 mt and 3,186 mt in the Western and Central Areas to bycatch levels only.

The NPFVOA recognizes the need for fishery observers on any domestic fishing vessel. However, until the funding, liability and role of observers are clearly defined, NPFVOA does not recommend adoption of a catcher/processor observer requirement.

The NPFVOA endorses the development of a framework procedure for the annual adjustment of halibut PSC limits (Alternative 3, under "Establish Measures to Control Halibut Bycatch"). Mr. Collier believes that the framework must accommodate trawl bycatch needs to allow them to fully expand and develop.

In regard to implementing the NMFS Habitat Policy, Mr. Collier suggests the establishment of an "inhouse" policy and recommends not to incorporate the policy formally into the FMP (Alternative 1b, under "Implement NMFS Habitat Policy").

Recognizing the absence of scientific information to support a change in sablefish fishing seasons for biological purposes, the NPFVOA recommends that the Council adopt the status quo season of January 1 - December 31 (Alternative 1, under "Sablefish Fishing Seasons").

Don Collinsworth, Alaska Dept. of Fish and Game - Supports a hook and longline-only sablefish fishery in the Gulf of Alaska (Alternative 3, under "Gear Restrictions...for Sablefish Fishery"). He cites a reduction in gear conflict, vessel safety concerns, ease of management problems, and an increase in economic benefits as his rationale. He also supports a delayed season opening date for sablefish.

In regard to the broader issue of bycatch, Mr. Collinsworth supports the full development of the domestic groundfish fisheries and the appropriate bycatch amounts of sablefish to support other trawl fisheries.

On shelf rockfish management, Mr. Collinsworth states the need for a joint federal-state management program, with close monitoring of the resource if overfishing of rockfish is to be protected.

Mr. Collinsworth favors weekly catch reporting by catcher/processors and mothership/processors (Alternative 2, under "Implement Regulatory Requirements for Catcher/Processors"). He believes such information is essential to prevent overfishing and to implement other provisions in the groundfish FMPs. Check-in/check-out requirements are also important if managers are to monitor effort. He also supports an effective at-sea observer program to verify target and bycatch harvests in the domestic fishery.

Walt Cothran, Plant Manager, Pelican Cold Storage, Pelican - Recommends that the Council adopt a hook and longline-only sablefish fishery in all waters east of 170°W. long. (Alternative 3c, under "Gear Restrictions...for Sablefish Fishery"). He cites community dependence on this fishery as the basis for his recommendation.

Mr. Cothran mentions that his company also supports the setting of the Southeast Alaska "Other Rockfish" OY at 600 mt for demersal shelf rockfish between 56°N. and 57°30'N. latitude, and the OY for pelagic and slope rockfish species within the remainder of the Southeast-East Yakutat District at 880 mt. This would provide a combined other rockfish OY at 1,480 mt for the Southeast-East Yakutat fishery (Alternative 3, under "Rockfish Quotas and Areas").

He also favors placing observers aboard all catcher/processors and mothership/processors (Alternative 5, under "Implement Reporting Requirements for Catcher/Processors"); amending the FMP to include the NMFS Habitat Policy; and to delay the sablefish opening in the Southeast and East Yakutat districts to March 15.

He concluded his comments by recommending that a size limit for sablefish be considered in the next amendment cycle.

Larry Cotter, International Longshoreman's and Warehouseman's Union, Local 200, Juneau - Provided employment-related data to assist the development of a broad-based socioeconomic impact analysis.

Elwin Cox, Fisherman - Favors a hook and longline-only sablefish fishery east of 147°W. long. (Alternative 3a, under "Gear Restrictions...for Sablefish Fishery") and a later season opening. He cites lost pot gear and poor fish quality for his comment.

Edward D. Evans, Alaska Factory Trawler Assn., Seattle - Comments that the Council is considering allocations of sablefish under the guise of addressing a gear conflict. Mr. Evans suggests that the remedies put forth as alternatives in the EA/RIR documents go far beyond what is necessary. No other alternatives are submitted by Mr. Evans. He explains that the alternatives presented in the documents are clearly oriented toward preserving the fishery for the longline gear user at the expense of other gear users. The negative impacts on the trawl fisheries are not addressed in the RIR.

Mr. Evans questions the accuracy of the discussion in the amendment package describing the historical precedence of longline gear in the sablefish fishery. He also questions the use of the term "social efficiency" and wonders if it doesn't really mean "new favoritism." Mr. Evans comments that the RIR analysis is fundamentally incorrect since it uses the presumption that an impact of a longline-only measure would be the added cost and inconvenience of obtaining the resource elsewhere. He suggests that the real impact is denial of the resource to displaced user groups given low quotas and fishable grounds. The RIR analyses of the alternative restrictions on fisheries that incidentally harvest sablefish such as halibut, cod, and soles are conspicuous by their absence.

Mr. Evans says that AFTA recognizes the sablefish problem as being one of too much effort for too few fish. If allocation is necessary, they expect that the trawl vessels would be allocated some reasonable amount of sablefish to commercially catch and market. They also expect some apportionment of sablefish for bycatch purposes in other trawl fisheries. At present, AFTA has no idea as to what their bycatch needs are, but they are willing to provide the necessary catch data.

The AFTA supports weekly catch reports from catcher/processors and check-in/check-out requirements. Until some fundamental questions are answered, they are opposed to regulations requiring onboard observers at this time. Their association still welcomes observers on a voluntary basis. In a related letter, Mr. Evans describes AFTA's voluntary commitment to provide bi-weekly catch reports to NMFS and ADF&G.

Mr. Evans comments that his group supports a habitat goal as outlined in Alternative 1b (under "Implement NMFS Habitat Policy"). Incorporation of the NMFS habitat policy in the FMP is not acceptable given the uncertainty of the implications of the policy.

Steven Fish, Fisherman, Petersburg - Supports a hook and longline-only sablefish fishery in waters east of 159°W. long. (Alternative 3b, under "Gear Restrictions...for Sablefish Fishery"). He feels that this measure is essential if the longline fleet and Alaskan coastal communities dependent on sablefish are going to survive.

Mr. Fish is opposed to using a delayed season opening as a resource allocation tool in the sablefish fishery. He is also opposed to limited entry unless pots were also eliminated.

Government of Japan; Stephen B. Johnson, representative, Japan Deep Sea Trawlers Assn. and the Hokuten Trawlers Assn.; Rodney E. Armstrong, Agent, Korean Fishing Fleet - Recommend an increase in the proposed pollock OY in the Western and Central Regulatory Areas from 305,000 mt to 360,000 mt to more fully harvest the 6 to 7-year-old fish in this population (New Alternative).

Dick Griffin, Sitka Chamber of Commerce, Sitka - Favors a hook and longline-only sablefish fishery in waters east of 147°W. long. (Alternative 3a, under "Gear Restrictions....for Sablefish Fishery"). He also supports a sablefish season opening date no earlier than March 15 (Alternative 2, under "Sablefish Fishing Seasons"). He cites both maintenance of local economies and product quality as being the rationale for his recommendation.

Ben Grussendorf, State Representative, Sitka - Voiced his support for a hook and longline-only sablefish fishery east of 170°W. long. (Alternative 3c, under "Gear Restrictions...for Sablefish Fishery"). It is his belief that longlining for sablefish best serves the coastal communities whose economy depends on fishing. He realizes that bycatch requirements for trawl activities does present a problem and believes that some amount should be identified for bycatch purposes only.

Mr. Grussendorf mentions that the state is now considering a limited entry program for sablefish in Southeast Alaska. He therefore favors placing a moratorium on the number of pot vessels participating in this fishery (Alternative 4, under "Establish a Gear and/or Area Restriction in the Sablefish Fishery").

In regard to sablefish fishing seasons, Mr. Grussendorf recommends delaying the season opening in Southeast Alaska to a date no earlier than March 15 as a measure to avoid the seasonal rough weather common during the winter and early spring months.

Mr. Grussendorf favors state management of the southeast demersal shelf rockfish fishery since he believes ADF&G has the experience and biological data to manage this expanding fishery (Alternative 6, under "Rockfish Quotas and Management Area").

Don Hall, Fisherman, Homer - Recommends that hook and longline areas, or pot-only areas should only be established to avoid gear conflicts. Suggests pot or hook limit and/or area registration as other alternatives.

Don Iverson, Fisherman, Seattle - Provided comments describing the techniques used to fish hook and longline and pot gear and the fishing efficiency of the gear. Mr. Iverson supports the designation of a hook and longline-only area in all waters east of 170°W. long., i.e., Gulf of Alaska (Alternative 3c, under "Gear Restrictions...for Sablefish Fishery"). He describes a fishing incident with a pot vessel that led him to this position.

Kathryn L. Kinnear, Kodiak Longline Assn., Kodiak - Provided detailed comments for each of the amendment proposals. In reference to sablefish gear and area restrictions, Ms. Kinnear discusses the gear conflict and grounds preemption problem between longline gear and pot gear. She also describes the 1985 trawl effort on sablefish and its potential impact on the sablefish resource and other gear types. The following compromise was proposed (New Alternative):

(1) Put a cap on the 6 pot vessels that were active in the Gulf of Alaska before March 31, 1985, issuing them a non-transferrable gear permit.
(2) This would mean a longline fishery for sablefish for the entire Gulf of Alaska east of 170°W. long.
(3) Concurrent openings, anytime later than March 15 for the entire Gulf.
(4) All pot vessels and longliners must remove their gear from the grounds when delivering or arriving in port.

Kodiak Longline Association is strongly opposed to Alternative #5, "License Limitation, of the sablefish fishery. We would favor a decision on gear restriction not participation limitation.

Ms. Kinnear believes that hook and longline is the logical choice for harvesting sablefish taking into consideration the history of the fishery, present participants, low initial investment of gear, existing

vessels that could diversify into this fishery, low impact on the ocean floor (ghost fishing), and less grounds preemption per vessel at any given time.

Ms. Kinnear also commented that her association supports the removal of southeast shelf rockfish from the FMP (Alternative 6, under "Rockfish Quotas and Areas"); the proposed 1985 OY values; the implementation of timely reporting requirements for catcher/processors; and the establishment of a habitat goal into the FMP, with the habitat discussion being placed in an annex (Alternative 1b, under "Implement NMFS Habitat Policy"). In regard to sablefish fishing seasons, her association supports concurrent openings throughout the Gulf of Alaska set later than March 15 (New Alternative).

Tim Longrich, Fisherman, Kodiak - As a pot fisherman, Mr. Longrich provided extensive comments on the perceived problems between pot and longline gear. Mr. Longrich favors the continuation of a mixed gear fishery. Included in his comments, he discusses why he fishes with pots and what led him to their use in the sablefish fishery. Mr. Longrich's comments focus on gear conflicts; destabilization of community economies in Alaska; historical harvest considerations; conservation; fish quality; and regulatory impacts. He provided useful cost information for the RIR.

He says that the gear entanglement and grounds preemption problems faced by the hook and longline-only fleet and the pot fleet can be worked out if both sides attempt to live together. There will be problems, but they should be accepted as part of fishing.

Possible regulatory alternatives include:

(1) Clearly marked and define hook and longline and pot gear using radar reflectors, lights on the end of buoys, end-markers, etc.;
(2) Staggered Gulfwide or Area-wide fishing periods during which either pot fishermen or hook and longline fishery may exclusively fish for sablefish;
(3) a geographical division of the Gulf of Alaska in half, each half representing approximately one-half of the sablefish OY, and restricting hook and longline fishermen to one-half and pot fishermen to the other half. In this regard, it may be advisable to alternate access to each section by different gear types.
(4) an allocation of one-half of the sablefish OY to hook and longline fishermen, and one-half to pot fishermen. In this regard, it may be advisable to allow only one gear type on the grounds at any one time, or to allow one gear type in one area, and the other gear type in another area, and alternate the areas during the season where a specific gear type would exclusively be permitted;
(5) a limit on the number of pots;
(6) a requirement that a vessel remove its hook and longline or pot gear from the grounds when it leaves an area to deliver its product; and
(7) a cap on the number of pot vessels permitted to harvest sablefish.

Mr. Longrich is opposed to license limitation in the sablefish fishery. He believes that this fishery can be effectively managed in an open access form.

He supports a delay in the sablefish season opening date to March 15 in the entire Gulf of Alaska (New Alternative). He believes such a delay would improve product quality; provide a season during better weather thereby reducing danger to vessel and crew; and would minimize lost fish due to the inability to pull the gear during poor weather.

Adm. R.S. Lucas, U.S. Coast Guard - While recognizing that closer management control is necessary for management of the domestic groundfish fishery, the U.S. Coast Guard does not have the equipment or personnel resources to handle the additional workload associated with receiving weekly catch reports from catcher/processors and floating processors.

Ralph D. Lund, Fisherman, Seattle - Supports a hook and longline-only measure for sablefish. He cites gear conflicts, grounds preemption and ghost fishing as the basis for his comment.

Mark S. Lundsten, Fisherman, Seattle - Favors a hook and longline-only sablefish fishery in the Gulf of Alaska (Alternative 3c, under "Gear Restrictions...for Sablefish Fishery"). He describes his desire to make a living from this fishery and his frustrations with management agencies inability to make hard decisions.

Mark F. Maring, Fisherman, Maring SEA Inc., Kodiak - Supports the continued use of pots as a method in harvesting sablefish (Alternative 1, under "Gear Restrictions...for Sablefish Fishery"). He argues that pot gear is very efficient and the availability of this method of harvesting will provide future opportunities for vessels currently idle. His company has invested hundreds of thousands of dollars into pot gear.

Mr. Maring supports Council action to provide optimum product quality of sablefish.

Donald A. McCaughran, Int'l Pacific Halibut Commission, Seattle - Voiced support for the development of a framework procedure for the annual adjustment of halibut PSC limits (Alternative 3, under "Measures for Controlling Halibut Bycatch"). The Commission is opposed to the setting of PSC limits only during the December - May period since they would not protect halibut during the remainder of the year. He also recommends deletion of the on-deck sorting exemption since it would make enforcement of this regulation impossible.

Walter Pereyra, et al., Coalition of Open Ocean Fisheries, Seattle - Favors continuation of a mixed-gear sablefish fishery (Alternative 1, under "Gear Restrictions...for Sablefish Fishery"). They believe that restricting all but longline gear may preclude the development of new fisheries and it may adversely impact the economic well being of other segments of the harvesting industry.

In regard to weekly catch reports from catcher/processors, COOF recognizes the importance of catch reports and some aspects of observer coverage as management tools. The COOF support weekly catch reports with check-in/check-out provisions (Alternative 2). They have no objection to observers onboard vessels providing that the conditions and responsibilities for those observers are agreeable to the industry.

However, they don't support partial coverage and extrapolating catch statutes to the entire fleet.

The COOF support the current sablefish fishing season of January 1 - December 31 until adequate biological information can demonstrate a need to change (Alternative 1, under "Sablefish Fishing Seasons").

Rudy A. Petersen, The Highliners' Assn., Seattle - Comments that the Amendment 14 documents focus on one particular view and do not deal with sablefish management options in a comprehensive manner. He believes that trawl fisheries are being excluded from the management regime without any discussion or rationalization. Mr. Petersen recommends that the allocation issue and incidental catch issue be dealt with in a comprehensive manner, and given this approach, the current documentation is inadequate. The amendment package should deal with:

(1) who should be involved in the directed fishery;
(2) how incidental catch for legal fishing occuring during and after the sablefish fishery will be dealt with;
(3) how the catch of sablefish taken by joint venture vessels will be handled;
(4) what happens to authorized fisheries if they exceed their incidental catch level; and
(5) how to ensure the targeting will not occur by fisheries other than those authorized to participate in a directed fishery.

Mr. Petersen hopes that more thought can be given to developing and promoting alternatives that deal with both the target and incidental catch as a single package.

Erling A. Skaar, Fisherman, Seattle; John Coyne, Fisherman, Homer - They support the continuation of mixed-gear sablefish fishery (Alternative 1, under "Gear Restrictions...for Sablefish Fishery"). They suggest that the Council consider separate quotas and fishing seasons as a method to reduce gear conflict.

Tom E. Thompson, Processor, Sitka Sound Seafoods, Sitka - Proposes an April 1 opening date for sablefish in the Eastern Regulatory Area as opposed to a March 15 opening (New Alternative). This recommendation is based on improved weather during this time of the year which will lead to more frequent deliveries as a result of a larger fleet participating in the fishery. The April 1 date is also suggested to schedule the sablefish fishery between the sac roe herring and halibut fisheries. Mr. Thompson also voiced his support for the Council's longline-only emergency rule.

Patrick J. Travers, NOAA General Counsel - Supplied a detailed legal analysis of the amendment package; the EA and RIR. His legal concerns focus on the impact analysis prepared for the sablefish gear restriction issue. He criticizes the cursory presentation of "objectives for regulation" which the Plan Team presented. Since the objectives are currently not found in the FMP, he suggests that these objectives be more fully discussed and analyzed. Similar concerns were voiced on the Team's presentation of its underlying assumptions used in the RIR analysis.

Mr. Travers recommends that reference to "historical or traditional" claims to the resource is not appropriate as a primary justification in support of a gear restriction and is in fact illegal under the Magnuson Act. It can only be considered in combination with a wide range of other factors that may actually outweigh it.

Mr. Travers comments further that while we consider hook and longline-only or hook and longline and other gears as alternatives, we should also consider pot-only or trawl-only options. Similarly, while considering an effort ceiling on pot fishermen, an effort ceiling for longline fishermen should also be reviewed. Also, if an objective is to promote the economies of of small Alaskan communities, then the Council may want to consider the requirement that all sablefish harvested from Alaskan waters be landed in Alaska.

On the OY for "Other Rockfish" Mr. Travers comments that since little is known about this resource, both shelf and pelagic species, maybe the Gulfwide OY should be lowered for all species categories to protect this resource until more is known (New Alternative). It seems inconsistent to protect one known stock for lack of biological data and yet keep the Gulfwide OY at its proposed level when even less information is available for these other stocks.

In regards to the proposal to delay the sablefish season opening date; if resource allocation is a primary objective of this measure, then more analysis and discussion of this objective is required. He comments further that the other objectives such as weather and product quality are sufficiently supported to warrant their inclusion in the documents.

On Alternative 6, under "Quotas and Management Areas in the Rockfish Fishery" which proposes that shelf rockfish in Southeast Alaska be excluded from federal management, Mr. Travers voiced several concerns. Implementation of this alternative in his view would violate the Magnuson Act since it specifies that the Council must prepare an FMP for each fishery where conservation and management is needed. In contrast with certain other fisheries, in which there is a well-established system of state management and in which fishing takes place primarily within state waters, the shelf rockfish fishery differs since it is a developing fishery and the majority of the fishing grounds are in the FCZ. Given the possibility that catcher/processors may enter this fishery, there is no guarantee that the state would have jurisdiction over the entire fishery.

Mr. Travers ended his comments on the RIR by saying that the establishment of fees to control halibut bycatch (Alternative 4, under "Measures to Control Halibut Bycatch") is currently illegal under the Magnuson Act and while an interesting discussion topic, it is not a viable option under current law.

Richard C. White, Processor and Fisherman, Baranof Fisheries, Seattle - In favor of maintaining the status quo on sablefish gear regulations and fishing seasons. He feels that gear conflicts can be avoided and that high quality fish can be found and processed at all times of the year.

However, given the controversial nature of this issue Mr. White proposes the following solution to the Council (New Alternative):

(1) Open the Eastern Regulatory Area (E. of 147°W.) to the taking of sablefish by pots only on January 1.
(2) After 20% of the OY is taken, or on March 15, whichever occurs first, close the area to pot fishing.
(3) On March 15, open the area to hook and longline-only.

Mr. White is in favor of maintaining the existing sablefish fishing seasons in the Central and Western Regulatory Areas and is opposed to placing a ceiling on the number of pot boats. If limited entry is considered as a possible method of restraining effort, the Council should closely examine the longline fleet which is expanding at the greatest rate.

Observers used to monitor domestic fisheries should be placed on all vessels and not just catcher/processors. Questions on liability and program funding are asked.

ADDENDUM TO GOA AM. 14 RIR, PART I - SABLEFISH

Alternative 6

Council Choice: Longline-only area east of 147°W. longitude with 5 percent of OY reserved for a trawl bycatch; area by area distribution of the OY in the Central (147°W. - 159°W.) and Western (159°W. - 170°W.) Gulf of Alaska by the following percentages: 55 percent to longline fleet, 25 percent to pot fleet, and 20 percent to trawl fleet. In addition, a one-year phase-out of pot gear will occur in the Central area of the Gulf, and a three-year phase-out will occur in the Western Gulf, after which the pot portion of the OY will be allocated to the longline fleet.

The development of this alternative is a result of extensive negotiations which took place at the Advisory Panel level and at the Council level, where all opening positions reflected either an explicit alternative analyzed in the RIR, Part I, or combination of these alternatives. The history of these deliberations will be discussed later. The longline-only area with 5 percent bycatch for trawls is a combination of an exclusive gear area and a quota allocation. The distribution of OY in the Central and Western areas of the Gulf is an example of a quota allocation by gear-type approach (Alternative 2). The phase-out part of this alternative is an example of delayed implementation of a combination of exclusive gear areas and quota allocation by gear type. The following analysis of impacts summarizes those areas of likely benefit or costs which will arise, based on a national perspective.

COSTS: There are several sources of costs to consider in this alternative:

(1) Gillnets and other gear besides trawl, pot, and longline will be illegal gear for the taking of sablefish. From 1980 to 1983, there was no evidence of these gear types fishing in the Gulf. In 1984, there were thirteen vessels which landed sablefish in this gear class. Even so, the 1985 catch by this gear class amounts to only

one ton out of 4,900 tons, which suggests an operating fleet size considerably smaller than 13 vessels. It is important on this issue to take into account the relative size of investments and the ease of gear-switching. Individual investments in gillnets are not likely to be large since it would be expected that those participating in an experimental type of fishery would not risk large amounts of venture capital. Although there may be some costs associated with switching to longline gear, it would be expected, given the way gillnets and longlines are normally fished in this area, that unemployment of capital will be relatively low, since much of the equipment used to set and retrieve gillnets may be adapted to set and retrieve longlines. This cost due to the unemployment of capital is expected to be low considering the likely sizes of the vessels engaged in these operations, and their aggregate contribution to the fishery, plus the fact that the gear is in an experimental phase, and recognizing the already existing problem of large influxes of effort. One other cost that should be mentioned is the preclusion of other gear types or developments of gear which may be technologically superior to what is being presently fished, except that they need small bycatches of sablefish. To the extent this occurs there will be some social costs imposed.

(2) Trawl vessels will be disallowed from directed fishing on sablefish in the Eastern Gulf. Although there has been a history of foreign directed trawl effort on sablefish in the Eastern Gulf, there has been limited directed effort domestically. In the last three months, however, one vessel from this area has been trawling for Pacific ocean perch and retaining relatively high catches (greater than 75 percent sablefish). Therefore, at worst, this one vessel will have to develop cleaner fishing methods in order to avoid sablefish, or risk being closed down for taking all of the bycatch amount allocated to the Eastern Gulf.

(3) Pot vessels which fished in the Eastern Area in 1984 will be forced to make a change in gear immediately or move westward from the Eastern area. They will have to change gear or move westward after one year in the Central Gulf of Alaska, or after three years in the Western Gulf. This is a more serious consideration than the gillnet issue, mostly because the investments are relatively large and the capital investment may not be as easily employable in another gear operation. That is, it is unknown what exactly is the level of switching that might be required for the pot vessels involved, but at the very least the actual gear put into the water would have to be sold or left unused if a vessel wanted to remain in the area. Some retrofits of the actual vessel may also be required. It is highly significant, however, that many pot fishermen started as longline fishermen, and vice-versa. This suggests, beyond the gear and retrofit costs, that fishermen may be able to change rapidly from one gear to the other. The point is that even though physical capital may have to be changed, human capital may not be as immobile as one might think. It is expected that the major source or motivation for substantial resistance to this alternative by pot interests will be:

(a) The pot gear probably is more efficient, for the scale size they are engaged in, and the adaptability of longline gear to the scale sizes involved may be largely unknown. However, this individual efficiency rationale, although a motivation for resisting the alternative, cannot be the motivation for wise management of the whole fishery at this time, as discussed in the overview to the analysis.

(b) The phase-out time frame may not allow a sufficient horizon for these vessels to achieve a stable operation. For example, if the firms affected were going to risk operating at a loss for three years in expectation of a gradual decrease in operating costs or an increase in profits, then the shortening of that horizon or the imposition of a different technology may be such that their achievement of a stable operation may be farther into the future.

(c) To the individual firms, the expected net benefits of lobbying to defeat the action on engaging in litigation, derived from subjective assessments of the probability of winning a case and having the status quo, may be great relative to the benefit they might face under the alternative. Considering the relatively high price of sablefish, and if considerations (a) and (b) are of great concern, then the losing firms may well consider such a trade-off. It is without doubt that in the wider negotiated solutions from which this alternative came, the ten vessels which comprise the pot interests have experienced constraints to their operations. If it turns out that, despite the open access environment, pot vessels actually are more efficient, then there is some measure of costs to society from excluding them. However, this cost must be weighed carefully against the contribution to the overall inefficiency of the fishery which occurs as a result of open access.

(4) Both active and passive (lost gear) gear conflicts between pots and longlines still have potential for occurring in the Central Gulf for one year, and the Western Gulf for three years. This could reduce the overall efficiency of the fleet. However, in terms of explicit costs to the U.S. government, in terms of gear loss settlements, there has not been a significant history of claims deriving from pot-longline controversies. The likelihood of these conflicts occurring have been restricted under this alternative to one year in the Central and three years in the Western Gulf. The decision making which took place by the Council favored such a phase out over staggered areas.

BENEFITS OVER THE STATUS QUO. Presently there are no restrictions with respect to sablefish, by gear type in the Central and Western part of the Gulf besides the OY constraints. There is a temporary emergency rule making the Eastern Gulf a longline-only area with a trawl bycatch provision. Before that was put in place, a large concentration of effort was directed in this area by members of the pot fleet, and this was alluded to in the analysis of the

status quo. Presently the Central Gulf has been closed to the sablefish fishery, with 47 percent of the catch taken by longline, 13 percent by trawl, and 40 percent by pot vessels. Again, this is a relatively large share of the catch taken by the pot fleet which is believed to be about six boats. The present realities of the status quo are that large amounts of effort are concentrated by large entities in small areas which lead to substantial amounts of perceived gear conflicts, economic dislocation, insufficient employment of productive factors fishery-wide, and the potential for an uncontrollable fishery from the standpoint of inseason management.

Alternative 6 proposes to deal with effort management in an open access situation. This means that the attempt is not necessarily to preempt gear types by region, but to make effort more homogenous and to spread it out, so that the growth which will inevitably come will not result in the adverse impacts outlined in Alternative 1. The following are likely benefits of such an alternative.

(1) Avoids negative impacts described in Alternative 1 for the Eastern Gulf, and eventually for the Central and Western Gulf. The brief analysis in Alternative 1 suggests that the net impacts from the primary and secondary processor levels are not at all clearly in favor of the new pot fleet, and if one takes into account relative employability or use of capital and labor inter-regionally or even over firms, there could be some net loss to the nation for allowing the status quo to continue. The costs to society of moving ten pot vessels out of these areas either immediately (or gradually) and/or encouraging a conversion to longline gear is likely less than the benefits which would be realized in terms of employment of the labor and capital which might have otherwise been unemployed or underemployed in the Eastern, Central, and Western parts of Alaska under the status quo. This discussion assumes, or predicts that such benefits are short-term, and that there may be, at best, a slowing effect in the growth of longline and trawl effort in these affected areas.

(2) Quota allocations to provide for greater stability in the fishery by reducing uncertainty which may arise from fishing on a pooled resource.

Much of the fishing behavior which is observed in the fishery derives from each individual's perception that if they are not the first to hit the resource, then they will be losers for the season. As prices of fish escalate, and effort increases, the incentive to beat all others to the punch intensifies. This observation can be justified by looking at the history of the sablefish fishery, which used to be a late spring and summer fishery, but which is now, for all practical purposes, a late winter and early spring fishery.

The quotas by gear type can actually be thought of as a first and very rudimentary step towards a system of management where the expectations by each gear type about their access to quota are shared by society. In economics parlance, the fishery is being stabilized by giving fishermen in the aggregate, and, in some non-legal sense, a nominal right to access of a specific amount of quota if they will only conform to some standard gear types. Writers in economic theory, referenced previously, suggest that any steps taken toward reinforcing expectations in this manner are efficient moves, no matter how rudimentary they may be. Even if the counter-argument is entertained that the manager has simply created a lot of little "mini" open access problems, the fact still remains that at least the different gear groups are no longer worrying about each other as much, and can then concentrate their efforts on how to work at differences within gear groups. This seemingly minor change in focus actually could turn out to be a major source of benefit, although real-world outcomes are hard to predict, and the magnitudes of benefits are uncertain. These benefits would show up more tangibly in the following forms:

(1) Effort would be expected to spread out rather than clumped, since the urge to "beat the punch" will be mitigated somewhat.

(2) Conversion of capital to sablefish operations will change in focus from pot gear and gillnet gear to trawl or longline gear, which, from outward appearances, have certain aspects of versatility which would seem to also be highly desirable in a long-term fishing operation. In addition, management efficiency is expected to improve somewhat by the reduction in the field of gear types which must be considered by managers. This last point should be emphasized, since, given what has transpired in the sablefish fishery, it is reasonable for managers to want more control over the type of effort which enters the fishery, at least as long as the resource is open access.

In summary, this alternative will ultimately direct the flow of capital and labor into two gear types, trawls and longlines, both of which are amenable to conversion of vessels from other gear types. It gives time for those engaged in pot fishing to realize some return on their investment, and to prepare for conversion of their vessels, or develop a fishing strategy which would place their operations in the Bering Sea and Aleutians. The horizon for a complete Gulf phase-out is three years. Therefore, phase out could reduce the incentive for new pot vessels to enter, so a larger portion of the resource would be shared by fewer boats. Also, the allocation by gear type introduces considerable stability to the fishery, which may well reduce the intensity and ill effects of a completely open access condition.

Another question might be posed regarding whether this alternative was chosen based upon a set of defensible objectives or whether this alternative satisfies objectives in the RIR.

The first objective, which is to ensure an equitable distribution of access to the sablefish resource among different gear types, regardless of the state of origin, was put in specifically as a guidepost for the actual decision-makers on the Council. This language closely resembles the same type of language in the FMP and in the National Standards of the Magnuson Act. It is realized and expected that the only group outside of the courts who has the responsibility for determining the definition of "fair and equitable" is (in this case) the

Council. However, in the event that there may be doubts about the inherent equity of the Council decision-making process, rather than defend the Council action, a brief synopsis is provided.

On May 22, 1985, the Advisory Panel convened to formulate a recommended approach to the management of sablefish for purposes of gear allocation. They had before them staff reports consisting of the Environmental Assessment for Amendment 14, the RIR Part I, and extensive public testimony on the reasons why regulation of the sablefish fishery at this point is so important.

The AP asked that a working group be formed to develop an AP position on the allocation of sablefish among gear types. Four people and one moderator from the staff were picked. The negotiators represented views from shorebased processing, pot fishing, longlining, and factory trawling interests. Using the broad alternatives outlined in the RIR as a guide, each participant presented an opening position, and based upon these positions, a discussion ensued which explored areas of potential agreement and areas of impasse. Although most of the results only yielded general areas of agreement, the meeting was useful in exploring flexibility in negotiating positions of each participant.

The areas of agreement were as follows:

(1) Concurrent opening dates, Gulf-wide, although no specific date was agreed upon.

(2) Pot interests and trawl interests appeared to be in possible agreement over placement of gear-specific areas and in quota allocation between the three gear types.

(3) Trawl interests and longline interests appeared to be in agreement that a negotiated solution could take place between them, although no specific areas of agreement were specified in the workgroup meeting.

The major impasse was between longline interests and pot interests, with substantial disagreement in both initial and ending negotiating positions. Specific disagreements arose over the size of any longline-only area, the distribution of quota between different gear groups, and the existence of a pot-only area. A report of these negotiations was presented to the AP.

The AP then began deliberating the issue as a whole, starting with three basic proposals:

(1) Longline only in the eastern Gulf, 5-7% trawl allocation in the Central Gulf, with the rest going to hook and longline gear, a 15% trawl allocation in the Western Gulf with the rest going to hook and longline gear, and pot fishing legal only west of 170°W longitude.

(2) Longline only in the eastern Gulf, allocations of one-third each for the trawl, hook and longline, and pot gears in the Central Gulf, and no specific allocations in the Western Gulf.

(3) Longline only in the eastern Gulf and one-third allocations for each group in both the central and the western Gulf.

(4) The concept of a phase out of longline pot gear over some period of time, to address the gear conflict problem.

Each of these opening proposals were carefully chosen on the basis of the existing RIR analysis, and in the fourth case, only after consultation with NOAA General Counsel on the efficacy of such a proposal, and on the basis of the supporting documents.

The AP, after preliminary discussion, decided to make affirmations of which proposals they wanted to pursue in further negotiation. They chose the top three of the four, and discarded proposal number 3. After extensive discussion, the AP decided to confine their deliberations only to sablefish fishing in the Gulf of Alaska, so they dropped the "pot only west of 170°" provision of Alternative 1.

While pot fishermen were not adverse to the concept of a phase out, it was important to them that the phase out be long enough for their expenditures on gear to be amortized and paid for before it was outlawed. Trawl fishermen were concerned that their future needs were not well known because they were projecting participation in new fisheries with no firm knowledge of bycatch requirements, and they did not want to preclude the possibility of some directed fishing for sablefish. The longline fleet was concerned because, in the Gulf as a whole, longline catch in 1985 has been approximately 68% of total catch, compared with 90% in 1983 and 1984.

A number of motions with different variations on the allocation in the central and western Gulf, and the length of a phase out, were proposed and failed. One example is eastern Gulf longline only, central Gulf a one-third split for each gear type, western gulf a one-third split for each gear type with a four-year phase out of pots in central and western Gulf. Another variation was a three-year phase out of pots in the central Gulf and a five-year phase out of pots in the western Gulf. Considerable discussion took place on what happens to the pot allocation once they are phased out of the central and western Gulf. How much would go to trawlers, and how much would go to longliners?

Another motion which was proposed and failed was a variation on number 1: eastern Gulf longline only, a 15% trawl allocation in the western and central Gulf, with the remainder available for pots and longlines, with a two-year phase out of pots in both areas. This motion also failed.

A change in the percentage distribution of sablefish between the three gear types was explored, with a proposal for one-half of the OY to go to the longline fishermen, 25% each to pots and trawlers, with the pot gear phased out in two years and the pot allocation reverting to the longline group. An attempt was made to amend this to a 35% pot catch and a 15% trawl catch in the central and western Gulf, but this failed. The original motion also failed, and a variation on the motion was then proposed. In all, eleven motions and amendments to motions were advanced, ten of which failed. The following proposal was advanced:

"Longline only east of 147°W.; 50 percent to longliners, 25 percent to trawls, and 25 percent to pots in the Central and Western Gulf; one year phase-out of pots in the Central Gulf and three year phase-out in the Western Gulf; after which longliners get the pot share."

This motion passed, 16 to 3, with one abstention.

This last proposal was the recommendation of the AP to the Council, who then took the advice of the AP into consideration based upon the testimony they received in the interim, and based on the analytical documents before them, the SSC comments, and legal advice from NOAA General Counsel.

Considerable discussion ensued on the Council floor specifically regarding the equity considerations as they pertained to the phase-out of pot fishing. The results of that deliberation, however, left the pot phase-outs in the original AP recommendation. There was also considerable deliberation on the appropriate level of trawl quotas in the Central and Western Gulf and on the efficacy of a bycatch allowance for trawls in the Eastern Gulf. Alternative 6 was passed by the Council on a 7 to 4 vote.

Although it is difficult to determine what is "equitable" in deliberations, one guidepost might be how characteristic or representative the actual decision process is for the institutional structure which is being looked at. For example, did the Council purposefully ignore information or processes which might skew their decisions? In comparing the process of decision-making which one might normally expect from such a body with what actually happened, the likelihood of such skewing, in this instance, is very remote.

Alternative 6, if implemented, will reduce the negative economic impacts on local communities which are relatively more dependent on the fishery, and there is good reason to think that, given the state of the fishery at present, and the structure and size of these fishing communities, the benefits could very well outweigh the costs sustained on the much smaller pot and gillnet fleet. This is especially true since a switch to longline gear is expected to be relatively easy for gillnet vessels, and some period of adjustment is given to the more heavily invested pot fleet.

Both the longline-only area in the Eastern Gulf and the phase-out in the Central and Western Gulf will have the ultimate effect of reducing gear conflict in all of these areas. Part of the negotiation process involved assessing the trade-offs involved in accepting likelihoods of gear conflicts, determining over what periods of time the likelihood would be tolerated, requirements to concede something to pot interests, and the achievement of voting alliances by trading quotas. Another way of looking at the process is that each group had a "bad" that they wanted to minimize. In consideration of satisfying all objectives, some potential for gear conflict had to be accepted, over some span of time.

The only objective which may not be met is the fourth objective, slowing the rate of development of excess capacity. Even though quotas by gear type have been considered, and even though the field of eligible gear types will be ultimately reduced if this alternative is implemented, the potential still exists for a formidable amount of effort to flow into the remaining two gear types. Although it is true that allocation by gear type <u>at least</u> gives each gear group some expectations about what they as a group can expect each year, it will still be necessary to encourage each group to actively pursue a course of defining how they would propose to manage their effort, should this alternative be implemented.

TO BE INSERTED INTO GULF OF ALASKA RIR, PART II, AMENDMENT 14:

*Alternative 4. Trawl seasons opening January 1; pot-longline and hook and longline seasons beginning April 1.

The Council selected as its preferred alternative a fishing seasons regime which would provide for opening of the trawl fishery on January 1 and opening of the hook and longline and pot longline fisheries on April 1, for each regulatory area of the Gulf. Seasons for each gear type would continue for as long as quota allocated to the gear type remained.

The Council considered sablefish fishing seasons immediately after deciding upon a set of allocations of sablefish to different gear types in the Gulf of Alaska, since the setting of seasons is necessarily related to how, and whether, the fishery is divided among different gear groups. Among the factors which the Council had before it, and considered carefully in its decision, were the nature and extent of gear conflict which might arise between different gear groups, the desirability of having better control over the allocations provided to different groups, by allocating directly rather than using conventional measures such as time/area closures which have indirect allocation effects; the scheduling of seasons related to weather and safety considerations, product quality considerations, equity in harvest between large and small vessels within gear class; and scheduling of seasons relative to fisheries for other species, for the purpose of reducing costs for both harvesters and processors.

The Council felt strongly that this was an area where the Advisory Panel's recommendation should be heeded, since the AP was comprised of many industry members who have an intimate knowledge of the relationship between season scheduling and the factors listed above. The AP discussed this issue extensively, recognizing the relatively large amount of testimony on this subject, both in favor of the three listed alternatives and other proposed alternatives. A summary of the public comment on both the existing alternatives and new alternatives was provided to the Council and the AP as one of their agenda items.

The AP and Council's sentiment was that trawl fisheries, since they would be governed by allocations in each regulatory area, should be permitted to start January 1, because trawl vessels typically are larger and better able to

withstand the rigors of winter fishing, and because fisheries for other species in which sablefish is taken incidentally often are prosecuted in the winter months. There was, however, substantial consensus for a movement of the season opening for the other gear types back from January 1 date, because of the concern over weather factors. In open-access, quota constrained fisheries, setting the season opening date guarantees the time at which the fishery will start, and a winter opening date assures that the fishery will be conducted in rougher, more dangerous weather. The specific allocations to gear types will help prevent the events of 1985, where smaller longline vessels rushed out in January to begin harvesting sablefish when a larger pot boat arrived in southeast Alaska waters and began fishing. There nevertheless has been a significant increase in effort within each gear type, which assures that the fishery will start and be actively prosecuted on the opening date. Because many longline vessels and a few pot vessels are smaller, safety factors were viewed as very significant, and the discussion focused on when in the spring the fishery for these gear types should open.

Although the March 15 opening in the Southeast/East Yakutat area was proposed and analyzed by staff as a starting point for discussion, as a feature of both alternatives 2 and 3, public comment received both during the comment period and at the meeting suggested that there might be a conflict with scheduling of the fisheries, notably herring, if a March 15 date was adopted. Because of the increased cost to both harvesters and processors from poor scheduling of capacity which results when seasons overlap to too great a degree, there was strong sentiment that the opening date ought to be moved back to April 1 to avoid conflict with the herring fishery. Another large component of public testimony held the opinion that seasons ought to be set to begin concurrently around the Gulf to avoid the large pulses of effort that would occur if season openings were staggered and vessels fished around the Gulf at various sablefish openings. Thus, in formulating its final recommendation to the Council, which the Council ultimately adopted, the AP decided to delay the season opening for the pot and longline fisheries, and to apply the delayed season opening date around the Gulf. Events in 1985 have made it clear that the excess effort problem, incipient in the Eastern area in 1984 and exacerbated in 1985, will be repeated in the Central and Western Gulf in 1986,

so there is good reason for concern about season scheduling in times of rough weather and increased risk of harm to persons and property.

The introductory statement on this issue provide a good discussion of the major factors which ought to be, and were, considered in setting seasons. A good general discussion of the role of weather in the setting of seasons, and the nature of the changes in impacts which occur with earlier and later season opening dates in a fishery, can be found in the Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Amendment 9 to the Tanner Crab FMP.

Retention of a January 1 date for trawlers avoids potentially serious adverse impacts which would occur if their season opening date were moved to later in the spring, thereby precluding participation in fisheries for cod, pollock, rockfish, or flatfish, in which small amounts of sablefish are taken. There would be very little gain from setting a later season opening for trawlers because most of this fleet is larger, multi-purpose vessels, able to withstand year round fishing conditions comfortably and safely.

In both the pot and longline fisheries it was felt that the safety gains from a later season scheduling far outweighed any potential losses from a delay of the season. In fact, there appear to be very few losses associated with such a delay for these gear types. Three pot boats did fish the southeast Alaska waters in January and February, and to the extent that these vessels have an edge in fishing in winter months, there will be some (probably slight) reallocation of catch away from these vessels because of the later season scheduling.

The Council felt it adequately addressed the gear conflict issue through the provisions for phase out of pot gear in the Central Gulf after 1986, and in the Western Gulf after 1988. The designation of the Eastern Area as a longline-trawl fishery, with only minimal amounts of trawl catch permitted, effectively addressed the pot-longline/hook-and-longline conflict which had been cited in the southeast Alaska area. Thus, the Council felt that the incremental gains from staggering fishing seasons between the gear groups, by further reducing gear conflict, were negligible.

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REGULATORY IMPACT REVIEW/INITIAL REGULATORY FLEXIBILITY ANALYSIS
OF AMENDMENT 14 TO THE FISHERY MANAGEMENT PLAN
FOR GROUNDFISH OF THE GULF OF ALASKA

PART I

SABLEFISH MANAGEMENT AND GEAR REGULATION

ADOPTED BY THE
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
FOR PUBLIC REVIEW

PREPARED BY:

NATIONAL MARINE FISHERIES SERVICE, ALASKA REGION
AND
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

MAY 1985

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I. INTRODUCTION

In compliance with Executive Order 12291, the National Marine Fisheries Service requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions or for significant DOC/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 or council 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 Regulatory Flexibility Act (P.L. 96-354). The primary purpose of the Regulatory Flexibility Act 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 for Amendment 14 to the Fishery Management Plan for Groundfish of the Gulf of Alaska analyzes the impacts of seven management proposals. These proposals are: (1) sablefish management and gear regulation; (2) rockfish quotas and management areas; (3) establish a reporting system for catcher/processor vessels; (4) changes in OY values; (5) halibut prohibited species catch limits (PSC) on domestic trawlers; (6) implementation of NMFS habitat policy; and (7) sablefish fishing seasons. The RIR is divided into two parts: Part I (this document) presents the analysis of sablefish gear regulation proposals; Part II provides the analysis for the remaining six management proposals.

The discussion in Part I was prepared with the goals and objectives of the FMP and the secondary objectives of the FMP in mind. Of these, the most important are:

Primary Plan Objectives

2. Promote the efficient use of fishery resources but not solely for economic purposes.

3. Promote fair resource allocation without allowing for excessive privileges.

Secondary Plan Objectives

4. Promote efficiency while avoiding disruption of existing social and economic structures.

6. Minimize impacts of fishing strategies on other fisheries and environment.

Background and Setting of the Problem

Current regulations implementing the FMP do not constrain types of gear used in harvesting any of the groundfish categories, with the exception of a temporary emergency rule for sablefish which intends to restrict the gear used in the Eastern Regulatory Area to hook and longline-only. All of the proposed amendments would entail long-term changes in the Gulf of Alaska Groundfish plan, and may affect as many as three other potential gear types, besides longlines.

The commercial harvest of sablefish in the Gulf of Alaska began in Southeast Alaska in 1906. Domestic landings grew to a peak in 1946 when about 4,083 metric tons (mt), dressed weight, were landed. Harvest levels began to decline initially after 1946 in response to a poor market and then in response to foreign competition and poor stock conditions, reaching a minimum in 1968 when 161 mt were landed. During the 1960s foreign harvest of sablefish soon grew to a high of 36,000 mt, most being taken in the western and central Gulf of Alaska. Since 1972, the foreign harvests have declined as a result of declining stock conditions.

With the implementation of the Magnuson Fishery Conservation and Management Act (Magnuson Act) in 1976, fishery managers encouraged domestic development of fishery resources. In terms of sablefish, fishery has responded by expanding quickly, providing stable employment for hundreds of fishermen, and providing economic growth to Alaskan and Pacific Northwest fishing communities. The sablefish resource has, in recent history, been taken by fishermen using principally longline gear.

In recent years, between 1977 and 1985, the trend of events in the groundfish in the fishery conservation zone off Alaska has been the removal of the foreign fishing effort and the encouragement of domestic effort. This domestic effort consists of a wide variety of different vessel sizes and types, including trollers, longliners, vessels converted from crabbers to trawlers or sablefish pot vessels, and large trawler-processors. Major sectors of this fleet are dispersed, spatially, throughout the Pacific Northwest but some ports have very high concentrations of particular gear types or vessels. Often, the predilection towards the use of a gear-type might be caused by:

1. historical fisheries in the area;

2. type of vessel and available gear on the vessel;

3. perceptions about the effectiveness of gear at catching fish and minimizing damage to the environment or the resource;

4. strength of exvessel markets for certain species, or other market phenomena; and

5. the perceived need to diversify activities in the face of uncertainty.

Because of the relatively open access condition of most federally-managed resources, the possibility exists for a rapid expansion of effort (labor and capital) which is then focused on a relatively small resource base. In the completely unregulated fishery, temporary or permanent economic harm to the resource can rapidly ensue, and prior to that occurrence substantial conflicts between producers can take place. These conflicts are external to market-related competition and therefore have little to do with economic efficiency. That is, winning a position in a fishery by engaging in gear conflicts where one operator is able to destroy the property of others with impunity is not allowed in many fisheries. And, in fact, similar types of activities in other industries are also not acceptable economic behavior. Such conflict is, in fact, characteristic of extra-market phenomenon. The results of these conflicts are usually grounds preemption, where one gear "wins," in terms of productive efficiency, and also by imposing external (or nonmarket) effects on other gear types. These types of resource conflicts would not be of great concern if there were easy or costless alternative employment opportunities for displaced capital and labor, or if the costs of negotiating and enforcing agreements between gear types were low enough that such conflicts could be mediated. However, this is usually not the case.

Recent developments of the sablefish fishery provide excellent examples of the open access phenomenon at work. In this section, recent events in the sablefish fishery will be examined. These events caused the pattern of landings between foreign and domestic fishermen to change, and within the American industry, caused changes in the pattern of catch by gear type. This documentation of current trends in the sablefish fishery should provide a better understanding of why it is necessary to contemplate regulation of the domestic sablefish fishery.

Table 1 describes the historical catch of sablefish by management area by all the fisheries off Alaska. The two areas which clearly have the most fishing pressure, from a historical standpoint, are the Southeast Area (Southeast, East Yakutat, and West Yakutat) and the adjacent FCZ. The central Gulf follows, in terms of both magnitude and history of catches, followed by the Bering Sea, Aleutians, and the western Gulf. The westernmost areas of the Gulf appear to have had the least amount of fishing pressure up until 1983.

Table 2 outlines the dramatic change in pattern of harvests of sablefish in the Gulf of Alaska which occurred during the 1984 season. In the 1983 season, there were substantial foreign longline fisheries for sablefish in each of the Eastern, Central, and Western Gulf regulatory areas. In the Eastern area, domestic fishermen took the bulk of the OY, some 2,491 mt compared with a total foreign catch of 1,046 mt, all taken by longliners. In the Central and Western Gulf, however, domestic fishermen took a small fraction of the total catch, some 393 mt of total (foreign and domestic) catch of 2,759 mt, and in the Western Gulf a total of 144 mt compared to a total catch of 1,483 mt.

In 1984, the domestic sablefish fishery accelerated rapidly, largely due to an agreement by the foreign longline fleets to abstain from fishing in the Gulf until after October 7, to allow American fishermen the opportunity to prove the claim that they could take the entire Gulf-wide resource. New market opportunities fueled the domestic fishery, and the American fishermen did take the bulk of the optimum yield in both the Eastern and Central regulatory areas and made a substantial increase in their catch in the Western Gulf of Alaska.

Table 1. Historical sablefish catch by management area

Year	Southeast/ East Yakutat Tons	West Yakutat Tons	Central Gulf Tons	Western Gulf Tons	Bering Sea Tons	Aleutians Tons	International Waters Tons	Unknown Waters Tons	TOTAL Tons
1975	391		0				1,165		1,555
1976	282						858		1,140
1977	750		0	0	2		421		1,173
1978	1,018		1				650	6	1,675
1979	2,143	5	48				1,100		3,297
1980	1,621	0	19	1	2		506		2,350
1981	1,316	5	6		2		705		1,834
1982	1,756	253	19		148	29	772		2,977
1983	2,269	368	251	10	26	25	847		3,796

Source: Alaska Department of Fish and Game

Note: Because of different data sources, similar data series between tables may not have the same names.

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Table 2. Foreign and Domestic Catches of Sablefish in Gulf of Alaska Regulatory Areas, 1983 and 1984.

	1984			1983		
Domestic	Eastern	Central	Western	Eastern	Central	Western
Pots	53 mt	74 mt	80 mt	0 mt	0 mt	0 mt
Gillnets	1	42	0	0	0	0
Longlines	4,165	2,628	96	2,483	251	0
DAP Trawl	0	12	30	8	1	10
JVP Trawl	0	207	256	0	141	134
TOTAL DOMESTIC	4,219 mt	2,963 mt	462 mt	2,491 mt	393 mt	144 mt
Foreign						
Trawl	0 mt	249 mt	50 mt	tr	326 mt	187 mt
Longline	0	113	702	1,046	2,040	1,152
TOTAL FOREIGN	0 mt	362 mt	752 mt	1,046 mt	2,366 mt	1,339 mt
TOTAL CATCH	4,219 mt	3,325 mt	1,214 mt	3,537 mt	2,759 mt	1,483 mt
OPTIMUM YIELD	3,000-4,250 mt	3,060 mt	1,670 mt	3,000-4,250 mt	3,060 mt	1,670 mt

tr = trace

Source: Domestic directed fisheries and DAP trawl - ADF&G
JV trawl and foreign trawl - PacFIN
Foreign Longline - PacFIN and NMFS

In the Eastern Gulf there was no foreign fishing, while American fishermen took a total 2,419 mt; in the Central Gulf, domestic fishermen took 2,963 mt of a total catch of 3,325 mt, and in the Western Gulf domestic fishermen took nearly 40% of the total catch, compared with less than 10% a year prior.

The bulk of the catch by domestic fishermen was taken by longline gear, though two new gear types that had not been seen in the domestic sablefish fishery in recent history also were used to take small amounts of the total catch. Pots were used to land some 53 mt in the Eastern Gulf, 74 mt in the Central Gulf, and 80 mt in Western Gulf, compared to zero the year before. Sunken gillnets were used to take 1 mt in the Eastern Gulf and 42 mt in the Central Gulf, compared with zero the year before. Trawlers, particularly fishing for joint ventures, took somewhat increased catches of sablefish incidentally to target operations for other groundfish species. In the Central and Western Gulf, JVP trawlers took roughly 463 mt, compared with some 275 mt the year before, and DAP trawlers took some 42 mt, compared to 19 mt the year before.

One consequence of the improved market opportunities for American fishermen, then, was a dramatic increase in the amount of domestic effort expended, which enabled the fleet to take virtually the entire optimum yield in 1984. This increase, while very beneficial to American fishermen because foreign fisheries were displaced, cannot continue indefinitely without adverse effects on fishermen who geared up in this fishery during those years prior to 1984, and eventually on all fishermen. Since the Gulf-wide OY for sablefish is very close to being fully taken by American fishermen now, increases in number of vessels and participants in the fishery will begin to decrease harvests of current participants, seasons will grow shorter, and capacity will be idled in the fishery.

A second consequence of the fisheries expansion in 1984 is that experimenting with new gear occurred. However, many people in the industry are concerned that with the longline fishery showing adequate capacity to take the entire sablefish OY, permitting continued introduction of new gear into the fishery will tend not only to diminish the harvest shares of current participants, but will also result in adverse effects on current operations because of gear conflicts.

The domestic sablefish fishery, particularly in the Eastern Gulf of Alaska, has traditionally been the province of longliners, many of whom reside in Southeast Alaska. Sablefish fishing constitutes an important groundfish fishery to residents of this region, and is one of the major non-salmon finfish fisheries from which local residents, both in the harvesting and processing sector, derive a substantial share of their income. Thus, fishing in general and sablefish in particular, concern has arisen over the use of new gear by new entrants to the fishery out of fear for adverse effects on small communities.

Another trend that appeared in 1984, and has been greatly exaggerated by events so far in 1985, is an acceleration of harvests in the fishery. Table 3 compares the 1984 and 1983 catches by month in the domestic sablefish fishery, and the cumulative percentage of the catch and the OY that was taken by month in each year. Notice that in 1984, the domestic fishery had reached 99% of the OY by the end of September, while in 1983 at that point, only 56% of the OY had been reached, and only 87% of the eventual total domestic catch had

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Table 3. Catches of sablefish by month in the domestic sablefish fishery in the Eastern Regulatory Area, and cumulative percentage of optimum yield and of total domestic catch taken by month; 1983-1984.

Month	Catches by Month[a/]		Cumulative Percent of Catch taken by Month		Cumulative Percent of OY taken by Month	
	1984	1983	1984	1983	1984	1983
January	101.3 mt	2.9 mt	2	tr	2	1
February	107.7	27.8	4	1	4	4
March	198.0	103.3	8	6	8	12
April	677.9	244.3	21	17	21	24
May	1,141.7	427.5	43	36	43	35
June	1,445.8	390.8	71	53	71	41
July	247.0	210.6	76	62	76	47
August	74.7	251.5	77	73	77	56
September	1,041.1	312.9	99	87	99	64
October	tr	304.1	99	100	99	64
November	0	0	99	100	99	64
December	42.6	0	100	100	100	64
TOTAL CATCH[a/]	5,077.8 mt	2,275.7 mt				
Optimum Yield[b/]	5,077.8 mt	3,537.0 mt				

Source: PacFin

a/PacFin reports of catch for the Southeastern area include state internal waters, so totals do not match these in other tables (e.g., Table 1).

b/Optimum Yield for the Eastern Regulatory Area is managed as a range (3,000-4,750 mt); we have used the resulting total (foreign and domestic) catch as a point estimate.

been reached. Table 3 shows an increase in the rate of prosecution which occurred in 1984 compared to 1983, and the trend is even more pronounced in 1985.

Preliminary results from the ongoing 1985 fishery indicate that as of mid-March, 55% of the OY for the entire Eastern Regulatory Area had been caught, compared with 8% of the OY caught through the end of March of 1984. The entire quota for the Southeast and East Yakutat subareas of the Eastern Gulf had been taken, with 874 mt (34% of the OY) taken by pot gear, with three vessels fishing, and 1,696 mt, or 66% of the OY, taken by 33 longline vessels. The only other reported catches of any significance from the Gulf were 43 mt taken in the West Yakutat subarea of the Eastern Gulf, by two longline vessels. The catch by pot gear is approximately a fifteen-fold increase over the entire 1984 pot catch. Preliminary estimates of the southeast communities' loss as a result of this influx of new effort is $1.637 million. This is an overestimate of actual loss, since some employment alternatives likely exist, and is the maximum loss that might have occurred, although it is unlikely to have been this great. This loss is based on $.85/lb., and the knowledge that pot boats are delivering their catches to Seattle, while longliners (resident and non-resident) deliver to Southeast Alaska ports.

In summary, marking the achievement of a fully utilized resource was a fully capitalized fishing fleet, a large harvesting and processing work force, increased markets, and the realization that there would be insufficient sablefish resource to accommodate all users at traditional levels.

This fact became apparent in the first 2 months of 1985 off southeast Alaska. Historically, the southeast Alaska sablefish fishery has not begun until spring, when weather and fishing conditions improve and the fish have recovered from spawning. In January 1985, three large (catcher/processor) vessels began fishing for sablefish using pot gear. One of these vessels, a catcher/processor new to this fishery, fished with 600 pots along an area ranging from 15-45 miles.

While the pot vessels were fishing there were several gear conflicts between the pot fishermen and those using longline gear. When longline gear, which is relatively lightweight, becomes entangled with the heavier pot gear, the longline breaks with some, or all of it, being lost. Gear conflicts are likely between these two gear types since fishing is concentrated along the narrow shelf edge. The presence of just one or two pot vessels can effectively preempt the grounds to longline gear, as longline fishermen are forced to move to avoid gear loss. Pots lost or stored on the fishing grounds can contribute to this problem.

The Council, in their February meeting in Sitka, heard testimony which suggested that an important secondary impact of the multiple gear open access condition is the potential for widespread destabilization of community economies in Alaska. This problem can come as a result of large and efficient vessels fishing adjacent to small communities which rely on the resource.

It should be pointed out that nearly all longline fishermen, whether from Alaska or from other states, land their fish in Alaska. Many of the pot boats which have fished in 1984 and early 1985 are large freezer vessels which deliver to ports outside the state. To the extent that location of delivery

is correlated with type of gear used, as appears to be the case at present, then regulation of gear type can well affect where the fish caught are landed, and a restriction on the use of gear could mean that fewer sablefish are landed outside the state and more are landed (by longliners) within the state.

However, the central issue, or problem, is that more effort can potentially target on sablefish than there are sablefish to go around, and can keep all participants fully employed. This is especially the case in the eastern part of the Gulf of Alaska where there is a substantial traditional longline fishery having home ports in Southeastern and South Central Alaskan towns.

These facts explain the basis for concern over the management of the sablefish resource. If current trends continue, substantial gear conflicts from the application of two incompatible types of gear could result; an erosion of an income base for local communities dependent on sablefish fishing will occur, and an acceleration of the fishery will result in a build up of excess capital in very short order. This is the same problem seen in other common property fisheries.

Summary of the Problem

The Alaska sablefish fishery has undergone a very rapid transformation, within little over a year's time, from a foreign-dominated fishery to a fishery fully utilized by domestic fishermen, and which will in the near future, if left unregulated, experience serious problems with gear conflict and excess effort. This draft Regulatory Impact Review was written to: (1) provide the North Pacific Fishery Management Council with background information on recent development of the fishery and its importance to fishermen and communities; (2) to propose and discuss possible objectives for regulation of the fishery; and (3) to analyze possible regulatory strategies for the fishery.

There have been a number of attempts to limit the specific form of gear used in the sablefish fishery. One such attempt was proposed in Amendment 12, which would have established a pot ban in southeast Alaska waters. At the time, no pot fishing was occurring in this area, and so it was difficult to demonstrate the advantages of such an action. It is without doubt that many of the motivations of those who developed this and other proposals were based on regional biases. However, the problems of open access, which could bring gear conflicts and grounds preemption, provide a host of perfectly valid reasons to initiate some form of effort management, which could include actions such as restrictions in the amounts and types of gear used. In other words, while the motivations of some of the proposals in the past might not have been free from bias, the suggestions were the more practical of the short-term approaches to the solution of a potentially serious problem of effort expansion. Such is the setting for the current sablefish management issue. Because there have been no solutions advanced which have been considered equitable enough (or documented enough) to be implemented, the potential for the whole fishery experiencing the ill-effects of open access is greatly increased. The longer this situation delays, the more difficult, and the more harmful, will be the effects on all fishermen who have limited abilities to diversify, both those who use pots and those who use longlines. The situation has advanced to the point where even short-term alternatives should be investigated.

II. DEFINING OBJECTIVES FOR REGULATION

An important part of any assessment of management strategies is the definition of the objectives. No explicit objectives for management of the sablefish resource have been articulated. However, objectives usually begin to take form only after the problems to be addressed have been identified. The discussions in the problem statement are meant to bring out those problems in sufficient detail so that a set of possible objectives can be discussed.

Based on recent events in the sablefish fishery, the Gulf of Alaska Plan Team has identified four possible objectives that the Council may wish to consider in discussing sablefish management. They are:

1. Ensure an equitable distribution of access to the sablefish resource among different gear types, regardless of the state of origin.

2. Reduce the negative economic impacts on local communities which are relatively more dependent on the fishery, to the extent that this maximizes net benefits to the nation.

3. Limit concentration of incompatible effort in small areas, thereby reducing gear conflicts and grounds preemption.

4. Prevent or slow the development of excess capacity in the sablefish fishery.

Any objectives used by the Council must be consistent with the National Standards of the Magnuson Act and other applicable law. Thus, a brief analysis of each objective within the context of the National Standards is given, and a justification for using these objectives in light of the National Standards is presented.

These objectives appear to be those which, if satisfied, would alleviate most of the problems in the sablefish fishery, from a regional standpoint. However, do the objectives conform to the National Standards of the Magnuson Act? These National Standards are listed below:

> (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery.
>
> (2) Conservation and management measures shall be based upon the best scientific information available.
>
> (3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
>
> (4) Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assing fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual corporation, or other entity acquires an excessive share of such privileges.

(5) Conservation and management measures shall, where practicable, promote efficiency in the utilizatin of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

(6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

Objective 1 recognizes that there needs to be some distribution of the resource or access to the resource which does not unnecessarily burden any one gear group from any one state. This objective is closely aligned with National Standard 4. This standard goes on to state that if fishing privileges must be allocated, then they must be fair and equitable to all fishermen, reasonably calculated to promote conservation, and carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges [16 USC 1851, sec.301(a)(4)]. From the weight of testimony at the March Council meetings, as well as in prior Council meetings, it seems doubtful that the status quo (i.e., allocations of privileges by inaction) is in conformance with Objective 1 or National Standard 4. Objective 1 does not appear to be countermanded by Standards 1-3. Objective 1, since it would advocate a more orderly distribution of resources, would be in conformance with Standard 5. This is because any move away from a completely open access arrangement towards the development of resource rights has been shown repeatedly to result in a use of that resource which would more closely conform to an optimal allocation of resources. For example, see works by Agnello and Donnelly (1975), Copes (1972) and Anderson (1977). The degree to which efficiency is promoted depends upon how definitive the resource rights are. The objective does appear to contemplate economic allocation as the sole purpose of a regulation which is proposed. The objective 1 appears to respond to the requirements set forth in Standards 6 and 7.

Objective 2 is in direct response to an expressed need to give some relief to those fishermen, especially in southeast Alaska communities, who are feeling the effects of a rapid expansion of effort in the sablefish fishery, and who are faced, at present, with relatively few employment alternatives. This objective is presented because the maintenance of the status quo appears to be skewing a major portion of the catch away from a large number of small operations to a relatively small number of pot vessels which are home-ported in Alaska and in Washington. Standard 4 says that management measures should be carried out in a way that no individual, corporation, or other entity acquires an excessive share of fishing privileges. There are two views on the application of Standard 4 to fisheries problems. A widely used interpretation is that the distribution of the resource which derives from maintaining the status quo, and the open access condition of the resource cannot be considered to be in violation of Standard 4, and the "excessive shares" clause. This readily assumes, in effect, that given the open access fishery, current management practices contribute little to the explicit allocation of the resource between different user groups. That is, the status quo in most cases is exempt from being in violation of National Standard 4, because it is an alternative of inaction, letting whatever forces exist to drive the fishery.

Another interpretation, however, derives from the observation that fisheries management is interactive. That is, everything that is done (or not done) in management allocates fishing privileges, even though the fishery remains open access. Most of the weight for this argument is based on the idea that the status quo is always treated as an alternative management measure and is in fact required to be analyzed by Executive Order 12291. In addition, the intent of the Executive Order is to not only examine the impact of new regulation, but also to look at the impacts of existing regulations. Depending on which interpretation applies, the status quo may or may not be in violation of National Standard 4. However, arguments which suggest that there is no room in the National Standards for consideration and amelioration of regional impacts are not substantiated by a reading of the National Standards.

While it is true that one dimension of this issue appears to be a dispute between fishermen in different states over fishing privileges, the question needs to be asked whether the provision of short-term relief to an affected area must always be an invidious discrimination. The Guidelines of Fisheries Management Plans (CFR Section 602.14), are very clear that management measures can be implemented which have different effects on different geographic groups, if other parts of the guidelines in Standard 4 are met. There the appears to be considerable room for Objective 2. For example, allocations of fishing privileges must conform to "fairness and equity" criteria. Such an allocation should be rationally connected with the achievement of OY or with the furtherance of legitimate FMP objectives. One of the objectives in the Gulf of Alaska Groundfish FMP mentions that:

> "Management measures, while promoting efficiency where practicable, are designed to avoid disruption of existing social and economic structures where fisheries appear to have operated in reasonable conformance with the Act and have evolved over a period of years as reflected in community characteristics processing capability, fleet size and distribution..." (NPFMC, 1984, pp. 2-2 to 2-3).

In addition, if overall economic efficiency is being considered, as is required in Executive Order 12291 in the discussion on net national benefits, some consideration must be given to the allocational impacts on regional economies, which is part of the national economy. If those impacts are thought to be severe, even in the short term, this should at least be pointed out, and could certainly eliminate the charge of illegal. The "fairness and equity" issue, in Section 602.14 of the guidelines mentioned above, discusses the notion of maximizing overall benefits in conjunction with determining whether or not an action is "fair and equitable." If this discussion is coupled with the ideas laid out in Executive Order 12291, then there is nothing in this guidance which would make the use of Objective 2 invalid. In fact the economic efficiency criteria of 12291 appears to be one test of fairness in the Standards. Satisfaction of this objective, although it may appear to be a forbidden discrimination, may not actually be so under the National Standards.

Pursuing the discussion of Section 602.14 still further, one argument which could be leveled at Objective 2 might be that satisfaction of the objective would sustain management approaches that would allocate excessive shares of the resource to longliners from Southeast Alaska. In fairness, it should be noted that as a practical matter, large numbers of small unorganized fishermen

are farther from being an "entity" than, perhaps, a considerably smaller number of large scale vessels. While it is up to others to decide what constitutes an "excessive" share of the resource, and what an "entity" is, it should be kept in mind that when considering the status quo, the very same criteria must be applied to that condition also. There appears to be general agreement at the regional level that a major redistribution of catch has occurred in the sablefish fishery. Depending on the interpretation, the status quo may already be in violation of Standard 4. The satisfaction of Objective 2 may simply re-establish some equity in the fishery, by considering overall economic efficiency in the context of an open access resource.

Finally, Objective 2 seems to be allowed under the heading of Other Factors [CFR Section 602.14(c)(3)(iv)]. When the Council considers allocation schemes, they should consider other factors relevant to the FMP's objectives. The examples cited clearly are meant to encompass local/regional impacts deriving from dependence on the fishery by local communities.

The satisfaction of Objective 2 may or may not promote efficiency in the utilization of fishery resources, depending on the specific approach taken to achieve the objective. In terms of avoiding what would amount to a simple transfer payment from one fisherman's pocket to another's (an economic allocation), it appears that the guidance is given in order to help avoid the mistake of implementing a rule without looking at the total problem at hand, in the context of the realities of the fishery. In other words, the analyst would like to specifically avoid recommending an action which simply takes money out of one fisherman's pocket and putting it into some other fisherman's pocket, with no other potentially positive effects. Therefore, other social welfare aspects such as employment impacts, which if quantified would also take its place in the calculus of net benefits to society, are not to be ignored. If this rendering of Standard 5 is accurate, then there is no apparent reason why Objective 2 could not be used as a standard by which alternatives are measured.

The satisfaction of Objective 2 would not necessarily lead to the violation of Standards 6 and 7, although different approaches to the satisfaction of this objective may well violate the standards.

A measure which satisfies Objective 3 may or may not violate the National Standards. However, the objective itself does not appear to be inconsistent with the Gulf of Alaska Groundfish Plan, or the National Standards. For example, the Goals and Objectives of the Groundfish Plan contain similar language to the National Standards. Parts of these standards clearly contemplate a role for management in order to promote where practicable efficiency. To the extent that gear conflicts inhibit economic efficiency, there may be cause to reduce the likelihood of those occurrences.

Objective 4 concerns itself with slowing or preventing the development of excess capacity in the sablefish fishery. Presently, the fishery is in a state of rapid expansion. This expansion of effort threatens to mature into a familiar pattern of excess applications of effort to the harvesting of the resource; just as is seen in other open access fisheries. The status quo, therefore, may be in violation of Standards 5 and 7. If the trend is allowed to continue, the status quo may also be in violation of Standard 1, since the effectiveness of in-season and post-season management will greatly decline as

seasons shorten and fishing becomes more vigorous. An attempt to meet Objective 4 will likely encourage a fishery which is more in conformance with the National Standards. It does not appear that the satisfaction of this objective will necessarily be in violation of any of the other standards.

In conclusion, the objectives themselves cannot be considered invalid in the sense that satisfaction of the objectives necessarily implies violation of the National Standards. There may, however, be management approaches which would satisfy some of these objectives, but which may violate some or all of the National Standards.

The reader must also be aware that, short of explicit methods which would involve the development of stronger rights to the resource (like license limitation or transferrable quota arrangements) most other methods of dealing with burgeoning levels of effort are at best temporary and distributive (they spread the effort out). However, the value of buying time until an effective long-term solution can be developed cannot be underestimated. If it is true that the status quo is unacceptable from the standpoint of satisfying the National Standards, then even a solution which only can be relied upon for a short period of time will be better than doing nothing at all. The Council may well consider an alternative with a specific time limit on its use, in anticipation of a more systematic attack on the basic problem of managing effort.

III. REGULATORY ALTERNATIVES

In response to its call for proposals ending in December, the Council received several proposals to manage effort in the sablefish fishery. These proposals ranged from conventional methods which are already used, such as gear and area restrictions, to fairly new methods which involve quota allocations to gear types or a government-industry approach to management of effort through a combination of a moratorium, conventional restrictions and a privately funded buy-back program. Among these alternatives, the ones selected for consideration and analysis were allocating specific amounts to each gear types and license limitations.

The majority of the gear/area restrictions called for a hook and longline-only fishery for sablefish for various areas of the Gulf of Alaska. The Council's alternatives, in terms of gear and area restrictions, were narrowed to limiting areas eastward of various longitudinal lines in the Gulf to hook and longline-only for the directed sablefish fishery, while leaving all other areas for multiple gear use. The gear types currently used in the directed sablefish fishery are: hook and longlines, pots, and gillnets. The large number of possible alternative hook and longline areas in the eastern Gulf were narrowed to the Eastern Gulf, the Eastern and Central Gulf, and the entire Gulf.

In summary, the Regulatory alternatives presented in this document are:

1. Status quo (no action);
2. Allocating the sablefish quota to specific gear types;

3. Exclusive gear areas;
   Hook and longline-only areas:
   (a) Eastern Gulf of Alaska
   (b) Eastern and Central Gulf of Alaska
   (c) Gulf of Alaska
   Pot-only areas:
   (d) Eastern Gulf of Alaska
   (e) Eastern and Central Gulf of Alaska
   (f) Gulf of Alaska
4. Place a ceiling on the number of vessels harvesting sablefish (pot caps, hook and longline caps, or both); and
5. License limitation

The status quo, or no action, and the additional alternatives generated by public comments are also among the alternatives considered.

IV. EMPLOYMENT, EARNINGS, AND PARTICIPATION IN THE ALASKA SABLEFISH FISHERY

Recent Patterns of Employment and Earnings in Southeast Alaska Fisheries

Since one of the potential objectives for regulation of the sablefish fishery is to attempt to maintain the economic viability of small communities who are heavily dependent on fishing as a source of income, it is important that we know what current (or relatively recent) levels of earnings and employment are supported by the sablefish fishery and other fishery activities in those communities. Since the question to be evaluated here is whether, and how, to regulate the sablefish fishery, a predominantly longline fishery, in an attempt to maintain the stability of community income and employment, the focus of our discussion will be on Southeast Alaska. This particular Alaska region has a well documented history of participation in, and dependence upon, the sablefish fishery.

Estimates of how the sablefish fishery contributes to each of the principal southeast Alaska communities in terms of income and employment generated, and how this income and employment might change if no action is taken, would be very useful. However, such data are not systematically collected. Also, it should be remembered that in a quota constrained fishery, where the total harvest is not increasing over time, any regulatory action which has beneficial consequences on income and employment in one region is likely to have adverse consequences in another region. Thus, the objective of maintaining community stability is multi-faceted, and involves consideration of trade-offs in other areas as well as the area in which stability is being maintained.

Recent work conducted by the Alaska Commercial Fisheries Entry Commission (CFEC) and the Alaska Department of Labor (ADOL) has focused on providing at least rough estimates of the employment that is generated through a commercial harvesting activity, and this information is useful for understanding the economic impact associated with commercial fisheries. However, it is not a complete assessment of that impact since no estimates are available on processing employment associated with the sablefish fishery, or how employment

would change as the fishery is regulated. Neither are there estimates of income or employment multipliers that would assist in understanding the regional economic impact of regulating the sablefish fishery.

Table 4 provides estimates, for 1977-82, of the gross exvessel earnings and two measures of employment associated with each of the major longline, trawl, and pot fisheries in Southeast Alaska. While, unfortunately, these latest estimates do not capture the recent increase in domestic activity in the sablefish fishery, they nonetheless provide a useful perspective on the relation between sablefish fishery and employment in the harvesting sector, particularly in relation to other fishery opportunities. Sablefish is one of the major longline fisheries, and is particularly important in terms of providing a longer season of employment. This fishery has been quite useful, considering the halibut seasons have been literally just a few fishing days in recent years. In Southeast Alaska, sablefish has been the third most important fishery to the region in terms of employment behind halibut and salmon (which is not shown). With the recent developments not captured by Table 4, namely the rapid expansion of the sablefish fishery and the decline of the crab fisheries, sablefish has become even more important as a source of employment to the region, and as a source of income to the region.

The "people employed" measure is the number of different individuals who were at some time during the year employed in harvesting the resource. These estimates are generated by identifying the number of different permit holders who made landings in each fishery during the year, and multiplying by an assumed "crew factor" representing the typical crew size in the fishery. The number of people employed is not additive across the fisheries because some individuals participated in more than one fishery, but the total for Southeast Alaska presented at the bottom of the table represents the number of individuals involved in any of Southeast Alaska's fisheries; there is no double counting of individuals across fisheries. The "average annual employment" is the simply the sum of the employment in a fishery in each month, divided by 12. This takes into account the number of months over which employment in the fishery is generated, and in a rough sense measures the average number of harvesting jobs each month during the year. The crew factors employed were developed by ADOL from a statewide survey and in consultation with fishing associations, government agencies, and knowledgeable individuals. They include crews and skippers on board vessels harvesting the resource, but do not include tender and packer crews or onshore fish processing employment generated from those harvests.

Tables 5 and 6, respectively, represent estimates of earnings and employment in Southeast Alaska fisheries, by residence of participants. These again must be considered rough estimates because it was necessary to assume that crew hired by a particular gear operator also resided in the same area as the skipper, and (implicitly) that the number of resident crew members hired by nonresident skippers and the number of nonresident crew members hired by resident skippers would tend to cancel out.

When the earnings and employment data are broken out on a residency basis, it can be seen that Alaska residents took roughly two-thirds to three-quarters of the gross earnings generated, and had a roughly similar portion of people employed. Sablefish fishing was a significant source of revenue to longline fishermen, and a significant source of employment.

TABLE 4. All fishermen: estimated total gross exvessel earnings, number of people employed in the harvesting sector, and average annual harvesting employment in the Southeast Alaska sablefish fishery, 1977-82.

	1977			1978			1979		
	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment
LONGLINE FISHERIES									
Halibut									
vessels 5 nt	176.7	508	73.1	514.5	665	106.9	1,683.7	1,413	213.5
vessels _ 5 nt	4,167.2	1,496	279.3	6,573.4	1,152	243.3	11,079.9	1,828	282.3
Sablefish									
vessels 5 nt							33.8	26	3.2
vessels _ 5 nt	1,098.2	283	49.2	1,591.8	283	57.4	3,311.1	570	120.9
Other Groundfish									
vessels 5 nt	0.6	10	1.5	11.5	30	3.2	17.0	70	9.3
vessels _ 5 nt	20.3	28	4.7	79.0	52	7.0	122.9	64	11.5
TRAWL FISHERIES									
Groundfish	179.5	18	4.8	335.3	21	6.0	251.8	21	5.8
POT FISHERIES									
Sablefish									
vessels 5 nt							101.7	10	1.7
King Crab									
vessels _ 50 ft.	364.6	48	11.5	519.2	70	17.1	575.2	93	23.8
vessels ~ 50 ft.				280.7	25	6.0	238.7	28	6.0
Tanner Crab									
vessels _ 50 ft.	434.8	56	13.3	603.2	68	*	703.3	82	22.3
vessels ~ 50 ft.	748.4	36	7.8	512.1	30	*	1,099.9	44	11.8
Dungeness Crab									
vessels _ 50 ft.	70.9	18	4.8	664.1	50	*	631.3	61	15.0
vessels ~ 50 ft.				961.6	14	2.8	1,016.5	34	6.1
S.E. ALASKA TOTAL	61,802.3	6,823	1,807.4	77,342.3	7,917	2,123.4	94,800.7	8,309	2,134.5

*Data not reported because of confidentiality constraints.

Source: Commercial Fisheries Entry Commission (1984).

TABLE 4. (Continued) All fishermen: estimated total gross exvessel earnings, number of people employed in the harvesting sector, and average annual harvesting employment in the Southeast Alaska sablefish fishery, 1977-82.

	1980			1981			1982		
	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment
LONGLINE FISHERIES									
Halibut									
vessels 5 nt	533.7	1,298	116.0	887.4	1,483	125.0	790.4	1,303	*
vessels _ 5 nt	4,179.9	2,312	*	5,045.9	2,256	189.7	4,868.1	2,196	*
Sablefish									
vessels 5 nt	38.4	40	9.0				15.9	20	3.3
vessels _ 5 nt	1,375.1	406	88.1	1,050.8	292	*	2,965.3	351	71.5
Other Groundfish									
vessels 5 nt	7.8	90	11.3	25.8	90	13.8	47.3	66	11.0
vessels _ 5 nt	25.0	114	13.5	83.7	132	24.3	126.2	156	*
TRAWL FISHERIES									
Groundfish	225.0	15	1.8	98.2	18	2.5	88.7	21	2.8
POT FISHERIES									
Sablefish									
vessels 5 nt									
King Crab									
vessels _ 50 ft.	343.5	66	16.0	798.5	88	20.2	1,867.2	157	*
vessels ~ 50 ft.	440.2	47	14.0	784.1	61	*	1,867.4	85	20.6
Tanner Crab									
vessels _ 50 ft.	457.8	80	21.3	1,143.3	107	*	2,807.5	215	43.3
vessels ~ 50 ft.	1,752.7	110	27.0	1,064.5	88	*	2,216.8	113	21.1
Dungeness Crab									
vessels _ 50 ft.	165.2	36	9.2	2,274.5	149	39.9	4,045.5	275	*
vessels ~ 50 ft.	530.5	34	6.8	1,657.8	47	7.1	2,338.0	63	13.5
S.E. ALASKA TOTAL	71,863.6	8,343	2,026.9	89,524.4	8,031	1,896.8	95,648.0	8,131	2,124.1

*Data not reported because of confidentiality constraints.

Source: Commercial Fisheries Entry Commission (1984).

TABLE 5. Alaska residents: estimated total gross exvessel earnings, number of people employed in the harvesting sector, and average annual harvesting employment in the Southeast Alaska sablefish fishery, 1977-82.

	1977			1978			1979		
	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment
LONGLINE FISHERIES									
Halibut									
vessels 5 nt	152.0	493	70.4	411.3	630	101.0	1,518.9	1,340	202.9
vessels _ 5 nt	3,460.4	1,252	237.0	5,637.5	960	209.7	9,236.1	1,524	*
Sablefish									
vessels 5 nt							33.8	26	3.2
vessels _ 5 nt	850.4	238	39.6	1,184.8	225	*	2,219.9	426	88.5
Other Groundfish									
vessels 5 nt	0.6	10	1.5	11.4	26	2.8	15.2	62	8.5
vessels _ 5 nt	16.9	26	4.2	78.4	48	6.3	93.3	58	10.7
TRAWL FISHERIES									
Groundfish	144.5	12	3.8				200.3	15	3.5
POT FISHERIES									
King Crab									
vessels _ 50 ft.	364.6	48	11.5	497.7	65	16.3	550.9	85	22.3
vessels ~ 50 ft.				280.4	23	5.8	227.6	25	5.8
Tanner Crab									
vessels _ 50 ft.	434.8	56	13.3	591.3	64	*	638.2	74	20.7
vessels ~ 50 ft.	601.6	32	7.3	512.1	30	*	760.7	36	10.2
Dungeness Crab									
vessels _ 50 ft.	70.9	18	4.8	286.2	38	9.6	227.9	47	10.8
vessels ~ 50 ft.							128.0	11	1.9
S.E. ALASKA TOTAL	40,933.0	5,175	1,434.0	47,980.1	5,741	1,610.7	65,583.4	6,232	1,653.5

*Data not reported because of confidentiality constraints.

Source: Commercial Fisheries Entry Commission (1984).

TABLE 5. (Continued) Alaska residents: estimated total gross exvessel earnings, number of people employed in the harvesting sector, and average annual harvesting employment in the Southeast Alaska sablefish fishery, 1977-82.

	1980			1981			1982		
	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment
LONGLINE FISHERIES									
Halibut									
vessels 5 nt	439.1	1,190	105.6	802.5	1,398	117.9	701.2	1,235	*
vessels _ 5 nt	3,307.0	1,900	198.7	4,209.6	1,924	*	3,967.0	1,836	*
Sablefish									
vessels 5 nt	33.4	36	8.7						
vessels _ 5 nt	969.2	273	*	797.9	226	46.8	1,950.3	253	54.6
Other Groundfish									
vessels 5 nt	7.6	81	9.8	25.6	78	12.8	41.8	57	9.5
vessels _ 5 nt	20.7	93	11.5	69.7	105	20.3	108.7	147	22.0
TRAWL FISHERIES									
Groundfish	171.8	12	1.5						
POT FISHERIES									
King Crab									
vessels _ 50 ft.	335.7	61	15.4	794.2	85	19.9	1,813.0	143	*
vessels ~ 50 ft.	431.9	44	13.5	695.0	58	*	1,837.1	66	19.0
Tanner Crab									
vessels _ 50 ft.	420.4	72	19.7	938.5	102	22.5	2,617.3	201	41.3
vessels ~ 50 ft.	789.7	91	23.4	758.7	72	*	1,830.2	80	18.1
Dungeness Crab									
vessels _ 50 ft.	165.2	36	9.2	1,151.8	117	30.9	1,758.3	191	*
vessels ~ 50 ft.	213.9	18	3.9	380.0	20	2.8	406.9	32	6.9
S.E. ALASKA TOTAL	42,930.4	6,130	1,513.2	54,629.1	5,920	1,436.3	58,827.0	5,771	1,567.7

*Data not reported because of confidentiality constraints.

Source: Commercial Fisheries Entry Commission (1984).

TABLE 6. Out-of-state residents: estimated total gross exvessel earnings, number of people employed in the harvesting sector, and average annual harvesting employment in the Southeast Alaska sablefish fishery, 1977-82.

	1977			1978			1979		
	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment
LONGLINE FISHERIES									
Halibut									
vessels 5 nt	24.7	15	2.7	103.2	35	5.9	164.8	73	10.6
vessels _ 5 nt	706.8	244	42.3	935.9	192	33.6	1,843.8	304	*
Sablefish									
vessels 5 nt							0	0	0
vessels _ 5 nt	247.8	45	9.6	407.0	58	*	1,091.2	144	32.4
Other Groundfish									
vessels 5 nt	0	0	0	0.1	4	0.4	1.8	8	0.8
vessels _ 5 nt	3.4	2	0.5	0.6	4	0.7	29.6	6	0.8
TRAWL FISHERIES									
Groundfish	3.5	6	1.0				51.5	6	2.3
POT FISHERIES									
King Crab									
vessels _ 50 ft.	0	0	0	21.5	5	0.8	24.3	8	1.5
vessels ~ 50 ft.				0.3	2	0.2	11.1	3	0.2
Tanner Crab									
vessels _ 50 ft.	0	0	0	11.9	4	*	65.1	8	1.6
vessels ~ 50 ft.	146.8	4	0.5	0	0	0	339.2	8	1.6
Dungeness Crab									
vessels _ 50 ft.	0	0	0	377.9	12	*	403.4	14	4.2
vessels ~ 50 ft.							888.5	23	4.2
S.E. ALASKA TOTAL	20,869.3	1,648	373.4	29,362.2	2,176	512.7	29,217.3	2,077	481.0

*Data not reported because of confidentiality constraints.

Source: Commercial Fisheries Entry Commission (1984).

TABLE 6. (Continued) Out-of-state residents: estimated total gross exvessel earnings, number of people employed in the harvesting sector, and average annual harvesting employment in the Southeast Alaska sablefish fishery, 1977-82.

	1980			1981			1982		
	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment	Gross Exvessel Earnings ($000)	People Employed	Average Annual Employment
LONGLINE FISHERIES									
Halibut									
vessels 5 nt	94.6	108	10.4	84.9	85	7.1	89.2	68	*
vessels _ 5 nt	872.9	412	*	836.3	332	*	901.1	360	*
Sablefish									
vessels 5 nt	5.0	4	0.3						
vessels _ 5 nt	405.9	133	*	253.1	66	*	1,015.0	98	16.9
Other Groundfish									
vessels 5 nt	0.2	9	1.5	0.2	12	1.0	5.5	9	1.5
vessels _ 5 nt	4.3	21	2.0	14.0	27	4.0	17.5	9	*
TRAWL FISHERIES									
Groundfish	53.2	3	0.3						
POT FISHERIES									
King Crab									
vessels _ 50 ft.	7.8	5	0.6	4.3	3	0.3	54.2	14	*
vessels ~ 50 ft.	8.3	3	0.5	89.1	3	*	30.3	19	1.6
Tanner Crab									
vessels _ 50 ft.	37.4	8	1.6	204.8	5	*	190.2	14	2.0
vessels ~ 50 ft.	963.0	19	4.4	305.8	16	*	386.6	33	3.0
Dungeness Crab									
vessels _ 50 ft.	0	0	0	1,122.7	32	9.0	2,287.2	84	*
vessels ~ 50 ft.	316.6	16	2.9	1,277.8	27	4.3	1,931.1	31	6.6
S.E. ALASKA TOTAL	28,933.2	2,213	513.7	34,895.3	2,111	460.5	36,821.0	2,360	556.4

*Data not reported because of confidentiality constraints.

Source: Commercial Fisheries Entry Commission (1984).

The ADOL survey which was the basis for the crew factors used in this exercise reported slightly higher employment aboard longline vessels (2.4 people vs. 2.0 in Southeast Alaska and 4.0 vs. 3.5 people in Kodiak, for example) than aboard pot vessels. However, discussions with ADOL reveal that these difference are probably not significant statistically; therefore, based upon this evidence, which appears to be the best information available, it should not be concluded that longline vessels employ more people than pot vessels, or even that longline vessels have larger crews than pot vessels.

When considering the employment generated by different kinds of vessels, it should be kept in mind that increases in employment may also be decreases in efficiency. That is, a fishing operation may be more efficient with two people, in terms of profits that can be generated, but if it employs four people, more employment will be generated though increased costs associated with additional two crew may not be justified in terms of the additional profits they helped to provide.

These tables are presented in the hopes that they will provide a better understanding of the importance of the sablefish fishery, both in relation to other fisheries and in relation to the employment and earnings it generates for both Alaska residents and out-of-state residents. It is not possible at this point to identify the changes in employment that would result from change (say, a decrease) in the harvest of a particular group. If, for example, no action were taken on the sablefish issue, it may well be that earnings by Southeast Alaska residents will decline, but whether this will translate to lost jobs or to smaller incomes per job cannot be predicted at this point. Thus, it is important to keep in mind that these Tables 4-6 provide a better understanding of where we are with respect to earnings and employment, but may be of limited value in terms of predicting changes that will occur through various regulations.

Growth in Permits Issued and Vessels Fishing in the Alaska Sablefish Fishery

Turning to an analysis of the numbers of potential entrants in the sablefish fishery, Table 7 shows the number of Gulf of Alaska groundfish permits issued by residency of applicant and gear category, for 1984 and 1985. The city/state designations are presented in a footnote. The gear groups are divided generally into two groups--the "specialists" and the "generalists"--or those who listed only one gear type which they might fish in the upcoming season versus those who listed multiple gear types. Those who listed multiple gear types have been divided into those who included longlines as a possible gear type to use, and those who listed pot gear as a possible gear type to use. These statistics, then, reflect numbers of permits by residency which show a high degree of involvement in a single gear-type fishery, and others who may be listing extra gear types in order to have the option to switch gear types in the future. There may be a number of motivations for such diverse behavior, ranging from genuine ability to switch to other gear, to speculative motives. However, the interpretation of the multiple gear figures is that these may be the reserve or potential numbers of participants in longline and pot fishing who might switch over, depending on markets, regulatory environment changes, or stock conditions. The second important observation regarding Table 7 is that the 1985 permit numbers, although preliminary, are very nearly that of the 1984 permits in terms of the magnitude of the numbers. The other notable observation is that both longline-only and pot-only permit

Table 7. Number of Gulf of Alaska Permits by Residency of Applicant and Gear category, 1984-1985

	CITY GROUPS/STATE GROUPS[1/]															
	1	2	3	4	5	6	7	8	9	10	11	12	OR	CA	OTH	U
1984																
Longline only	26	18	10	6	29	12	21	37	36	12	54	3	3	5		1
Pot only					1			1	2		3			1		
Other gear only	10	1	3		4	4	1	4	26	2	53	5	21	5		3
Multi-gear, longlines incl.	55	18	25	11	52	24	27	84	43	16	37	3	8	2		1
Multi-gear, pots incl.	25	13	13	4	23	12	22	58	30	13	26	1	3	2		
Total number of permits[2/]	91	38	38	17	86	40	51	127	108	31	157	11	33	14		5
1985 (Preliminary)																
Longline only	26	14	8	3	20	5	13	36	29	7	42	4	1	3		
Pot only									1		3			2		
Other gear only	10	1	4		8	3		3	15	1	56	5	21	4		
Multi-gear, longlines incl.	56	26	26	13	57	27	33	79	40	20	37	5	9	4	1	1
Multi-gear, pots incl.	25	19	15	5	29	10	26	55	37	16	22	2	6	3	1	
Total number of permits[2/]	92	41	38	16	86	35	47	119	89	28	146	14	32	13	1	1

1/ 1 = Sitka; 2 = Petersburg/Wrangell; 3 = Ketchikan; 4 = Pelican; S = Juneau/Douglas; 6 = Other Southeast Towns; 7 = Prince William Sound; 8 = Kenai Peninsula; 9 = Kodiak/Aleutian Islands; 10 = Alaska Interior; 11 = Seattle/Puget Sound; 12 = Other Washington; OR = Oregon; CA = California; OTH = Other Cities or States; U = Unknown locale or unable to locate residence.

2/ This row is not a column-wise addition of the top five rows. This row represents the total number of individual permits, regardless of gear categories listed. A column addition would double-count permits, and is therefore not a relevant indicator of permit numbers.

Source: National Marine Fisheries Service; V. Vaughn, Analyst

numbers have not yet reached the 1984 levels, even though one fishery for which most of these licenses are obtained--the sablefish fishery--is already underway. One possible explanation is that many of the longline vessels anticipate fishing halibut only, the fishery for which will occur later in the season.

However, the most interesting aspect of Table 7 is the area of residency of the permit holders for 1984 and 1985, and the composition of the gear types which were listed on the permits. For example, the largest fleet is based in Seattle and is composed mainly of longline and "other gear" (mostly trawls).

The number of vessels fishing pots exclusively and which were licensed in 1984 were relatively small compared to those vessels which listed multiple gear plus pots. The same pattern is almost duplicated in 1985. The five major cities in terms of number of Gulf of Alaska groundfish permit holders were Seattle/Puget Sound, Kenai Peninsula, Kodiak/Aleutian, Sitka, and Juneau/ Douglas in 1984 and 1985.

Table 8 presents the number of vessels which actually fished sablefish in the respective management areas by year and gear type used. It cannot be inferred from this table where these vessels come from. The only inference which can be made is that a mixed group of vessels fished in the area. The subheading "Southeast totals" gives the total numbers of vessels operating in the Eastern Gulf, by gear type, in a given year. It is interesting to note that since 1981, there has been a general increase in the number of vessels fishing in the southeast area. As other tables indicate, there is reason to believe that the share of the catch by Southeast Alaska longliners have gradually declined, and the beneficiaries of this decline have been vessels from Washington, principally. Although this cannot be easily seen in this table, catch tonnages reveal the pattern and suggest that the vessels which are contributing to the increased effort may be coming from outside the southeast area. There has been little trawl activity for sablefish, although there have been limited attempts in 1981 and 1983. The presence of pot fishermen in southeast Alaska has fluctuated from 4 in 1980 to 2 in 1984. The general trend over all gear classes, then, is a gradual accumulation of effort, which appears to be accelerating through time. Practically speaking, encouragement to fully develop the sablefish fishery has now added to a rapid trend towards overdevelopment. This trend is also reflected in many of the other indicators of effort shown. For example, the management area called "State waters" is that fishing area within 3 miles of the States coast line, plus internal areas beyond 3 miles recently ceded over to the State. There are a number of vessels which fish exclusively in this area throughout Alaska, and their numbers have been steadily increasing since 1982. The largest group of vessels in this category are the longliners, and they appear to have contributed substantially to the overall increase in small vessels fishing in the State. It should be mentioned that these vessels which fish exclusively in State waters are likely to be smaller and less mobile than other vessels engaged in fishing operations. They are not, however, subject to Federal regulation.

TABLE 8. Number of vessels which fished sablefish, by year, gear, and management are, 1980-1984[1/]

	LL	TRWL	POT	GLNT	OHL	OTHR	TOT	LL	TRWL	POT	GLNT	OHL	OTHR	TOT
	1980							1981						
Southeast/East Yakutat	96	0	4	0	0	0	100	62	0	1	0	3	0	66
West Yakutat	1	0	0	0	0	0	1	0	1	0	0	0	0	1
Central Gulf	3	4	0	0	0	0	7	0	4	0	0	0	0	4
Western Gulf	1	1	0	0	0	0	2	0	0	0	0	0	0	0
Gulf of Alaska Total	100	5	4	0	0	0	109	62	5	1	0	3	0	71
Bering Sea/Aleutians Total	0	1	0	0	0	0	1	0	1	0	0	0	0	1
State Waters Total	76	0	1	0	1	1	79	56	0	3	1	2	1	63
	1982							1983						
Southeast/East Yakutat	95	0	0	0	2	0	97	95	0	0	0	3	0	98
West Yakutat	21	0	1	0	0	0	22	23	1	0	0	0	0	124
Central Gulf	4	8	0	0	0	0	12	23	3	0	0	1	0	27
Western Gulf	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Gulf of Alaska Total	105	8	1	0	2	0	116	113	6	0	0	4	0	123
Bering Sea/Aleutians Total	0	22	0	0	0	2	24	0	5	0	0	0	0	5
State Waters Total	64	0	1	1	0	0	66	80	0	1	0	1	0	82
	1984													
Southeast/East Yakutat	126	0	2	0	5	2	135							
West Yakutat	64	0	0	1	0	0	65							
Central Gulf	46	9	3	5	0	0	63							
Western Gulf	8	7	1	0	0	1	17							
Gulf of Alaska Total	173	16	5	5	5	3	200							
Bering Sea/Aleutians Total	3	26	1	0	0	1	28							
State Waters Total	108	0	4	0	7	0	119							

1/
LL = Longlines
TRWL = Trawl
POT = Pot
GLNT = Gillnet
OHL = Other Hook-and-line
OTHR = Other gear
TOT = Total

Source: Alaska Department of Fish and Game

In contrast, those vessels which visit from outside of the State to fish are likely to be more seaworthy, since they are in the position of having to make longer trips from the south. Also, 1984 is the first time there has been longline activity for sablefish in the Bering Sea or Aleutian Islands management area. There is, however, a noticeable increase in these areas by pot, trawl and longline vessels recently.

Overall, the image that is presented is one of a rapidly growing fishery, with little or no constraints placed on it, and a rather large involvement in the fishery by those outside the State in several different gear types. Pots and gillnets are, for the present, in the minority as far as numbers are concerned, although pot vessels appear to have taken large proportions of the OY in areas where they have fished.

Table 9 presents two important pieces of information in a time series; the numbers of groundfish permits by gear type and also by city group or state in which the permit holder is resident. Although data are not readily available by area of residence and gear type earlier than 1984 (see Table 8), this table does show overall trends by each category. The figures should be interpreted as a listing not only of those presently engaged in the fishery, but also those who may not be fishing sablefish at this time, but who might have the capability or the motivation to enter the fishery. The top part of the table is a tabulation of gear categories and groupings which were listed on the permit application for the fishery in the EEZ (Exclusive Economic Zone).

The permits were divided into several categories according to the gear type or groups of gear types the applicant expected to use in the fishery. As in Table 8, this type of information may reflect speculative motives, actual capability, or desires for planning flexibility in the face of uncertainty. None of these motives can be completely discounted as mere wishful thinking on the part of the fishermen. This is especially true for longline vessels, which are well adapted to rapid conversion to other rigs of longlines. Pot fishing would likely require more capital investment, and therefore conversion to sablefish pots may be slower; however, the manager is dealing with a potentially volatile fishery which, at present, would be very hard to manage on a long-term basis, since, as effort increases relative to the available resource, achieving the OY targets become successively more difficult to accomplish, given the present in-season management tools.

As could be expected, those fishermen who specified gear type tended to try to diversify their permits by making themselves eligible to fish multiple gear types. The growth in pot-only permits has been somewhat sporadic, but the instances where pots are specified as an alternative has grown steadily to an impressive number. By the same token, longline-only permits first declined and then went on the increase, and now stands at 203 permits as of March 1985. Overall, however, the incidence of longlines as a possible gear type has reached very large proportions. In 1985, there were twice as many fishermen specifying longlines as a possible gear type as there were pot specifications in permits. From 1981, the total number of permits distributed by NMFS has been practically on an exponential increase.

The lower half of Table 9 investigates the residence of the permit holders. In practically every city group and state of residence, there has been an explosive growth in permits, overall, in 1983 and 1984, and especially 1984.

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Table 9. Number of Gulf of Alaska groundfish permits by gear type and residence of permit holder, by year

	1979	1980	1981	1982	1983	1984	1985[3/]
Permits where longline is specified:	180	188	149	172	272	680	625
Longline only	163	140	82	93	133	273	203
Longline and pots	3	9	17	13	19	59	61
Longline, pots, and other	0	8	16	29	45	169	185
Longline and other (no pots)	14	31	34	37	75	179	176
Permits where pots are specified:	12	27	40	49	79	253	267
Pots only	3	6	2	0	3	8	6
Longline and pots[1/]	3	9	17	13	19	59	61
Longline, pots, and other[1/]	0	8	16	29	45	169	185
Pots and other (no longlines)	6	4	5	7	12	17	15
Other gear only	33	59	43	71	106	142	130
Total Gulf of Alaska Permits[2/]	222	257	199	250	393	847	776
City Group or State of Residence							
1. Sitka	22	34	25	37	58	91	
2. Petersburg/Wrangell	33	31	21	19	22	38	
3. Ketchikan	17	12	9	10	11	38	
4. Pelican	4	3	2	5	12	17	
5. Juneau/Douglas	34	41	30	31	55	86	
6. Other Southeast	4	6	6	6	6	40	
7. Prince William Sound	1	7	6	6	4	51	
8. Kenai Peninsula	23	22	16	9	21	127	
9. Kodiak/Aleutians	12	23	16	16	36	111	
10. Alaska Interior	0	0	1	1	4	28	
11. Seattle/Puget Sound	57	55	50	79	111	157	
12. Other Washington	1	1	0	1	3	19	
13. Other:							
Oregon	5	11	10	17	36	23	
California	3	9	7	13	14	14	
Other	0	1	0	0	0	0	
Unknown	1	1	0	0	0	5	

1/ These categories were duplicated in the major heading "Permits where longline is specified".
2/ Totals represent individual permits, regardless of the number of gear types specified.
3/ Preliminary estimates.

Source: National Marine Fisheries Service

Those areas experiencing the most rapid growth in permit holdings since 1982 have been, in order, the Kenai Peninsula, Kodiak/Aleutians, Seattle/Puget Sound, Juneau/Douglas, Sitka, and Prince William Sound. Although much of this effort is directed at the halibut fishery this data indicates the rather large potential for growth by switching into the sablefish fishery.

This information suggests, again, that growth in the sablefish fishery has the potential of being broad-based and rapid, with a high likelihood of this growth outstripping the ability of the managers to monitor resource use or to manage effort. This is not uncommon in open access fisheries, where large amounts of effort are chasing resources.

V. ANALYSIS OF REGULATORY ALTERNATIVES

Overview

The Magnuson Act, Executive Order 12291, and other applicable law require that for a proposed action, a benefit-cost analysis will be performed. This benefit-cost analysis is done in order to determine: (1) whether the potential benefits of a proposed action outweigh the potential costs to society; (2) whether regulatory objectives are chosen to maximize net benefits to society; (3) which alternative involves the least net cost to society; (4) whether regulatory priorities are set in a way that will maximize the aggregate net benefits to society, taking into account the condition of particular industries affected by regulations, the condition of the national economy, and future regulatory actions.

In preparing an analysis of the benefits and costs of a proposed action, it often becomes necessary to carefully describe those parts of a problem or an issue which, though not quantifiable, are extremely important to consider in order to gain a full understanding of the effects of regulation. Economic theory can be used as a guide on what to consider. For example, there are three important areas where gains in economic efficiency are usually observed. These are the areas of:

(1) Production;
(2) Transformation;
(3) Exchange.

For example, gains in productive efficiency tend to lower operating costs for individual firms, all other things being equal. However, the open access condition of most fisheries causes the other factors of production, such as labor and capital, to be overused, industry-wide. Therefore, while each individual may be efficiently using resources, the fishery as a whole is not efficient in open access. Yet another example of issues to consider in the area of productive efficiency is that of gear conflicts and their effects on costs of production. Every time a gear conflict occurs there is the possibility for a substantial amount of down time, which translates to higher operating costs. Gear loss also increases operating costs. Actions, then, which tend to help promote industry-wide efficiencies in production for very little government investment are desirable from a national perspective, if they take place in an environment where the negative effects of open access are also dealt with.

Transformation efficiencies arise by making it easier to switch jobs, find alternative uses for capital, reduce idleness of plants, and to make new products that the public demands. However, in a real economic system frictional unemployment (i.e., the inability to find a job or use a piece of equipment for a period of time) of productive factors is a fact of life. Also, the ease with which a new job can be found can vary dramatically from region to region. Many of the most pressing social problems exist because of labor immobility or unemployability and capital fixity (i.e., capital which cannot be used for another purpose or which cannot be employed some other way). Some of the most desirable policies from the standpoint of wide-spread popularity, have actually encouraged transformation inefficiencies. Therefore, an approach which does not address the short- and long-term impacts on employment and the use of existing capital may not yield maximum net benefits to society. In other words, one cannot assume that because a more efficient gear type or method of production has been introduced, that it is necessarily to society's advantage to encourage its use. This is because if the new process is still based on an open access resource, then the efficient individual contribution may well be an overuse of capital and labor in the aggregate, or at the very worst (in the case of an open access resource limited by time and quota) a rapid allocation away from the less productive to the more productive process under that management regime, and a subsequent long period of under employment or unemployment for that sub-sector of the national economy which lost out.

Gains in efficiencies of exchange have to do with how easily markets can be established, or how well they function. For example, how hard is it for buyers and sellers to get together, or how easy is it for those involved in a resource dispute to negotiate a solution which is enforceable? Often the question must be asked whether or not a market even exists for some productive inputs such as access to the fishery; and if there is not a market, how does this affect the benefit-cost analysis or the choice of the most desirable alternative? In other words, when the analyst measures or describes the benefits and costs of a set of alternatives, it is sometimes important to remember the peculiar aspects of the real economic system being dealt with.

The above areas are what economic theory says are the three important components of economic efficiency to be somehow addressed in an analysis of benefits and costs. Naturally, any proposed measure will lead to some alteration of economic efficiency in one or more of the possible areas. However, there will be other aspects or aberrations of the real economic system which cannot or will not be changed, but which will affect the range of choices and the effectiveness of those choices once they are implemented. This has been dubbed the Theory of the Second Best by Mishan (1976), one of the most prolific authors on benefit-cost analysis, and was first described in some generality by Lipsy and Lancaster (1957).

Finally some mention should be made of the arguments for the use of certain types of gear or allocation to certain gear types based on their productive efficiency, and arguments in general for the open access fishery. These arguments are based on the idea that the basic assumption of perfect competition, and particularly the assumption of free entry and exit, will ensure the optimal allocation of resources to the taking of fish, will promote efficiency gains, and will ultimately result in lower fish prices to consumers. The list

of expected positive effects is, roughly, a litany from classical economic theory dating back to Adam Smith, and developed in detail in many basic economics texts.

However, care should be exercised in the applications of the predictions of the perfectly competitive model to cases such as fisheries. It should be pointed out that these segments do not hold out much hope for helping the Council solve some of the more immediate problems at hand, which are:

1. How will gear conflicts be avoided?
2. How will grounds preemption be avoided?
3. How will the Council achieve an equitable solution to resource access and conform to Executive Order 12291?

In Fact, the above arguments seem to be based on a mistaken assumption that the economy of the fishing industry is perfectly competitive. There are several reasons for believing that this outlook is not correct, unless more substantive steps are made by industry and fisheries managers to address the open access issue in fisheries. These reasons are presented below.

As mentioned before, the perfectly competitive model upon which open access and efficiency gains arguments are based on assumes that all factors of production, for which there is any scarcity value, will end up being paid a going wage for their services. In other words, the perfectly competitive model assumes that when a resource gets scarce enough to fight over, a market will immediately arise instead which will distribute the resource to each user at a going price. In fact, the perfectly competitive model in equilibrium says that the wage (or input price) a producer pays will be equal to the value of marginal productivity of the input.

Looking at the "real" fishery, it is clear that fish (sablefish in this case) are in short supply, and it is getting so that substantial resource disputes occur. However, in the present open access situation, there is no well developed market for fishing privileges: no one pays for that input; but there is no denying that it is a scarce resource. That is, no one pays any semblance of a going wage for access to the fishery. In this situation, many authors have shown theoretically and empirically that such a condition may lead ultimately to:

(1) the over use of effort, industry-wide;
(2) an under valuation of the resource and its products; and
(3) potential over-exploitation of the resource.

See, for example, treatments by Anderson (1977), Gordon (1954), Scott (1955), Gould (1972), Copes (1972), and for a dynamic treatment, Clark (1976).

For some empirical examples of the difference between open access fisheries and those where property rights to access have been established, see Agnello and Donnelly (1975) and Karpov (1984).

Notice that there are subtle, but important differences between the world in which the fisheries actually exist and the model used to argue for open access and allocation to the producer with the greatest productive efficiency. First, the model would assume de facto that a market exists for the access to

fisheries. In fact, no such market exists. That is, "free entry and exit" in the classical model pre-supposes that each producer "buys in" to his ownership of all scarce resources he uses. No such "buying in" occurs with the right to fish in the real world, although factors are bought, and are even seomtimes confused with buying in to the right to fish. Another, more subtle difference between the real world and the classical model is that resource depletion is never addressed in the classical model, but must be addressed in the real world.

Those who argue for open access to the resource using the perfectly competitive model are using the model in the wrong context to make their prediction. The actual economics of the fishery, amply laid out in detail by numerous credible economists, suggests that the very thing which is a hallmark for an open access fishery is the inefficient use of resources, industry-wide, for fishing. That model in fact would predict that individual producers might be very efficient, which is precisely part of the problem: A large number of highly efficient vessels are competing for a limited resource. One might counter other arguments that the open access condition plus uncertainties in fisheries production leads to excess capacity; and that, in fact such excess capacity is in some part a rational response to the open access condition of the fishery. Nevertheless, a substantial part of excess capacity may be either directly or indirectly (because the fishery is more "risky") tied to the existence of an open access condition.

The preceding discussion has direct bearing on how the reader might evaluate the validity of the alternatives presented and the public comments. If some form of rights to the resource would be established which were transferrable, then the more efficient operators, given other management constraints, could soon dominate the fishery (as predicted by the classical model) with no help from fisheries managers, and the inefficient vessels would drop out of the fishery or upgrade their operations. However, the open access condition prevails in the fishery. That is, it is hard to tell who is relatively more efficient; and besides, even if this were known, it still may not make any sense to favor them in allocation, since they are simply contributors to a larger condition of inefficiency in the whole industry, and may be even contributing to a substantial amount of dislocation of other fishermen by their activities in the status quo.

For example, arguments have been voiced that regulation of permissable gear in the fishery may violate National Standards because it impedes the use of potentially more efficient gear in a fishery. It is important to remember, considering such arguments, that virtually all the new effort in the sablefish fishery, both by longliners and by pot fishermen, comes from existing capital stock. That is, vessels which have been used in other fisheries are now moving into the sablefish fishery, as opposed to new construction of vessels that are designed primarily or solely to fish for sablefish.

This distinction is important, because particularly in the Eastern Gulf of Alaska the entrance of new effort in the sablefish fishery, even if possibly more efficient, comes at a cost of displacing existing effort. Thus, entry of new gear into a fishery that is already adequately capitalized offers mixed blessings.

Additionally, the question of differences in harvesting efficiencies (particularly as a guide to regulation) is a very difficult one, because of the dynamics of open access fisheries. Recent events in the sablefish fishery bear out the contention that, left unregulated, the fishery will absorb too much fishing effort, and any "efficiencies" gained by individual boats that are faster, larger, more cost effective, or more productive are short-lived; with additional effort, the invariable pattern of seasons becoming shorter and shorter occurs, and otherwise efficient vessels become less so in the face of crowding, overuse of inputs (crew and other materials) during short, intense seasons.

Finally, regulations designed to restrict continued entry into an already capitalized fishery are not necessarily designed to keep out the most efficient operators; rather, they may reflect a considered weighing of the gains from use of gear that is at least as efficient (or perhaps more so) against the losses incurred by others in the already capitalized fishery due to a reallocation of harvest away from them. It is by no means a question with obvious answers; in some circumstances, the former could outweigh the latter, while in other circumstances the cost to existing users may be deemed too great.

Therefore, productive efficiency of individual gear types or vessels should not, at this time, be a basis upon which allocation are made. However, a valid question or argument to entertain might be whether one group is bearing an inordinate amount of cost in order to relieve another user group. Second, for the sablefish fishery (and indeed for all open access fisheries), the classical notions of "free entry and exit" should not be confused with "open access." Free entry and exit in perfect competition assumes the payment of the going wage for all productive scarce factors by producers; in this context, all other things constant, an optimal allocation of resources prevails. The same claim cannot be made for the "open access" case. Until some sort of rights system for the access to fisheries resources is developed, arguments for allocation based on individual producer efficiency are largely meaningless. Until a rights system is developed for access to the fisheries, the manager is consigned to shorter term alternatives which involve spreading out the effort spatially or temporally; or making it more inefficient. These, in fact, have been the tools used all along by fisheries managers in an open access fishery.

Most of the alternatives presented work in varying degrees to end gear conflicts and grounds preemption. However, they are nearly all short-term and do not address longer range needs. None of the alternatives address the problem of how to deal with the effects of open access except the license limitation alternative, which is merely added to keep the open access issue before the public and the decision makers. A more comprehensive, though more time consuming, attack on the negative aspects of open access would involve the investigation of measures similar to the one advanced in the discussion on license limitation, or which involve other methods of establishing access rights to the resource.

Alternative 1 - Status Quo (No Regulation)

The status quo would leave the fishery as it is, which means that all vessels would be fishing on a common pool or stock of fish, with free entry and exit. When an area OY is reached, then the fishery would close down.

Traditional dependence on a fishery and economic stability of small communities are both at issue in this discussion. The area under consideration has 190 local vessels which were actively engaged in longlining, and a number of shore-based processing plants, either privately or cooperatively owned. In the Eastern Gulf, the catch of sablefish in 1984 was 4,330 mt, which provided a long seasonal fishery for the residents. Assuming a conservative average price, dressed weight, of $0.65/pound, the gross ex-vessel value, which is the maximum level of producer surplus which can be inputted to the sablefish fishery, was $4,343,394. This figure would represent the maximum amount of producer loss that could occur to the region if all longline fishing had to cease, assuming perfect competition in other inputs and a vertically integrated industry. The current weighted average price, as of March 1985, is now even higher for this region at $0.85/pound. More realistically, longline fishing probably would not cease altogether, but would lose considerable ground and resource to the pot fishermen.

One example of how the status quo might affect a local community could be seen by examining the economy of Sitka, a representative town, which has readily available cost and earnings data, and which has one of the more diversified (and therefore relatively healthy) economies in southeast Alaska. Sitka also is one of the active fishing ports in the Southeast District. Five main sectors of Sitka's economy are, in order: forest products, fisheries, health care, education, and government. Fishing represents 28.6% of the economy in terms of employment, based on a 1982 survey by a local consulting firm. With the diminishing position of the wood products industry, the contribution of fisheries to the community may have increased since 1982. In 1984, approximately 1,815 mt of sablefish was landed in Sitka for gross sales of $2,600,00, assuming an average price of $0.65/pound. The disposition of these sales were roughly as follows: Boat payments; 30%: Variable costs, less labor; 30%: Labor, in the form of crew shares; 40% (includes skipper). If one thinks of the notions of economic rents, or profit, as applied to this problem, some portion of the figure $1,040,000 (40% times gross sales) represents gains to society from sablefish fishing. However, the separation of profit from the normal return on labor is extremely difficult, since an opportunity cost of labor would have to be established for those living in Sitka. This figure, however, represents an upper bound on primary producer rents which accrue to Sitka in a year, if all other factor markets are considered perfectly competitive, and the fishery is unchanged. Additionally, the true benefits probably tend toward the upper bound for the following reasons:

1. labor in Sitka probably has a low opportunity cost; and

2. labor mobility, for whatever reasons, appears to be relatively low in communities like Sitka.

Other benefits may accrue to Sitka if the assumption of perfect competition is violated. Turning to the processor side, or the buyers of sablefish, the net operating profit of the processing sector for sablefish is between $100,000

and $150,000 per year, not including payments to labor (approximately $700,000). This net operating profit is one other representation of societal benefits accruing not only to Sitka but to society as a whole. Therefore, based on 1984 figures, a rough estimate of the total net benefits to society of maintenance of a hook and longline-only fishery in Sitka alone for sablefish alone might have been as high as $1,055,000--assuming that processing labor is more mobile than labor in the fishery.

However, some of the parameters of this issue have changed rapidly since 1984. Pot fishing activity in this region in 1985 is estimated to take 20.6% of the Eastern Regulatory Area OY by end of March 1985, and nearly 34% of the Southeast/East Yakutat District OY, by the time the fishery closes down. Assuming the landings made by Sitka were to decline by equal proportions, the impact of this activity on the economy of Sitka in 1985 would be some measure of loss in operating profits for processors and primary product rent for fishermen. An estimate of these losses to the Eastern regulatory area via the losses to fishermen as a result of the new pot effort would be about $460,000. Although it is difficult to make precise estimates on social losses based on processing and harvesting cost structures for the Eastern Regulatory Area fishery, it is possible to show general magnitudes of loss and gain as a result of the open access phenomenon. If profits as a percentage of the total cost of the raw product can be extrapolated from Sitka to the processing sector for the Eastern Regulatory Area, then a rough estimate of producer losses would be about $34,000. A similar inference has been used to obtain fishermen losses for the Eastern Regulatory Area, above. An estimate of the total losses for the Eastern Regulatory Area, based on Sitka cost and production figures, is about $493,000.

However, assume that some of the past testimony to the council is correct in that the processing and harvesting of sablefish on board those vessels fishing pots has been primarily destined for a direct sale to Japanese markets. This would suggest that the output from the catcher-processors of sablefish is at the same market level and goes to the same place as does the product from the shore-based processors. At this point, not much is known about the actual cost structure of the processors which fish pots. For example, most of the large pot vessels currently engaged in this fishery seem to be relatively new to the sablefish fishery, but are retrofits of vessels previously used in other fisheries now considered less profitable. Can it be inferred that they are heavily mortgaged at this time? If it does mean this, and if debt service is counted as the cost of production, then the net benefits to society deriving from these operations may be extremely low, for these new-comers. Are the vessels experiencing some sort of "learning curve" effect as a result of their recent entry? If they are, this might also make the operation less profitable, at this stage, than those who are already have been operating for some time.

Operating profit for all the pot vessels, if accurately measured, would be the best measure of the contribution to the net benefits to society deriving from the activity of the pot producers in the Southeast fishery of 1985. Such a measurement is the goal of this discussion. In the absence of any better information, data were taken from one very successful sablefish freezer operation which processes product at sea. The owner was asked to provide an estimate of the profit margin for the firm over several years of operation, as a percentage of the gross wholesale value of the catch in each year. the purpose of this time series was to get an idea of what the first years of an

operation looked like, and to control the analysis for changes in price and available resource. It is important to remind the reader that the notion of profit for a real firm is dynamic in nature; a newer firm may have a lower profit margin because of debt load and learning the fishery. Based on what was given to the analysts, and based on the fact that resource availability is good this year, it is estimated that the profit of a representative pot vessel, net of operating expenses, interest expenses and administrative costs, which includes expenses of crew, fuel, bait, gear, insurance, owners salary, office and travel) would be on the order of 15% to 25%. This admittedly rough measure is then used to derive the likely benefits of the pot fisheries' share of the 1985 season in southeast as of march 1985. The estimated catch of 20.6% of the DAP for the Eastern district (4250 tonnes) was used. An estimated measure of the NET benefits of the pot fishery is between $319,000 and $531,000, using the 1984 price of $1.10 per pound. These figures should be compared to the estimated net loss to the southeast fishery of $493,000.This whole analysis has used 1984 prices to assure consistency. It should be emphasized that these estimates are probably extremely poor measures of net benefits. However, the analysts were unable to obtain necessary cost structure information from some of those who participated in the southeast sablefish fishery. The present analysis is the best that can be done, given the time constraints and available data. The council should encourage those who have a stake in these decisions to volunteer those types of information the analysts might need to make a more cogent assessment of the benefits and costs of an action. This would be especially true if other informed sources conclude that the approach and the data presented here do not adequately reflect the actual fishery.

To summarize this alternative, it is far from clear that the status quo is equitable, in terms of the distribution of access to the sablefish resource. In fact, given the limited analysis above, it is not clear that it is much more than a transfer payment from longline fishermen to pot fishermen, althouth at the upper range of the estimated profit margin for pots, there is a slight net benefit and for the lower range of proft margin, this analysis shows a net national loss of about $173,000. It is not very suprising to see this result, since it has been hypothesized that there is too much effort in the fishery. The degree of public attention to this issue, which has been ongoing and increasing in intensity, suggests that there is a wide-spread perception amoung longline fishermen that they are being pre-empted by pot vessels and forced to deal with unacceptable levels of gear conflict. The most direct counter-argument might be that such perceptions are a result of a broad-based conspiracy, or that the complaints are unfounded empirically. It would probably be be difficult to prove either of these assertions, if they were made. Based on the admittedly rough benefit cost analyses above, the status quo will not mitigate negative economic impacts on local communities which are relatively more dependent on the fishery. It is not clear that this alternative will maximize net benefits to the nation, nor will it limit gear conflicts. The open access condition is not addressed in this alternative, and therefore will not slow the development of excess capacity in the industry.

Alternative 2 - Allocate the Sablefish Quota to Specific Gear Types

The Council has long been aware that many of the questions it faces involve the allocation of scarce fishery resources between competing groups of users. Any regulatory measure which affects the pattern of catch in the industry

technically can be thought of as having allocational effects. Where a fishery is resource constrained, or fully harvested by all the gear groups, actions which increase the share of harvests to one group of fishermen will necessarily decrease the share to other groups.

The most common approaches to the regulation or management of fishing effort have involved the institution of time and area closures, restrictions on the amount of gear or on the types and size of vessels that can be used, or (as in the case of prohibited species) the amounts of incidental catch that may be taken by different groups of vessels. Only the latter can be considered a direct form of allocation, since it involves telling one group what the limit on the catch of a particular species may be. This is typically done for species taken incidentally to target operations for some other species and then as a further disincentive to capture, all of the species are prohibited; they must be returned to the sea.

The other types of regulation just mentioned have definite allocational effects, but they are indirect in the sense that the Council (or, for state-managed fisheries, the Board of Fisheries) does not tell members of each gear group how much of a species they can take. Rather, through the institution of various types of restrictions, the amounts which each group will ultimately take is affected. However, the managing body often has not established exactly what the allocational outcome might be, and is sometimes surprised by unexpected outcomes of some types of regulations.

It is for this reason that the alternative of allocating specific amounts to different gear groups in the directed sablefish fishery is proposed. The Council may wish, after weighing all of the pertinent testimony and analysis, to make a decision regarding the amounts of the resource which each gear group can take, rather than selecting a strategy which will generally favor one group, but to an unknown extent.

This point can be examined by referring to Table 10. This table lists the current optimum yields for sablefish in each of the three Gulf of Alaska regulatory areas, and the possible allocation outcomes between pot and longline fishermen which could occur should the Council decide to make the Eastern area a hook and longline-only area, the Eastern and Central areas hook and longline-only, and the whole Gulf of Alaska hook and longline-only. Since 50% of the Gulf OY is located in the Eastern area, if that area alone were made hook and longline-only, and the whole Gulf sablefish OY were taken by domestic fishermen, longline fishermen could catch a minimum of 50% of the OY, and a maximum of 100%. Conversely, pot fishermen could catch the entire remaining 50% of the OY in the common Central and Western regulatory areas (though this is quite unlikely), or (though this is equally unlikely) they could catch as little as 0%. Since 82% of the total Gulf sablefish OY are found in the Eastern and Central areas, making both these areas hook and longline-only would result in an allocational outcome to longliners of 82%-100% of the OY, and an allocational outcome to pot fishermen of 0%-18% of the OY. Of these three possible definitions of a hook and longline-only area, only the third (making the whole Gulf a hook and longline-only area) is determinate with respect to the allocation to each gear group; in this case of course pot fishermen would be allocated 0% of the optimum yield, and longline fishermen would be allocated 100%. The Council may wish for a more determinate outcome as regards allocation than is possible using the hook and longline-only strategy for Eastern and Central areas of the Gulf.

Table 10. An illustration of the possible allocation outcomes associated with selected longline-only areas for the directed sablefish fishery.

Gear Types	Type of Longline-only area		
	Eastern Area	Eastern and Central	Whole Gulf
Longlines	4,750-9,480 mt	7,810-9,480 mt	9,480 mt
	(50-100%)	(82-100%)	(100%)
Pots/Gillnets	0-4,730 mt	0-1,670 mt	0 mt
	(0-50%)	(0-18%)	(0%)

It should be pointed out that the gear allocation alternative is the same as the hook and longline-only alternative for a particular area, if the Council chooses to allocate 100% of the OY to longline fishermen and to allocate 0% of the OY to fishermen using other forms of directed gear. The gear allocation alternative does not, in itself, do anything to satisfy a gear conflict objective, short of allocating 100% of an OY to a given gear type. If the Council were to allocate portions of the OY in each area to different gear groups, if these groups were to fish in the same area at the same time gear conflicts would be expected to occur. Thus, it might be necessary to separate the gear groups in time by staggering seasons or in space by offering different fishing areas; given the amount of effort already extant in the 1985 sablefish fishery, the Council could probably specify seasons for the use of pot gear, and different seasons for the use of longline gear, and perhaps seasons for the use of other gear, so that the same grounds could be used, but at different times, subject to some provisions for lost gear. Alternatively, the Council could define grounds that would be used for longline fishing and grounds that would be used for other fishing.

Gear allocation strategy might be no better than the other proposed strategies in dealing with the maintenance of employment and incomes in Alaska communities. At the same time, depending on how it is implemented, it would be no worse, since one form of the gear allocation strategy would be in effect the same as creation of hook and longline-only areas.

The problem with satisfaction of this objective is that the share of longline catch which is taken by residents of Alaska has declined from 1983 to 1984, and if this were symptomatic of a trend, no manner of regulation of other gear types would prevent the erosion of an income base and an employment base to those local Alaska communities. In fact, any regulation short of effort management aimed at entry limitation will at best slow the open access phenomenon.

The gear allocation alternative, like the hook and longline-only strategy, does not address the longer term issue of too much effort in the domestic sablefish fishery. It is generally recognized that no conventional management methods (those which restrict the use of inputs to fishing, such as gear or vessel restrictions, or those which establish time and area regimes) is satisfactory to address the problem of too many fishermen and too few fish. On the other hand, it is not clear that there are any good examples of limited access systems from American fishery management experience that adequately address this problem either.

Perhaps the objective which allocating by gear type best satisfies is the one of avoiding undue hardship on current industry participants on the introduction of a regulation. Through the use of this alternative, the Council could essentially "freeze" the pattern of catch of gear groups in whatever way it wished, including the current pattern of catches. This alternative could well impose less cost on non-longline fishermen, because it would not necessarily require such fishermen to relocate to new grounds.

The question has arisen whether it is legal for the Council to make such allocations according to the type of gear used in the fishery, and in effect create the situation where one group of domestic fishermen is closed out of the fishery (because the quota for their gear type had been taken), while

other domestic fishermen (whose quota had not yet been taken) are allowed to continue to fish. Legal advice received is that this strategy is feasible, provided that in the allocation chosen the Council feels that there is a "niche" for each type of gear, and that ensuring that fishermen with each type of gear have an opportunity to take part of the harvest enhances the economic benefits derived from the resource. One issue of particular concern here is National Standard 4 which provides that conservation and management measures shall promote economic efficiency, but that economic allocation not be the sole purpose for the measure. Economic allocation would not be the sole purpose if a particular allocation scheme resulted in a greater overall level of net national benefits than continuing the status quo or choice of some other regulatory strategy. In the present case, if the Council finds that stipulating a specific allocation to each gear group avoids unnecessary hardship on fishermen who currently have claim to the resource and (perhaps through the simultaneous specification of seasons for each gear type) that the pattern of catch can be maintained, without undue gear conflict, then these might be grounds for successful implementation of an allocation scheme and satisfaction of National Standard 4.

From discussions with enforcement and management personnel, it would appear that this regulatory alternative poses substantially the same issues and concerns pertaining to enforcement of the regulation and monitoring of the catch in season.

Monitoring Allocations by Gear Type

Much of the responsibility for inseason monitoring of groundfish harvests rests with the Alaska Department of Fish and Game. The Department has developed a soft data monitoring system which has proven highly responsive to management needs with respect to monitoring total catch from a fishery. One area of concern with this system, however, is the frequency of reporting by vessels making harvests. For vessels which make landings ashore, this has proven to be no problem, even though some of these vessels make trips of up to ten days in length. For catcher-processors, factory trawlers, and motherships, the situation is somewhat different. These vessels are often based outside the State of Alaska, and they often will not make any landings until they return to their home base at the end of the season. Thus, it is very difficult to know in season how much of a particular species (say, sablefish) each of these vessels may have on board; however, the Council is taking steps to require these vessels to report their catches on a weekly basis, and much of the concern about these vessels will be obviated once this regulation is in place.

The issue of reporting by catcher-processors has been of concern generally for the sablefish fishery, and this concern applies equally to all of the regulatory approaches discussed in this section. However, there is a second monitoring issue which is of particular concern for the alternative to allocate the sablefish quota in each area by gear type.

According to the Department, a situation could arise where a vessel obtained a federal permit for fishing for groundfish, but not a state permit. Because of Alaska's landing laws, vessels must in effect possess a State of Alaska license in order to enter state waters and because the need might arise to enter state waters to lay over in a blow, it is unlikely that vessels would

obtain just a federal permit. In fact, in 1984 there were no vessels that had just a federal permit. In 1985, however, there are 24 catcher-processors or motherships with federal licenses, and six of those do not yet have State of Alaska licenses. Informed opinion is that a number of these vessels are new of construction, and for a variety of reasons these vessels have not yet picked up State of Alaska licenses although they are expected to do so.

The problem which arises if a vessel has just a federal permit, and not a state permit, is that the federal permit has several fields for gear type to be used and the individual applying checks all of the fields that he feels may be appropriate for the upcoming year. As a result, some of the federal permits issued (228 in 1984; 246 to date in 1985) have both the longline and the pot field checked. Thus, theoretically, under the gear allocation alternative, if the pot fishery were to be closed because its allocation had been taken by pot vessels, and a vessel which had only a federal vessel which authorized both pot and longline gear on the grounds, it might not be immediately obvious on overflight what kind of gear the vessel was actually fishing. This might raise an enforcement issue, which will be discussed more fully in a following section. With regard to monitoring, with weekly reporting by catcher-processors (and normal fish ticket procedures for other vessels), such a vessel would have to file a fish ticket reporting the catch made and the gear used to take the harvest. Past experience indicates that the gear used field is not well completed, though the Department of Fish and Game has instituted requirements that the fish ticket be fully completed and they have the power to enforce this provision. Thus, a circumstance could arise where a vessel that had just a federal permit, with both pot and longline authorizations, and which turned in a fish ticket without the gear used field completed, could temporarily be difficult to monitor.

The occurrence of this type of situation is acknowledged to be remote because there were no vessels in 1984 that had just a federal permit and not a state permit, and while there are six currently in this condition in 1985, they are expected to obtain state permits during the year. Also, the Department's ability to enforce the completion of fish tickets and obtain the gear type used would further prevent any significant monitoring problem from arising. Nonetheless, it is useful for the Council to be aware of this theoretically possible difficult with monitoring allocations by gear type. Both NMFS and the Department of Fish and Game have advised that they are working on procedures to eliminate completely the possibility of such a circumstance happening.

Alternative 3 - Exclusive Gear Areas

A general class of management tools considered by the Council was gear restrictions for selected areas in the Gulf of Alaska. These types of restrictions have been used in the past in order to protect the resource of the directed fishery as well as to disperse effort and reduce the magnitude of incidental catch. There are several major advantages to this general class of effort management.

1. It is timely. The effects of a gear restriction area would be immediate. The time necessary for setting gear area restrictions could be comparatively shorter than for other measures.

2. Gear restriction can reduce gear conflicts by physically separating gear types in many cases. Note, however, that it is conceivable for a management area to become so small, relative to the number of potential participants in the area, as to bring on the very gear conflict which was to be solved by a gear/area designation.

3. Gear restrictions, if they are not challenged, may be less costly to enact than other effort management approaches.

4. A variant of this alternative will likely mitigate the short-term impacts on southeastern and south-central community economies. However, note that since this management tool does not explicitly address the problem of overuse of effort, these benefits are likely to be short-lived.

The Council directed the analysts to look at a specific sub-set of exclusive gear areas in detail. The major part of the following analysis, therefore, is presented for the hook and longline gear only alternatives. However, it should be immediately apparent that precisely the same approach could be used to investigate the relative desirability of a large number of different types of gear only areas. In particular, the alternative of a pot-only area was advanced as a way of relieving some of the pressures of competition with large numbers of other types of gear in a confined fishing area. Other alternatives have included provisions for trawl-only areas. The point, however, may not be necessarily to achieve solely symmetry or equity, but also to ensure a separation of the conflicting gear types, minimizing economic hardship on small local economies throughout Alaska and provide for a less explosive growth of directive effort in the fishery; in other words, the desired effect is to spread the effort out while minimizing dislocation costs, crowding and gear conflict costs, and adverse impacts on small communities. To do this the Council analysis of the longline-only areas can be used as a guide in the approach to looking at the tradeoffs which arise for placing longline-only areas in different areas of the Gulf of Alaska. A brief, but similar, analysis is presented for the pot-only alternatives.

Catch By Gear Type and Residence

In Table 2, it was shown that the pattern of catch in the sablefish fishery shifted from a substantially foreign fishery to a wholly domestic fishery between 1983 and 1984. Since two of the Council's objectives may include maintenance of community stability and minimization of hardship on current participants, it is useful to know not only what type of gear is being used to harvest the resource, but where the fisherman doing the harvesting call home, and where they have fished in the past. Because creation of hook and longline-only areas could disadvantage other gear types by making them forego grounds they previously fished, it is helpful to know where fishermen live in relation to where they fished in 1984.

Tables 11-13 present a more detailed breakdown of catch in the domestic sablefish fishery by gear type and residence of the permit holder making landings, for each of the three Gulf of Alaska regulatory areas. Taking Table 11 first, of those reporting catches from the Eastern Gulf, residents of Southeast Alaska reported longline catches of 1,685 mt in 1983, and 2,298 mt in 1984. The five major communities of residence were Sitka, Petersburg-Wrangell area, the Ketchikan area, Pelican, and the Juneau area. Longliners

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Table 11. Eastern Gulf Regulatory Area: Domestic Catches of Sablefish by Gear Type and Residence of Permit Holder Making Landings, 1983 and 1984.

Residence	1984 Longline	1984 Pot	1984 Gillnet	1983 Longline	1983 Trawl
Sitka	603 mt	0 mt	0 mt	422 mt	0 mt
Petersburg/Wrangell	467	0	0	343	0
Ketchikan	200	1	0	84	0
Pelican	368	0	0	402	0
Juneau/Douglas	622	0	0	396	0
Other SE	38	0	0	38	0
SE ALASKA TOTAL	2,298 mt	1 mt	0 mt	1,685 mt	0 mt
Cordova/Prince William Sound	10 mt	0 mt	0 mt	0 mt	0 mt
Homer/Kenai Peninsula	58	0	1	53	0
Kodiak/Aleutians	45	0	0	4	8
Other Alaska	7	0	0	0	0
ALASKA TOTAL	2,418 mt	1 mt	1 mt	1,742 mt	8 mt
Seattle/Puget Sound	1,473 mt	0 mt	0 mt	659 mt	0 mt
Other Washington	9	51	0	0	0
Other Outside	239	0	0	71	0
OUT OF STATE TOTAL	1,721 mt	51 mt	0 mt	730 mt	0 mt
Unknown	26	0	0	0	0
TOTAL HARVEST	4,165 mt	53 mt	1 mt	2,483 mt	8 mt

Source: Alaska Dept. of Fish and Game

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Table 12. Central Gulf Regulatory Area: Domestic Catches of Sablefish by Gear Type and Residence of Permit Holder Making Landings, 1983 and 1984.

Residence	1984				1983	
	Longline	Pot	Gillnet	Trawl	Long-line	Trawl
Sitka	142 mt	0 mt	0 mt	0 mt	74 mt	0 mt
Petersburg/Wrangell	19	0	0	0	0	0
Ketchikan	20	0	0	0	0	0
Pelican	72	0	0	0	3	0
Juneau/Douglas	53	0	0	0	7	0
SE ALASKA TOTAL	306 mt	0 mt	0 mt	0 mt	84 mt	0 mt
Cordova/Prince William Sound	5 mt	0 mt	0 mt	0 mt	3 mt	0 mt
Homer/Kenai Peninsula	452	0	3	0	51	0
Kodiak/Aleutians	492	12	0	11	3	1
Other Alaska	32	0	0	0	0	0
ALASKA TOTAL	1,287 mt	12 mt	3 mt	11 mt	141 mt	1 mt
Seattle/Puget Sound	1,017 mt	62 mt	39 mt	0 mt	38 mt	0 mt
Other Outside	324	0	0	1	72	0
OUT OF STATE TOTAL	1,341 mt	62 mt	39 mt	1 mt	110 mt	0 mt
TOTAL HARVEST	2,628 mt	74 mt	42 mt	12 mt	251 mt	1 mt

Source: Alaska Dept. of Fish and Game

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Table 13. Western Gulf Regulatory Area: Domestic Catches of Sablefish by Gear Type and Residence of Permit Holder Making Landings, 1983 and 1984.

	1984			1983
Residence	Longline	Pot	Trawl	Trawl
Ketchikan	66 mt	0 mt	0 mt	0 mt
Pelican	tr	0	0	0
SE ALASKA TOTAL	66 mt	0 mt	0 mt	0 mt
Kodiak/Aleutians	3 mt	80 mt	3 mt	0 mt
ALASKA TOTAL	69 mt	80 mt	3 mt	0 mt
Seattle/Puget Sound	24 mt	0 mt	1 mt	10 mt
Other Washington	0 mt	0	1	0
Other Outside		0	22	10
OUT OF STATE TOTAL	24 mt	0 mt	24 mt	10 mt
Unknown	3 mt	0 mt	3 mt	10 mt
TOTAL HARVEST	96 mt	80 mt	30 mt	10 mt

tr = trace

Source: Alaska Dept. of Fish and Game

residing in other Alaskan communities took a total of 57 mt in 1983 from the Eastern area, and 120 mt in 1984. Residents of other states took 730 mt from the Eastern area in 1983, and 1,721 mt in 1984, using longline gear.

Two important trends from these brief data series should be pointed out. First, since the fishery was expanding dramatically between 1983 and 1984, the increases in catches by other gear types did not significantly affect the share of harvest taken by longline gear; it changed from 99.7% in 1983 to 98.7% in 1984. However, events in 1985 have substantially altered the share of harvest taken by longline gear: pot gear has taken 34% of the Eastern area catch to date, and longline gear has taken 66%.

The second interesting trend is that among longliners, the share of longline harvests taken by Southeast Alaska residents declined from between 1983 and 1984. In 1983, Southeast Alaska residents took 68% (1,685 mt divided by 2,483 mt) of longline harvests, while in 1984 they took some 55% (2,298 mt divided by 4,165 mt). What this suggests is that even though a hook and line only area might be formed, the basic open access problem still remains, and such regulation may only provide short term relief.

The bulk of the pot catch taken in 1984 and 1985 has been by nonresidents. In 1984 only a single metric ton of sablefish was taken by gillnet gear in the Eastern area. In 1983, neither of these gears were reported as taking any sablefish catches, although 8 mt of DAP trawl catch was reported.

Table 12 presents similar information for the Central Gulf of Alaska. Most of the longline catch in 1984 was taken by nonresident boats, while residents of Central Alaska communities, primarily Homer and Kodiak, landed nearly 1,000 mt, compared to 141 mt the year before. Southeast Alaska residents accounted for only 306 mt, a substantial increase from 84 mt the year prior.

Pot and gillnet gear accounted for slightly more than 4% of the Central Gulf domestic sablefish catch in 1984 compared with 0% the year prior. The bulk of the pot and gillnet catch was taken by nonresidents of the state. In the Central Gulf, sablefish fishing became a major source of earnings to residents of Kodiak and Homer in particular. As in the Eastern Gulf, the share of longline harvests taken by Alaska residents declined somewhat between 1983 and 1984 from 56% to 49%, though in absolute volume the catches increased by a factor of eight-fold.

In the Western Regulatory Area, domestic fishermen did not take the entire optimum yield for sablefish. Here, the catch was much more evenly split between longlines and pots, with pot gear accounting for 80 mt of catch and longline gear accounting for 96 mt of catch. Neither gear had registered any harvest in 1983. There was also a small trawl catch of 30 mt in 1984 and 10 mt in 1983.

Relative Importance of Sablefish Management Objectives by Regulatory Area

The following discussion will focus on which objectives for regulation of the sablefish fishery might appear to be most important in each of the regulatory areas, based on evidence on the pattern of catch from 1983 to 1985.

In looking at the Eastern Gulf (Table 11), it appears that a strong case can be made that mitigating economic instability of Southeast Alaska communities which rely on the sablefish fishery can be made. In 1983, as in prior years (see Table 5), residents of Southeast Alaska derived substantial income and employment from the longline sablefish fishery. While the fishery is important to residents of other states, the catches of non-residents were at a level of one-quarter to one-third of the total harvest in 1984; most of these non-resident (longline) fishermen land their catches in Southeast Alaska, and for 1983 and 1984, most of the non-resident catch was taken by fishermen who lived in the Seattle/Puget Sound region, a metropolitan area with substantially greater employment opportunities than exist for most Southeast Alaska communities. The gear conflict issue was not serious until the 1985 fishery, but it is a very real and substantial problem now, according to testimony the Council has received.

With respect to avoiding hardship on current participants in the fishery, it is interesting to note that nearly all of the pot catch in 1984 taken in the Eastern Gulf was by residents of communities outside the state, and indications are that the same is true for 1985. A hook and longline-only area in the Eastern Gulf would require vessels from out of state to travel farther to fish in the Central or Western Gulf than they would if the Eastern Gulf were available to them; there may also be differences in catch rates between the two areas, which could affect the cost of operation of pot boats either positively or negatively. The Council may wish to evaluate how much greater cost is involved for pot vessels in traveling from the Seattle area to the Central or Western Gulf, relative to traveling from Seattle to the Eastern Gulf, in considering the costs imposed on pot fishermen.

With respect to the prevention of excess capitalization, it does not appear to be reasonable to argue that creation of a hook and longline-only area addresses the issues this issue satisfactorily in the long term. It also appears, from the evidence of the 1985 fishery, that this is a major problem in the Eastern Regulatory Area; it was noted earlier that by mid-March 1985, 55% of the entire Eastern area quota had been taken, compared with 8% through all of March in 1984. While 34% of this catch was taken by pot fishermen, the other 66% was taken by longline fishermen, so longline fishermen alone accounted for the taking of 36% of the Eastern area OY through mid-March 1985. While it is possible that the longline fishery would not have accelerated so rapidly had there not been pot boats actively fishing, it is nevertheless true that the increasing number of longline vessels participating in the fishery would tend to accelerate the fishery anyway, and this fishery would only become more grave in the years to come unless it is addressed soon.

Taking the Central Area (Table 12), it is interesting to see that this area has not been historically depended upon by local communities, since the 1983 catches were only something like 8% of the total available optimum yield. Even in 1984, catches by Southeast Alaska residents increased only moderately in relation to increases by fishermen in other areas. A substantial portion of the optimum yield was taken by residents of small communities in the Central Gulf of Alaska in 1984, mainly from Homer and Kodiak, though catches by people from these areas was relatively small in 1983. While the longline fishery is currently a source of significant income to residents of Central Alaska and of communities outside the state, there does not appear to be as

strong a case to be made in this area that regulation of the sablefish fishery significantly affects the maintenance of incomes in local communities historically dependent upon the sablefish fishery.

Gear conflict would appear to be an important issue in this area as well as in the Eastern Gulf. While it has not yet reached crisis proportions, the Council undoubtedly would not wish to wait until it did reach those proportions before acting, because once the fishery reached that point it might be very difficult to establish appropriate restrictions. Most of the pot and gillnet catch (101 mt out of 116 mt) was taken by residents of the Seattle/ Puget Sound area. If this area were made hook and longline-only, most of the costs of conforming to the regulation would be placed on fishermen from outside the state, who would have to travel further to find fishable grounds. However, the additional costs in terms of running time and running expenses in going to the Western Gulf from Seattle, relative to going to the Central Gulf from Seattle, may be fairly small. The Council will wish to consider this factor in its determination about a possible hook and longline-only area in the Central Gulf. For this reason, it may be that the objective of avoiding hardship on current participants is not quite so important in the Central Gulf, since there have been no landings of any consequence made yet from the Central Gulf, and the pot and gillnet landings in 1984 were relatively small in magnitude, made by a relatively small number of vessels for whom the additional running costs of relocating to the Western Gulf may not be an extreme burden.

In this regulatory area, the problem of excess of effort is clearly not so major, as it is in the Eastern Gulf, but should well be considered because of the long lead time in attempting to put effective regulations in place to deal with this problem. As the Eastern Gulf becomes rapidly over capitalized, and seasons shorten, the effort will surely move west, so the Council should be thinking ahead toward possible strategies of dealing with this problem in the fairly near future.

Turning to the Western Gulf (Table 13), this fishery remains considerably more wide open, and there is still a significant foreign presence in this fishery. Pot and longline landings in 1984 were nearly equal, so on the basis of catch, both gear groups would appear to have roughly equal claims to the rights to harvest the resource. Similarly, the first landings of sablefish to speak of with these gear types were made in 1984, the objective of maintaining local community stability dependent upon fishing in this area should not be considered a major one. Gear conflict can still be a very real issue since both gear groups (pot and longline) have made landings, avoidance of hardship to either group is a concern; excess effort is not at this point a major concern in this fishery.

Summary of Impacts of Hook and Longline-Only Areas

To provide a summary of some possible effects of a hook and longline-only area on different groups of fishermen, Table 14 was prepared. Here, much the same information presented in Tables 4-6 is condensed and organized by gear type, management area, and residence of permit holder for 1984 and 1983. Total harvest information is presented for 1985, though it cannot be broken out by residence of permit holder. If the Eastern regulatory area is made hook and longline-only, vessels landing 53 mt in 1984 and 874 mt in 1985 would be

Table 14. A summary of domestic catches in the Gulf of Alaska sablefish fishery by gear used, management area, and residency of permit holder; 1983 and 1984.

Year/ Residency of Holder	Longline			Pot			Gillnet		
1984	Eastern	Central	Western	Eastern	Central	Western	Eastern	Central	Western
Southeast Alaska	2,298 mt	306 mt	66 mt	1 mt	0 mt	0 mt	0 mt	0 mt	0 mt
Central Alaska	113	949	3	0	12	80	1	3	0
Other Alaska	7	32	0	0	0	0	0	0	0
Out of State	1,721	1,341	24	51	62	0	0	39	0
TOTAL HARVEST	4,165 mt	2,628 mt	96 mt	53 mt	74 mt	80 mt	1 mt	42 mt	0 mt
1983									
Southeast Alaska	1,685 mt	84 mt	0 mt	0 mt	0 mt	0 mt	0 mt	0 mt	0 mt
Central Alaska	57	57	0	0	0	0	0	0	0
Other Alaska	0	0	0	0	0	0	0	0	0
Out of State	730	110	0	0	0	0	0	0	0
TOTAL HARVEST	2,483 mt	251 mt	0 mt	0 mt	0 mt	0 mt	0 mt	0 mt	0 mt

Source: ADF&G

required to conduct their fishing operations westward. Data for 1984, and available evidence for 1985, suggest that these are primarily out-of-state fishermen on whom the burden of this requirement would fall. Similarly, if the Central Gulf were made a hook and longline-only area, it would be out-of-state fishermen who have made the bulk of landings, who would be affected, in both the gillnet and pot fisheries. If the Western Gulf were made hook and longline-only, it would be residents of Central Alaska, who fished pots in 1984, who would be required to move. Looked at another way, residents of other states accounted for the bulk of the pot and gillnet catch in the Eastern and Central regulatory areas, while residents of Central Alaska accounted for the bulk of the catch in the Western area.

It is not possible to provide very definitive assessments of the impacts involved with creation of alternative hook and longline-only areas; however, it is thought that the burdens will mainly accrue at the harvesting level, and take the form of increased costs of operation due to the increased running time required to move to new grounds. To the extent that catches per unit effort are different on the new grounds, which would be a transitory phenomenon, some differences in cost of operation of harvesting vessels could result. The number of vessels potentially affected is small, ranging from three to six vessels which operated pot and gillnet gear in 1984 and 1985; however, the catch accounted for by pot boats in 1985 is substantial. If it were possible to make up catches lost in the Eastern area in areas farther west, there might not be significant adverse impacts on these pot boats, aside from the costs of running mentioned earlier. However, as pot boats compete in the remaining unrestricted areas, with longline vessels, the gear conflicts between vessels could increase. The Council may wish to consult Table 14, to better understand the magnitude of catches, and who made them, which would be relocated under different forms of the hook and longline-only area.

For purposes of evaluating which of several different hook and longline-only areas is preferable, one important criterion will be the amount of displacement of other participants. To assist in the evaluation of this question, Table 14 was prepared. It summarizes, by major residence category, catches by longline, pot, and gillnet gear in each of the three Gulf of Alaska regulatory areas. According to the figures for 1984, nearly all of the pot catch in both the Eastern and Central regulatory areas was registered by residents of other states; in contrast, all of the Western area pot catch was taken by Central Alaska residents, and a small amount of the Central area catch was taken by Central Alaska residents. Nearly all of the gillnet catches came from the Central area, and most of those were recorded by nonresidents.

For purposes of comparison between these catch statistics and the numbers of permits which have been recorded by NMFS and ADF&G, the reader should refer to Tables 7, 8, and 9, as well as the discussions developed there.

There are three proposed sub-alternatives within the broad alternative of implementing a hook and longline-only area. All involve the question of where the most appropriate longitudinal line should be drawn in the Gulf of Alaska which will delineate the hook and longline-only sablefish fishery from the mixed gear areas. The mixed-gear areas would allow pot, longline, trawl and experimental bottom gillnet fisheries. The longline-only area would allow only a hook and longline fishery.

It is difficult to determine what the most socially efficient placement of the boundary between these two management areas might be. Inherent in the decision process is the need to determine the additional costs of travel to new ground, the impacts on local, small communities due to redistribution of effort, search costs associated with prospecting for new grounds, and the success at avoiding the crowding effects which may result in gear conflicts. None of these considerations can be completely analyzed due to lack of data sufficient for analysis. However, some limited data may be brought to bear on this problem; and with an appeal to economic theory, a discussion of likely sources of costs and benefits can be presented. Although this approach will not result in a specific numerical presentation of the alternative yielding the maximum net benefits, it should be helpful to those who are trying to make a choice of an appropriate sub-alternative within the general scope of a hook and line only area. The first three alternatives discussed are the Council's hook and longline only alternatives, and the last three alternatives are an identical analysis for pot-only areas; using the same longitudenal delineations.

Alternative 3(a) - Designate the Area East of 147°W. Longitude as a Hook and Longline-Only Area for Directed Sablefish Fishing

This alternative would force those vessels which are not longline fishing to move west of 147°. This restriction would apply to those vessels from Washington, Oregon, California, and Alaska. The number of vessels which would be directly affected by having to move is estimated to be a minimum of three vessels, based on 1984 estimates of the number of sablefish vessels by gear and management area (Table 8). Based on 1985 estimates, a total of six pot vessels would be affected. By placing the line at 147°, at least 190 longline vessels presently fishing would not have to move their operations from where they fished in 1984. At least 57 longline vessels would be fishing in the mixed gear zone west of 147°. It is unknown at this time whether or not a portion of these 57 vessels will be affected enough by the competition in the westerly district to attempt fishing in the longline area. The practical effect of this regulation is to allocate the eastern Gulf OY of sablefish to longlines, and the western Gulf OY to a mixed gear fishery. Providing for management districts with restricted gear will implicitly allocate the resource, but such measures may not yield definitive allocations. For example, the decision maker does not normally know exactly how much fish each gear type will actually be able to take, on the whole, as a result of this type of action. However, these types of alternatives do attempt to provide a simultaneous reduction of gear conflict in the eastern Gulf, while at the same time providing for some guidance in terms of general directions of allocation, thus satisfying the objectives set out in the RIR.

There are two likely sources of costs arising from this alternative. One source is the extra costs of running to and from legal grounds. The other is the logistical constraints of going to another area and discovering the new grounds. The data required to present the costs explicitly are not available, since fuel consumption by general vessel class is unavailable at this time. In addition, lost time due to prospecting has never, to the authors' knowledge, been collected. However, forcing some fishermen to search for new grounds is at issue.

Assume that a fisherman will attempt to move from the illegal area to the closest known legal area, in order to minimize running time. Of course, vessel characteristics, such as whether or not it relies on ice for refrigeration, will affect the decisions on where to run. However, the basic assumption is reasonable. In this case, the closest known fishing ground west of 147° lies roughly on the 500 fathom mark at between 147° and 148°, at about 59°20'N. The minimum distance between a known fishing ground in the illegal area (based on ADF&G contacts as well as NMFS documents on historical foreign longline activity) and the closest known legal fishing ground is approximately 140 nautical miles. The maximum direct distance between a known illegal fishing ground and this same closest known legal ground would be about 520 nautical miles. Based on this information, and the knowledge that 6 vessels would be affected, the total one way mileage which would likely be travelled in order to avoid the illegal areas would be between 840 and 3,120 nautical miles.

The extent to which prospecting for new fishing grounds adds to costs is not known, but the components of that cost would certainly include increased time fishing at lower overall catches, for some period of time. These gross notions of costs and benefits cannot be any better defined without a substantial increase in the amount of information collected, which would be costly to accumulate.

Finally, the effects of this alternative on the motivations to switch gear types is not completely known. However, the longline fleet in general is thought to be more effective at making changes in target species (by relatively modest changes in gear type) like any other gear, with the possible exception of trawls. As a result, it is not clear that, for the long term, a hook and longline-only area will actually address the problems of open access; and if it does, the solution will most likely be a short-term one.

Alternative 3(b) - Designate the Area East of 159°W. Longitude as a Hook and Longline-Only Area for Directed Sablefish Fishing

This alternative is a simple variation on Alternative 3(a), in which the demarcation line between the longline area and the mixed gear areas is set at 159°. The longline area would include all of Kodiak island, practically to the Shumagin islands. Under this alternative, at least 236 longline vessels which fish in Federal waters would be included in the sanctuary area, assuming that the fishing patterns remain the same as in 1984. Eight vessels in the western Gulf and three vessels in the Bering sea would still be in the mixed gear area. However, 9 out of 53 trawl vessels, 5 out of 11 pot vessels, and all 6 gillnet vessels would be forced to fish westward of 159°. In this case, the closest known fishing ground west of 159° lies roughly on the 160° longitude at 54°00'. The minimum distance between a known fishing ground in the illegal area and this fishing ground is about 188 nautical miles. The maximum direct distance between a known illegal fishing ground and this closest known fishing ground would be about 960 miles. Based on this information, and the knowledge that 20 vessels would be affected, the total one-way mileage which would likely be travelled in order to avoid the illegal areas would be between 3,760 and 19,200 miles. Again, the actual costs associated with this type of activity are difficult to come by. It would include items such as fuel and food, and could include lost income as a result of learning new grounds. The extent of these costs is not known, because there have been no cost studies by gear type in the groundfish fishery.

Weighed against this expected cost is the likely benefits of the proposal. These benefits would, in the short term, be reduction of gear conflicts by making vessels and certain gear types somewhat immobile, which should stabilize deliveries to local communities in the short run. However, the problems of open access, which is manifested as large amounts of effort converging on a relatively limited resource, are not completely solved by this or any of the other actions which do not propose to regulate entry and exit.

Alternative 3(c) - Designate the Area East of 170°W. Longitude as a Hook and Longline-Only Area for Directed Sablefish Fishing

This is the most restrictive alternative for all other gear types besides hook and longline. One-hundred percent of the longline vessels which fished in the Gulf of Alaska (all areas westward to and including the western Gulf) in 1984 would be included in the hook and longline-only area. Sixteen trawl vessels, six pot vessels, and six gillnet operations would have to move to the Aleutian Islands and the Bering Sea. There are three possible results, among others, of such an action:

1. All vessels who have targeted on sablefish, but who are not set up for hook and longline, would have to move west, or shut down.

2. The delineation of such an area might, for a period immediately after the regulation, reduce density of vessels in hook and line only Area and increase the density of other gear types in the Bering sea and Aleutian islands area. This could possibly recreate the gear conflicts which the measure itself was designed to avoid.

3. Such a measure could impose the same type of hardship on towns such as Kodiak as the opposite measure (status quo) would likely impose on southeast Alaska. This alternative might be even more severe, since not even a mixed gear type fishery would be allowed east of 170°, where most of the sablefish activity by non-longline gear types has occurred.

The most severe impacts would likely occur if all of the displaced vessels were forced completely out of business as a result of a rule such as this. The loss, however, would not necessarily be in the form of foregone catch to society. The open access condition would assure that a substantial portion of the resource would be taken by someone else. However, as in the southeastern part of the Gulf, achieving productive efficiencies in the short-term by fiat, at the expense of the stability of local communities to the west might arguably leave the manager and society no better than a choice of the status quo would for the Eastern part of the Gulf of Alaska.

Alternative 3(d) - Designate the Area East of 147°W. as a Pot-Only Area for Directed Sablefish Fishing

This alternative would force those vessels not pot fishing to move west of 147°W. The question is how much farther will vessels have to travel under this restriction to void being illegal. Apply the notion of a minimum distance - maximum distance to legal fishing ground, which was presented in Alternative 3(a). These are 140 and 520 nautical miles, respectively. The

number of displaced vessels from the Eastern Regulatory Area, from Table 8 is 198, based on 1984 figures. The total one-way mileage traveled to avoid illegal areas would be between 28,000 and 103,000 nautical miles.

Alternative 3(e) - Designate the Area West of 147°W. as Pot-Only Area for Directed Sablefish Fishing

This alternative would force those vessels not pot fishing to move east of 147°W. The number of dislocated vessels, again based on Table 8, would be 64. Applying the minimum distance-maximum distance to legal fishing areas, the minimum distance would be 135 nautical miles, and the maximum distance would be 827 nautical miles, based on the assumption that most of the known fishing grounds off the Alaska Peninsula are east of 165°W. longitude. The one way distance to legal fishing grounds weighted by the total number of vessels displaced would be 8,640 and 52,928, respectively.

Alternative 3(f) - Designate the area West of 159°W. as a Pot-Only Area for Directed Sablefish Fishing

This alternative would force those vessels not pot fishing to move east of 159°W. The number of dislocated vessels, based on Table 8, would be 16. The minimum and maximum distance one would have to travel to reach legal grounds would be 185 and 357 nautical miles, again based on the assumption that the known grounds are east of 165°W. longitude. The weighted one way travel distance of the vessels dislocated by such a rule would be between 2,960 and 5,712.

It should be evident to the reader that an expanded analysis of such a problem would taken on an exceedingly complex character. In fact, this analysis is a limited and more prosaic form of some types of optimization problems in operations research. The reason it is limited is primarily due to lack of data in a form readily accessible. However, the approach is quite general, and can be used to weigh different approaches to the problem of resolving gear conflicts and minimizing dislocation costs.

Alternative 4: Place a Ceiling on the Number of Vessels Harvesting Sablefish (Pot Caps, Longline Vessel Caps, or Both)

A cap on the number of vessels permitted to fish with pot gear was suggested at the Council meeting, and is included as an alternative for consideration and for public comment. The Council recognized that there would not be sufficient time to provide an extensive analysis of the impacts of this alternative, before it was sent out for public review, and is particularly interested in public comment and suggestions about the possible effects of this alternative. This alternative could be adopted in addition to whatever the Council's preferred alternative might be for managing sablefish.

A "pot cap" would permit only those individuals who were fishing for sablefish with pot gear as of March 1, 1985, to continue to fish sablefish with pot gear. This cap would be implemented by issuing permits authorizing the use of pot gear for sablefish only to those individuals who qualify by virtue of having fished for sablefish as of March 1, 1985. This permit would be separate from, and in addition to, the NMFS permit that is required to fish for groundfish in the FCZ.

A pot cap would appear to have several desirable characteristics, in light of the possible Council objectives for management of sablefish. In fact, a pot cap was an essential part of an industry agreement reached at the February Council meeting, but was abandoned at the time based on an understanding that such a cap could not be successfully implemented. Subsequent events have clarified that such a pot cap could be implemented if it were properly documented and justified.

One possible Council objective for management of sablefish concerns reducing, to the extent possible, the costs imposed on current participants in the sablefish fishery. Vessels which have geared for pot fishing have considerable investments in gear and equipment for the sablefish pot fishery. Participants from one area of the Gulf incurred costs exceeding $100,000 to equip their existing crab pot vessels for sablefish pot longline operation, and, as another example, two large catcher-processors valued in excess of $10 million were converted at considerable expense to fish pot longline gear for sablefish. Other testimony from Kodiak suggests similar types of substantial investment. The hook and longline-only areas being proposed [Alternatives 3(a), (b), and (c)] would to varying degrees impose costs on these and other current participants using pot gear. If additional vessels are allowed to enter the fishery with pot gear, such displacement would only increase. Increases in vessels fishing with pot gear would also, according to extensive Council testimony, increase the gear conflict between the hook and longline and pot longline participants.

Given that sablefish is now a fully domestic fishery, a pot cap would operate to some extent to slow down the acceleration of effort in the sablefish fishery. As noted elsewhere, there was a dramatic acceleration in the rate of harvest in the Eastern Gulf sablefish fishery in 1985, due in large part to the commencement of operations by two to three pot boats, and concern by longline fishermen over an erosion of their catches which might result from the introduction of new units of gear. To the extent that a pot cap does prevent potential future participants using pot longline gear from entering the fishery, it will reduce the rate of growth of effort in the sablefish fishery. However, there have been substantial increases in the number of vessels in the longline fishery as well, so it is clear that a pot cap will not substantially slow the growth of effort in the sablefish fishery in and of itself. The Council has recognized, though, that effort limitation is not an achievable objective in the course of this particular amendment cycle but it remains very much on the agenda because the Council directed its plan team to prepare an amendment for the 1986 amendment cycle that would include effort limitation measures. Thus, the failure of a pot cap to significantly reduce the rate of growth of effort should not be viewed as a significant detriment, because it could serve to significantly alleviate a more pressing Council concern, that of gear conflict between user groups.

For purposes of equity, or symmetry, it might be desirable to propose a "hook and longline cap" in addition to a pot cap or even a general moratorium on effort. However, several issues should be pointed out. First, if the Council wants to stem the expansion of effort into the sablefish fishery, both pots and longline entry would have to be capped. Based on the year 1984 in Table 9, there seems to be relatively more potential longline entrants than there are pot entrants. If the objective is to impose the least onerous restriction on the existing fishery as a whole, with the least amount of

administrative and enforcement costs, the pot cap is probably the most desirable. If the output of the potential pot entrants is greater than about three times the output of the potential longline fleet entrants (based on Table 9, 1984), then a pot cap is even more desirable, if a choice has to be made between the two gear types. The problem arises, however, of who of the affected gear groups is actually able to enter the fishery.

The provision for a retroactive date for qualification is important for successful implementation of a pot cap, given the Council's experience with attempts to restrict effort in the halibut fishery. A retroactive date removes the opportunity and incentive for speculative new entry by pot longline fishermen. This is also a more cost effective means to achieve the Council's objectives for reducing gear conflict and reducing the hardship imposed on current participants, since it keeps the number of vessels operating under the pot cap to a manageable number.

It should be pointed out that if a general effort cap is proposed, then the action is equivalent to a general moratorium on effort.

The halibut moratorium did not ultimately get a favorable reception for several reasons; one reason was that it did not propose to follow through with a more comprehensive attack on the open access issue. The implied suggestion, therefore, in the aftermath of that proposal, is that acceptable forms of effort management need to be developed prior to advancing the proposal of a moratorium.

In summary, a pot cap would seem to be highly desirable, in view of the Council's desire to reduce gear conflict in the sablefish fishery. It would not appear to impose significant costs on any current participants, and if adopted in conjunction with one of the other management alternatives, this measure would appear to assist the Council in maintaining the current balance of cap between gear groups.

Alternative 5 - <u>License Limitation or Comprehensive Effort Management</u>

There are a number of effort limitation methods. However, the one which will be discussed in this review is the proposal presented to the Council in December 1984 to institute a system in which effort would be controlled by general moratorium, followed by the institution of a privately-funded effort management program by gear type. This general type of limited access is not new; it has been practiced by the Australian government and other countries for 15 years, with some measure of success. However, what is unique in the proposal which was presented to the Council was the notion of using a system of checks and balances, or a market adversarial relationship between the public and private sector for the management of sablefish. This method of introducing checks and balances to provide stable management in a changing environment is similar in many ways to Jeffersonian types of government models, upon which the United States system of democracy is based. This idea was an extension of a proposal for a cooperative government and industry effort management program developed by an industry member from Kodiak, Alaska. The intent of the original proposal was to find a solution to the problems encountered in the management of effort in the halibut fishery.

There are a number of theoretical underpinnings which the proposal explicitly or implicitly addresses which make it highly attractive. A few of these observations from theory are listed below:

1. Fishermen in the aggregate are affected, to some extent, by whatever misallocation of resources may occur as a result of the open access condition. The so called "dissipation of rents" imposes a cost to fishermen and to all of society.

Although society as a whole could bear this cost, and has done so under most forms of fisheries management, it is often to the advantage of individual fishermen in an open access fishery to attempt negotiations which would lead to a stronger definition of property rights. The problem which usually arises is that the costs of coalition and negotiation may be very great; prejudices and biases could preclude meaningful discussions altogether. Fisheries management at the Federal level is often not equipped to manage effort using analytical approaches and is often constrained by a formidable set of criteria apparently designed to limit agency access to information. Rational management methods must therefore require little or no appeals for additional information, must be flexible and timely, and must conform, at least conceptually, to the national standards, some of which are based on neoclassical and welfare economics. Fisheries management agencies can sometimes do little more than help set reasonable initial conditions; where "reasonable" implies a condition where the probability of widespread litigation is greatly reduced.

2. If costs of coalition and transaction (or negotiation) are reduced sufficiently, a system of property rights in the fishery will arise, and these property rights will likely be a "socially superior" move, even if these rights continue to be constrained by other rules and regulations such as gear restrictions or fishing seasons. The role of a fisheries management agency might then be to facilitate the formation of negotiations which could yield a stronger system of property rights.

3. An "optimal" number and distribution of permits in any licencing scheme is practically impossible to determine a priori. In fact, optimality depends upon the perceptions of the observer, through time. Social perceptions of the optimal number and distributions of permits as articulated by a regulatory agency may vary substantially from private notions of what is optimal. Since the long-term stability of the resource is ultimately a public responsibility, some exertion of regulatory agency influence is needed. Since long-term stability of effort entry and exit is of concern to those in the fishery, some exertion of the private notions of optimality in numbers and distribution of permits is also needed.

4. Overcapacity in a fishery which arises from attempts to diversify may be a rational response to uncertainty in the fishery. However, this further obscures the idea of analytically deriving an "optimal" number of vessels which collectively possess the correct capacity. However, one could use theoretical results which are accepted by most economists to guide the development of an effort management system which would address the problem of overcapacity, without having to attempt a measurement of optimal capacity in all cases where this information would be needed.

These underpinnings which appeal to the theory of property rights formation and the rise of markets, as well as the inherent role of risk and uncertainty in decision-making, suggest a framework for effort management which is relatively simple to administer, once in place.

First, representatives of different gear types which target on sablefish could be solicited for participation in preliminary planning meetings where a basic framework of self-managed effort would be discussed. This basic framework would include:

1. The setting of a moratorium. This moratorium would be the result of all negotiation between the private and public sector representatives, and would cover, in detail, the criterion and conditions under which the moratorium would take place. However, no moratorium proposal would be advanced until a complete negotiation of the effort management model had taken place. The objective would be to develop a moratorium which would minimize the possibility of lengthy litigation.

2. The setting of a yearly fee for permit holders according to some aspect of scale of production (say, size of vessel). A yearly licence fee would serve the twofold purpose of generating funds for effort management, as well as discouraging the speculative motive in the permitting system. Notice, however, that this procedure is presently illegal under the Magnuson Act.

3. Deciding upon the terms of use and transferability of a permit. For example, to further discourage speculative motives, all permits might be initially nontransferable, (or transferrable, but not at a free market value) for some period of time, which would be agreed to in negotiation. After this time of limited trading rights, permits would then become freely transferable. This is but one example of terms which might be applied to permits in order to assure an orderly fishery. Other types of terms might include:

   (a) maximum number of licences one can hold;

   (b) rules governing the licencing of those having fished more than one scale size or class of vessel;

   (c) rules governing the use of licences by absentee owners;

   (d) rules governing special cases which are likely to occur, such as eligible fishermen who do not have a vessel; and

   (e) other features designed to make the fishery more rational, such as provisions for inactive permits which would decrease fishing pressure which is based on speculative motive.

4. Development of a nominal fish tax, also used to fund effort management. The reason for this provision would be to tax those fishermen who benefit the most from the fishery. The tax would also have the dual purpose of slowing down "capital stuffing" while at the same time contributing to a buy-back fund. This activity, which is considered by the analyst to be pivotol in the effective management of effort, is illegal under the Magnuson Act.

5. Developing of the fishermen's association and trust fund for that gear type and fishery, and outlining the rules under which funds could be used. Some of the more important issues which would have to be resolved would be those associated with the organization of the association, and the legal basis for the collection of fees for management. More specifically, a plan would probably have to address:

(a) composition, tenure and bylaws of the Board of Trustees;

(b) development of the specific uses for monies collected (i.e., to fund meetings of fishermen representatives, mailings, commissioned studies on status of stocks or fishery, and buy-back schemes); and

(c) bylaws regulating the trading rules for the exchange of permits by all participants.

6. Appointment of an effort management board composed of public managers for the purpose of engaging in open market bids for permits, either for retirement or for resale. The basis for these dichotomous bodies involved in the management of effort would ultimately be to provide a free market checks and balances approach to fisheries management between public and private interests. For example, if public managers are more concerned about effort reduction than their counterpart board, it would be incumbent upon them to engage in open market operations to buy and retire permits. Obviously, the checks and balances system could just as easily work in a number of other ways, all of which would provide market solutions to specific cases of effort oversupply or undersupply.

There are a number of very strong recommendations for such an effort management system, the most important of which is that fishermen collectively bear some of the costs and responsibilities of fisheries management directly, and they do so in areas like effort management, where public managers in this country have been neither too eager nor very successful at suggesting different approaches to the management of effort. Costs of litigation under this alternative are intentionally avoided by having a high degree of participation by fishermen from the beginning, and a fairly liberal set of entry criterion. However, annual fees for permits, poundage taxes for deliveries or "no-trade" periods could be structured in such a way as to discourage speculators, but not be burdensome to low income fishermen.

There is a theoretical basis both for the entry fee and the poundage tax, since the entry of more vessels in a fishery than needed imposes a cost to society in the form of dissipated rents, which might be partially corrected through time by removal of effort. A poundage tax, especially if divided between the fishermen and management boards for purposes of effort management, and used for fisheries management related activity only, conforms closely to the notion of fishermen remitting some captured rents resulting from effort management directly to the public sector, through taxes, which has been a frequent recommendation coming from fisheries economic theory. A market adversarial relationship between effort management boards, one for public managers and one for private managers, maintains a set of checks and balances which are inherent in fisheries management anyway, but in this system the adversarial relationship is market related. Such a system might be more in conformance with the dynamics of the fishery itself, and does not necessarily

require large amounts of data to bring about a change (in fact, information associated with licence trading could generate considerable data on vital indicators of the fishery). The proposal is general in approach to effort management; and the implementation need not necessarily disturb the present fisheries management structure.

Most other limited entry plans assume that the primary focus should always be effort reduction through the permanent retirement of permits. These plans, however, suffer from the inability to allow growth in a fleet when or if it is needed, or to provide for a system of permit redistribution in accordance with the desires of public or private managers. A system where permits are temporarily retired and then recirculated at later dates have several positive features, and are therefore attractive from a cybernetic standpoint:

1. It provides for the possibility for a growth in fleet size if stocks rebuild.

2. It allows for the possibility of resales to occur over time; the practical effect of such an arrangement is that effort is redistributed over time in a way that might better reflect a social optimum. Permit sales could be used to recoup losses which occur in previous time periods.

3. It allows for the possibility of subsidized permit redistribution to occur to disadvantaged groups or younger fishermen in order to partially offset whatever biases a market approach may have against those activities which generally might be considered to be socially desirable.

It should be added that the general notion of effort management with checks and balances is applicable to all fisheries and gear types, although it has been discussed here primarily in connection with sablefish. The features of this alternative are its basis in economic theory, a reliance on a Jeffersonian system of checks and balances to represent public and private views, a management alternative which encourages negotiation between gear types and coalition among similar gear types, and flexible effort management response to exogenous changes, especially those occurring as a result of stock rebuilding.

There are, however, a number of drawbacks to this system of managing the sablefish fishery and there are immediate problems which are apparent. First, the negotiation of bylaws for any fishermen's association and board of trustees would likely be long and somewhat expensive to accomplish. Even if a guideline plan which would serve as the basis for further development were well developed by Council and NMFS staff, a substantial amount of time would have to be devoted to refining this plan and exploring the "what if's" which would arise. This formative part of the plan would have to be worked out far in advance of any proposed moratorium. From the standpoint of timing and costs of development, such a plan would not provide effective short-term solutions to the problems which were identified by the Council.

A second major problem with this alternative is the legalities of the proposed boards of trustees and the source of their funding. This is especially true since there have been no changes in fee collecting provisions in the Magnuson Act. These provisions, as they are now stated, do not permit the collection

of fees, the amounts of which exceed the administrative costs of issuing licenses. Although it is clear that management costs can far exceed the costs of issuing licenses, this continues to be a substantial roadblock to the more rational management of the fishery.

This alternative, because of its long-term nature, would do little to correct or curtail gear conflict problems in the southeast part of the Gulf of Alaska, nor would it be an immediate solution to the other, more general consequences of the open access condition. The benefits that would accrue would be longer-term, and substantial. However, time would be required, both to set up the system and to realize these benefits. Even over the medium-term, the problem of "capital stuffing" might persist, and would therefore not necessarily result in an immediate reduction of effort, unless conventional gear restrictions are imposed or retained.

There is also a problem with the ease in which a moratorium might be imposed. Inherent in any successful moratorium is a distillation of very simple criteria which, for one reason or another, are not seriously contested. Difficulties arise, however, when a moratorium and plan for effort management has not been worked out well in advance and then the proposal is stymied or killed during review. The public attention given to the moratorium then affects the speculative motives of fishermen, which then descend on the resource en masse; and, as can be seen historically, this economically rational, individual act by all fishermen nevertheless poses formidable fisheries management problems by greatly exacerbating the open access phenomenon.

These issues pose problems in the timely implementation of this alternative, and in the realization of positive benefits. Depending on future changes which could take place in the Magnuson Act, some variant of this proposal might be more politically or legally acceptable.

However, even with the possibility of setting up such an effort management program, three problems still remain, which are somewhat related to each other. The first problem is that agencies will, as a matter of practicality, need to make decisions on the appropriate gear type which will be used in a given fishery, unless all gear types are simultaneously treated. If all gear types are simultaneously treated, the manageability of the resource could be severely taxed. If certain gear types are excluded, the likelihood of legal conflict becomes greater. The second problem is related to the first, and has to do with the applicability of license limitation by gear type and fishery. If the fishing environment is unstable to the point where diversification of operations is a way for fishermen to maximize returns in the face of uncertainty, how reasonable is it to propose effort management programs which are piecemeal, by gear type, and by directed fishery? Also, if there are participants who are less able to exclusively target on one resource than on others, but who are able to retain their rights to sell incidental catch, would an effort management model based on single species and gear type be useful?

Finally, the difficulties in defining the eligible gear types for a specific fishery extend to problems in defining the appropriate region within which such effort management would take place. Ultimately, both of these definitions must be somewhat arbitrary, but must at the same time conform to

national standards. Most of these problems might be overcome by incorporation of existing management infrastructure, such as development of effort management for the participants in the Alaska Region, regardless of the state of origin. Many problems could be resolved by judiciously selecting representatives of a negotiating team which would include as many of the affected parties as possible. However, it could well be that negotiations aimed at comprehensively dealing with the effort management issue could lead to recommendations which transcend any one fishery, and which would be general enough to be applicable to different gear types. Such thinking, while badly needed for the long-range welfare of the fisheries, would do little in the way of clearing up the short term problems which the Council has identified.

Other Alternatives Suggested During Public Comment

A number of additional alternatives were raised during the public comment period, most of them variations on or combinations of alternatives analyzed in detail in the RIR. This section will discuss each of the additional alternatives, and relate them where appropriate to existing analysis in the RIR.

Richard White proposed that the waters east of 147°W (the Eastern Gulf of Alaska) be a pot-only area between January 1 and March 15 or the date on which 20% of the OY is taken, whichever occurs first; after March 15 the Eastern Gulf opens as a hook-and-(long)line-area. It is unclear from Mr. White's proposal what happens during the period of time between when 20% of the OY is taken by pots and March 15, if 20% of the OY is taken before March 15. This is a combination of Alternative 3 (exclusive gear areas) and Alternative 2 (allocation between gear types, with separate seasons in a given area for the different gear types). This proposal could have a number of potential advantages, in that it would reduce the "active" gear conflict which has occurred when pot vessels and longline vessels fish side by side, which is cited in a great deal of informed testimony. It also would address and reduce the problem of "grounds preemption" by pot vessels, both when fishing and when returning to port (by leaving gear on the grounds), that longline fishermen have complained so extensively about. This proposal also would reduce the incentive which now exists for smaller, usually hook and longline, vessels to go out in weather conditions that are risky for the size of their vessels; probably a large part of the accelerated effort for sablefish in 1985 is due to concern by longline vessels that they had to go out even in poor weather conditions to get their share of the sablefish harvest, in light of the substantial early harvests by other boats. The proposal, like any proposal which allows different gear types on the same grounds at different times of the year, may not address the ghost fishing or "passive" gear conflict, where lost gear imposes an external cost on other fishermen.

Kathryn Kinnear proposed a pot cap, issuing permits for the six pot vessels that were active in the Gulf of Alaska sablefish fishery before March 31, 1985, issuing them non-transferable gear permits. Aside from these six pot vessels, the entire Gulf of Alaska east of 170°W longitude would be hook and longline only. Concurrent opening after March 15 would be set for the entire Gulf, to spread effort around the Gulf, thereby reducing gear conflicts. All vessels would also be required to remove their gear from the grounds when leaving the grounds. The first two parts of the proposal are analyzed in detail elsewhere in this RIR. The latter two are both designed to reduce the gear conflict between the longline vessels and the six pot vessels.

Concurrent openings would work better to spread effort if the catch per unit effort of sablefish were relatively constant around the Gulf; if there were big differences in catch per unit effort of sablefish the fleet would tend to bunch up in the areas of highest sablefish catch rates, and concurrent openings might not help a great deal to reduce active gear conflict. The requirement that all vessels remove their gear when leaving the grounds would effectively eliminate the grounds preemption by untended gear. It is not clear at this time that this provision is enforceable.

Tim Longrich identified several possible regulatory alternatives to the gear entanglement and grounds preemption issues, though it is not clear whether he proposes all of just some of these alternatives for Council implementation. One part of the proposal deals with better communication, in the form of clearly marked and defined gear strings, with radar reflectors, lights on end buoys and markers, and other means. Another part deals with creation of (unspecified) exclusive gear areas for hook and longline and pot fishermen, so that approximately one-half of the OY is available for capture for each gear group, and fishing periods and exclusive areas are staggered and reversed to give approximately equal, but separate, access to the sablefish resource by both groups. Another part would give an explicit allocation of half the OY to hook and longline fishermen, and one half to pot fishermen. Another part would place a (unspecified) cap on the number of pot vessels permitted to harvest sablefish. Each of these elements has been discussed in detail elsewhere in the RIR. Additional suggestions made by Mr. Longrich are a requirement that vessels remove their gear from the grounds when they leave the grounds, which would address the grounds preemption by untended gear. It might not deal well with the other facets of gear conflict. An additional proposal is a limit on the number of pots used by pot vessels, presumably instead of a limit on the number of vessels. This might be instituted on the grounds that there was an effort problem in the pot sablefish fishery, because a limit on the number of pots might slow down the total number of pots lifted per day by the pot fleet. The extent of any slowing of effort that this measure would achieve is dependent on whether, in addition, there is any restriction on the number of vessels permitted to fish with pot gear. A difficulty with pot limits is that it is not always clear how much, if any, reduction in pots lifted per day will result from imposition of a pot limit, and it is not always clear how much, if any, reduction in catch per day per vessel will occur either. Pot limits, as applied to the Tanner crab fishery, have been studied extensively by the North Pacific Council, the Alaska Department of Fish and Game, and the National Marine Fisheries Service, and there is no reason to believe why the conclusions of the Council's investigations in that setting are not valid in the present setting. The reader is referred to the Regulatory Issues Paper for Tanner Crab Amendment 10, dated September 1983, and the staff report entitled "Conservation, Allocation, and Enforcement Aspects of the Use of Pot Limits and Exclusive Areas in the Western Alaska Tanner Crab Fisheries," dated September 1984; both reports are available from the North Pacific Fishery Management Council. The primary conclusions of both these reports were that the allocation effects of pot limits are ambiguous, and depend on conditions of effort and stock abundance and catch rates. There does not appear to be any generalizable rule about the allocational effects of pot limits.

Karena Adler proposed a different variation of a hook and longline only area for sablefish. She proposed the waters east of 137°W longitude. This is the Southeast Outside District of the Eastern Gulf of Alaska. The factors which will affect the costs and benefits of this alternative are discussed at some length under Alternative 3, exclusive gear areas; although this particular proposal was not evaluated, since there an infinitude of possible delineations of exclusive gear areas, the principles of incurring costs on vessels which are forced to move because of the exclusive designation would hold for this alternative as well.

Robert Alverson proposed that the entire Gulf of Alaska, waters east of 170°W longitude, be designated as longline only; this is one of the alternatives examined elsewhere in this RIR. Additionally, he proposed that the directed, in this case hook and longline, fishery be allocated 92% of the OY, with 5% of the OY for bycatch in trawl operations and 3% of the OY for incidental catch by all other gear types (presumably including longline operations on other species). This second aspect of the proposal mirrors an emergency rule passed by the Council at the March Council meeting. This is primarily designed to accommodate the needs for bycatch of sablefish in other directed fisheries. Whether 8% of the OY of sablefish is the most appropriate one is more an empirical question, though the 8% is based on extrapolations from prior-year catch rates in other fisheries. However, the importance of making some provision for bycatch is clear. The pollock, cod, rockfish, and other fisheries in the Gulf of Alaska are valued in excess of $100 million. Without some provision for bycatch, these fisheries could not be prosecuted, imposing a tremendous loss on participants in those other directed fisheries. Thus, the reasoning behind the proposal to allow bycatch is very sound.

Patrick Travers suggested that the analysis in the RIR include consideration of pot-only areas, and caps on the number of longline vessels, to provide better balance to the alternatives. The discussion under Alternative 3 has been broadened to include discussion of pot-only areas, and the discussion under Alternative 4 has been broadened to include discussion of longline vessel ceilings. This issue of ceilings or caps on either pot boats or longline boats, or both, overlaps considerably with discussion of Alternative 5, License Limitation, as a possible solution to the effort management problem in the sablefish fishery.

VI. ENFORCEMENT ISSUES

Discussions with NMFS enforcement personnel indicate that the enforcement issues concerning possible Council regulation of the sablefish fishery are substantially the same for the hook and longline-only alternative and the gear allocation alternative. The primary issues concern how the fishery is closed once the quota (either in the aggregate, for the hook and longline-only alternatives, or for each gear type, in the gear allocation alternative) is reached. If the regulation providing for closure of the fishery stipulated that once the quota was reached, fishing for groundfish with that gear type in the area would be prohibited, enforcement would be relatively easy and could be done on an overflight basis. If, on the other hand, the regulation stipulated that once the quota for sablefish for a gear type were reached, fishing for sablefish with that gear type would be prohibited, enforcement would be more difficult, and could not be done simply on the basis of

overflight. The reason enforcement in this case is made more difficult is that there are other groundfish fisheries which are currently taken by longline gear, and after a longline closure for sablefish occurred under either alternative a vessel observed fishing with longline gear in the area could not automatically be assumed to be in violation of the regulation. A combination of overflight and dockside monitoring would be necessary to determine that a vessel had been observed fishing with longline gear actually had sablefish on board. Even in this instance, it would be necessary for the Council to recommend a second regulation prohibiting the possession of sablefish while fishing with longline gear for other groundfish species, to prevent skippers from arguing that sablefish found on board at dockside were actually caught in another regulatory area.

As noted earlier, these enforcement issues apply both to the hook and longline-only alternative and to the gear allocation alternative. Under the hook and longline-only alternative, since there currently are longline fisheries for rockfish, the Council may wish to provide that once the sablefish quota had been reached, fishing for sablefish with longline gear is prohibited to avoid unnecessary closure of longline fisheries for other groundfish species. This, as indicated, would be relatively more difficult to enforce, and would require a second provision that possession of sablefish while fishing with longline gear for other groundfish would be prohibited. The easy-to-enforce alternative, of prohibiting fishing for groundfish for longline gear once the sablefish quota was reached, could well have an adverse impact on longline operations for other groundfish.

To put this concern in perspective, currently the same enforcement issue is raised by the recent (March 13, 1985) closure of the sablefish fishery in the Southeast Outside district of the Gulf. Since the aggregate quota in that fishery has been taken, longline (and pot) fishing for sablefish is prohibited. However, there are ongoing longline rockfish fisheries, and under the status quo, this enforcement issue still exists.

With the gear allocation alternative, the same sort of enforcement difficulty would exist in closing the longline fishery for sablefish. However, because there are not currently any pot fisheries for other groundfish, the Council could, as part of its rulemaking under this alternative, easily prohibit the fishing for groundfish with pot gear once the pot quota had been reached. Thus, it doesn't appear likely that any additional enforcement burdens would be incurred as a result of this alternative.

One other issue already addressed concerns the ability of enforcement officials to determine whether or not a vessel having only a federal fishing permit which authorized both pot and longline fishing was fishing illegally if the quota for one or the other of the fisheries had been taken. In this situation, overflight of the vessel would not enable enforcement officials to tell whether or not a violation was occurring. However, the risk of this becoming a major enforcement problem remains small, both because of NMFS enforcement plans to make their permitting more gear-specific, and because there are few, if any, vessels which have only a federal permit.

DRAFT

VII. LIST OF PERSONS CONSULTED

Fritz Funk, Barry Bracken, Pete Jackson
Alaska Department of Fish and Game

Steve Davis
North Pacific Fishery Management Council

Ron Berg
National Marine Fisheries Service, Alaska Region

Joe Terry, Gary Stauffer
Northwest and Alaska Fisheries Center

Steve Hoag
International Pacific Halibut Commission

VIII. LIST OF PREPARERS

J.R. Wilson
National Marine Fisheries Service, Alaska Region
P.O. Box 1668
Juneau, AK 99802
(907) 586-7229

D.M. Larson
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, AK 99510
(907) 274-4563

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DRAFT

REGULATORY IMPACT REVIEW/INITIAL REGULATORY FLEXIBILITY ANALYSIS OF AMENDMENT 14 TO THE FISHERY MANAGEMENT PLAN FOR GROUNDFISH OF THE GULF OF ALASKA

PART II

ADOPTED BY THE
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
FOR PUBLIC REVIEW

PREPARED BY THE PLAN TEAM FOR
GULF OF ALASKA GROUNDFISH

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DRAFT

REGULATORY IMPACT REVIEW/INITIAL REGULATORY FLEXIBILITY ANALYSIS TO THE FISHERY MANAGEMENT PLAN FOR GROUNDFISH OF THE GULF OF ALASKA

PART II

I. INTRODUCTION

Part II of the RIR analyzes the impacts of six management proposals under Amendment 14 to the Fishery Management Plan for Groundfish of the Gulf of Alaska. These proposals are: (1) rockfish quotas and management areas; (2) establish a reporting system for catcher/processor vessels; (3) changes in OY values; (4) halibut prohibited species catch limits (PSC) on domestic trawlers; (5) implementation of NMFS habitat policy; and (6) sablefish fishing seasons. Each of these topics will be presented as chapters of this document.

II. OBJECTIVES OF AMENDMENT

The proposed amendment was prepared to be consistent with the management objectives of the FMP. The pertinent objectives are:

1. Rationale and optimal use in both the biological and socioeconomic sense of the region's fishery resources as a whole;

2. Protection of the Pacific halibut resource; and

3. Provide for the orderly development of domestic groundfish fisheries consistent with 1 and 2, at the expense of foreign participation.

The proposed management measure also fulfills the goals and objectives of the FMP and the secondary objectives of the FMP. Of these, the most important are:

A. Primary Plan Objectives

   1. Promote conservation while providing for optimum yield.

   2. Promote the efficient use of fishery resources but not solely for economic purposes.

   3. Promote fair resource allocation without allowing for excessive privileges.

   4. Use the best scientific information available.

B. Secondary Plan Objectives

   4. Promote efficiency while avoiding disruption of existing social and economic structures.

   6. Minimize impacts of fishing strategies on other fisheries and environment.

III. PROBLEMS NECESSITATING THE AMENDMENT

A description of, and the need for, each amendment proposal follows:

1. Rockfish Quotas and Management Areas

"Other rockfish" as defined in the FMP includes all species of Sebastes other than Pacific ocean perch and four associated slope rockfish species. Other rockfish are currently managed in the FMP with a Gulfwide OY. The MSY for this complex was based on the incidental catch of slope rockfish in the foreign trawl fishery for Pacific Ocean perch between 1973 and 1976 with OY set at the lower end of the MSY range.

In November 1984 the Alaska Department of Fish and Game (ADF&G) submitted to the Groundfish Team a report on the rapidly expanding domestic fishery for bottom-dwelling (demersal) shelf rockfish in the southeastern area. The report pointed out that this fishery is targeting on a species complex that has not previously been addressed in the groundfish FMP. This fishery has grown in recent years from less than 45 mt (dressed weight) in 1970 to nearly 400 mt in 1983, doubling further in 1984 to approximately 800 mt.

The domestic fishery targets on benthic forms of shelf rockfish in depths of less than 100 fathoms. Over 20 species of rockfish are regularly landed. Predominant species are yelloweye rockfish (S. ruberrimus), canary rockfish (S. pinniger), tiger rockfish (S. nigrocinctus), and rosethorn rockfish (S. helvomaculatus) in the 40-100 fathom depth zone and quillback rockfish (S. maliger), china rockfish (S. nebulosus) and copper rockfish (S. caurinus) in depths of less than 40 fathoms. Yelloweye rockfish and quillback rockfish are the primary target species. Longline gear is the predominant gear type and accounts for well over 90% of the harvest.

Until recently it was assumed that the majority of the landings were from the waters within state jurisdiction. However, approximately 50% of the fishable grounds are within the Fishery Conservation Zone(FCZ). Based on fishermen interviews conducted by ADF&G in 1983 and 1984, approximately 25% of the landings were of catches taken only in the FCZ, 21% only within state waters, and the remaining 54% were taken on trips that fished areas both under state and under federal jurisdiction.

Aging studies conducted in recent years conclude that rockfish are much longer lived and slower growing than early literature suggests. Many of the demersal species live in excess of 50 years and many do not reach maturity until after age 10. Because rockfish are extremely long lived and slow growing, the sustainable yield that can be taken from a stock is much lower than for a comparable biomass of faster growing species such as pollock or cod. As a result, rockfish stocks can be easily and quickly overfished. Lacking information on appropriate harvest levels for the demersal shelf rockfish stocks in southeastern Alaska, the risk of overharvesting this resource by the expanding target fishery is great.

After reviewing the ADF&G rockfish issue paper the Plan Team recommended in their November 1984 report to the Council that the other rockfish category should be redefined to include three separate assemblages or species groups; slope rockfish, shelf pelagic rockfish and shelf demersal rockfish. Species

Table 1.--Categories of rockfish present in the Gulf of Alaska by habitat area.

Slope Category	Shelf Dermersal Category
POP	Yellowye rockfish
Northern rockfish	Quillback rockfish
Rougheye rockfish	Canary rockfish
Shortraker rockfish	China rockfish
Sharpchin rockfish	Tiger rockfish
Red banded rockfish	Rosethorn rockfish
Rosethorn rockfish	Silvergray rockfish
Darkblotch rockfish	Copper rockfish
Redstripe rockfish	
Splitnose rockfish	
Harlequin rockfish	
Aurora rockfish	
Yelloweye rockfish	

Shelf Pelagic Category

Black rockfish

Dusky rockfish

Yellowtail rockfish

Widow rockfish

Boccacio

Blue rockfish

included in these groups are shown in Table 1. Further, the management of the shelf demersal category should be conducted in cooperation with the State of Alaska. The Team report also noted that, based on the poor showing in the 1984 trawl survey, there was no evidence that the slope complex could sustain a harvest greater than the 1984 harvest of 700 mt.

At the December meeting the Council acted to reduce the Gulfwide OY of "other rockfish" from 7,600 mt to 5,000 mt due to concern for the risk of over-harvesting certain rockfish stocks. The 1984 harvest was approximately 1,500 mt of which approximately 700 mt were taken from the slope rockfish stocks by foreign and joint venture fisheries in the Central and Western Gulf management regions. The remaining 800 mt was taken from shelf rockfish stocks by domestic fishermen in the southeastern area. In adopting the 5,000 mt OY, the Council considered the testimony of fishermen in the Central Gulf area who expressed a desire to expand potential nearshore fisheries in the Central Gulf into the FCZ. At the the joint Alaska Board of Fisheries (Board) and Council meeting in early February 1985, ADF&G staff presented alternative management proposals for establishing a separate management category of shelf rockfish stocks in order to reduce the risk of overharvesting demersal shelf rockfish and to eliminate the possibility of harvesting the entire Gulfwide OY in any one portion of the Gulf, consistent with the FMP objectives.

At the February joint meeting the Council deferred further discussion on rockfish management pending recommendations by the Board of Fisheries. Following the joint meeting the Board adopted the management alternatives which were developed by ADF&G staff and the Southeast Alaska fishing community and endorsed by the Council Advisory Panel. The recommended action would place a 600 mt OY on demersal shelf rockfish in both state outercoastal and FCZ waters between 56°N latitude and 57°30'N latitude. In addition, the Board voted to restrict harvest of other rockfish species in the remainder of the Southeast-East Yakutat District to no more than 880 mt. That would place a total other rockfish OY of 1,480 mt in the outer coastal state and federal waters within the Southeast District. No more than 600 mt of demersal shelf rockfish could be harvested in the specified portion of the area where the fishery is currently concentrated. No management action was recommended by the Board for the remainder of the Gulf since the February Board meeting was advertised to address southeastern groundfish issues only. In addition, the Board adopted an October 1 to September 30 accounting year for shelf demersal rockfish in the southeastern area to assure that fish would be available to the fishermen during the fall and early winter when the market is strongest.

With the increasing effort in directed rockfish fisheries and the vulnerability of these species to overharvest, the risk of overfishing certain stocks is high. Therefore, management action is considered essential for other rockfish. There are several management alternatives that would reduce the risk of overharvest.

2. Implement New Optimum Yields for Pollock, Pacific Ocean Perch, Other Rockfish, Atka Mackerel, and Other Species

At its December 1984 meeting, the Council adopted changes in optimum yields for pollock (Western/Central Regulatory Area), Pacific ocean perch ((Western and Central Regulatory Areas), Atka mackerel (Central and Eastern Regulatory

Areas), and other rockfish (Gulfwide). At the same meeting, the Council voted to request the Secretary of Commerce to implement these changes by emergency rule under Section 305(e) of the Magnuson Act. The Secretary did implement these changes on (Insert date of filing with the Office of Federal Register) (__FR, _____). Changes in optimum yields are based on the best available information. A summary of that information concerning the status of pollock, Pacific ocean perch (POP), other rockfish, and Atka mackerel follows:

Pollock - On the basis of acoustic surveys conducted in the Shelikof Strait region of the Gulf of Alaska during March and April, 1984, total pollock biomass is estimated to be between 1,574,634 mt and 2,034,857 mt with a mean estimate of 1,789,186 mt. This mean represents the total biomass in the Central and Western Regulatory Areas combined, since few pollock were found elsewhere in these areas while surveys were conducted in Shelikof Strait during the spawning period. Similar surveys have been conducted in Shelikof Strait during 1980, 1981, and 1983. Results of the 1984 survey indicate that total biomass continues to decrease from its peak level in 1982. Length and age composition and hydroacoustic survey data from 1984 joint venture fisheries confirm that the 1980 year class (age 4 fish) is weak. The 1981 year class (age 3 fish) also appears to be weak. The abundance estimate of age 3 fish in 1984 is about the same as age 3 fish (1980 year class) in 1983. It is estimated that the exploitable biomass of pollock has now declined from the 1984 level by some 500,000 mt to fall within a range of 1,200,000 to 1,270,000 mt. An acceptable exploitation rate of 28.5% would provide a harvest between 342,000 mt and 358,000 mt, with a mean of 350,000 mt. The Council and the SSC reviewed the Plan Team's concern that the majority of the 1985 harvest will come from the only two dominate year classes, 1978 and 1979, which are 7 and 6-year-old fish in the 1985 fishery. The Council chose, therefore, a more conservative exploitation rate of 24% times the upper limit of the exploitable biomass to establish an optimum yield of 305,000 mt, to recognize the dependency of the fishery on only two year classes and continuing poor recruitment.

Pacific ocean perch (five species complex) - Results of the triennial Gulf of Alaska biomass survey indicate the current exploitable biomass of the Pacific ocean perch complex are 53,400 mt, 120,150 mt, and 93,450 mt in the Western, Central, and Eastern Regulatory Areas, respectively. Respective EYs are 1,736 mt, 5,208 mt, and 4,530 mt. The Council considered the desirability of establishing optimum yields at levels that would provide only minimal bycatches incidental to other target fisheries in order to promote fastest rebuilding of Pacific ocean perch stocks. Such minimal levels would prove a burdensome cost to developing domestic fisheries if their operations were terminated by prematurely achieving the bycatch optimal yields. The Council, therefore, established optimum yields at higher than bycatch levels, or 1,302 mt in the Western Area and 3,906 mt in the Central Area. It retained the existing 875 mt optimum yield in the Eastern Area to promote rapid stock rebuilding in this regulatory area.

Other Rockfish - This group contains about eight species of rockfish, excluding the POP complex, that occur along the continental slope and are taken incidental to other target fisheries. Results of the 1984 trawl survey indicate that none of the eight species were present in significant numbers. The average 1982-1984 harvest in the joint venture and foreign fisheries is about 1,500 mt with a 1984 harvest of only 700 mt. The EY for this group needs

to be reevaluated. The Council considered the limiting effect that an optimum yield equal to the bycatch would have on the developing domestic fisheries, and established the optimum yield at 5,000 mt which is substantially higher than the bycatch level so as not to limit that growth.

Atka mackerel - The 1984 survey indicates that the total biomass for Atka mackerel is 39,000 mt with 38,000 mt being available in the Western Area and 1,000 mt in the Central Area. Length frequency information suggest that the population consists mostly of large fish. Recruitment in the Central Area appears nonexistent. The absence of catches in the Eastern Area indicates stocks are not sufficiently abundant to support a commercial fishery. The low abundance of Atka mackerel may be due to westward shift in the distribution of stocks or to excessive fishing mortality. The Council reviewed the SSC recommendation for the the Western Area to set the exploitation rate between 10% and 15% of 38,000 mt, which would provide an OY between 3,800 mt and 5,700 mt. Since the current OY for the Western Area of 4,678 mt falls within this range, the Council opted not to change the OY. The Council also reviewed the SSC recommendation to set the OYs in the Central and Eastern Areas at bycatch levels only and recommended this to the Secretary of Commerce. After reviewing the recent catch data, OYs were set at 100 mt and 10 mt in the Central and Eastern Areas, respectively.

Other Species - The "other species" category includes those groundfish species not individually addressed in the FMP. The FMP specifies the OY for those species to be equal to 5% of the total OY for all of the target groundfish species combined. Consequently, if the recommended OY changes are adopted the OY would be reduced to 22,435 mt.

3. Establish a Reporting System for Catcher/Processors

The objective of this proposal is to ensure that fishery managers receive timely estimates of catch by all domestic vessels so that fishery closure notices can be promptly issued when OYs are achieved. With the rapid recent growth of the domestic fishing fleet, increasing importance is being placed on timely reporting of domestic harvests in order to ensure that OYs are not exceeded. Vessels which deliver their catch to shore-based processors land their catch frequently enough to allow timely estimation of total catch under existing regulations. However, vessels which process their catch at sea can remain on the fishing grounds for extended periods of time. Catch reports submitted by these vessels at the time of landing as required under existing regulations are not timely enough to prevent OYs from being grossly exceeded. The resulting overharvests could seriously damage future production from groundfish stocks.

Current fishing regulations implementing the Gulf of Alaska and Bering Sea Fishery Management Plans require fishing vessels to submit a State of Alaska fish ticket or equivalent document to the Alaska Department of Fish and Game for any commercial groundfish harvest in the Gulf of Alaska or Bering Sea within 7 days of the date of landing the catch. Vessels which preserve their catch by non-freezing refrigeration or icing methods must land their catch within a maximum of 10-12 days from the time of harvest in order to ensure product quality. The catch from these vessels, when delivered to shore-based processors, can be reported on a timely basis under existing regulations. If existing regulations are properly enforced, fishery managers can estimate

harvests by these vessels with sufficient precision to ensure that OYs are not exceeded.

However, vessels which freeze or salt their catch aboard frequently remain at sea for trips of up to several months duration and are not currently required to report their catch until the time of landing and offloading. At least 22 catcher/processor vessels will be operating in the Gulf of Alaska and Bering Sea areas in 1985. Based on past catcher/processor landing records the combined hold capacity of these vessels will be approximately 13,000 mt. Therefore these vessels are capable of harvesting significant portions or even entire OYs in a single trip. Under existing fishing regulations, fishery managers have no knowledge of the catch aboard these vessels until the time of landing. In addition, vessels are not required to notify fishery managers when beginning fishing operations. Since domestic groundfish fishing vessels are also not marked for identification by enforcement overflights, the number of catcher/processor vessels actually fishing in a given management area is not known until the time of landing. Without knowledge of effort levels, fishery managers are not able to make projections of catch aboard based on past performance.

Delayed catch reporting is also a problem for fully domestic mothership operations. In these operations small catcher vessels without processing capability deliver their catch, usually by cod-end transfers, to a mothership/processor vessel. Current regulations require that an ADF&G fish ticket be filled out each time a catcher vessel delivers to the mothership/processor and that these fish tickets be forwarded to ADF&G within 7 days of the date that fish were delivered. Domestic mothership and floating processor operations thus far have all occurred in sheltered waters with at least periodic access to U.S. mail service so that regulations requiring filing of fish tickets with ADF&G within 7 days could have been enforced. However, there is a potential for these mothership operations to occur at sea, with no method of filing the fish tickets with ADF&G within the 7 day period required by law.

With such large processing capacities and increasing numbers of catcher/processor and mothership/processor vessels, the risks of overharvesting groundfish resources under the current system are high. Because of the time delays involved in catch reporting under current regulations, groundfish resources could be drastically overharvested before fishery managers had even discovered that OYs had been exceeded. Since many of the groundfish species concerned are slow growing and long-lived, overharvesting can have considerable impacts on future production.

4. Establish Measures to Control the Pacific Halibut Bycatch

The halibut that is taken as bycatch in trawl fisheries results in fishing mortality even though the FMP requires that halibut bycatch be discarded because the survival rate of discarded halibut is typically less than 100% and may approach zero in some fisheries. Therefore, the FMP contains restrictions on both foreign and domestic groundfish fishermen in the Western and Central Areas that were designed to control the bycatch of halibut, an important species in a separate and fully utilized domestic target fishery. Foreign trawl fishermen are not permitted to use on-bottom gear in the Central and Western Areas (i.e., between 147°W. and 170°W. longitude) from December 1

through May 31. Domestic fishermen are permitted to use on-bottom gear during this period until the total take by domestic fishermen reaches the prohibited species catch (PSC) limit of 29 mt in the Western Area or 52 mt in the Central Area. Once the PSC limit is reached in an area, all further domestic trawling is prohibited in that area until June 1. The FMP does not restrict the use of on-bottom trawls by domestic or foreign fishermen during the rest of the year in these two areas.

The rapid development of the domestic groundfish trawl fleets, including both wholly domestic and joint venture operations, and the dramatic changes in fishing strategies that have occurred since the FMP was developed, approved, and implemented in the late 1970s have resulted in five specific problems that prevent the objectives of the FMP from being met without amending the FMP. The five problems are as follows:

(1) The Shelikof Strait joint venture pollock is jeopardized by the 52 mt PSC in the Central Area even though the halibut bycatch is very low in this highly productive fishery.

(2) The PSC limits for the Western and Central Areas jeopardize the maintenance and further development of domestic trawler fisheries for cod, flounders, and other groundfish species that are targeted on with on-bottom gear.

(3) The bycatch of halibut by domestic trawlers during the six months for which there are no restrictions on the use of on-bottom gear has increased significantly.

(4) Although the PSC limits are for all domestic vessels, that is, those in both wholly domestic and joint venture operations, only the bycatch of the joint ventures is monitored because bycatch cannot be effectively monitored without extensive onboard observer coverage and such coverage exists for joint venture but not wholly domestic operations.

(5) With respect to regulating the bycatch of halibut in groundfish fisheries, the FMP has not been flexible enough to remain effective as conditions in the fisheries change.

A more detailed discussion of each of these problems and the temporary solutions that have been implemented through emergency rules is presented below.

Problem 1. The Shelikof Strait joint venture pollock fishery in the Central Area has grown from a relatively small fishery in the early 1980s into a very important fishery which in 1985 will take more than 221,000 mt of groundfish including over 218,00 mt of pollock and will have an estimated exvessel value of $21 million. The halibut bycatch in this fishery has been very low because off-bottom trawl gear is used. Based on reported bycatch through April 20, 1985, it is estimated that the halibut bycatch will not exceed 0.5 mt in 1985. This is a significant decrease from the low levels of bycatch of 4 mt and 14 mt that were taken in 1983 and 1984, respectively. Emergency rules were implemented for the 1984 fishery and again for the 1985 fishery to prevent the attainment of the PSC limit in the Central Area from jeopardizing

this extremely important fishery which takes only very small quantities of halibut. Specifically, the emergency rules permitted off-bottom trawling to continue regardless of the level of halibut bycatch by domestic fishermen.

Problem 2. The domestic PSC limits of 29 mt and 52 mt, respectively, for the Western and Central Areas were implemented in 1978. At that time these limits were equal to approximately 1% of the amount of Pacific cod expected to be taken by domestic fishermen in 1979 or soon thereafter. Domestic on-bottom trawl groundfish catches have increased dramatically since then. By 1984 the joint venture catches of Pacific cod, flounder, rockfish, and Atka mackerel, target species that are typically taken with bottom trawls, were 3,108 mt and 7,612 mt in the Western and Central Areas, respectively. The 1984 catches of these same species in wholly domestic fisheries were 221 mt and 2,883 mt, respectively, in the Western and Central Areas. Emergency rules were implemented for the 1984 fishery and again for the 1985 fishery to prevent the PSC limits implemented in 1978 from excessively restricting the catch of domestic on-bottom trawlers. Specifically, the limits were temporarily increased from 29 mt to 270 mt in the Western Area and from 52 mt to 768 mt in the Central Area. If the emergency rules had not been in effect and if bycatch had occurred at the rate it did in 1984, domestic on-bottom trawling would have been prohibited from the last weeks of December 1983 until June 1, 1984 in the Central Area and during the last part of May in the Western Area (see Table 2). The joint venture groundfish catches with on-bottom trawls were less than 800 mt in the Western Area and less than 2,000 mt in the Central Area during the periods in which domestic trawling would have been prohibited had the emergency rules not increased the PSC limits. During these periods, the groundfish catches in wholly domestic trawl operations were approximately 1 mt and 2,800 mt in the Western and Central Area, respectively. It should be noted that since much of the on-bottom trawl catch by domestic vessels occurs after May 31, it is possible that the main effect of the increased PSC limits was a change in the timing of the catch and not in the quantity of the 1984 on-bottom trawl catch (see Tables 3 and 4).

Problem 3. The FMP prohibited foreign on-bottom trawling and limited the halibut bycatch of all domestic trawlers from December 1 through May 31 because juvenile halibut are at shallow depths and more vulnerable to capture in trawls during this period. In recent years, it has become apparent that large numbers of halibut are vulnerable in the rest of the year to foreign, joint venture, and presumably wholly domestic on-bottom trawl operations. Estimates of the monthly joint venture halibut bycatches for 1983 and 1984 are presented in Table 5 for the Western Area and in Table 6 for the Central Area. In each area and year, the bycatch during the unregulated period approaches or exceeds that of the regulated period. It should also be noted that beginning in 1985, the regulated period for foreign trawlers will be 12 months. That is, beginning in 1985 foreign on-bottom will be prohibited at any time. The emergency rules that were implemented for the 1984 fishery and again for the 1985 fishery did not extend the regulated period for domestic trawlers.

Problem 4. The fourth problem addressed by the proposed changes to the halibut PSC regulations is that although the PSC limits are for all domestic vessels, only the bycatch of the joint venture trawlers is monitored because bycatch cannot be effectively monitored without extensive onboard observer coverage and such coverage exists for joint venture but not wholly domestic operations. Therefore, if the PSC limits are set on the basis of acceptable

Table 2 -- Cumulative monthly joint-venture halibut bycatch beginning December (metric tons).

Month	C. Gulf	W. Gulf
12/83	84	0
01/84	124	1
02/84	135	1
03/84	138	1
04/84	141	16
05/84	166	62
06/84	196	84
07/84	220	87
08/84	268	92
09/84	352	97
10/84	420	141
11/84	500	141
12/84	13	0
01/85	13	0
02/85	13	0
03/85	13	0
04/85	13	4

TABLE 3. -- WESTERN AREA JOINT VENTURE AND DOMESTIC GROUNDFISH CATCH BY MONTH, 1983-1985

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1983 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	-	-	-	6	7	17	69	35	15	21	-	-	171
ALL ROCKFISH	-	-	-	58	550	365	309	310	393	231	-	-	2216
ATKA MACKEREL	-	-	-	1	191	58	53	41	292	152	-	-	789
PACIFIC COD	-	-	-	2	72	37	45	86	187	40	-	-	469
SABLEFISH	-	-	-	3	2	4	70	7	32	16	-	-	134
WALLEYE POLLOCK	-	-	-	4	1	4	189	111	54	135	-	-	497
ALL ROUNDFISH	-	-	-	9	266	103	358	245	566	342	-	-	1889
MISC. GROUNDFISH	-	-	-	1	5	8	5	8	11	6	-	-	45
ALL GROUNDFISH	-	-	-	75	829	493	741	598	986	601	-	-	4322

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1984 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	1	-	-	20	63	19	8	28	53	362	2	TR	556
ALL ROCKFISH	-	-	-	311	492	359	118	177	57	141	1	TR	1656
ATKA MACKEREL		-	-	77	207	44	29	5	TR	216			577
PACIFIC COD	2	-	-	17	48	26	8	43	48	104	2	TR	298
SABLEFISH		-	-	10	49	32	13	17	49	104	1	TR	275
WALLEYE POLLOCK	6	-	-	10	21	7	45	137	1202	6458	112	8	8006
ALL ROUNDFISH	8	-	-	114	326	108	95	201	1300	6882	114	8	9156
MISC. GROUNDFISH	1	-	-	3	10	8	2	5	8	23	TR	TR	61
ALL GROUNDFISH	11	-	-	448	890	495	223	412	1417	7408	117	8	11429

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1985 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	TOTAL
ALL FLATFISH	-	-	-	2	TR	2
ALL ROCKFISH	-	-	-	1	TR	1
ATKA MACKEREL	-	-	-	TR		TR
PACIFIC COD	-	-	-	6	1	7
WALLEYE POLLOCK	-	-	-	864	136	1000
ALL ROUNDFISH	-	-	-	869	137	1006
MISC. GROUNDFISH	-	-	-	1	TR	1
ALL GROUNDFISH	-	-	-	873	138	1011

TABLE 3. -- CONTINUED

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1983 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
PACIFIC OCEAN PERCH	-	-	-	-	-	-	-	-	-	-	-	7	7
POP GROUP	-	-	-	-	-	-	-	-	-	-	-	7	7
UNSP. ROCKFISH	-	-	-	-	-	4	-	-	-	-	-		4
ALL ROCKFISH	-	-	-	-	-	4	-	-	-	-	-	7	11
PACIFIC COD	-	-	-	-	51	-	-	-	1	-	7	16	74
SABLEFISH	-	-	-	-	-	-	-	-	-	-	-	2	2
WALLEYE POLLOCK	-	-	-	-	-	-	-	-	T	-	-		1
ALL ROUNDFISH	-	-	-	-	5T	-	-	-	2	-	7	17	77
ALL GROUNDFISH	-	-	-	-	51	4	-	-	3	-	7	24	88

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1984 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	-	-	-	-	-	-	-	-	-	5	-	1	5
YELLOWEYE ROCKFISH											1		1
UNSP. POP GROUP	-	-	-	-	-	-	26	49	11	T	30	-	116
POP GROUP	-	-	-	-	-	-	26	49	11	1	30	-	116
THORNYHEADS	-	-	-	-	-	-		4	2		4	-	9
ALL ROCKFISH	-	-	-	-	-	-	26	52	12	T	35	-	126
ATKA MACKEREL										31	TR		31
PACIFIC COD	12	-	-	3	T	-	4	T	7	24	6	-	58
SABLEFISH		-	-		TR	-	15	6	41	147	111	24	345
ALL ROUNDFISH	12	-	-	3	1	-	19	7	48	202	117	24	435
ALL GROUNDFISH	12	-	-	3	1	-	45	60	61	208	152	25	566

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1985 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	TOTAL
ALL FLATFISH	-	1	8	-	9
PACIFIC COD	603	1617	1336	737	4294
SABLEFISH	40	24	44	71	179
WALLEYE POLLOCK	37	18	14		68
ALL ROUNDFISH	680	1658	1395	808	4541
ALL GROUNDFISH	680	1659	1403	808	4550

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TR =¶ LANDED CATCH LESS THAN 0.5 METRIC TONS, OR METRIC TONS PER DELIVERY LESS THAN 0.005

TABLE 4. -- CENTRAL AREA JOINT VENTURE AND DOMESTIC GROUNDFISH CATCH BY MONTH, 1983-1985

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1983 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL ROCKFISH	TR	1	1	TR	2	_	2	5	1	5	22	20	60
ATKA MACKEREL								TR			1	TR	1
PACIFIC COD	23	110	179	15	2	_	179	337	129	54	238	691	1957
SABLEFISH	TR	1	3	TR	4	_	26	10	1	8	46	42	141
WALLEYE POLLOCK	5856	43444	77241	4848	TR	_	117	166	55	105	257	1544	133634
ALL ROUNDFISH	5880	43555	77422	4864	6	_	323	513	185	167	541	2277	135733
MISC. GROUNDFISH	30	49	80	5	TR	_	6	25	17	24	66	48	349
ALL GROUNDFISH	5912	43609	77513	4869	12	_	430	938	608	442	1085	3244	138662

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1984 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	318	95	33	25	136	240	421	303	261	441	323	99	2696
ALL ROCKFISH	19	31	6	1	4	101	10	151	29	11	9	3	376
ATKA MACKEREL	1	TR	TR	2	TR	TR	1	3	TR	TR		TR	7
PACIFIC COD	438	441	330	71	345	452	443	380	605	346	228	46	4125
SABLEFISH	46	8	1	TR	3	8	26	38	19	34	25	8	216
WALLEYE POLLOCK	8720	70459	97768	1013	195	230	595	278	4738	7206	5196	2615	199014
ALL ROUNDFISH	9204	70908	98099	1086	543	691	1065	699	5363	7586	5449	2669	203362
MISC. GROUNDFISH	223	796	71	4	12	18	13	11	12	12	9	20	1201
ALL GROUNDFISH	9765	71829	98209	1117	695	1050	1509	1165	5664	8050	5791	2791	207635

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1985 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	TOTAL
ALL FLATFISH	2	44	23	2	_	71
POP GROUP	TR	10	TR	2		12
ALL ROCKFISH	1	10	TR	2	_	14
ATKA MACKEREL	TR	TR				TR
PACIFIC COD	23	514	384	13	_	934
SABLEFISH	TR	1	2	TR	_	3
WALLEYE POLLOCK	3355	84101	119021	11983	_	218460
ALL ROUNDFISH	3378	84615	119407	11996	_	219397
MISC. GROUNDFISH	54	1536	235	83	_	1908
ALL GROUNDFISH	3435	86206	119664	12083	_	221389

TABLE 4 -- CONTINUED

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1983 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	20	10	9	10	13	1	TR	-	1	7	15	1	88
ALL ROCKFISH	-	-	-	8	3	4	2	1	4	4	1	TR	26
PACIFIC COD	72	372	338	618	1018	558	TR	1	8	25	632	463	4106
SABLEFISH	3		10	15	65	41	43	107	14	5	TR	5	307
WALLEYE POLLOCK	65	18	27				TR		2	1		6	118
ALL ROUNDFISH	140	390	375	633	1083	600	43	107	25	30	632	474	4533
MISC. GROUNDFISH	4	12	5	-	TR	7	1	-	24	1	4	1	60
ALL GROUNDFISH	164	412	389	650	1099	612	48	108	54	42	652	477	4706

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1984 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	69	74	85	9	4	-	-	-	-	-	-	-	240
ALL ROCKFISH	3	TR	TR	6	7	5	6	6	2	2	18	2	58
PACIFIC COD	276	554	860	145	174	35	5	TR	6		279	250	2585
SABLEFISH	4	13	85	17	85	491	635	789	672	46	2	-	2838
WALLEYE POLLOCK	93	75	157	1	3								329
ALL ROUNDFISH	373	642	1101	163	263	526	647	790	678	46	283	250	5755
UNSP. GROUNDFISH	TR	-	-	-	-	-	-	-	TR	-	-	-	TR
MISC. GROUNDFISH	TR	-	-	-	-	-	-	-	TR	-	-	-	TR
ALL GROUNDFISH	445	716	1186	178	273	531	647	796	681	48	301	252	6053

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1985 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	TOTAL
ALL FLATFISH	-	TR	2	-	2
ALL ROCKFISH	TR	-	TR	4	4
PACIFIC COD	207	204	161	75	647
SABLEFISH	43	52	225	395	716
WALLEYE POLLOCK	179	762	542		1483
ALL ROUNDFISH	430	1018	928	470	2846
MISC. GROUNDFISH	2	-	-	-	2
ALL GROUNDFISH	432	1019	930	474	2854

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Table 6. -- Central Gulf joint-venture catch and bycatch in metric tons, 1983-1985

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	83	1	C GULF	3614	0.0	15	1	0		0.0	0	23	0.4	0.1	1	0	0	0
US	J V	83	2	C GULF	41292	0.0	109	4	0		0.0	1	41	0.4	0.5	1	0	0	0
US	J V	83	3	C GULF	84092	0.0	194	11	0		0.1	1	91	1.7	2.9	1	1	0	0
US	J V	83	4	C GULF	2392	0.0	10	0	0		0.0	0	4	0.1	0.0	0	0	0	0
US	J V	83	5	C GULF	0	0.0	2	3	0		0.1	0	0	2.3	4.4	0	1	0	0
US	J V	83	6	C GULF	0	0.0	0	0	0		0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	7	C GULF	109	0.0	161	88	0		0.7	0	5	0.8	25.9	1	9	0	0
US	J V	83	8	C GULF	175	0.0	388	460	0		2.2	0	31	2.6	10.1	1	59	3	19
US	J V	83	9	C GULF	56	0.0	100	361	0		0.6	0	12	0.4	0.6	0	34	4	14
US	J V	83	10	C GULF	102	0.0	31	183	0		0.8	0	20	3.7	8.2	0	21	0	2
US	J V	83	11	C GULF	351	0.6	288	562	1		4.7	0	77	17.2	50.5	2	72	6	0
US	J V	83	12	C GULF	1451	0.3	659	847	0		8.7	0	41	11.5	37.6	4	84	2	19
US	J V	83		C GULF	133634	1.0	1957	2521	1		17.9	3	346	41.1	140.9	11	280	15	55

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	84	1	C GULF	5003	0.6	394	300	0		1.2	0	80	13.6	45.6	2	40	1	4
US	J V	84	2	C GULF	82794	0.1	513	115	0		1.2	3	947	33.9	8.6	14	11	0	2
US	J V	84	3	C GULF	89151	0.1	301	32	0		1.8	1	59	3.5	0.9	5	3	0	0
US	J V	84	4	C GULF	999	2.2	36	17	0		0.9	0	4	0.3	0.0	0	3	0	0
US	J V	84	5	C GULF	224	0.3	388	159	0		1.8	0	13	2.6	2.9	0	25	0	2
US	J V	84	6	C GULF	216	0.0	445	224	0		30.0	0	18	70.5	7.8	0	30	0	0
US	J V	84	7	C GULF	510	1.1	382	367	0		6.8	0	12	2.0	21.2	3	24	5	5
US	J V	84	8	C GULF	377	2.6	500	435	0		23.5	0	16	142.4	55.1	0	48	4	5
US	J V	84	9	C GULF	4633	0.0	721	335	1		9.0	0	18	7.4	29.2	4	84	4	3
US	J V	84	10	C GULF	8015	0.1	376	482	0		5.7	0	14	6.2	42.4	47	68	4	4
US	J V	84	11	C GULF	4710	0.0	254	329	0		1.4	0	9	7.7	23.6	51	80	1	4
US	J V	84	12	C GULF	2456	0.0	35	85	0		0.7	0	20	2.5	7.6	29	13	0	1
US	J V	84		C GULF	199086	7.1	4344	2882	1		84.1	4	1209	292.6	244.9	156	431	18	29

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	85	1	C GULF	4594	0.2	32	3	0		1.0	0	74	0.7	0.1	0	0	0	0
US	J V	85	2	C GULF	92520	0.0	549	44	0		0.1	5	1595	10.2	0.7	0	0	0	0
US	J V	85	3	C GULF	108311	0.0	339	22	0		0.0	1	146	0.0	1.9	0	0	0	0
US	J V	85	4	C GULF	13036	0.0	14	3	0		0.1	0	87	1.6	0.0	0	0	0	0

Table 5. Western Gulf joint-venture catch and bycatch in metric tons, 1983-1985

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	83	1	W GULF	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	2	W GULF	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	3	W GULF	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	4	W GULF	4	0.7	2	6	4		6.1	0	1	48.4	2.9	0	2	0	0
US	J V	83	5	W GULF	1	191.1	72	7	2		83.7	0	5	464.9	2.5	0	16	0	0
US	J V	83	6	W GULF	4	61.9	37	17	1		117.4	0	8	258.8	4.3	0	19	0	0
US	J V	83	7	W GULF	189	43.4	44	68	3		22.5	0	5	266.5	69.9	0	8	0	0
US	J V	83	8	W GULF	111	47.0	87	36	0		8.7	0	8	305.9	6.6	0	7	0	0
US	J V	83	9	W GULF	54	297.4	190	15	1		23.2	0	11	375.4	32.2	0	11	0	0
US	J V	83	10	W GULF	135	147.0	37	21	1		9.6	0	6	213.7	15.7	0	14	0	0
US	J V	83	11	W GULF	0	0.0	0	0	0		0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	12	W GULF	0	0.0	0	0	0		0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83		W GULF	497	788.6	469	171	12		271.2	1	44	1933.7	134.2	0	76	0	0

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	84	1	W GULF	6	0.0	2	1	0	0	0.0	0	1	0.0	0.0	0	1	0	0
US	J V	84	2	W GULF	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	84	3	W GULF	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	84	4	W GULF	9	39.8	13	19	1		2.8	0	3	290.2	9.5	0	15	0	0
US	J V	84	5	W GULF	22	286.9	62	68	1		112.2	0	11	445.2	51.6	0	46	0	0
US	J V	84	6	W GULF	6	0.1	16	15	4		34.7	0	8	271.4	30.5	0	22	0	0
US	J V	84	7	W GULF	29	29.5	7	7	0		18.7	0	1	78.9	11.5	0	3	0	0
US	J V	84	8	W GULF	153	4.8	44	29	2		19.0	0	6	176.7	18.0	0	5	0	0
US	J V	84	9	W GULF	1000	0.1	47	50	1		4.2	0	7	42.9	47.8	0	5	0	0
US	J V	84	10	W GULF	6705	216.8	114	376	8		8.2	0	23	135.2	114.3	1	44	0	0
US	J V	84	11	W GULF	86	0.0	0	1	0		0.0	0	0	0.6	0.0	0	0	0	0
US	J V	84	12	W GULF	0	0.0	0	0	0		0.0	0	0	0.0	0.0	0	0	0	0
US	J V	84		W GULF	8018	578.0	305	566	18		199.8	1	60	1441.1	283.4	1	141	0	0

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	85	1	W GULF	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	85	2	W GULF	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	85	3	W GULF	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	85	4	W GULF	762	0.0	5	1	0	0	0.0	0	1	0.8	0.0	0	4	0	0
US	J V	85	5	W GULF	238	0.0	2	1	0	0	0.0	0	0	0.0	0.0	0	1	0	0

bycatch levels for all domestic vessels as they appear to have been set in the initial FMP and subsequent emergency rules, and if only joint venture bycatch is monitored, the prohibition on domestic trawling will not be imposed until the joint ventures take the PSC limits and by that time the total bycatch of all domestic vessels will have exceeded the acceptable level by the unknown amount taken in wholly domestic operations. This problem was not addressed by the emergency rules implemented for the 1984 and 1985 fisheries.

Problem 5. The development of the first four problems since the FMP was implemented and the need to change the bycatch regulation by emergency rules and the lengthy amendment process demonstrate that the FMP is not sufficiently flexible with respect to bycatch regulations to remain effective as conditions change. The need for flexibility is particularly important for rapidly growing and changing fisheries such as the wholly domestic and joint venture fisheries.

5. Implement the NMFS Habitat Policy

The proposed action amends the FMP by modifying and adding certain sections specifically to address the habitat requirements of individual species in the Gulf of Alaska groundfish fishery. The amendment describes the diverse habitat types within the Gulf of Alaska, delineates the life stages of the species, identifies potential sources of habitat degradation and the potential risk to the fishery, and describes existing programs, applicable to the area, that are designed to protect, maintain, or restore the habitat of living marine resources. The amendment responds to the Habitat Conservation Policy of the National Marine Fisheries Service, which advocates emphatic consideration of habitat concerns in the development or amendment of FMPs, and the strengthening of NMFS' partnerships with states and the councils on habitat issues. It also provides the necessary authorization for institution of marine debris restrictions and other regulations to protect the marine habitat.

6. Sablefish Fishing Seasons

Current federal regulations open all groundfish fisheries including sablefish on January 1 and close the season on December 31. The objective of this proposal is to delay the sablefish season opening date in one or more areas. There are several reasons which have been presented in support of a later season. They are: (1) resource allocation; (2) fishermen safety; and (3) fish quality.

The delay of the sablefish fishing season is considered a viable management tool for resource allocation purposes. Due to poor weather conditions in the Gulf of Alaska, vessel size plays an important role in a fisherman's ability to fish. During times when fishing effort for this species was low, fishermen would wait for favorable weather before fishing. This factor was extremely important given that most of the vessels used in this fishery are small, longline-type vessels. In the last few years, as fishing effort grew there has been more pressure on fishermen to harvest "their share of the resource." Large vessels fishing both hook and longline and pots have also entered the fishery. These vessels are more capable of fishing in poor weather than the more common small boats and put pressure on fishermen to fish in adverse conditions. Fishing by any vessel in poor weather increases the risks to

fishermen's safety. By delaying the sablefish opening date until better weather all segments of the fleet have equal chances in harvesting the OY. Weather impacts on vessel safety are also minimized.

Fish quality problems associated with spawning sablefish has been presented in support of a later fishing season. Product quality is lower during periods of spawning or immediately following reproduction. Since sablefish is a low-OY species, and there exists a fishing fleet capable of taking the OY at any time of the year, it may be desirable to schedule the fishing season to produce the highest quality product and obtain the greatest value possible.

It should be noted that prior to the enactment of the Groundfish FMP sablefish fishing was closed by regulation during the winter and spring months. This regulation was first enacted by the federal government in 1945 to halt the observed decline in sablefish CPUE, to protect the sablefish stocks during the spawning period and to minimize the incidental catch of halibut which tend to overlap sablefish in depth range during the winter months. Inferior quality of flesh and viscera during and after spawning was also cited as a reason for the winter closure. During 1945 and 1946 the closure was in effect from December 1 through March 15. In 1947 the closure was extended to April 30 since the shorter closure failed to halt the observed decline in sablefish CPUE. Because the same vessels fished both sablefish and halibut, the closure actually extended until after the end of the IPHC Area 2 halibut season, usually in mid- to late-August. For that reason the sablefish fishery evolved into a fall fishery as reflected in the timing of the current northern inside area season in state waters.

The winter closure regulation was adopted by the state at statehood and remained in effect until 1977. It was rescinded then only to allow the U.S. vessels to compete effectively with the foreign fleet that was operating off the coast of Southeastern Alaska at that time. Because the season was closed during the winter and spring for over a 30-year period, there is no time series of information available concerning the effects of a winter closure on quality or CPUE. Management memorandums and letters written during the mid-1940s indicate that a substantial decline in incidental halibut catch would be directed attributed to the winter closure.

IV. ALTERNATIVE MANAGEMENT MEASURES INCLUDING THOSE PROPOSED

Certain alternatives to each amendment proposal have been considered by the Council. A summary of each alternative, including those proposed, follows:

1. Establish Quotas and Areas in the Rockfish Fishery

Alternative 1 - Maintain a Gulfwide OY for other rockfish. This alternative would maintain status quo in the other rockfish fishery. Other rockfish could be harvested anywhere in the Gulf of Alaska up to a total all-species OY of 5,000 mt. This alternative does not address the risk of overharvesting shelf demersal rockfish in the rapidly expanding southeastern fishery. Also, it does not address the potential problem of all of the other rockfish OY being harvested in one area of the Gulf and the negative impact that a Gulfwide closure would have on target fisheries for rockfish and on other fisheries where other rockfish are landed as an incidental species.

Alternative 2 - Set the Southeast District shelf demersal rockfish OY at 600 mt between 56°N latitude and 57°30'N latitude with the remainder of the 5000 mt OY (4400 mt) to be taken elsewhere in the Gulf.

This alternative addresses the immediate management concern for the heavily exploited shelf demersal rockfish stocks in the northern southeast outercoastal area by placing a cap on the fishery at approximately the 1984 harvest level. However, the problems of the remainder of the quota being taken in a single management area and the need for separate management of the different species groups are not addressed. Included in this alternative would be the designation of two management districts (Southeast-East Yakutat and West Yakutat) within the Eastern Regulatory Area (Figure 1). The new rockfish district boundaries would be the same as those currently used to manage the sablefish fishery.

Alternative 3 - Set the Southeast District shelf demersal rockfish OY at 600 mt between 56°N latitude and 57°30'N latitude and set the OY for the pelagic and slope rockfish species within the district at 880 mt for a combined Southeast District OY of 1,480 mt. The remaining 3,520 mt could be harvested from the other areas of the Gulf.(Recommended by the Alaska Board of Fisheries).

(1) Change the accounting year to October 1 through September 30 as part of this alternative.(Board recommendation).

(2) Retain January 1 - December 31 as the accounting year.

This alternative addresses the immediate management concern for the heavily fished southeastern outercoastal stocks and sets the total OY for other rockfish in the new Southeast-East Yakutat District at 1,480 mt thus minimizing the potential for large rockfish harvests in other portions of the Gulf impacting the developing domestic fishery in the southeastern area. Conversely, it minimizes the potential for a rapidly harvested OY in the southeastern fisheries impacting fisheries for rockfish and other species where rockfish are landed in the remainder of the Gulf. Alternative 3 does not address the need to establish separate OYs for the three rockfish species groups and does not establish OYs for management area other than for the Southeast-East Yakutat District. Also, the 880 mt OY for the remainder of the Southeast District was derived by subtracting the recommended 600 mt quota for the northern southeast area from the 5,000 mt Gulfwide OY and dividing the remaining 4,400 mt into the five INPFC areas of the Gulf. This division was undertaken given the lack of any biological information on possible OY apportionments. This may not be an appropriate division of OY as rockfish abundance is not uniform Gulfwide. In addition option 1 presents the Board recommendation to provide a fall and winter fishery.

Alternative 4 - Set the shelf demersal rockfish OY at 600 mt for the area where the 1984 domestic fishery was concentrated and establish separate OYs for slope, shelf pelagic, and shelf demersal rockfish species groups by Gulf of Alaska management area based on the best available data.

Alternative 4 addresses the need for immediate management action in the southeastern area by establishing a 600 mt OY for demersal shelf rockfish. It would also provide the lowest risk of overharvesting OYs for the various

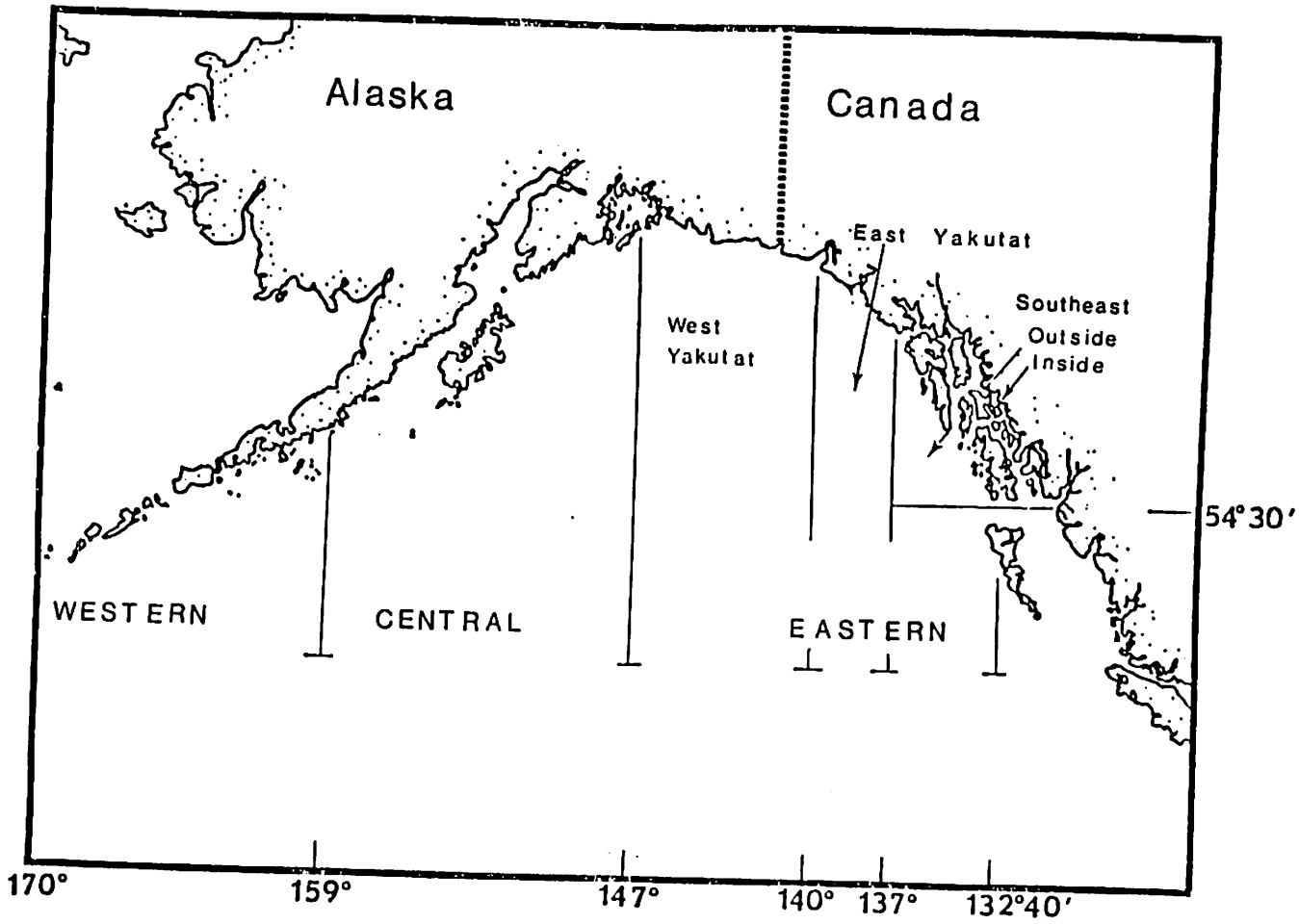


Figure 1. FMP Regulatory Areas and Districts

species groups and management areas. Separation of OYs by species assemblage and management area based on catch history and survey data would be scientifically defensible and would provide for a more orderly fishery as target effort on certain stocks increases. However, a cursory review of the 1984 triennial survey data and the joint Japan/U.S. survey data for 1981-1983 was inconclusive beyond the fact that concentrations of shelf demersal species appear to be substantially higher in the Eastern Gulf and that very few shelf rockfish of either species group were caught in the Central or Western Gulf. It may be difficult to establish appropriate OYs for shelf pelagic and shelf demersal rockfish by management area with the existing data base.

Alternative 5 - Set the OY for shelf demersal rockfish at 600 mt between 56°N. latitude and 57°30'N. latitude. Subtract this amount from the Gulfwide OY of 5,000 mt and apportion the remaining 4,400 mt by regulatory area as follows: Southeast-East Yakutat 880 mt, West Yakutat 880 mt, Central Gulf 1,760 mt, and Western Gulf 880 mt.

Alternative 5 is similar to Alternative 3 by establishing a 600 mt OY for demersal shelf rockfish stocks located in the southeastern outercoastal waters between 56°N. latitude and 57°30'N. latitude and an 880 mt OY for other rockfish harvested from the remaining portion of the proposed Southeast-East Yakutat District. As mentioned previously, the 880 mt figure was calculated by subtracting 600 mt from the current Gulfwide OY of 5,000 mt and dividing the remainder by the five INPFC areas. This alternative goes beyond Alternative 3 by apportioning OY to each of the remaining management areas. The overlaying of INPFC areas on to the FMP management areas will produce a Western Area OY of 880 mt; a Central Area OY of 1,660 mt; and an 880 mt OY for the proposed West Yakutat District (Figure 2).

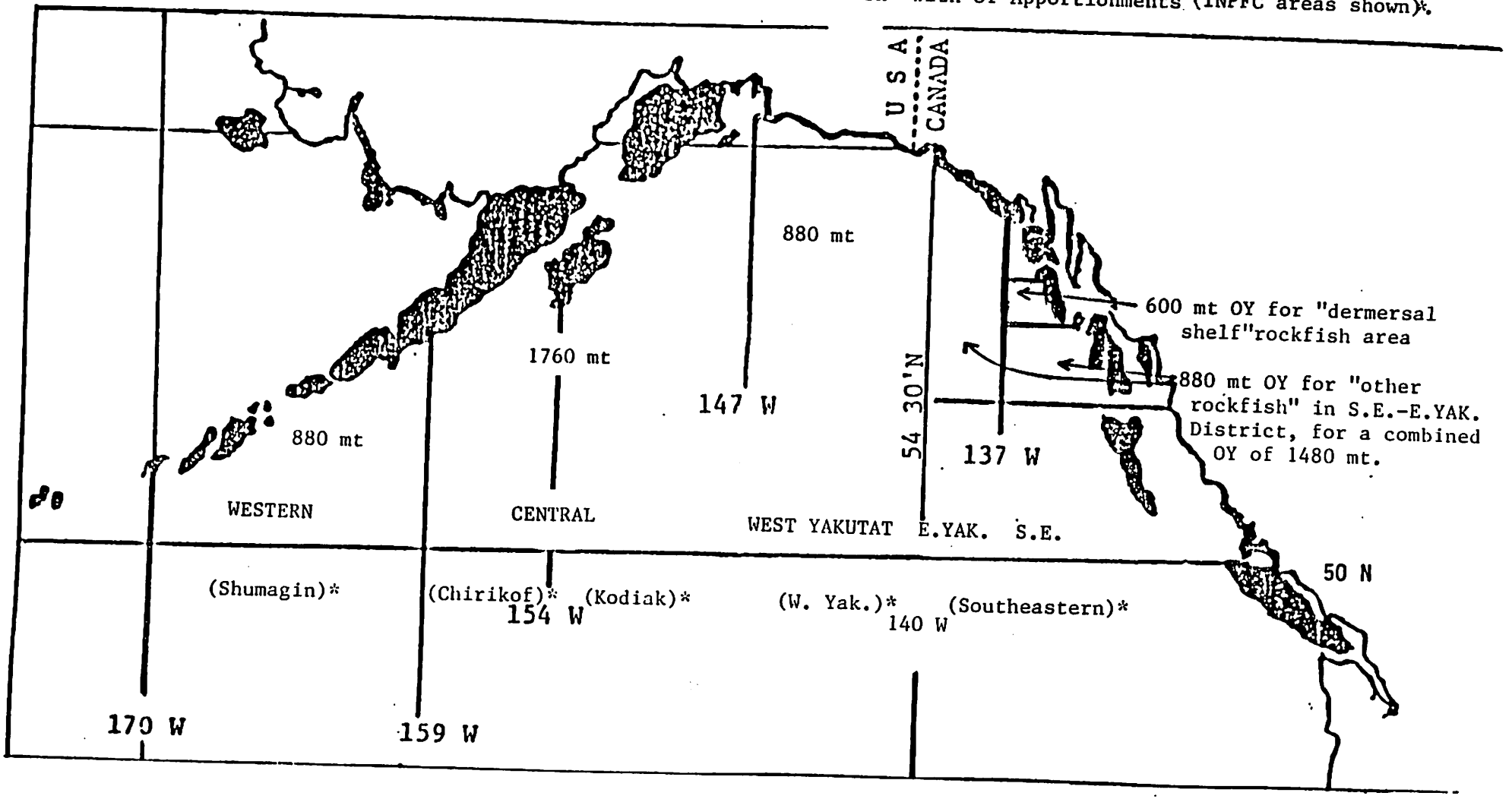
Alternative 6 - Redefine the "other rockfish" category in the Southeast Outside District to exclude shelf rockfish, thereby removing shelf rockfish from federal management under the FMP.

When the FMP was developed initially, the 12 species of shelf rockfish identified in Table 1 including six species of demersal and six species of pelagic rockfish were not considered when the "other rockfish" category was included in the management unit. Under this alternative, the Council would recommend to the Secretary that demersal shelf rockfish are not in need of federal management. Responsibility for their management would return to the State of Alaska. The OY for "other rockfish" would continue to be specified for slope and pelagic rockfish species and would be set at the current Gulfwide amount of 5,000 mt or be apportioned according to one of the alternatives described above.

2. Implement New Optimum Yields for Pollock, Pacific Ocean Perch, Other Rockfish, Atka Mackerel, and Other Species

Certain alternatives for the OY changes for each species, including the preferred action, have been considered and are addressed as follows:

Figure 2. Proposed FMP Regulatory Areas/Districts for "Other Rockfish" with OY Apportionments (INPFC areas shown)*.



A. Pollock

Alternative 1 = preferred action. Reduce the optimum yield for pollock to 305,000 mt in the Western/Central Area.

This alternative is preferred,because it recognizes the apparent weakness of the 1980 and 1981 year classes and that the 1985 harvest will likely be dependent on the 1978 and 1979 year classes, which are been in the fishery for four and three years, respectively.

Alternative 2 - Maintain the optimum yield at 400,000 mt.

This alternative is not acceptable, because over-exploitation of old and weak year classes would likely result.

B. Pacific ocean perch

Alternative 1 = preferred action. Reduce the optimum yield for POP to 1,302 mt and 3,906 mt in the Western and Central Areas, respectively.

This is the preferred action, because it does allow for some rebuilding of stocks. Any lesser amounts would prove constraining to developing domestic fisheries while.

Alternative 2 - Maintain the optimum yields for POP at their existing levels.

This alternative would likely result in a continued decline in the condition of POP stocks and therefore is not acceptable.

C. Other Rockfish

Alternative 1 = preferred action. Reduce the Gulf of Alaska-wide optimum yield for rockfish to 5,000 mt.

This alternative is preferred, because it accommodates some growth in small rockfish fisheries in the Central Regulatory Area, while accounting for the poor condition of stocks generally throughout the Gulf of Alaska.

Alternative 2 - Reduce the optimum yield to an amount that would provide for a bycatch only to support other target fisheries.

The total incidental catch of rockfish in 1984 was approximately 700 mt. To set the OY at this level in 1985 as a bycatch amount would severely constrain developing target rockfish fisheries in the Eastern and Central Regulatory Areas. This alternative, therefore, is unacceptable.

Alternative 3 - Maintain the optimum yield at 7,600 mt.

This alternative grossly exceeds the 1982-1984 average harvest of 1,500mt which currently represents the best estimate of EY for incidental slope rockfish. There is no evidence that a 7,600 mt harvest can be sustained even with the developing shelf rockfish fisheries.

D. Atka mackerel

Alternative 1 = preferred action. Reduce the OYs in the Western and Central Areas to bycatch amounts only, or 500 mt and 100 mt, respectively. This alternative is preferred, because it reflects the current availability of stocks that is based on the best available information.

Alternative 2 - Maintain the OYs in the Western and Central Areas at their current values of 20,836 mt and 3,186 mt, respectively.

This status quo alternative sets OYs equal to amounts that are not available for harvest, according to preliminary results of the 1984 triennial survey.

E. Other species

Alternative 1 = preferred action. The other species OY is set equal to 5% of the total OYs for each of the other groundfish categories on the basis of an equation contained in the FMP. This is the only viable alternative under the current FMP.

3. Establish a Reporting System for Catcher/Processors

Alternative 1 - Maintain the current reporting requirements.

With the present system catches are reported on ADF&G fish tickets at the time of landing.

Alternative 2 - Require an FCZ processing permit with check-in/check-out and weekly catch reporting.

Under this alternative, catcher/processor and mothership/processor vessels would be required to obtain an FCZ processing permit. These catcher/processor and mothership/processor vessels would be required to notify NMFS via U.S. Coast Guard radio each time they entered or left an FMP management area. Catcher/processor and mothership/processor vessel operators or their representatives would also be required to submit a report to NMFS by U.S. mail or telex for each fishing week documenting the hail weight estimates of catch by FMP species group in each FMP area. These weekly reports would be due within 7 days of the end of the fishing week. ADF&G fish tickets would continue to be required to be submitted within one week of the date of landing to document more precise catch or product weights and specific ADF&G statistical areas. A completed logbook may be submitted with the ADF&G fish ticket showing total catch by species for a trip as a means of documenting catch by specific ADF&G statistical area.

Alternative 3 - Require an FCZ processing permit with a weekly catch report, but without check-in/check-out reporting.

Under this alternative, catcher/processor and mothership/processor vessels would be required to obtain an FCZ processing permit. These catcher/processor and mothership/processor vessel operators or their representatives would be required to submit a report to NMFS by U.S. mail or telex for each fishing week documenting the hail weight estimates of catch by FMP species group in each FMP area. These weekly reports would be due within 7 days of the end of

the fishing week. ADF&G fish tickets would continue to be required to be submitted within one week of the date of landing to document more precise catch or product weights and specific ADF&G statistical areas. A completed logbook may be submitted with the ADF&G fish ticket showing total catch by species for a trip as a means of documenting catch by specific ADF&G statistical area.

Alternative 4 - Place observers aboard a portion of the catcher/processor and mothership/processor vessels and extrapolate the catch from these vessels to the entire fleet.

Under this alternative, catcher/processor and mothership/processor vessels would be required to obtain an FCZ processing permit which would require that observers be allowed onboard if requested. These catcher/processor and mothership/processor vessels would be required to notify NMFS via U.S. Coast Guard radio each time they entered or left an FMP management area. Observers would be placed aboard a portion of the catcher/processor and mothership/processor vessels. Radio reports of catch from the observed sample would be extrapolated to all vessels in each management area. ADF&G fish tickets would continue to be required to be submitted within one week of the date of landing to document more precise catch or product weights and specific ADF&G statistical areas. A completed logbook may be submitted with the ADF&G fish ticket showing total catch by species for a trip as a means of documenting catch by specific ADF&G statistical area.

Alternative 5 - Place observers aboard all catcher/processor and mothership/processor vessels.

Require catcher/processor and mothership/processor vessels to obtain an FCZ processing permit which would require that an observer be aboard at all times. Total catch would be computed directly from observer radio reports.

4. Establish Measures to Control the Pacific Halibut Bycatch

Each regulatory alternative for controlling halibut bycatch in trawl fisheries consists of a unique combination of a large number of regulatory elements or options. For example, PSC limits can be stated in terms of numbers or metric tons of halibut; the PSC limits can be in effect for part of the year or the entire year; some fisheries can be exempt from the PSC limits; the limits can be held in common or allocated to individual fisheries or operations; the sanctions imposed when a limit is reached can include a closure, gear restrictions, the imposition of bycatch fees, or merely a request that efforts be taken to control bycatch; and PSC limits or other mechanisms to encourage trawl fleets to control bycatch can be used. A more complete list of these elements and a qualitative evaluation of them is presented by Terry (1984, 1985). The alternatives presented below are specific combinations of these regulatory elements or options. The alternatives are:

Alternative 1 - Maintain the Western and Central Gulf PSC limits of 29 mt and 52 mt, respectively (Status Quo).

This alternative is defined by the following set of regulatory elements.

a. PSC limits of 29 mt and 52 mt of halibut for the Western and Central Areas, respectively, are specified in the FMP.
b. The PSC limits are in effect six months each year, December 1 through May 31.
c. The PSC limits apply to all domestic vessels (i.e., domestic vessels in both wholly domestic and joint venture operations).
d. Separate PSC allocations are not made by individual fishery or operation.
e. All further domestic trawling is prohibited in an area until June 1 once the PSC is taken.

Alternative 2 - Raise the Western and Central Gulf PSC limits to 270 mt and 768 mt, respectively (currently implemented by emergency rule).

As noted Section III, the FMP and the emergency rule for 1984 and 1985 set PSC limits for all domestic vessels but only the bycatch of joint ventures is monitored. To account for this problem, this alternative includes an option with respect to the level of the PSC limits. The option proposes a PSC limit based on the observed joint venture bycatch of halibut in 1984. This alternative can, therefore, be considered as two separate alternatives or as one with a suboption. This alternative is defined by the following set of regulatory elements with the suboption defined by element a'.

a. PSC limits of 270 mt and 768 mt of halibut for the Western and Central Areas, respectively, are specified in the FMP.
a'. PSC limits of 120 mt and 330 mt of halibut for the Western and Central Areas, respectively, are specified in the FMP.
b. The PSC limits are in effect six months each year, December 1 through May 31.
c. The PSC limits apply to all domestic vessels (i.e., domestic vessels in both wholly domestic and joint venture operations).
d. Separate PSC allocations are not made by individual fishery or operation.
e. All further on-bottom domestic trawling is prohibited in an area until June 1 once the PSC limit is taken; however, further off-bottom domestic trawling is permitted.

Alternative 3 - Develop a framework procedure for the annual adjustment of PSC limits.

Two versions of Alternative 3 are defined below as two sets of regulatory elements. The differences are in terms of the number of elements that are frameworked and the allocation of PSC limits among fisheries.

a. The FMP specifies the procedure that will be used to annually determine and make inseason adjustments to the PSC limits for the Western, Central, and Eastern Areas. The limits are specified in terms of metric tons of bycatch.
b. The PSC limits are in effect 12 months each year (i.e., they are in effect all year).
c. In each area there are separate PSC limits for wholly domestic, joint venture, and foreign fisheries and a procedure is specified for changing the number of PSC limits per area as the fisheries change or as new information becomes available.

d. Further on-bottom trawling during a year is prohibited in a fishery and area once a fishery takes its PSC limit in that area.
e. The FMP specifies a procedure to be used to change the types of operations that may continue to fish once a PSC limit is taken and to impose alternative sanctions for selected types of operations.

Possible modifications to this alternative are outlined below. These modifications are for a subset of the elements of Alternative 3 and are presented using the reference letters used above.

a'. A method for changing the areas for which PSC limits are established is specified in the FMP.
c'. Each year individual operations will be allocated PSC limits for each area, individual PSC limits are transferable. The method that will be used to make the initial and supplemental allocations will be determined by procedures specified in the FMP. AP review

The procedures referred to above are presented below using the same reference letters. Note that not all of the elements require a procedure and that the reference letters a' and c' are for the second or modified version of Alternative 3.

a. Procedure for Setting and Adjusting PSC Limits

The halibut PSC limit for each fishery and area will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to him halibut PSC limits for each fishery and area based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend PSC limits by December 15, the PSC limits already established shall automatically constitute the Council's recommendations to the Regional Director.

The Council's recommendations will be based on the following types of information:

1. estimated bycatch in years prior to that for which PSC limits are being set,
2. expected change in groundfish catch,
3. estimated change in groundfish biomass,
4. estimated change in halibut biomass and stock condition,
5. potential impact on halibut stocks,
6. potential impacts on domestic halibut fishery,
7. methods available to reduce bycatch,
8. the cost of reducing bycatch, and
9. other biological and socioeconomic factors that affect the appropriateness of specific PSC limits in terms of FMP objectives.

For example, the 1984 halibut bycatch in the joint venture fisheries was 141 mt in the Western Area and 431 mt in the Central Area; therefore, if after reviewing the above factors the Council determines that a 25% increase in bycatch is appropriate, it would recommend that the joint venture PSC limits be set at 176 mt and 539 mt, respectively for the two areas.

The Regional Director may change the PSC limits during the year for which they were set, if as new information becomes available, it is apparent to him that his initial determination has become inappropriate with respect to meeting FMP objectives. The Council may recommend such inseason changes based on new information.

c. Procedure for Changing the Number of PSC Limits for Each Area

The number of halibut PSC limits for each area will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to him the number of halibut PSC limits for each area based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend numbers of PSC limits by December 15, the number of PSC limits already established shall automatically constitute the Council's recommendations to the Regional Director.

The Council's recommendations will be based on the types of information listed above and additional information as appropriate to meet the FMP objectives.

The Regional Director has the same authority to change the number of PSC limits inseason as he has to change the PSC limits.

e. Procedure for Changing the Sanctions to be Imposed Once a PSC Limit is Taken

The procedure for changing the sanctions to be imposed once a PSC limit is taken are similar to those for setting both the PSC limits and the number of limits per area; and as with either of these two aspects of PSC regulations, the Regional Director may make inseason changes.

a'. Procedure for Changing the Areas for which PSCs are Defined

The procedure will be similar to that presented above for determining the other aspects of PSC regulations and the Regional Director will have correspondingly similar authority to make inseason changes.

c'. Procedure for Determining Initial Annual and Supplemental Allocations to Individual Operations

The method of allocation will be determined by the Regional Director by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to him a method of allocating halibut PSC limits for each fishery and area based on the best available information concerning the appropriateness of alternative methods with respect to the FMP objectives. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend an allocation method by December 15, the method already established shall automatically constitute the Council's recommendations to the Regional Director.

The method of allocation may include, but is not limited to, the following:

1. allocate based on historical and/or expected catch,
2. auction, or
3. sell at a predetermined price per unit of bycatch.

Alternative 4 - Establish bycatch fees.

Alternative 4 which includes the use of bycatch fees is defined by the following set of regulatory elements.

a. Bycatch fees would be imposed in terms of dollars per metric ton of halibut bycatch. The procedure used to annually set the fees is specified in the FMP.
b. Fees would be applicable to all fleets for which bycatch is adequately monitored.
c. A procedure is specified in the FMP for imposing alternative bycatch control regulations for fisheries in which adequate monitoring is not available.

The procedures referred to in elements a and c are presented below.

a. Procedure for Determining Bycatch Fees

The halibut bycatch fee for each fishery and area will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to him a halibut bycatch fee for each fishery and area based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend bycatch fees by December 15, the bycatch fees already established shall automatically constitute the Council's recommendations to the Regional Director.

The Council's recommendations will be based on the following types of information:

1. estimated change in halibut biomass and stock condition,
2. potential impact on halibut stocks,
3. potential impacts on domestic halibut fishery,
4. methods available to reduce bycatch,
5. other biological and socioeconomic factors that affect the appropriateness of specific bycatch fees in terms of FMP objectives.

For example, based on an estimate of the potential impact of bycatch on the halibut fishery of approximately $1,500 per metric ton, it may be determined that the appropriate fee is $1,500 per metric ton. In the 1985 Shelikof Strait joint venture pollock fishery which took 0.5 mt of halibut in a 221,000 mt fishery, a fee of $1,500 per ton would have increased the harvesting costs by $0.003 per ton of groundfish. For a fishery with a bycatch rate of 1%, this bycatch fee would increase the harvesting cost by $15 per ton of groundfish if no actions were taken to reduce the bycatch rate.

The Regional Director may change the bycatch fees during the year for which they were set if as new information becomes available it is apparent to him that his initial determination has become inappropriate with respect to meeting FMP objectives. The Council may recommend such inseason changes based on new information.

c. Procedure for Determining Alternative Bycatch Regulations for Fisheries with Inadequate Bycatch Monitoring

The control of bycatch in fisheries for which bycatch is not well monitored require a separate set of regulations. The halibut PSC regulations for such fisheries will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to him halibut PSC regulations for such fisheries based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend PSC regulations by December 15, the PSC regulations already established shall automatically constitute the Council's recommendations to the Regional Director.

The Council's recommendations will be based on the following types of information:

1. estimated bycatch in years prior to that for which PSC limits are being set,
2. expected change in groundfish catch,
3. estimated change in groundfish biomass,
4. estimated change in halibut biomass and stock condition,
5. potential impact on halibut stocks,
6. potential impacts on domestic halibut fishery,
7. methods available to reduce bycatch,
8. the cost of reducing bycatch,
9. the cost effectiveness of onboard observers in such fisheries,
10. other biological and socioeconomic factors that affect the appropriateness of specific PSC regulations in terms of FMP objectives.

Examples of the regulations include, but are not limited to, the following:

1. Improved monitoring methods can be implemented.
2. Gear, time, and/or area restrictions can be imposed.
3. Fleets may be requested to use voluntary measures.

5. Implement the NMFS Habitat Policy

Alternative 1 - Amend the FMP to address habitat considerations, based on the best available information, to meet standards set forth in the National Marine Fisheries Service's Habitat Conservation Policy.

This alternative focuses, within the FMP, on habitat as the source of productivity of a fishery and demonstrates Council awareness of potential adverse and cumulative effects of man-induced habitat alterations on the health and size of the harvest. It would provide legal foundation for future

Council expressions of concern and action should the need arise, and would provide the Secretary with a basis for implementing appropriate Council habitat recommendations to the extent possible within legal and budget limitations.

Alternative 2 - Amend the FMP to add a general habitat conservation objective. However, the more detailed material that is under the Alternative 1 proposed amendment would be included in a separate Council Habitat Document that would be referenced in, but not part of, the FMP.

This alternative would issue the amendment text as a Council Habitat Document separate from, but referenced in, the FMP. Not subject to Secretarial approval, it would provide essentially the same information without the need for FMP amendment should the information change. Whether future Council action based on information published separately from the FMP would have the same legal effect is uncertain and is being evaluated.

Alternative 3 - Do not amend the FMP to address habitat considerations.

Under this alternative, the FMP would not be responsive to the NMFS Habitat Conservation Policy.

6. Sablefish Fishing Seasons

Alternative 1 - Maintain the current sablefish fishing season of January 1 through December 31 or until closed by field order (status quo).

This alternative would maintain the status quo and open the sablefish fishery with all other groundfish fisheries in the Fishery Conservation Zone.

Alternative 2 - Change the opening date of the sablefish fishery in the Southeast and East Yakutat Districts from January 1 to March 15.

This alternative is being requested by Southeast Alaska fishermen and processors. A later opening is considered more desirable given the fish quality problems associated with spawning and the increased dangers to vessel and crew when fishing in this area during the winter. A March 15 opening would also bring the federal season into conformity with the State for most of this area.

Alternative 3 - Change the opening dates of the Southeast - East Yakutat and Central area sablefish fisheries to March 15 and May 1, respectively.

This alternative is similar to Alternative 2 and would meet the request of Southeast Alaska fishermen and processors. It differs from the above alternatives by delaying the opening date in the Central Regulatory Area from January 1 to May 1. A later opening in this area is being considered due to reports of poor fish quality and bad weather in the area during the winter and early spring months.

V. REGULATORY IMPACTS OF THE AMENDMENT PROPOSALS AND THEIR ALTERNATIVES

1. Rockfish Quotas and Management Areas

There is a real need for management action in this fishery. The risk of overharvest in the domestic shelf demersal rockfish fishery is great. Because of that risk the OY in the area where the 1984 fishery was concentrated should not exceed the 1984 harvest level of approximately 600 mt round weight.

Little is known about the abundance of shelf demersal rockfish in other areas of the Gulf or of shelf pelagic rockfish anywhere in the Gulf. The original OY for other rockfish was based on incidental catch of slope rockfish only. As pointed out in the November Team report, the predominant species in the incidental slope rockfish landings have since been incorporated into the POP complex or assigned to another separate species group (Sebastolobus sp.). There is no evidence that a 5,000 mt OY can be maintained for other rockfish.

Trawl surveys and the cooperative Japan/U.S. longline surveys have not been designed to sample the abundance of shelf rockfish. The average depth of the shallowest end of the joint Japan/U.S. longline survey set at average is greater than the depth that many of the shelf species inhabit. Therefore, there is little hope of determining appropriate harvest levels based on the existing survey data. Also, until recently there was no fisheries data on the shelf species and what little does exist is limited to only demersal species in a portion of their range.

The three species groups that make up the current other rockfish category have been defined. A list of species by category was presented in Table 1. If separate OYs are established, it will bring the total number of rockfish species categories in the Groundfish FMP to five including the POP complex and the thornyhead complex that are already in the FMP. Because of some species overlap and the lack of data mentioned previously, it will be difficult to assign scientifically defensible ABC levels for most species groups.

Alternatives 2, 3, and 4 place a limit on the catch of shelf demersal rockfish at approximately the 1984 harvest level for the fishery operating along the outer coast of the Baranof and Chichagof Islands. With continued expansion of fishing effort, the 600 mt OY would likely be achieved prior to the end of the accounting year. If this occurs, the fishery can continue by expanding north of 57°30'N latitude and south of 56°N latitude. This will increase travel time to the new grounds by fishing vessels operating out of Sitka, thereby increasing the costs and hazards of fishing, but it will not prevent additional growth in the fishery operating along the outer coast. The 600 mt limit in this proposed management area will provide the time to assess the impact of a 600 mt harvest on the rockfish stocks which are highly susceptible to overfishing. Due to the complexity of the problem, the lack of data for many of the species involved, and the biology of these fish that makes them so vulnerable to overexploitation, it would be in the best interest of this valuable resource and the developing domestic fishery to assign OY values at very low levels until the needed stock status data can be obtained.

If either Alternative 3 or 4 are adopted for the Groundfish FMP for 1985, all of the existing data should be carefully analyzed to determine if ABC levels for the various species groups can be calculated by area. Where gaps exist data needs should be determined and studies designed to furnish the needed data. The rockfish fisheries are expected to expand rapidly and stock status data are essential for orderly development of a sustained domestic multispecies fishery.

Under Alternative 6, the State would be the sole manager of shelf demersal rockfish in the Southeast Alaska Outside District. The State currently monitors the status of this rockfish group in the Southeast Outside District and is the only agency that has an infrastructure in place to monitor the progress of the fishery at ports of landing. Hence, the Council would consider results of ongoing State management of demersal shelf rockfish to determine whether conservation and management under an FMP is necessary or would contribute to conservation and management provided by the State, given current budget constraints imposed on the Council and the federal government. The Council would consider the effectiveness of this alternative against the alternatives listed above.

A test of effectiveness of any of the alternatives is whether economic, social, and ecological aspects of the fishery would be maintained or enhanced with the aim of minimizing the aggregate net benefits to society. Examples of economic aspects are promotion of domestic fishing, development of unutilized or underutilized shelf demersal rockfish fisheries, satisfaction of consumer and recreational needs, and encouragement of domestic and export markets for U.S.-caught rockfish. Another test of effectiveness is whether this group of rockfish would be conserved and managed to accomplish certain objectives contained presently in the FMP--national and optimum use, in both the biological and socioeconomic sense, of the Region's fishery resources as a whole, and provision for the orderly development of domestic groundfish fisheries.

Benefits of removing shelf demersal rockfish from Federal management under this alternative, compared to the status quo, include savings in terms of administrative and enforcement costs resulting from avoiding management overlap with the State. These savings may result in more efficient utilization of Federal dollars and labor for assignment to higher priority monitoring and enforcement tasks elsewhere. Additional benefits would be those accruing to fishermen and processors from a more uniform management regime resulting in a more orderly and efficient fishery. Benefits would include administrative costs saved during annual planning actions by the Council when setting new optimum yields or other management measures to address the remaining groundfish in the management unit. Benefits of this alternative would be those conveyed to fishermen and the processing industry as a result of management being conducted by a single agency under a consistent and more uniform management regime.

Possible costs under this alternative could be those incurred by the State in monitoring rocking landings to ascertain that those landed were truly demersal shelf species and not slope or pelagic species. To the extent that slope and pelagic rockfish were reported as demersal shelf rockfish could be costs under this alternative if such misreporting jeopardized the management objectives of the Council and resulted in harm to slope and pelagic rockfish species.

The state should be consulted as to whether adequate funding is available to manage and monitor this fishery independently. Although the state has functioned as the primary data gathering agency, it is recognized that rockfish management in general and management of the slower growing shelf demersal species in particular is not an easy task.

The state has indicated the need for a more substantial database to rationally manage this fishery. The needed data will not be either cheaply or easily obtained. More extensive sampling coverage, continued biological studies including continued age-growth and fecundity studies are needed. Independent indexing and tagging studies are essential. There is a risk that if management responsibility is deferred entirely to the state, inadequate funding may also hamper their effectiveness. In this case the cost to the resource and potential future users could be substantial.

2. Implement New Optimum Yields for Pollock, Pacific Ocean Perch, Other Rockfish, Atka mackerel, and Other Species

A. Reduce the optimum yield for pollock from 400,000 mt to 305,000 mt in the Western/Central Regulatory Area.

Costs

Risk of overfishing - Under this alternative, the OY is reduced 24% from its present level. If it were fully harvested, however, the OY would represent a 1% increase over the actual 1984 harvest, which equaled the sum of U.S. and foreign harvests of 202,700 mt and 99,200 mt, respectively, or 301,900 mt. The OY is based on the best available scientific information. This information was mostly derived from the hydroacoustic surveys conducted in an area (Shelikof Strait) where pollock were concentrated, making biomass estimates more reliable. Although some risk of overfishing exists because biological information always includes a degree of uncertainty as to its accuracy, this OY is based on a very conservative exploitation rate that reflects that this fishery is now dependant on only two year classes and continuing poor recruitment. The risk of overfishing is believed, therefore, to be small.

Impact on prices - Assuming the entire 305,000 mt of the pollock OY were caught, the 95,000 mt decrease from the present OY of 400,000 mt represents only 6.4% of the 1984 U.S. and foreign 1,474,000 mt pollock catch from the FCZ off Alaska and only 2.1% of the 1982 worldwide total pollock catch , which was about 4.5 million mt. The amount of the pollock decrease, therefore, is likely too small to influence price at any level.

Foreign fees - Of the 305,000 mt OY, only 25,000 mt will be apportioned initially to TALFF; an additional 23,129 mt is apportioned to the reserve, which could be reapportioned to TALFF during the fishing year if not needed by U.S. fishermen. Foreign nations must pay a poundage fee (in $ per mt) for amounts of groundfish they actually harvest. Assuming foreign nations harvest all of the 25,000 mt, the Federal government would receive $800,000 in foreign fees based on the 1985 foreign fee schedule for pollock of $32/mt. Depending on how much of the 23,129 mt reserve is allocated to and caught by foreign nations, the Federal government could receive an additional $740,000. This alternative OY, however, results in a 95,000 mt decrease in a potential

foreign harvest that could have generated an additional $3 million in foreign fees if it all were allocated to and harvested by foreign nations. This amount, then, represents an upper bound cost of this alternative.

Benefits

Species conservation - This alternative is a management and conservation measure that will promote the economic well-being of the commercial fisheries that are being, or have, developed to profit from pollock. The best available information indicates that the lowest exploitable biomass that can be tolerated without inducing drastic effects on the pollock stocks, as well on other animal populations that depend on pollock, is about 600-700 thousand mt. A catch level in 1985 equal to about 305,000 mt will likely reduce the exploitable biomass to about 800,000-900,000 mt in 1986, i.e., an amount higher than the 600,000-700,000 mt threshold that would harm the resource. Higher catch levels, then, could jeopardize the health of the resource to a point where allowable catches should be reduced to zero. The entire OY, if harvested by U.S. fishermen, is worth about $40 million, exvessel value. This amount is an estimate of the minimum benefit conveyed to the Nation as a result of successful protection of the pollock resource as a result of this alternative.

Conservation of prohibited species - Any catches of prohibited species, i.e., Pacific halibut, salmon, king crab, and Tanner crab, which are not allowed to be retained in the groundfish fisheries, must be discarded. Because U.S. fishermen trawling for pollock typically use off-bottom or pelagic trawls, few prohibited species are caught as compared to foreign nations that have been major harvesters of pollock in past years. If a biological conservation need had not dictated the 95,000 mt decrease in the pollock OY, and this amount were declared available to TALFF for harvest by traditional bottom trawl harvest methods, then amounts of prohibited species can be estimated from amounts of these species taken incidentally while trawling for pollock in 1984 (Table 7). On the basis of weighted averages calculated from 1984 data, 475 mt of halibut, 38 mt of salmon, 4 mt of king crab, and 2 mt of Tanner crab could have been taken. To the extent that this scenario will not happen is a benefit under this alternative.

Table 7. Foreign trawl catches (mt) of prohibited species and pollock in the Western/Central Regulatory Area in 1984.

	Pollock	Halibut	Salmon	King crab	Tanner crab
Japan	57,363.3	298.9	14.2	4.3	2.3
ROK	38,553.5	205.0	3.6	0.0	0.2
Poland	2,793.9	3.6	18.8	0.0	0.0
TOTAL	98,710.7	507.5	36.6	4.3	2.5

B. Maintain the optimum yield at 400,000 mt.

Costs

Risks of overfishing - The effects of maintaining the optimum yield at its status quo level of 400,000 mt are uncertain. The exploitable biomass could decline to unacceptable levels it this amount were actually harvested in 1985, but other factors, e.g.,. predation by Pacific halibut and Pacific cod, make reliable predictions difficult. The increased availability of pollock during the years 1977-82 could have caused an significant, albeit lagged, increase in predator populations. Predators will now be taking a relatively greater percentage of pollock as numbers of pollock decline until numbers of predators also decline. Suffice it to say that any harvest amount above 305,000 mt will cause the exploitable biomass to approach the minimum threshold level of 600-700 thousand mt at a faster rate, which will increase the level of overfishing.

Impact on prices - If the resulting 1985 harvest actually equaled this alternative, it would represent an increase above the 1984 total harvest of about 100,000 mt. This amount would only represent about 2% of the total worldwide production of 4.5 million mt. Although more pollock would be available under this alternative , the additional amount is likely too small to significantly influence price.

Species conservation - This alternative would not be consistent with the best available information concerning the status of the pollock resource, which indicates that the harvest should be curtailed in response to few supporting year classes and poor recruitment. The upper end of the maximum sustainable yield for pollock is 344,000 mt, which at an ex-vessel value of $0.06/pound, should be worth $45 million. To the extent that a harvest of 400,000 mt is in excess of MSY and jeopardizes a maximum sustainable return to the fishing industry is a cost under this alternative.

Conservation of prohibited species - The benefits identified for the alternative of setting the OY at 305,000 mt would now be costs under this alternative. If an additional 95,000 mt of pollock were made available to foreign fisheries - a reasonable expectation at present, because this amount appears excess to the needs of U.S. fishermen - additional amounts of prohibited species would be caught, estimated at: 475 mt of halibut, 38 mt of salmon, 4 mt of king crab, and 2 mt of Tanner crab. These species bring a high return to U.S. fishermen, which must be foregone under this alternative.

Benefits

Foreign fees - Under this alternative, an additional 95,000 mt could be allocated to foreign nations if it were not needed by U.S. fishermen. If all this additional amount were actually harvested, the Federal government could receive in $3 million.

C. Changes in optimum yields for POP, other rockfish, and Atka mackerel.

1. Reduce the optimum yields for POP, other rockfish, and Atka Mackerel as stated under the preferred alternative.

Costs

Risks of over fishing - 1. POP. The OYs adopted by the Council in the Western and Central Regulatory Areas are substantially higher than those amounts that would have been sufficient for bycatches to support other domestic target fisheries. POP catches in a pollock fishery can be quite small; conversely, POP catches in a flounder fishery can be quite large. For instance, in 1984 joint venture catches of POP in the pollock fishery ranged from a trace to 0.2% of the pollock catch; monthly catches of POP in the flounder fishery ranged from 1% to 33% of the flounder catch.

Impact on prices - 1. The total reductions of the POP, rockfish, and Atka mackerel OYs are equal to 5,392, 2,600 mt, and 23,912 mt, respectively. World-wide data are not available to compare the amounts of these reductions with world-wide harvests to estimate the impact of these reductions on prices. On the other hand, actual 1984 harvests of these species were only 4,358 mt, 1,332 mt, and 1,143 mt (Table 8).

The new OYs are not large changes in terms of magnitude from 1984 catches, especially compared to the total 2.4 million mt of groundfish available for harvest off Alaska, and likely represent amounts too small to affect prices.

Foreign fees - The respective poundage fees that foreign fishermen must pay to the Federal government for POP, rockfish, and Atka mackerel are $100/mt, $94/mt, and $52/mt. If the OYs were not reduced and if surplus amounts, i.e., amounts not needed by U.S. fishermen (currently set at 6,181 mt, 4,733 mt, and 3,808 mt, respectively) were allocated to, and actually caught by foreign fishermen, then the Federal government could have collected fees equal to $540,000, $244,000, and $1.2 million, respectively.

Table 8. 1984 catches (mt) of POP, rockfish, and Atka mackerel in the Gulf of Alaska by domestic, joint venture, and foreign fishermen.

	POP	Rockfish	Atka mackerel
Domestic	120	632	31
Foreign	2,580	414	536
Joint venture	1,658	286	576
Total	4,358	1,332	1,143

Benefits

The reductions in OYs for POP, rockfish, and Atka mackerel are conservation and management measures calculated to prevent potential harm to the resource that could otherwise occur if fishing effort were actually applied to harvest the current OYs. These measures are calculated to protect commercially important species; such measures employed over the long-term could theoretically result in stock recovery to maximum sustainable yields (MSYs). These amounts represent upper bound benefits that could be achieved under this alternative.

2. Reduce the optimum yields for POP, rockfish, and Atka mackerel to levels that would provide for bycatches in other target fisheries.

Costs

Catches of POP, rockfish, and Atka mackerel are caught incidental to a flounder fishery in significant amounts. Data from the 1983 Japanese trawl fisheries show that bycatch rates in a flounder fishery can range from 0.63 to 0.92 for POP; 0.10 to 0.23 for rockfish; and 0.20 to 0.56 for Atka mackerel. On the other hand, catches of these species in a pollock fishery are small. Data from the 1983 Japanese trawl and joint venture (all nation) fisheries show by-catch rates ranging from 0.002 to 0.01 for POP; 0.001 to 0.002 for rockfish; and 0.006 to 0.008 for Atka mackerel (Table 9). If bycatch amount were set to be as "clean" as possible, e.g. employing those rates experienced in the pollock fishery, then premature closures of the flounder fishery could result. Also, the Council recommended that sufficient bycatches be provided so as not to overly restrict the newer fisheries in which fishermen may not have the necessary experience to avoid POP, rockfish, and Atka mackerel. Assuming U.S. fishermen inadvertently harvested small bycatches prematurely, and thus were forced to terminate a flounder fishery, some amount of the flounder harvest up to an amount short of the OY itself, could be foregone by U.S. fishermen. At an ex-vessel price of about $0.30/lb. for flounder, U.S. fishermen could forego an amount equal to about $27 million.

Table 9. 1983 groundfish catches (mt) by Japanese and joint venture trawlers in the Gulf of Alaska. (Numbers in parentheses are percentages.)

	Japan Trawl Vessel Class			
	Small	Surimi	Lg. Freezer	Joint Venture
Pollock	10,582	31,507	5,280	134,131
Flounder	2,297	204	3,751	2,691
POP	1,442 (63)	38 (.2)	3,448 (92)	1,974 (1)
Rockfish	229 (10)	32 (.1)	845 (23)	289 (.2)
Atka mackerel	445 (20)	239 (.8)	2,109 (56)	789 (.6)
	(*)	(**)	(*)	(**)

Note: (*) percent of flounder
(**) percent of pollock

Foreign fees - Bycatch rates in Table 9 are reasonable estimates to calculate bycatch amounts that would be needed to support a flounder fishery hence only a total of 7,150 mt (OY-DAH) of flounder are currently available for apportionment to TALFF, at least 4,500 mt of POP, 700 mt of rockfish, and 1,430 mt of Atka mackerel might be needed to support a flounder harvest of 7,150 mt. The differences between these amounts and the amounts of OY reductions are 693 mt of POP, 1,900 mt of rockfish, and 22,482 mt of Atka

mackerel, respectively. If the OYs were not reduced and U.S. fishermen did not require the surplus then these amounts might have been available for a directed fishery by foreign nations. If these amounts were actually available to, and were harvested by, foreign fisheries, the Federal government would receive about $87,200, $178,000, and $3.4 million in foreign fees.

Benefits

As in the above Alternative, reduced OYs for POP, rockfish, and Atka mackerel are conservation and management measures calculated to protect these species. To the extent that this alternative will allow faster rebuilding of these stocks to former, more productive, levels is a benefit of this alternative.

3. Establish a reporting system for catcher/processors.

Alternative 1 - Maintain the status quo system with catches reported on ADF&G fish tickets at the time of landing.

Because catch reports are not required until the time of landing under the current regulatory regime, OYs will almost always be exceeded before a fishery closure order can be issued. Given the large hold capacity of the current catcher/processor and mothership/processor fleets and the rapid expansion of these fleets, the risks of overfishing and reducing stock production in future years is high. Under the current regulations, fishery managers have no knowledge of fishing effort by area prior to the time of landing by each vessel and are therefore not able to project catches based on past performance.

Under this alternative, as well as under all alternatives which do not require onboard observers, discarded prohibited species catches will remain largely unaccounted for. Prohibited species caught and discarded at sea usually have high mortality rates, especially for trawl gear catches. Prohibited species catches as well as discard mortality of unwanted species is largely unaccounted for under the present system. In certain few cases, prohibited species catches can be extrapolated from data provided from the limited observer program of ADF&G or from the NMFS foreign and joint venture observer program. Prohibited species catches can easily be illegally retained, landed and sold by catcher/processors under the current enforcement system.

Enforcement of regulations prohibiting catches of species after fishery closure orders have been issued is extremely difficult under the present system. Because there is no existing method of tracking or even identifying catcher/processor vessels on the fishing grounds, it is difficult to locate, board and inspect the holds of these vessels on the fishing grounds or in port during the infrequent landings of these vessels. Because of the duration of fishing trips by catcher/processor vessels, these vessels retain large quantities of legally caught catches in their holds long after fisheries for certain species have been closed but prior to their subsequent landing and offloading. Enforcement of fishery closure regulations by hold inspections is extremely difficult under these conditions.

The reporting burdens placed on fishing vessels under the current regulations are minimal. Vessels are required to fill out an ADF&G fish ticket or provide equivalent information within 7 days of the date of landing or delivering

their catch. ADF&G fish tickets require vessels to identify the vessel, operator, processor, gear(s) used, and catch by species in each ADF&G statistical area fished for the duration of the trip. Catches are not required to be subdivided into time units smaller than the duration of the trip. Vessels which are leaving Alaskan waters to deliver to ports outside the state of Alaska are required to notify ADF&G or NMFS of their departure prior to leaving the FCZ. Very few vessels have abided by this regulation in the past. The regulation is very difficult to enforce without prior knowledge of which vessels are capable of delivering catches outside of the state of Alaska.

Alternative 2 - Require FCZ processing permit with check-in/check-out and weekly catch report.

Under this alternative vessels would be required to obtain a permit to process their catch in the FCZ. The permit would serve to identify those vessels which would be required to participate in the additional reporting programs. Each time one of these vessels enters or leaves an FMP management area (an area for which a quota is defined), they would be required to notify NMFS via U.S. Coast Guard radio. These vessels would also be required to submit a report to NMFS by U.S. mail, or telex for each fishing week documenting the hail weight estimates of catch by FMP species group in each FMP area. These weekly reports would be due within 7 days of the end of the fishing week. The medium by which the catch reports are submitted is up to the discretion of the vessel operator. Large catcher/processor and mothership/processor operations usually maintain home port offices which are in at least weekly contact with their vessels. Catch reports could be submitted by these offices via telex, telephone, or U.S. mail. Smaller operations without frequent home office contact would have to contact NMFS via U.S. mail or telex.

Under this alternative, as well as under all alternatives which do not require onboard observers, discarded prohibited species catches will remain largely unaccounted. Prohibited species caught and discarded at sea usually have high mortality rates, especially for trawl gear catches. Prohibited species catches as well as discard mortality of unwanted species is largely unaccounted for under the present system. In certain few cases, prohibited species catches can be extrapolated from data provided from the limited observer program of ADF&G or from the NMFS foreign and joint venture observer program. Prohibited species catches can easily be illegally retained, landed and sold by catcher/processors under the current regulatory and enforcement system.

Under this alternative, fishery managers would be provided with estimates of catch aboard from FCZ domestic processing vessels that were no more than two weeks old. With the check-in/check-out reporting requirement, projections of catch within the most recent two week period could be made based on past performance. This method would allow fishery managers to estimate the date when OYs would be achieved with a moderate level of precision.

With the check-in/check-out reporting requirement, catch reporting by area fished can be enforced. The locations of vessels boarded at sea or sighted from enforcement overflights could be checked against the check-in/check-out list for verification. Without the check-in/check-out requirement, vessels could easily alter the reported area of fishing on the weekly catch report in the rare event of an enforcement boarding or overflight observation. The check-in/check-out requirement would also enable enforcement officials to be

notified of upcoming landings so that hold inspections could be performed at the port of landing. Hold inspections performed at the port of landing impose far less burden on fishing vessels than at-sea boardings and are much less expensive to implement. Weekly catch reports would be verified against ADF&G fish tickets which would be submitted at the time of landing. Spot checking of catches from hold inspections performed at the port of landing could be used to verify the fish ticket information.

The catch data in the weekly catch reports would be based on skipper's estimates of catch weights or "hail weights" by species group and management area. Fishing vessels do not weigh their catch at sea and can only estimate "hail weights" from experience. At the time vessels offload their catch, more accurate weights are obtained and these are recorded on the fish ticket, presently required under state and federal regulations, which is forwarded to ADF&G. It is always desirable to update the "soft" data obtained from "hail weights" with the more accurate weights and specific statistical areas obtained from fish tickets.

Alternative 3 - Require an FCZ processing permit with a weekly catch report, but without check-in/out.

Under this alternative vessels would be required to obtain a permit to process their catch in the FCZ. The permit would serve to identify those vessels which would be required to participate in the weekly catch reporting programs. These vessels would then be required to submit a report to NMFS by U.S. mail or telex for each fishing week documenting the hail weight estimates of catch by FMP species group in each FMP area. These weekly reports would be due within 7 days of the end of the fishing week. The medium by which the catch reports are submitted is up to the discretion of the vessel operator as long as a hard copy of the report is received. Large catcher/processor and mothership/processor operations usually maintain home port offices which are in at least weekly contact with their vessels. Catch reports could be submitted by these offices via telex or U.S. mail.

Under Alternative 3, as well as under all alternatives which do not require onboard observers, discarded prohibited species catches will remain largely unaccounted for. Prohibited species caught and discarded at sea usually have high mortality rates, especially for trawl gear catches. Prohibited species catches as well as discard mortality of unwanted species is largely unaccounted for under the present system. In certain few cases, prohibited species catches can be extrapolated from data provided from the limited observer program of ADF&G or from the NMFS foreign and joint venture observer program. Prohibited species catches can easily be illegally retained, landed and sold by catcher/processors under the current regulatory and enforcement system.

Under this alternative, fishery managers would be provided with estimates of catch aboard from FCZ domestic processing vessels that were no more than two weeks old. Fishery managers would make projections of current catch based on past performance and the two week old effort distribution provided in the weekly catch reports.

Without the check-in/check-out reporting requirement, catch reporting by area is more difficult to enforce. The locations of vessels boarded at sea or sighted from enforcement overflights could only be checked against areas fished that are reported at the end of each week. Vessels could easily alter the reported area of fishing on the weekly catch report in the rare event of an enforcement boarding or overflight observation. The current FCZ checkout regulation could enable enforcement officials to be notified of upcoming out-of-state landings so that hold inspections could be performed at the port of landing. However, lacking knowledge of the vessels which are actually operating in an area, the current check-out regulation has been difficult to enforce. Hold inspections performed at the port of landing impose far less burden on fishing vessels than at-sea boardings and are much less expensive to implement. Weekly catch reports would be verified against ADF&G fish tickets which would be submitted at the time of landing. Spot checking of catches from hold inspections performed at the port of landing could be used to verify the fish ticket information.

The catch data in the weekly catch reports would be based on skipper's estimates of catch weights or "hail weights" by species group and management area. Fishing vessels do not weigh their catch at sea and can only estimate "hail weights" from experience. At the time vessels offload their catch, more accurate weights are obtained and these are recorded on the fish ticket, presently required under state and federal regulations, which is forwarded to ADF&G. It is always desirable to update the "soft" data obtained from "hail weights" with the more accurate weights and specific statistical areas obtained from fish tickets.

Alternative 4 - Place observers aboard a small sample of catcher/processor vessels and mothership/processors and extrapolate the catch from these vessels to the entire fleet.

Under this alternative vessels would be required to obtain a permit to process their catch in the FCZ. The conditions of the permit would require observers to be allowed onboard, if requested. All processing vessels would be required to notify NMFS via U.S. Coast Guard radio each time they entered or left an FMP management area. Observers would be placed aboard a sample of catcher/processors and mothership/processors. Observers would radio catch reports to fishery managers on a weekly basis. The observed catch sample would be extrapolated to the total catch in an FMP management area based on the ratio of sampled effort to total effort as determined from the vessel check-in/check-out system.

Observer derived samples provide the most accurate estimates of total catch of the alternatives. Observer samples estimate catch of all species, including prohibited species and unwanted legal species or sizes that are discarded. Observer samples would also provide the least time delay in catch reporting of the alternatives, at a maximum lag of one week. However, observer derived catch sampling is by far the most expensive of the alternatives. Based on the performance of the foreign and joint venture observer programs, observers would have to be placed aboard at least 30% of the vessels in the fleet in order to provide catch estimates with sufficient precision. Reporting burdens place on vessel operators are reduced under this alternative since no in-season catch reporting is required of the vessel operator. Vessel operators would still have to notify NMFS each time they entered or left an FMP area.

Because of cramped living conditions aboard most domestic fishing vessels, vessel operators would be burdened to some extent by the presence of the observer aboard, even if reimbursed for the living expenses of the observer.

The costs of an observer program can be high. Currently, the federally managed foreign observer program costs a minimum of $235/day plus the cost of food, transportation to and from the vessel, liability insurance, and other support services. Who would bear the costs of an observer program, the federal government or the resource users, is an important question. Other questions include: Will the observer be a biologist or an enforcement agent? or both?; how will liability be handled? The public is being asked to comment on this alternative.

Alternative 5 - Place observers aboard all catcher/processor and mothership/processor vessels.

Under this alternative vessels would be required to obtain a permit to process their catch in the FCZ. The conditions of the permit would require an observer to be taken aboard at all times. Observers would radio catch reports to fishery managers on a weekly basis. Catches within areas could be computed by fishery managers as total counts.

Observer derived samples provide the most accurate estimates of total catch of the alternatives. Observer samples estimate catch of all species, including prohibited species and unwanted legal species or sizes that are discarded. Observer samples also provide the least delay in catch reporting of the alternatives, at a maximum lag of one week. Placing observers aboard all catcher/processor and mothership vessels could be prohibitively expensive. Reporting burdens placed on vessel operators are minimal under this alternative since no in-season reporting is required of the vessel operator. Vessels would not be required to check in or out of FMP areas since the observer reports would contain this information for all vessels. Because of cramped living conditions aboard most domestic fishing vessels, vessel operators would be burdened to some extent by the presence of the observer aboard, even if reimbursed for the living expenses of the observer.

Discussion of the Costs and Benefits of Establishing a Reporting System for Catcher/Processors.

Table 10 summarizes our best estimates of the costs and benefits associated with catcher/processor weekly reporting. It breaks out the costs imposed on different classes of vessels, both in terms of additional time spent reporting, additional costs of reporting, and costs to the government for entry of data collected under this regulation.

It appears, at this point, that approximately 25 vessels would be affected by this requirement. With a total of approximately 140 vessel-weeks in the fishery by all vessels, at $10 per marine operator-assisted call, the additional home office-to-vessel contacts (at one per week) are estimated to cost $1,400. The additional fleet costs for trawl catcher/processors are estimated to be $450 per week; with a total of 40 vessel-weeks anticipated for the fishery, this figures to a total of $18,000 per season for this category of vessels. Through a similar line of reasoning, the estimated added fleet costs of $80 per week per vessel for pot catcher/processors, each week for 35 weeks,

TABLE 10. COST/BENEFIT ANALYSIS OF CATCHER/PROCESSOR WEEKLY REPORTING OPTION

	Vessel Class:	Mothership/ Processors	Trawl Catcher/ Process.	Pot Catcher/ Process.	Longline Catcher/ Process.	Total
	No. of vessels	2	15	4	4	25
	No. of weeks in fishery	40	40	35	25	
A. Added Home Office to Vessel Contacts:	No. of marine oper. calls	0	3	2	4	9
	Marine operator costs/call	$10	$10	$10	$10	
	Total added vessel costs/seas	$400	$400	$350	$250	$1,400
	Total added fleet costs/week	$0	$450	$80	$160	$690
	Total added fleet costs/seas	$0	$18,000	$2,800	$4,000	$24,800
B. Home Office to NMFS Contacts:	Method of contacting NMFS	Telex	Telex	Mail	Mail	
	Weekly cost of contact method	$10	$10	$0.22	$0.22	
	Total add'l vessel costs/seas	$400	$400	$8	$6	$813
	Total add'l fleet costs/week	$20	$150	$1	$1	$172
	Total add'l fleet costs/seas	$800	$6,000	$31	$22	$6,853
C. Added Reporting Time Burden:	On-vessel tabulation hrs/week	0.5	0.5	0.5	0.5	2
	Added off. contact hrs/week	0.2	0.2	0.2	0.2	0.8
	Home office to NMFS hrs/week	0.3	0.3	0.3	0.3	1.2
	Total burden/vessel/week	1	1	1	1	4
	Cost of time ($/hr)	$15	$15	$15	$15	
	Cost of burden/vessel/week	$10	$15	$15	$15	$60
	Total add'l vessel costs/seas	$600	$600	$525	$375	$2,100
	Total add'l fleet costs/week	$30	$225	$60	$60	$375
	Total add'l fleet costs/seas	$1,200	$9,000	$2,100	$1,500	$13,800
D. Total Costs to Fishermen:	Total add'l vessel costs/seas	$1,400	$1,400	$883	$631	$4,313
	Total add'l fleet costs/week	$50	$825	$141	$221	$1,237
	Total add'l fleet costs/seas	$2,000	$33,000	$4,931	$5,522	$45,453
E. Costs to NMFS:	Clerical data entry (Vessel boardings and hold inspections in port and enforcement overflights must be done to properly enforce any of the alternatives.)					$50,000
F. TOTAL COSTS:						$95,453
G. BENEFITS:	Value of groundfish resource targeted by catcher/processors (all species except pollock)					$113,908,968
	Potential reduction in EY caused by overfishing by catcher/processors					2%
	Potential benefit of catcher/processor reporting:					$2,278,179
COST/BENEFIT:						0.042
BENEFIT/COST:						23.9

totals to $2,800; and the estimated added fleet costs for longline catcher/processors is $4,000. The total added fleet costs in a season, therefore, is $24,800, in addition to the $1,400 estimate of direct phone costs.

Home offices will have to make additional contacts with NMFS, which, through the assumptions laid out in Part B of Table 10, totaled to $6,853 for the fleet for the season. Additionally, the time burden can be estimated as approximately 1/2-hour per week onboard vessels, 0.2 hours per week in the home office, and 0.3 hours estimated for home office contact with NMFS. The total burden, therefore, is 1 hour per vessel per week. Choosing, arbitrarily, a value of time of $15 per hour, the total time cost associated with this regulation is estimated to be $13,800. Totaling these three cost categories, then, the total costs to fishermen of this regulation are estimated to be $45,453. There may be some additional costs associated with NMFS clerical and data entry functions, once this data is collected. Based on informed staff-level estimates, this cost has been placed at $50,000, so that total costs of this regulation are estimated to be $95,000 per year.

On the benefits side, it is useful to note that the value of the groundfish resource targeted by catcher/processors, excluding pollock, is approximately $113.9 million. A major benefit of this regulation will be an increased ability of managers to properly achieve the optimum yields from the fishery, because of the more timely provision of information about total catches in the fleet. This can be a quite tangible benefit, when one considers the potential reductions in stock size and subsequent quotas which could occur if overfishing were to result from an absence of timely data from vessels that do not deliver their catches until the end of their season.

Assessing the change in risks of affecting future quotas by current year for overfishing is a very complex subject. Overfishing this year would result in an increase in industry earnings this year, which would later be offset by reduced earnings in future years compared to what would be attainable had not the overfishing occurred.

For purposes of the present discussion, an assumption was made that overfishing by catcher/processors, caused by lack of timely data to be used by managers in closing seasons, would result in a potential reduction in OY of 2% of the groundfish resource, distributed proportionally for all species. This would, if it occurred, result in a lowering of annual groundfish value by some $2.3 million, and a regulation which prevents this occurrence can be considered to convey a benefit in that amount. Whether this is precisely the savings in lost future earnings which would occur or not it is very much an open question; however, it is useful to note that this particular assumption results in an annual savings of some 24 times the cost of the regulation itself. Looked at another way, if the regulation forestalled a decrease in annual groundfish earnings of $95,453/$113,908,968 = .08%, the regulation would have a positive benefit-cost ratio.

The value of this regulation is to reduce the variability in actual harvests around the target harvests determined annually by the Council. The Council is a forum for determing what society's preferences for harvesting of groundfish over time are, and these preferences are reflected in the Council's designation of optimum yield. Any deviations in actual harvest which result from the inability of our management system to precisely attain the target can be

considered social costs, although the measurement of these social costs can be quite complex because of our lack of understanding of biological ramifications of "underharvesting" or "overharvesting." A measure which reduces that variability can be considered to provide a benefit in two ways: first, in the form of a reduced risk of longer term damage to the stocks productivity; and second, rrespective of effects on the longer term productivity of the stock, a benefit derives from a closer matching of actual harvests to the Council-determined socially optimal harvests over time.

4. Establish Measures to Control the Pacific Halibut Bycatch

The analysis of the regulatory impacts of each of the alternative requires the use of some common information. This information includes the status of halibut stocks and fishery, trends in halibut bycatch, the potential impact of halibut bycatch on the halibut fishery, the development of the domestic trawl fleets, and the cost effectiveness of monitoring bycatch. Such information is presented in this section and then used in the following sections in which the potentional impacts of each alternative are discussed.

A. Status of Halibut Stocks and Fishery

After declining during the 1960s and early 1970s,halibut biomass has increased steadily in the Gulf of Alaska since about 1974. Quinn II, Deriso, and Hoag (IPHC unpublished ms) estimated that the biomass exploitable by setlines increased from about 47,000 mt in 1974 to about 103,000 mt in 1984. The International Pacific Halibut Commision (IPHC) has been rebuilding the resource by keeping catches below annual surplus production. The 1984 annual surplus production in the Gulf of Alaska was estimated at 28,000 mt (61.7 million pounds), and domestic setline catch was 19,500 mt (43.0 million pounds). The remainder of the annual surplus production was taken as bycatch, was taken in noncommercial fisheries, or contributed to stock rebuilding. Halibut stocks may be approaching levels that produce MSY, and further rebuilding may not be desirable. The IPHC has estimated that the halibut MSY in the Gulf is about 30,000 mt (66.1 million pounds) including both directed catch and bycatch.

The rebuilding has allowed annual increases in directed catches beginning in 1981. However, a rapid expansion in the number of fishermen and vessels participating in this fishery and the downward pressure on exvessel prices that has resulted from larger quantities of halibut being landed in a shorter period of time have prevented the increase in catch from being a good monitor of the economic health of the fishery. Historical catch, value, and particpation data are presented in Table 11.

B. Halibut Bycatch Trends

The halibut bycatch estimates for the foreign and joint venture fisheries may not be comparable over time because there has been a dramatic increase in observer coverage since the early 1980s. And only rough estimates of halibut bycatch in domestic fisheries are available because there has not been systematic bycatch monitoring for these fisheries. Therefore, there is considerable uncertainty concerning the historical levels of actual halibut bycatch.

Table 11. -- Gulf of Alaska halibut fishery, catch by weight and value, exvessel price, and number of boats, 1977-1984.

Year	Catch in Millions (pounds)	(dollars)	Price	Boats
1977	15.2	18.8	1.24	2252
1978	15.9	26.3	1.65	2414
1979	16.3	31.9	1.96	3032
1980	15.5	13.9	0.90	2638
1981	18.7	17.9	0.96	3166
1982	21.0	22.3	1.06	2897
1983	28.3	30.5	1.08	3776
1984	31.4	23.6	0.75	3400
1985*	41.0	30.8	0.75	3400

The number of boats are all U.S. boats in Areas 2 and 3.
* Projected.

Between 1977 and 1984 the estimated bycatches decreased in the foreign trawl fisheries and increased in both the foreign longline fisheries and the joint venture fisheries. Bycatch is expected to decrease in the foreign trawl and longline fisheries in 1985 due to the prohibition on foreign on-bottom trawling and reduced foreign allocations. Bycatch is expected to increase in the joint venture fisheries as their catches of cod, rockfish, and flatfish increase. The increase in observer coverage that has occurred since the early 1980s may have affected the magnitude of the estimated reduction in foreign bycatch, that is, the bycatch estimates for the earlier years may be too low. Estimates of foreign and joint venture halibut bycatch for 1977 through 1984 and projected bycatch for 1985 are presented in Table 12.

Although bycatch has not been systematically monitored, it is generally believed that the bycatch in domestic on-bottom trawl fisheries has increased as these fisheries have expanded. Approximately 3,100 mt of groundfish were taken in these fisheries from the Western and Central Areas combined in 1984. If the bycatch rate of 6.8% observed in a limited ADF&G sampling program is applied to the catch of 3,100 mt, the estimated halibut bycatch is approximately 211 mt. This is about 25% more than was taken in the 1984 joint ventures and very close to what the joint ventures are projected to take in 1985. The bycatch in these fisheries is expected to increase as these fisheries continue to expand. In recent years, the decrease in halibut bycatch in the domestic king and Tanner crab fisheries caused by declines in these fisheries are thought to have more than offset increased bycatch by domestic trawlers. However, further declines are not expected.

Although as noted above there are severe limitations on our ability to estimate halibut bycatch, the best scientific information available is probably that prepared by the IPHC. The procedure used by the IPHC to set annual halibut quotas requires estimates of halibut bycatch in all fisheries. The estimates for the foreign and joint venture fisheries are provided by the NMFS Foreign Vessel Observer Program. The estimates for all other fisheries are based on limited sampling programs. As recently as 1981, the total bycatch in all areas and fisheries was estimated to be approximately 17,000 mt round weight. In 1984, it was estimated to be about 6,000 to 12,000 mt. Therefore, it is generally believed that halibut bycatch has decreased in recent years despite, and in part accounting for, improved halibut stocks.

C. Potential Impact of Halibut Bycatch on the Domestic Halibut Fishery

As was mentioned in the problem statement, the bycatch of halibut is a source of halibut mortality and, therefore, tends to reduce the amount of halibut that is available to the halibut fishery. The resulting reduction depends on factors such as discard mortality rates, growth and natural mortality rates, halibut quota setting procedures, and the responsiveness of exvessel prices to changes in landings. The limited information that is available concerning discard or handling mortality rates suggest the following:

1. Mortality is directly related to the size and duration of a haul and to the length of time between initial capture in a trawl and discard. Therefore, mortality is thought to approach 100% in joint venture fisheries and perhaps be 50% in domestic fisheries for relatively small trawlers that sort the catch immediately on deck.
2. Discard mortality is probably approximately 25% in foreign longline fisheries.

Table 12 -- Joint-venture and foreigh halibut bycatch, 1977-84 with projections for 1985.

Bycatch
(metric tons)

Year	Foreign Trawl	Foreign Longline	Foreign Total	Joint Ventures	Total
1977	2200.0	0.0	2200.0	0.0	2200.0
1978	1217.0	71.6	1288.6	0.0	1288.6
1979	2365.0	210.0	2575.0	21.5	2596.5
1980	2086.0	1119.0	3205.0	48.5	3253.5
1981	1192.0	1307.0	2499.0	4.8	2503.8
1982	1137.0	1514.0	2651.0	3.6	2654.6
1983	772.0	2463.0	3235.0	356.5	3591.5
1984	513.0	1077.0	1590.0	572.0	2162.0
1985*	154.0	670.0	824.0	700.0	1524.0

Bycatch
(1,000 halibut)

Year	Foreign Trawl	Foreign Longline	Foreign Total	Joint Ventures	Total
1977	413.0	54.7	467.7	0.0	467.7
1978	274.6	18.8	293.4	0.0	293.4
1979	188.4	61.2	249.6	5.1	254.8
1980	180.5	331.0	511.5	19.3	530.8
1981	102.1	315.2	417.3	0.3	417.6
1982	128.7	429.0	557.7	2.4	560.1
1983	99.0	590.7	689.7	98.6	788.3
1984	59.9	330.5	390.4	168.0	558.4
1985*	13.8	205.6	219.4	206.0	425.4

* Projections for 1985

Two possibilities are considered with respect to how halibut quotas are affected by bycatch. The first is that in a given year the quota is equal to estimated annual surplus production minus the sum of surplus to be used for rebuilding, bycatch, and noncommercial fisheries. In this case, there is a ton for ton tradeoff between expected bycatch and the quota each year. The other possibility is that bycatch in one year will affect quotas and, therefore, catch in following years on the basis of the proportion of the bycatch that would have, through the processes of natural mortality and growth, survived to be taken in the halibut fishery at an age and size typically taken in that fishery. Assuming annual natural mortality of 20% and assuming that the halibut that would have otherwise survived to be taken in the halibut fishery would have been taken at approximately age 11 and 21.7 kg (round weight), the decrease in directed halibut catch per metric ton of halibut bycatch mortality is approximately 2.08 mt or 1.52 mt (round weight) for halibut taken as bycatch at ages 5 or 6, respectively.

In a fishery such as halibut for which landings are clearly constrained by a quota and not prices and costs, the effect on the exvessel value of a change in landing will depend on how responsive prices are landings. If the price is not at all responsive (i.e., if demand is perfectly elastic) the catch and value change proportionally. At the other extreme, if the price is very responsive to a change in catch, (i.e., demand is inelastic) an increase in catch will decrease value. Preliminary efforts to model halibut exvessel prices suggest that prices are sufficiently unresponsive that catch and value move in the same direction but not at the same rate.

Assuming a round to dressed weight recovery rate of 75% and an exvessel price of $0.75 per pound dressed weight, the estimated impacts on the exvessel value of halibut landings per metric ton of bycatch mortality are approximately $1,240 and $2,230, respectively, for the first and second possibilities if prices do not respond to changes in landings. If a real discount rate of 5% is used to caulculate the present value of the latter, its value is reduced to approximately $1,700. Because prices are thought to be somewhat responsive to changes in landings and because these estimates are of the impact of bycatch on exvessel value rather than on net exvessel earnings, they tend to overstate the net impact on halibut fishermen. However, they exclude impacts beyond the harvesting sector. If these opposing biases are offsetting, the estimated impacts of $1,240 to $1,700 per mt of halibut bycatch mortality may be good approximations of the actual impact.

D. Development of Domestic Trawler Fleets

To date the development of the domestic groundfish trawl fleet has been lead by domestic trawlers. participating in joint venture fisheries. In 1984, joint ventures operating in the Western and Central Areas of the Gulf of Alaska harvested over 219,000 mt of groundfish valued at approximately $22.5 million. Pollock accounted for over 207,000 mt or about 95% of the total. In terms of the exvessel value, pollock accounted for $19.6 million or 87% of the total. The joint venture fisheries are expected to continue to grow, although perhaps less rapidly than in the last few years due to resource constraints for the pollock fishery. Domestic trawlers participating in wholly domestic operations harvested approximately 3,100 mt in the Western and Central Areas during 1984. If this harvest had been landed in the round, its exvessel value

would have been approximately $1 million. Since much of it consists of Pacific cod that was landed by factory trawlers, the landed value may have exceeded $1.5 million.

E. Cost Effectiveness of Monitoring Bycatch

Because relatively minor differences in fishing strategies may result in significantly different levels of bycatch, bycatch probably cannot be accurately monitored without high levels of observer coverage. However, the cost of observer coverage may be prohibitive for some vessels in terms of either the value of catch or the benefits coverage would provide. Comparisons of the cost of observer coverage to both the gross exvessel earnings and bycatch impact cost of a vessel are useful in considering the appropriateness of observer coverage for a range of operations.

If the exvessel value of the target species is $330 per metric ton (i.e., $0.15 per pound) round weight and if the observer cost is $235 per day, as it is for the NMFS Observer Program excluding training and data entry costs, the cost of observer coverage as a percentage of exvessel value is about 71.2 divided by the daily groundfish catch. For example, the cost of observer coverage would be 7.12% or 0.712% of the gross exvessel value for daily groundfish catches of 10 mt or 100 mt, respectively. The former may approach a crew share on some vessels.

If the impact on the halibut fishery per metric ton of halibut bycatch mortality is $1,500 and if the discard mortality rate is 50%, the bycatch impact per day is the product of $7.50, bycatch as a percentage of target catch, and target catch per day. For example, a vessel with a 5% bycatch rate and a target catch of 20 mt per day would have a bycatch impact per day of $750 which exceeds the cost per observer day. Since the cost of coverage is about 31% of the bycatch impact cost in this example, the benefit of the observer coverage would exceed its cost if the coverage resulted in more than a 31% reduction in bycatch without imposing other costs.

F. Review of Alternatives

Alternative 1 - Maintain the Western and Central Gulf PSC limits of 24 mt and 52 mt, respectively (status quo).

This alternative does not respond to any of the five problems listed above. Although it appears that the 1985 Shelikof Strait joint venture pollock fishery would have occurred with the existing PSC limits and without the emergency rules implemented for 1985, the 1984 fishery would not have occurred if these limits had not been temporarily removed by emergency rules. The 1986 fishery could be jeopardized by these limits if other joint-venture and domestic fisheries are active in December through March. Therefore, the failure of the existing FMP to permit off-bottom trawling regardless of the bycatch that has occurred in the domestic fisheries may prevent a $20 million fishery from taking place while reducing the impact of halibut bycatch by as little as $750.

The current limits restrict the timing of the on-bottom fisheries for cod and flounders without assuring that the annual halibut bycatch is reduced in these fisheries. The existing regulations do not reflect the best scientific

Alternative 3 - Develop a framework procedure for the annual adjustment of PSC limits.

Frameworked PSC limits would allow the Council to use the best scientific information available to adjust PSC limits, areas, exemptions, and sanctions. This would tend to assure that, within a system of setting PSC limits, the most appropriate set of limits will be in effect for each fishing year. Annual PSC limits would provide assurance that bycatch is not just shifted from one period to another. The tradeoff between the benefits and costs of controlling bycatch is partially reflected by the exemption for off-bottom trawling. This alternative would prevent the bycatch of on-bottom trawl fisheries from jeopardizing the Shelikof Strait pollock fishery or other fisheries which use off-bottom trawls and, therefore, have low halibut bycatch levels. Therefore, this alternative responds to each of the five problems listed above. However, it would not assure that the costs of controlling bycatch do not exceed the benefits, and the Regional Director and Council are faced with the difficult problem of determining the appropriate PSC limits.

The modifications to Alternative 3 that are discussed would: (1) provide more flexibility in terms of defining the area for each PSC limit, (2) provide a greater incentive for on-bottom trawl fleets to develop and use improved methods to control bycatch, and (3) provide an opportunity to assure that the cost imposed on fleets to control bycatch does not exceed a predetermined level per unit of bycatch.

Although the modifications to this alternative in terms of the allocation of PSC limits to individual operations, the transferability of these limits, and the methods used in the initial and supplemental allocations may present some legal problems and will tend to have higher administrative costs, the additional flexibility and information they provide may justify the cost of resolving the legal questions and performing the additional administrative responsibilities.

Alternative 4 - Establish bycatch fees.

This alternative addresses each of the five problems listed above. And by providing a market-oriented solution to the problems of managing bycatch, it has the potential of resulting in the appropriate level of bycatch without requiring the Regional Director or Council to have complete information on the cost of alternative actions individual fishing operations can take to control bycatch. If the bycatch fee is set approximately equal to the benefit of reducing bycatch by one unit, if that benefit is constant with respect ot the level of bycatch, and if the costs of efforts to control bycatch are borne by the fleets making them, the use of bycatch fees will tend to result in the level of bycatch that best reflects the benefits and costs of controlling bycatch.

There are, however, provisions in the MFCMA that limit the use of fees in wholly domestic fisheries and perhaps also in joint venture fisheries. At the current time, the issue of being able to impose bycatch fees on joint ventures is more important for two reasons. Bycatch is currently monitored for joint ventures but not strictly domestic operations and the joint ventures are much more fully developed than are wholly domestic operations. It should be noted that there are other market-oriented solutions to the bycatch management

information concerning the period of the year halibut are vulnerable to trawl gear, they do not reflect the tradeoffs between the benefits and costs of controlling bycatch, they do not provide the flexibility required to successfully manage rapidly developing and changing fisheries, and they do not reflect the changes that have occurred in the fisheries since they were established.

The costs imposed by this alternative in terms of: (1) foregone fishery development opportunities, (2) inadequate bycatch control during half of each year, and (3) the management costs of implementing emergency rules far exceed the temporary benefit this alternative offers. That benefit is limited to the postponement of the full administrative cost of amending the FMP with respect to PSC limits. This benefit is expected to be minimal because the PSC limit changes considered in the other alternatives would be part of a amendment package that addresses several other management issues.

Alternative 2 - Raise the Western and Central Gulf PSC Limits to 270 mt and 768 mt, respectively.

The 1984 and 1985 emergency rules prevent halibut bycatch from restricting the Shelikof Strait pollock fishery by allowing off-bottom trawling to continue regardless of the halibut bycatch. This alternative, therefore, addresses the first problem listed above. That is, it permits the $20 million Shelikof Strait pollock fishery to occur which may result in a halibut bycatch impact as low as $750.

This alternative does not respond to the other four problems. The modified version of this alternative, with the lower set of PSC limits based on acceptable bycatch levels for the fisheries for which bycatch is monitored, addresses problem four and, therefore, provides more of an incentive for those fisheries to control bycatch. At the current time, these would be the joint venture fisheries.

The PSC limits imposed by the emergency rules were sufficiently high that they did not appear to restrict the on-bottom trawl fisheries in 1984, and, depending in part on whether bycatch data become available for wholly domestic operations, these limits may be sufficiently high that they will provide little incentive for the on-bottom trawl fisheries to control halibut bycatch. As rapidly as the groundfish fisheries are changing, the PSC limits of the 1984 and 1985 emergency rules could be completly inappropriate in 1985, or 1986 and beyond. The 1984 and 1985 emergency regulations do not reflect the best scienific information concerning the period of the year halibut are vulnerable to trawl gear, they do not reflect the tradeoffs between the benefits and costs of controlling bycatch, and they do not provide the flexibility required to successfully manage rapidly developing and changing fisheries.

The management costs would not be higher with this alternative than with the current management measures. The need for further emergency rules and amendments and the associated costs are less than with the current measures but higher than with Alternatives 3 or 4.

problem that could be used if it is determined that bycatch fees are prohibited by the MFCMA. One example is to annually allocate initial and supplemental PSC limits to individual domestic halibut fishermen based on individual halibut catch in the previous year and require that these limits be transferable to trawl fishermen upon request at a fixed price per unit. The fixed price could be set using the procedure defined above for setting bycatch fees.

Management costs would tend to be lower with this alternative, than with the others being considered because it requires less information to implement.

G. Concluding Remarks Concerning Regulatory Impacts

As was mentioned several times, bycatch probably cannot be effectively monitored in the absence of high levels of observer coverage. The cost effectiveness of such coverage for a given type of fishing operation depends on a variety of factors including the objectives and benefits of the coverage, its cost, and the size of the operation. The alternatives discussed above primarily deal with how bycatch is to be managed in fisheries for which adequate coverage exists. Therefore, the cost of coverage is not a factor that is considered in evaluating the relative merits of these alternatives.

It should be noted that all of the alternatives focus on the halibut bycatch problems even though similar problems exist for both other prohibited species (e.g., crab and salmon) and fully utilized species (e.g., sablefish and POP). The Council is scheduled to address the bycatch problems for these other species in its next amendment cycle.

5. Implement NMFS Habitat Policy

This amendment is descriptive in nature, focusing on the environment within which the product for harvest is generated and nurtured. Its purpose is to alert users of the marine environment to the elemental influence of habitat on the productivity of the fishery and to the potential for alteration by man's actions. The intended effect is to provide the basis for a common awareness among these users and for appropriate expressions of Council concern should the need arise. Because this statement is informational only, there is no immediate regulatory impact, although the residual effect of increased knowledge may serve, in the long-term, to protect, maintain, or restore the habitats of the Gulf of Alaska groundfish fishery. In absence of such an amendment, the benefits of increased public awareness of habitat issues would be last.

Given the above, both Alternatives 1 and 2 would meet the amendment's objective. Alternative 1 proposes inserting into the Gulf of Alaska Groundfish FMP, detailed text describing the marine habitat and its elements. With the lack of knowledge of the habitat, it is likely that the habitat description will require periodic revision. Administrative costs associated with this option would increase since both a habitat analysis and a plan amendment would be required.

Alternative 2 proposes amending the groundfish FMP to include a habitat conservation objective. The detailed habitat analysis would not be included in the FMP. Instead, the analysis would be referred to in the plan and be

available as a separate document. Administrative costs would be lower with Alternative 2 since the periodic revision to the analysis could occur outside the formal plan amendment process.

Alternative 3 would present the least administrative costs but it would not meet the proposed habitat conservation goal.

6. Delay the Opening Date for Harvesting Sablefish

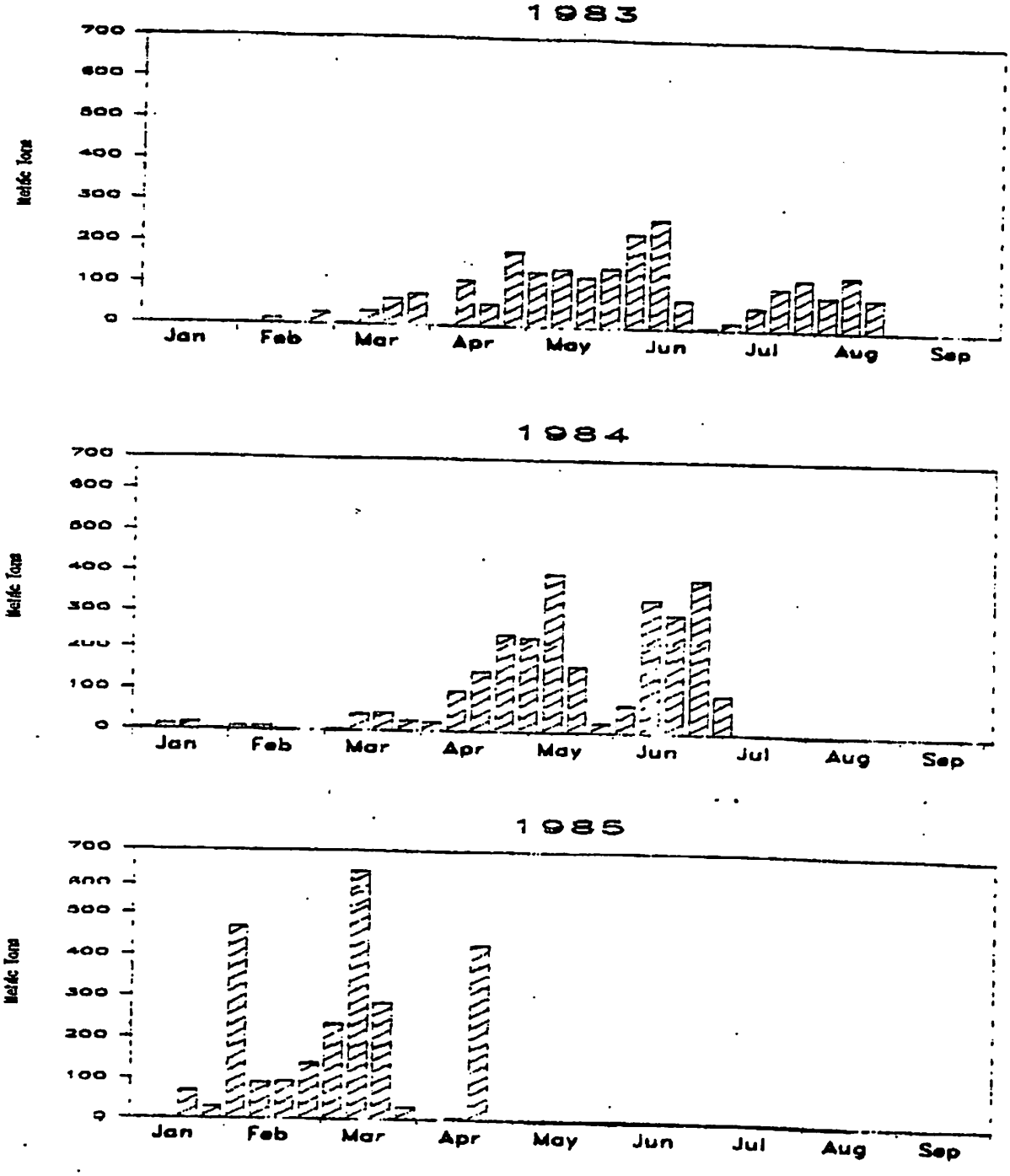
This amendment proposes delaying the opening of the sablefish fisheries in one or more areas for both biological and socioeconomic reasons. The primary socioeconomic rationale is resource allocation, vessel safety and product quality. If seasons are to be used as an allocative tool, then regulatory impacts are necessarily a result.

At present the sablefish season runs concurrently with all other groundfish fisheries in the Fishery Conservation Zone (January 1-December 31). In the last two years, fishing effort has increased, with more small and large vessels entering the fishery. The ability of large vessels to fish in poor weather conditions, give this vessel group an "edge" over the smaller vessels. This advantage is new to the sablefish fishery. In the past, there hasn't been a need to build large vessels for this fishery. Existing vessels were considered adequate and while unsuitable for fishing in rough seas, fishermen would wait for periods of good weather before fishing.

As seen in Figure 3, the Southeast Alaska sablefish fishery during 1983 was basically prosecuted from March through August even though the season began on January 1 by regulation. In that year, sablefish was harvested by small vessels. In 1984, the first sablefish landing was in January with the fishery progressing in earnest by April. The OY was reached earlier in 1984 compared to 1983 due to a large increase in fishing effort. The early landings seen in 1984 were also a result of increasing effort, as some fishermen attempted to get ahead of the rest of the fleet. In 1985, several large vessels entered the fishery resulting in a higher proportion of the OY being taken during the winter months. The accelerated harvest of sablefish during 1985 lead to the earliest season closure to date, occurring on April 25, 1985. Most of the large vessels entering this fishery in the last year are former crab vessels, designed for fishing in a different area and season. With the collapse of the Alaskan king crab and Tanner crab fisheries, many of the large crab vessels are being used in groundfish fisheries. As a result, there has been a dramatic reallocation of sablefish from the small boat fleet to the large vessels. Fishery data from 1983-1985 in Southeast Alaska show the magnitude of this reallocation (see discussion in the Introduction of the RIR, Part I).

This amendment is being proposed to delay the sablefish season to later in the year when all vessels, according to some fishermen, have a more equal opportunity of harvesting the resource. If true, such a delay might promote a more fair and equitable fishery for all participants, and alleviate any national standard concerns.

Fig.3. SOUTHEAST/EAST YAKUTAT SABLEFISH CATCH BY WEEK, 1983-1985



As mentioned above, poor weather conditions (i.e., high seas, icing of the vessel, high winds) provide some fishermen with a competitive advantage over the rest of the fishing fleet. This same factor can also lead to reduced safety of vessel and crew. Fishermen on any vessel, regardless of size, are subject to danger during periods of adverse weather. Fishermen on small vessels are at greater risk due to the inability of the vessel to weather storms. Insurance companies will often not insure fishermen or their vessels during the winter months; or if they do so, only at a high premium.

An examination of National Oceanic and Atmospheric Administration, National Weather Service records show that in general the storm period in the Gulf of Alaska occurs from September through April. Major storms are most common during this period. However, weather experts recognize that serious storms can occur at any time.

When reviewing weather patterns in each of the three groundfish regulatory areas, it is apparent that in the Eastern Regulatory Area, the frequency of storms, wave height, wind, and air temperature, is most favorable during the May through August period (Table 13). The probability of severe weather interfering with commercial fishing operations, is less during this period than at any other time of the year. In the Central and Western Regulatory Areas, the most favorable weather occurs during June through September. Vessel and crew safety concerns due to weather would be minimized if fishing seasons were scheduled during these months. Unfortunately, for biological, management, and enforcement reasons, the scheduling of fisheries and the coordination with one another, often must take into account other considerations.

Fish quality problems associated with spawning sablefish have been presented in support of a delayed season opening. Product quality is lower during periods of spawning or immediately following reproduction as reported by fishermen and processors. In Southeast Alaska during the first four months of 1985, "jelly-belly" or soft fish were most abundant in the sablefish deliveries during January, becoming less of a problem as the season progressed (Table 14). Soft fish are often discarded or used for bait. Since sablefish are a low-OY species, and there exists a fishing fleet capable of taking the OY at any time of the year, it may be desirable to schedule the fishing season to produce the highest quality product and obtain the greatest value possible.

Table 14. Proportion of sablefish rated poor quality as observed by one Southeast Alaska processing plant during January-April, 1985.

	JAN	FEB	MAR	APR	TOTAL
Sablefish Delivered (lb)	55,881	301,563	500,613	237,682	1,095,739
Amount Poor Quality (lb)	3,424	12,204	11,824	2,156	29,608
Percent of total delivery rated poor quality	6.13	4.05	2.41	0.91	---

Table 13. Selected weather variables that are most likely to effect commercial fishing, as observed in the Gulf of Alaska since 1967.

	Eastern Regulatory Area			Central Regulatory Area			Western Regulatory Area		
Month	Average No. of Storms	Average Maximum Wave Ht.	Average Air Temp. Range	Average No. of Storms	Average Maximum Wave Ht.	Average Air Temp. Range	Average No. of Storms	Average Maximum Wave Ht.	Average Air Temp. Range
Jan	45	9.0 mt	-8,10°C	50	10.5 m	-12,8°C	25	13.0 m	-12,8°C
Feb	31	13.0	-4,10	51	11.0	-13,8	41	9.0	-13,8
Mar	48	7.0	-4,10	50	11.0	-13,9	35	12.5	-13,9
Apr	45	7.5	-1,11	56	12.5	-6,11	44	10.0	-6,11
May	24	6.0	3,16	45	8.5	0,12	52	8.0	-2,12
Jun	27	5.0	5,18	38	8.0	3,16	34	7.5	3,16
Jul	16	4.5	8,20	35	5.0	6,20	31	8.0	4,18
Aug	25	3.5	10,20	47	7.5	10,20	40	6.5	8,18
Sep	25	8.0	8,18	39	10.5	6,18	36	7.0	5,16
Oct	46	10.0	3,14	59	11.0	0,14	54	10.0	0,14
Nov	39	10.0	-2,11	47	10.0	-6,11	40	10.0	-6,11
Dec	38	8.0	-8,9	58	12.5	-10,9	49	9.5	-10,9

Source: NOAA, National Weather Service, Alaska Ocean Service Center, Anchorage, AK.

Analyzing the costs and benefits of season alternatives is difficult given the lack of information on the operating and processing costs of sablefish fishing operations. However, a few general assumptions can be made: It is likely that the costs of fishing are higher during periods of poor weather than during good weather. Even large catcher/processor vessels, while better equipped to handle rough seas, would fish more effectively in good weather. The inability to attend to fishing gear on the grounds, loss of fish from hooks, sand fleas, and predators all increase the costs of operation. Avoiding these costs by fishing in more favorable weather would be a benefit of a later sablefish season. Reducing safety risks and optimizing product quality by conducting a sablefish fishery later in the year are other obvious benefits.

Given the above discussion, an examination of the three season alternatives was performed. Alternative 1, which would continue the sablefish season from January 1 to December 31 would not address the issues discussed under the Problems Necessitating a Plan Amendment, Section III. Adoption of this alternative, while not requiring an amendment to the FMP, would be an allocative decision in favor of the recent change in proportion of the sablefish OY from small to large vessels.

Alternative 2, which proposes delaying the sablefish season opening from January 1 to March 15 in the Southeast and East Yakutat Districts only, would meet the amendment objectives in this area only, leaving the season in the remainder of the Gulf unchanged. If weather is to be a primary concern, an opening later than March 15 should be considered, although it may conflict with other fisheries being prosecuted in these districts.

Alternative 3 would delay the Southeast-East Yakutat sablefish fishery to March 15, and delay the West Yakutat-Central sablefish fishery to May 1. This proposal would address the concerns discussed previously in all areas but the Western Regulatory Area where the season would remain unchanged (i.e., January 1 - December 31).

Other season dates, for these districts and the entire Gulf, have been proposed by the public. In addition to these dates, it has been suggested that the sablefish season be scheduled concurrently throughout the Gulf as opposed to different seasons in different areas. The major advantage of a concurrent season opening is it would encourage the widest distribution of effort throughout the region.

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VII. LIST OF PREPARERS

Steve Davis and Doug Larson
North Pacific Fishery Mgmt Council
P.O. Box 103136
Anchorage, AK 99510
(907) 274-4563

Gary Stauffer and Joe Terry
Northwest & Alaska Fisheries Center
National Marine Fisheries Service
7600 Sand Point Way NE, BIN C15700
Seattle, WA 98115

Ron Berg and Jim Wilson
National Marine Fisheries Service
P.O. Box 1668
Juneau, AK 99802

Barry Bracken
Alaska Dept. of Fish & Game
P.O. Box 667
Petersburg, AK 99833

Fritz Funk
Alaska Dept. of Fish & Game
P.O. Box 3-2000
Juneau, AK 99802

DRAFT

ENVIRONMENTAL ASSESSMENT OF AMENDMENT 14 TO THE FISHERY MANAGEMENT PLAN FOR GROUNDFISH OF THE GULF OF ALASKA

ADOPTED BY
THE NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
FOR PUBLIC REVIEW

PREPARED BY THE PLAN TEAM FOR
GROUNDFISH OF THE GULF OF ALASKA

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DRAFT
ENVIRONMENTAL ASSESSMENT OF AMENDMENT 14
TO THE FISHERY MANAGEMENT PLAN FOR
GROUNDFISH OF THE GULF OF ALASKA

I. INTRODUCTION

The domestic and foreign groundfish fishery in the 3-200 mile fishery conservation zone of the Gulf of Alaska is managed under the Fishery Management Plan for Groundfish of the Gulf of Alaska (FMP). This FMP was developed by the North Pacific Fishery Management Council (Council), approved by the Assistant Administrator for Fisheries, NOAA (Assistant Administrator), on February 24, 1978, and implemented by a final rule December 1, 1979 (43 FR 52709, November 14, 1978). A final environmental impact statement was prepared for the FMP and is on file with the Environmental Protection Agency. Since that time, the Council has adopted thirteen amendments to the FMP. Twelve amendments have been implemented by the Secretary of Commerce. The subject of this action is DRAFT Amendment 14. It contains seven proposals, which are described below.

Prior to 1984, the Council would receive amendment proposals during any of its scheduled meetings. At its April, 1984 meeting, the Council adopted a policy whereby proposals for amendments would be received only once a year. Proposals contained in Amendment 14 were requested by the Council in September 1984 with a deadline set at December 7, 1984. By the deadline, over thirty proposals were submitted to the Council, who then instructed its Plan Team to review and rank each proposal. At its February and March 1985 meetings, the Council reviewed the recommendations of the Plan Team, Scientific and Statistical Committee, and Advisory Panel, and selected seven proposals for inclusion in Amendment 14. Other proposals were identified for development and consideration in a future amendment.

The seven topics to be reviewed in this environmental assessment are: (1) sablefish gear regulation; (2) rockfish quotas and management areas; (3) establish a reporting system for catcher/processor vessels; (4) changes in OY values; (5) halibut prohibited species catch limits (PSC) on domestic trawlers; (6) implementation of NMFS habitat policy; and (7) sablefish fishing seasons. Each of these topics will be presented as chapters of this document.

This environmental assessment is prepared under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and its implementing regulations.

II. DESCRIPTION OF AND THE NEED FOR EACH AMENDMENT PROPOSAL

A description of, and the need for, each amendment proposal follows:

1. Establish a Gear and/or Area Restriction in the Sablefish Fishery

Current regulations implementing the FMP do not constrain types of gear used in harvesting any of the groundfish categories, with the exception of a temporary emergency rule for sablefish which restricts the gear used in the Eastern Regulatory Area to hook and longline only. All of the proposed alternatives would entail long-term changes to one or more areas of the Gulf of Alaska and may affect three other potential gear types, besides longlines.

The commercial harvest of sablefish in the Gulf of Alaska began in Southeast Alaska in 1906. Domestic landings grew to a peak in 1946 when about 4,083 mt, dressed weight, was landed. Harvest levels began to decline initially after 1946 in response to a poor market and then in response to foreign competition and poor stock conditions, reaching a minimum in 1968 when 161 mt were landed. During the 1960s foreign harvest of sablefish soon grew to a high of 36,000 mt. Since 1972, the foreign harvests have declined as a result of declining stock conditions and regulation under the FMP.

With the implementation of the Magnuson Fishery Conservation and Management Act (MFCMA) in 1976, fishery managers have encouraged domestic development of fishery resources. In terms of sablefish, the Alaska fishing industry has responded by expanding quickly, creating jobs for hundreds of fishermen, and providing economic growth to Alaskan and Pacific northwest fishing communities. The challenge to develop the sablefish resource was taken by fishermen using principally longline gear.

Most U.S. fishermen operating in Alaska have chosen longlines as the primary gear when targeting on sablefish, because many of them are experienced in the halibut fishery which is executed strictly with hook and longline and own vessels best suited to fishing that gear type.

Pots have been used periodically since the mid-1970s. In 1973, 42% of the domestic harvest, or 38 mt, was taken by one pot fishing vessel. Since then, no more than six pot vessels have fished in the Gulf during any one season. Since 1973, longline fishermen have dominated this fishery with as many as 200 vessels participating in 1984. Directed fishing for sablefish using trawl and gillnets has been minimal to date.

In 1982, the sablefish optimum yield (OY) was fully achieved by U.S. fishermen in the Southeast Outside District (i.e. westward to the longitude of 137°W.). The OY was again achieved in this district in 1983 and further west to 140°W. (East Yakutat District). In 1984, the OY was reached for the first time throughout the entire Gulf of Alaska. Marking this achievement was a fully capitalized fishing fleet, a large harvesting and processing workforce, increased markets, and the realization that there would be insufficient sablefish resource to accommodate all users at traditional levels.

This fact became apparent in the first two months of 1985 off Southeast Alaska. Historically due to regulation, the Southeast Alaska sablefish fishery has not begun until spring when weather and fishing conditions improve until May 1 and the fish have recovered from spawning. In January 1985 three large (catcher/processor) vessels began fishing for sablefish using pot gear. The pots, as with longline gear, are set on a relatively narrow depth range (250-500f). Fishing has been good and it has been projected that the pot vessel catch will exceed 850 mt, or about one-third of the combined Southeast-East Yakutat District OY. As vessels left the area to unload their catch, pots would often be stored on the grounds predatory use by other gear types.

While the pot vessels were fishing there were several gear conflicts between the pot fishermen and those using longline gear. When longline gear, which is relatively lightweight, becomes entangled with the heavier pot gear, the longline breaks with some or all of it being lost. Gear conflicts are likely

between these two gear types since fishing is concentrated along the narrow shelf edge. The presence of just one or two pot vessels can effectively preempt the grounds to longline gear as longline fishermen are forced to move to avoid gear loss. Pots lost or stored on the fishing grounds can contribute to this problem over a long period of time.

2. Rockfish Quotas and Management Areas

"Other rockfish" as defined in the FMP, includes all species of Sebastes other than Pacific ocean perch and four associated slope rockfish species. Other rockfish are currently managed in the FMP with a Gulfwide OY. The MSY for this complex was based on the incidental catch of slope rockfish in the foreign trawl fishery for Pacific Ocean perch between 1973 and 1976 with OY set at the lower end of the MSY range.

In November 1984 the Alaska Department of Fish and Game (ADF&G) submitted to the Groundfish Team a report on the rapidly expanding domestic fishery for bottom-dwelling (demersal) shelf rockfish in the Southeastern area. That report pointed out that this fishery is targeting on a species complex that has not previously been addressed in the groundfish FMP. This fishery has grown in recent years from less than 45 mt (dressed weight) in 1970 to nearly 400 mt in 1983. The round weight catch for 1984 doubled to approximately 800 mt.

The domestic fishery targets on benthic forms of shelf rockfish in depths of less than 100 fathoms. Over 20 species of rockfish are regularly landed. Predominant species are yelloweye rockfish (S. ruberrimus), canary rockfish (S. pinniger), tiger rockfish (S. nigrocinctus), and rosethorn rockfish (S. helvomaculatus) in the 40-100 fathom depth zone and quillback rock fish (S. maliger), china rockfish (S. nebulosus) and copper rockfish (S. caurinus) in depths of less than 40 fathoms. Yelloweye rockfish and quillback rockfish are the primary target species. Longline gear is the predominant geartype and accounts for well over 90% of the harvest.

Until recently it was assumed that the majority of the landings were from the waters within State jurisdiction. However, approximately 50% of the fishable grounds are within the Fishery Conservation Zone(FCZ). Based on fishermen interviews conducted by ADF&G in 1983 and 1984, approximately 25% of the landings were of catches taken only in the FCZ, 21% only within state waters, and the remaining 54% were taken on trips that fished areas both under state and under federal jurisdiction.

Aging studies conducted in recent years conclude that rockfish are much longer lived and slower growing than early literature suggests. Many of the demersal species live in excess of 50 years and many do not reach maturity until after age 10. Because rockfish are extremely long lived and slow growing, the sustainable yield that can be taken from a stock is much lower than for a comparable biomass of faster growing species such as pollock or cod. As a result, rockfish stocks can be easily and quickly overfished. Lacking information on appropriate harvest levels for the demersal shelf rockfish stocks in Southeastern Alaska, the risk of overharvesting this resource by the expanding target fishery is great.

After reviewing the ADF&G rockfish issue paper the Plan Team recommended in their November 1984 report to the Council that the other rockfish category should be redefined to include three separate assemblages or species groups; slope rockfish, shelf pelagic rockfish and shelf demersal rockfish. Species included in these groups are shown in Table 1. Further, the management of the shelf demersal category should be conducted in cooperation with the State of Alaska. The Team report also noted that, based on the poor showing in the 1984 trawl survey, there was no evidence that the slope complex could sustain a harvest greater than the 1984 harvest of 700 mt.

At the December meeting the Council acted to reduce the Gulfwide OY of "other rockfish" from 7,600 mt to 5,000 mt due to concern for the risk of overharvesting certain rockfish stocks. The 1984 harvest was approximately 1,500 mt of which approximately 700 mt were taken from the slope rockfish stocks by foreign and joint venture fisheries in the Central and Western Gulf management regions. The remaining 800 mt was taken from shelf rockfish stocks by domestic fishermen in the Southeastern area. In adopting the 5,000 mt OY, the Council considered the testimony of fishermen in the Central Gulf area who expressed a desire to expand potential nearshore fisheries in the Central Gulf into the FCZ. At the the joint Alaska Board of Fisheries (Board) and Council meeting in early February 1985, ADF&G staff presented alternative management proposals for establishing a separate management category of shelf rockfish stocks in order to reduce the risk of overharvesting demersal shelf rockfish and to eliminate the possibility of harvesting the entire Gulfwide OY in any one portion of the Gulf, consistent with the FMP objectives.

At the February joint meeting the Council deferred further discussion on rockfish management pending recommendations by the Board of Fisheries. Following the joint meeting the Board adopted the management alternatives which were developed by ADF&G staff and the Southeast Alaska fishing community and endorsed by the Council Advisory Panel. The recommended action would place a 600 mt OY on demersal shelf rockfish in both State outercoastal and FCZ waters between 56°N. latitude and 57°30'N. latitude. In addition, the Board voted to restrict harvest of other rockfish species in the remainder of the Southeast District to no more than 880 mt. That would place a total other rockfish OY of 1,480 mt in the outercoastal state and federal waters within the Southeast District. No more than 600 mt of demersal shelf rockfish could be harvested in the specified portion of the area where the fishery is currently concentrated. No management action was recommended by the Board for the remainder of the Gulf since the February Board meeting was advertised to address Southeastern groundfish issues only. In addition, the Board adopted an October 1 to September 30 accounting year for shelf demersal rockfish in the Southeastern area to assure that fish would be available to the fishermen during the fall and early winter when the market is strongest.

With the increasing effort in directed rockfish fisheries and the vulnerability of these species to overharvest, the risk of overfishing certain stocks is high. Therefore, management action is considered essential for other rockfish. There are several management alternatives that would reduce the risk of overharvest.

Table 1.--Categories of rockfish present in the Gulf of Alaska by habitat area.

Slope Category	Shelf Dermersal Category
POP	Yellowye rockfish
Northern rockfish	Quillback rockfish
Rougheye rockfish	Canary rockfish
Shortraker rockfish	China rockfish
Sharpchin rockfish	Tiger rockfish
Red banded rockfish	Rosethorn rockfish
Rosethorn rockfish	Silvergray rockfish
Darkblotch rockfish	Copper rockfish
Redstripe rockfish	
Splitnose rockfish	
Harlequin rockfish	
Aurora rockfish	
Yelloweye rockfish	

Shelf Pelagic Category

Black rockfish

Dusky rockfish

Yellowtail rockfish

Widow rockfish

Boccacio

Blue rockfish

3. Implement New Optimum Yields for Pollock, Pacific Ocean Perch, Other Rockfish, Atka Mackerel, and Other Species

At its December 1984 meeting, the Council adopted changes in optimum yields for pollock (Western/Central Regulatory Area), Pacific ocean perch ((Western and Central Regulatory Areas), Atka mackerel (Central and Eastern Regulatory Areas), other rockfish (Gulfwide) and other species (Gulfwide). At the same meeting, the Council voted to request the Secretary of Commerce to implement these changes by emergency rule under Section 305(e) of the Magnuson Act. The Secretary did implement these changes on (Insert date of filing with the Office of Federal Register) (__FR, _____). Changes in optimum yields are based on the best available information. A summary of that information concerning the status of pollock, Pacific ocean perch (POP), rockfish, Atka mackerel, and other species follows:

Pollock - On the basis of acoustic surveys conducted in the Shelikof Strait region of the Gulf of Alaska during March and April, 1984, total pollock biomass is estimated to be between 1,574,634 mt and 2,034,857 mt with a mean estimate of 1,789,186 mt. This mean represents the total biomass in the Central and Western Regulatory Areas combined, since few pollock were found elsewhere in these areas while surveys were conducted in Shelikof Strait during the spawning period. Similar surveys have been conducted in Shelikof Strait during 1980, 1981, and 1983. Results of the 1984 survey indicate that total biomass continues to decrease from its peak level in 1982. Length and age composition and hydroacoustic survey data from 1984 joint venture fisheries confirm that the 1980 year class (age 4 fish) is weak. The 1981 year class (age 3 fish) also appears to be weak. The abundance estimate of age 3 fish in 1984 is about the same as age 3 fish (1980 year class) in 1983. It is estimated that the exploitable biomass of pollock has now declined from the 1984 level by some 500,000 mt to fall within a range of 1,200,000-1,270,000 mt mt. An acceptable exploitation rate of 28.5% would provide a harvest between 342,000 mt and 358,000 mt, with a mean of 350,000 mt. The Council and the SSC reviewed the Plan Team's concern that the majority of the 1985 harvest will come from the only two dominate year classes, 1978 and 1979, which are 7- and 6-year-old fish in the 1985 fishery. The Council chose, therefore, a more conservative exploitation rate of 24 percent times the upper limit of the exploitable biomass to establish an optimum yield of 305,000 mt, to recognize the dependency of the fishery on only two year classes and continuing poor recruitment.

Pacific ocean perch (five species complex) - Results of the triennial Gulf of Alaska biomass survey indicate the current exploitable biomass of the Pacific ocean perch complex are 53,400 mt, 120,150 mt, and 93,450 mt in the Western, Central, and Eastern Regulatory Areas, respectively. Respective EYs are 1,736 mt, 5,208 mt, and 4,530 mt. The Council considered the desirability of establishing optimum yields at levels that would provide only minimal bycatches incidental to other target fisheries in order to promote the quickest rebuilding of Pacific ocean perch stocks. Such minimal levels would prove a burdensome cost to developing domestic fisheries if their operations were terminated by prematurely achieving the bycatch optimal yields. The Council, therefore, established optimum yields at higher than bycatch levels, or 1,302 mt in the Western Area and 3,906 mt in the Central Area. It retained the existing 875 mt optimum yield in the Eastern Area to promote rapid stock rebuilding in this regulatory area.

Other Rockfish - This group contains about eight species of rockfish, excluding the POP complex, that occur along the continental slope and are taken incidental to other target fisheries. Results of the 1984 trawl survey indicate that none of the eight species were present in significant numbers. The average 1982-1984 harvest in the joint venture and foreign fisheries is about 1,500 mt with a 1984 harvest of only 700 mt. The EY for this group needs to be reevaluated. The Council considered the limiting effect that an optimum yield equal to the bycatch would have on the developing domestic fisheries, and established the optimum yield at 5000 mt which is substantially higher than the bycatch level so as not to limit that growth.

Atka mackerel - The 1984 survey indicates that the total biomass for Atka mackerel is 39,000 mt with 38,000 mt being available in the Western Area and 1,000 mt in the Central Area. Length frequency information suggest that the population consists mostly of large fish. Recruitment in the Central Area appears nonexistent. The absence of catches in the Eastern Area indicates stocks are not sufficiently abundant to support a commercial fishery. The low abundance of Atka mackerel may be due to westward shift in the distribution of stocks or to excessive fishing mortality. The Council reviewed the SSC recommendation for the the Western Area to set the exploitation rate between 10% and 15% of 38,000 mt, which would provide an OY between 3,800 mt and 5,700 mt. Since th e current OY for the Western Area of 4,678 mt falls within this range, the Council opted not to change the OY. The Council also reviewed the SSC recommendation to set the OYs in the Central and Eastern Areas at bycatch levels only and recommended thus to the Secretary of Commerce. After reviewing the recent catch data, OYs were set at 100 mt and 10 mt in the Central and Eastern Areas, respectively.

Other Species - The "other species" category includes those groundfish species not individually addressed in the FMP. The FMP specifies the OY for those species to be equal to 5% of the total OY for all of the target groundfish species combined. Consequently, if the recommended OY changes are adopted the OY would be reduced to 22,435 mt.

4. Establish a Reporting System for Catcher/Processors

The objective of this proposal is to ensure that fishery managers receive timely estimates of catch by all domestic vessels so that fishery closure notices can be promptly issued when OYs are achieved. With the rapid recent growth of the domestic fishing fleet, increasing importance is being placed on timely reporting of domestic harvests in order to ensure that OYs are not exceeded. Vessels which deliver their catch to shore-based processors land their catch frequently enough to allow timely estimation of total catch under existing regulations. However, vessels which process their catch at sea can remain on the fishing grounds for extended periods of time. Catch reports submitted by these vessels at the time of landing as required under existing regulations are not timely enough to prevent OYs from being grossly exceeded. The resulting overharvests could seriously damage future production from groundfish stocks.

Current fishing regulations implementing the Gulf of Alaska and Bering Sea Fishery Management Plans require fishing vessels to submit a State of Alaska fish ticket or equivalent document to the Alaska Department of Fish and Game for any commercial groundfish harvest in the Gulf of Alaska or Bering Sea

within 7 days of the date of landing the catch. Vessels which preserve their catch by non-freezing refrigeration or icing methods must land their catch within a maximum of 10-12 days from the time of harvest in order to ensure product quality. The catch from these vessels, when delivered to shore-based processors, can be reported on a timely basis under existing regulations. If existing regulations are properly enforced, fishery managers can estimate harvests by these vessels with sufficient precision to ensure that OYs are not exceeded.

However, vessels which freeze or salt their catch aboard frequently remain at sea for trips of up to several months duration and are not currently required to report their catch until the time of landing and offloading. At least twenty two catcher/processor vessels will be operating in the Gulf of Alaska and Bering Sea areas in 1985. Based on past catcher/processor landing records the combined hold capacity of these vessels will be approximately 13,000 mt. Therefore these vessels are capable of harvesting significant portions or even entire OYs in a single trip. Under existing fishing regulations, fishery managers have no knowledge of the catch aboard these vessels until the time of landing. In addition, vessels are not required to notify fishery managers when beginning fishing operations. Since domestic groundfish fishing vessels are also not marked for identification by enforcement overflights, the number of catcher/processor vessels actually fishing in a given management area is not known until the time of landing. Without knowledge of effort levels, fishery managers are not able to make projections of catch aboard based on past performance.

Delayed catch reporting is also a problem for fully domestic mothership operations. In these operations small catcher vessels without processing capability deliver their catch, usually by cod-end transfers, to a mothership/processor vessel. Current regulations require that an ADF&G fish ticket be filled out each time a catcher vessel delivers to the mothership/processor and that these fish tickets be forwarded to ADF&G within 7 days of the date that fish were delivered. Domestic mothership and floating processor operations thus far have all occurred in sheltered waters with at least periodic access to U.S. mail service so that regulations requiring filing of fish tickets with ADF&G within 7 days could have been enforced. However, there is a potential for these mothership operations to occur at sea, with no method of filing the fish tickets with ADF&G within the 7 day period required by law.

With such large processing capacities and increasing numbers of catcher/processor and mothership/processor vessels the risks of overharvesting groundfish resources under the current system are high. Because of the time delays involved in catch reporting under current regulations, groundfish resources could be drastically overharvested before fishery managers had even discovered that OYs had been exceeded. Since many of the groundfish species concerned are slow growing and long-lived, overharvesting can have considerable impacts on future production.

5. Establish Measures to Control the Pacific Halibut Bycatch

The halibut that is taken as bycatch in trawl fisheries results in fishing mortality even though the FMP requires that halibut bycatch be discarded because the survival rate of discarded halibut is typically less than 100% and may approach zero in some fisheries. Therefore, the FMP contains restrictions

on both foreign and domestic groundfish fishermen in the Western and Central Areas that were designed to control the bycatch of halibut, an important species in a separate and fully utilized domestic target fishery. Foreign trawl fishermen are not permitted to use on-bottom gear in the Central and Western Areas (i.e., between 147°W. and 170°W. longitude) from December 1 through May 31. Domestic fishermen are permitted to use on-bottom gear during this period until the total trawl take by domestic fishermen reaches the prohibited species catch (PSC) limit of 29 mt in the Western Area or 52 mt in the Central Area. Once the PSC limit is reached in an area, all further domestic trawling is prohibited in that area until June 1. The FMP does not restrict the use of on-bottom trawls by domestic or foreign fishermen during the rest of the year in these two areas.

The rapid development of the domestic groundfish trawl fleets, including both wholly domestic and joint venture operations, and the dramatic changes in fishing strategies that have occurred since the FMP was developed, approved, and implemented in the late 1970s have resulted in five specific problems that prevent the objectives of the FMP from being met without amending the FMP. The five problems are as follows:

(1) The Shelikof Strait joint venture pollock is jeopardized by the 52 mt PSC in the Central Area even though the halibut bycatch is very low in this highly productive fishery.

(2) The PSC limits for the Western and Central Areas jeopardize the maintenance and further development of domestic trawler fisheries for cod, flounders, and other groundfish species that are targeted on with on-bottom gear.

(3) The bycatch of halibut by domestic trawlers during the six months for which there are no restrictions on the use of on-bottom gear has increased significantly.

(4) Although the PSC limits are for all domestic trawlers, that is, those in both wholly domestic and joint venture operations, only the bycatch of the joint ventures is monitored because bycatch cannot be effectively monitored without extensive onboard observer coverage and such coverage exists for joint venture but not wholly domestic operations.

(5) With respect to regulating the bycatch of halibut in groundfish trawl fisheries, the FMP has not been flexible enough to remain effective as conditions in the fisheries change.

A more detailed discussion of each of these problems and the temporary solutions that have been implemented through emergency rules is presented below.

Problem 1. The Shelikof Strait joint venture pollock fishery in the Central Area has grown from a relatively small fishery in the early 1980s into a very important fishery which in 1985 will take more than 221,000 mt of groundfish including over 218,00 mt of pollock and will have an estimated exvessel value of $21 million. The halibut bycatch in this fishery has been very low because

off-bottom trawl gear is used. Based on reported bycatch through April 20, 1985, it is estimated that the halibut bycatch will not exceed 0.5 mt in 1985. This is a significant decrease from the low levels of bycatch of 4 mt and 14 mt that were taken in 1983 and 1984, respectively. Emergency rules were implemented for the 1984 fishery and again for the 1985 fishery to prevent the attainment of the PSC limit in the Central Area from jeopardizing this extremely important fishery which takes only very small quantities of halibut. Specifically, the emergency rules permitted off-bottom trawling to continue regardless of the level of halibut bycatch by domestic trawlers.

Problem 2. The domestic PSC limits of 29 mt and 52 mt, respectively, for the Western and Central Areas were implemented in 1978. At that time these limits were equal to approximately one percent of the amount of Pacific cod expected to be taken by domestic trawlers in 1979 or soon thereafter. Domestic on-bottom trawl groundfish catches have increased dramatically since then. By 1984 the joint-venture catches of Pacific cod, flounder, rockfish, and Atka mackerel, target species that are typically taken with bottom trawls, were 3,108 mt and 7,612 mt in the Western and Central Areas, respectively. The 1984 catches of these same species in wholly domestic fisheries were 221 mt and 2,883 mt, respectively, in the Western and Central Areas. Emergency rules were implemented for the 1984 fishery and again for the 1985 fishery to prevent the PSC limits implemented in 1978 from excessively restricting the catch of domestic on-bottom trawlers. Specifically, the limits were temporarily increased from 29 mt to 270 mt in the Western Area and from 52 mt to 768 mt in the Central Area. If the emergency rules had not been in effect and if bycatch had occurred at the rate it did in 1984, domestic on-bottom (Table 2) trawling would have been prohibited from the last weeks of December 1983 until June 1, 1984 in the Central Area and during the last part of May in the Western Area (see Table 2). The joint venture groundfish catches with on-bottom trawls were less than 800 mt in the Western Area and less than 2,000 mt in the Central Area during the periods in which domestic trawling would have been prohibited had the emergency rules not increased the PSC limits. During these periods, the groundfish catches in wholly domestic operations were approximately 1 mt and 2,800 mt in the Western and Central Area, respectively. It should be noted that since much of the on-bottom trawl catch by domestic vessels occurs after May 31, it is possible that the main effect of the increased PSC limits was a change in the timing of the catch and not in the quantity of the 1984 on-bottom trawl catch (see Tables 3 and 4).

Problem 3. The FMP prohibited foreign on-bottom trawling and limited the halibut bycatch of all domestic trawlers from December 1 through May 31 because juvenile halibut are at shallow depths and more vulnerable to capture in trawls during this period. In recent years, it has become apparent that large numbers of halibut are vulnerable in the rest of the year to foreign, joint venture, and presumably wholly domestic on-bottom trawl operations. Estimates of the monthly joint venture halibut bycatches for 1983 and 1984 are presented in Table 5 for the Western Area and in Table 6 for the Central Area. In each area and year, the bycatch during the unregulated period approaches or exceeds that of the regulated period. It should also be noted that beginning in 1985, the regulated period for foreign trawlers will be 12 months. That is, beginning in 1985 foreign on-bottom will be prohibited at any time. The emergency rules that were implemented for the 1984 fishery and again for the 1985 fishery did not extend the regulated period for domestic trawlers.

Table 2 -- Cumulative monthly joint-venture halibut bycatch beginning December (metric tons).

Month	C. Gulf	W. Gulf
12/83	84	0
01/84	124	1
02/84	135	1
03/84	138	1
04/84	141	16
05/84	166	62
06/84	196	84
07/84	220	87
08/84	268	92
09/84	352	97
10/84	420	141
11/84	500	141
12/84	13	0
01/85	13	0
02/85	13	0
03/85	13	0
04/85	13	4

TABLE 3. -- WESTERN AREA JOINT VENTURE AND DOMESTIC GROUNDFISH CATCH BY MONTH, 1983-1985

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1983 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	-	-	-	6	7	17	69	35	15	21	-	-	171
ALL ROCKFISH	-	-	-	58	550	365	309	310	393	231	-	-	2216
ATKA MACKEREL	-	-	-	1	191	58	53	41	292	152			789
PACIFIC COD	-	-	-	2	72	37	45	86	187	40	-	-	469
SABLEFISH	-	-	-	3	2	4	70	7	32	16	-	-	134
WALLEYE POLLOCK	-	-	-	4	1	4	189	111	54	135	-	-	497
ALL ROUNDFISH	-	-	-	9	266	103	358	245	566	342	-	-	1889
MISC. GROUNDFISH	-	-	-	1	5	8	5	8	11	6	-	-	45
ALL GROUNDFISH	-	-	-	75	829	493	741	598	986	601	-	-	4322

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1984 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	1	-	-	20	63	19	8	28	53	362	2	TR	556
ALL ROCKFISH	-	-	-	311	492	359	118	177	57	141	1	TR	1656
ATKA MACKEREL				77	207	44	29	5	TR	216			577
PACIFIC COD	2	-	-	17	48	26	8	43	48	104	2	TR	298
SABLEFISH		-	-	10	49	32	13	17	49	104	1	TR	275
WALLEYE POLLOCK	6	-	-	10	21	7	45	137	1202	6458	112	8	8006
ALL ROUNDFISH	8	-	-	114	326	108	95	201	1300	6882	114	8	9156
MISC. GROUNDFISH	1	-	-	3	10	8	2	5	8	23	TR	TR	61
ALL GROUNDFISH	11	-	-	448	890	495	223	412	1417	7408	117	8	11429

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1985 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	TOTAL
ALL FLATFISH	-	-	-	2	TR	2
ALL ROCKFISH	-	-	-	1	TR	1
ATKA MACKEREL	-	-	-	TR		TR
PACIFIC COD	-	-	-	6	T	7
WALLEYE POLLOCK	-	-	-	864	136	1000
ALL ROUNDFISH	-	-	-	869	137	1006
MISC. GROUNDFISH	-	-	-	1	TR	1
ALL GROUNDFISH	-	-	-	873	138	1011

TABLE 3. -- CONTINUED

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1983 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
PACIFIC OCEAN PERCH													
POP GROUP	-	-	-	-	-	-	-	-	-	-	-	7	7
UNSP. ROCKFISH	-	-	-	-	-	-	-	-	-	-	-	7	7
ALL ROCKFISH	-	-	-	-	-	4	-	-	-	-	-		4
	-	-	-	-	-	4	-	-	-	-	-	7	11
PACIFIC COD	-	-	-	-	51	-	-	-	1	-	7	16	74
SABLEFISH	-	-	-	-	-	-	-	-	-	-	-	2	2
WALLEYE POLLOCK	-	-	-	-	-	-	-	-	T	-	-		1
ALL ROUNDFISH	-	-	-	-	5T	-	-	-	2	-	7	17	77
ALL GROUNDFISH	-	-	-	-	51	4	-	-	3	-	7	24	88

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1984 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	-	-	-	-	-	-	-	-	-	5	-	1	5
YELLOWEYE ROCKFISH											1		1
UNSP. POP GROUP	-	-	-	-	-	-	26	49	1T	T	30	-	116
POP GROUP	-	-	-	-	-	-	26	49	11	1	30	-	116
THORNYHEADS	-	-	-	-	-	-		4	2		4	-	9
ALL ROCKFISH	-	-	-	-	-	-	26	52	12	T	35	-	126
ATKA MACKEREL										31	TR		31
PACIFIC COD	12	-	-	3	T	-	4	T	7	24	6	-	58
SABLEFISH		-	-		TR	-	15	6	41	147	111	24	345
ALL ROUNDFISH	12	-	-	3	1	-	19	7	48	202	117	24	435
ALL GROUNDFISH	12	-	-	3	1	-	45	60	61	208	152	25	566

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1985 FOR WESTERN AREA

SPECIES	JAN	FEB	MAR	APR	TOTAL
ALL FLATFISH	-	1	8	-	9
PACIFIC COD	603	1617	1336	737	4294
SABLEFISH	40	24	44	71	179
WALLEYE POLLOCK	37	18	14		68
ALL ROUNDFISH	680	1658	1395	808	4541
ALL GROUNDFISH	680	1659	1403	808	4550

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TABLE 4. -- CENTRAL AREA JOINT VENTURE AND DOMESTIC GROUNDFISH CATCH BY MONTH, 1983-1985

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1983 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
___ALL ROCKFISH	TR	1	1	TR	2	_	2	5	1	5	22	20	60
ATKA MACKEREL								TR			1	TR	1
PACIFIC COD	23	110	179	15	2	_	179	337	129	54	238	691	1957
SABLEFISH	TR	1	3	TR	4	_	26	10	1	8	46	42	141
WALLEYE POLLOCK	5856	43444	77241	4848	TR	_	117	166	55	105	257	1544	133634
___ALL ROUNDFISH	5880	43555	77422	4864	6	_	323	513	185	167	541	2277	135733
___MISC. GROUNDFISH	30	49	80	5	TR	_	6	25	17	24	66	48	349
ALL GROUNDFISH	5912	43609	77513	4869	12	_	430	938	608	442	1085	3244	138662

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1984 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
___ALL FLATFISH	318	95	33	25	136	240	421	303	261	441	323	99	2696
___ALL ROCKFISH	19	31	6	1	4	101	10	151	29	11	9	3	376
ATKA MACKEREL	1	TR	TR	2	TR	TR	1	3	TR	TR		TR	7
PACIFIC COD	438	441	330	71	345	452	443	380	605	346	228	46	4125
SABLEFISH	46	8	1	TR	3	8	26	38	19	34	25	8	216
WALLEYE POLLOCK	8720	70459	97768	1013	195	230	595	278	4738	7206	5196	2615	199014
___ALL ROUNDFISH	9204	70908	98099	1086	543	691	1065	699	5363	7586	5449	2669	203362
___MISC. GROUNDFISH	223	796	71	4	12	18	13	11	12	12	9	20	1201
ALL GROUNDFISH	9765	71829	98209	1117	695	1050	1509	1165	5664	8050	5791	2791	207635

NPFMC JOINT-VENTURE PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1985 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	TOTAL
___ALL FLATFISH	2	44	23	2	_	71
___POP GROUP	TR	10	TR	2		12
___ALL ROCKFISH	1	10	TR	2	_	14
ATKA MACKEREL	TR	TR				TR
PACIFIC COD	23	514	384	13	_	934
SABLEFISH	TR	1	2	TR	_	3
WALLEYE POLLOCK	3355	84101	119021	11983	_	218460
___ALL ROUNDFISH	3378	84615	119407	11996	_	219397
___MISC. GROUNDFISH	54	1536	235	83	_	1908
ALL GROUNDFISH	3435	86206	119664	12083	_	221389

TABLE 4 -- CONTINUED

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1983 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	20	10	9	10	13	1	TR	-	1	7	15	1	88
ALL ROCKFISH	-	-	-	8	3	4	2	1	4	4	1	TR	26
PACIFIC COD	72	372	338	618	1018	558	TR	1	8	25	632	463	4106
SABLEFISH	3		10	15	65	41	43	107	14	5	TR	5	307
WALLEYE POLLOCK	65	18	27				TR		2	1		6	118
ALL ROUNDFISH	140	390	375	633	1083	600	43	107	25	30	632	474	4533
MISC. GROUNDFISH	4	12	5	-	TR	7	1	-	24	1	4	1	60
ALL GROUNDFISH	164	412	389	650	1099	612	48	108	54	42	652	477	4706

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1984 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ALL FLATFISH	69	74	85	9	4	-	-	-	-	-	-	-	240
ALL ROCKFISH	3	TR	TR	6	7	5	6	6	2	2	18	2	58
PACIFIC COD	276	554	860	145	174	35	5	TR	6		279	250	2585
SABLEFISH	4	13	85	17	85	491	635	789	672	46	2		2838
WALLEYE POLLOCK	93	75	157	1	3							-	329
ALL ROUNDFISH	373	642	1101	163	263	526	641	790	678	46	283	250	5755
UNSP. GROUNDFISH	TR								TR				TR
MISC. GROUNDFISH	TR	-	-	-	-	-	-	-	TR	-	-	-	TR
		-	-	-	-	-	-	-		-	-	-	
ALL GROUNDFISH	445	716	1186	178	273	531	647	796	681	48	301	252	6053

NPFMC DOMESTIC PERIOD REPORT: MONTHLY COMMERCIAL GROUNDFISH LANDED CATCH (METRIC TONS) FOR 1985 FOR CENTRAL AREA

SPECIES	JAN	FEB	MAR	APR	TOTAL
ALL FLATFISH	-	TR	2	-	2
ALL ROCKFISH	TR	-	TR	4	4
PACIFIC COD	207	204	161	75	647
SABLEFISH	43	52	225	395	716
WALLEYE POLLOCK	179	762	542		1483
ALL ROUNDFISH	430	1018	928	470	2846
MISC. GROUNDFISH	2	-	-	-	2
ALL GROUNDFISH	432	1019	930	474	2854

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Table 5. -- Western Gulf joint-venture catch and bycatch in metric tons, 1983-1985

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	83	1	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	2	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	3	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	4	W GULF	4	0.7	2	6	4	6.1	0	1	48.4	2.9	0	2	0	0
US	J V	83	5	W GULF	1	191.1	72	7	2	83.7	0	5	464.9	2.5	0	16	0	0
US	J V	83	6	W GULF	4	61.9	37	17	1	117.4	0	8	258.8	4.3	0	19	0	0
US	J V	83	7	W GULF	189	43.4	44	68	3	22.5	0	5	266.5	69.9	0	8	0	0
US	J V	83	8	W GULF	111	47.0	87	36	0	8.7	0	8	305.9	6.6	0	7	0	0
US	J V	83	9	W GULF	54	297.4	190	15	1	23.2	0	11	375.4	32.2	0	11	0	0
US	J V	83	10	W GULF	135	147.0	37	21	1	9.6	0	6	213.7	15.7	0	14	0	0
US	J V	83	11	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	12	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83		W GULF	497	788.6	469	171	12	271.2	1	44	1933.7	134.2	0	76	0	0

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	84	1	W GULF	6	0.0	2	1	0	0.0	0	1	0.0	0.0	0	1	0	0
US	J V	84	2	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	84	3	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	84	4	W GULF	9	39.8	13	19	1	2.8	0	3	290.2	9.5	0	15	0	0
US	J V	84	5	W GULF	22	286.9	62	68	1	112.2	0	11	445.2	51.6	0	46	0	0
US	J V	84	6	W GULF	6	0.1	16	15	4	34.7	0	8	271.4	30.5	0	22	0	0
US	J V	84	7	W GULF	29	29.5	7	7	0	18.7	0	1	78.9	11.5	0	3	0	0
US	J V	84	8	W GULF	153	4.8	44	29	2	19.0	0	6	176.7	18.0	0	5	0	0
US	J V	84	9	W GULF	1000	0.1	47	50	1	4.2	0	7	42.9	47.8	0	5	0	0
US	J V	84	10	W GULF	6705	216.8	114	376	8	8.2	0	23	135.2	114.3	1	44	0	0
US	J V	84	11	W GULF	86	0.0	0	1	0	0.0	0	0	0.6	0.0	0	0	0	0
US	J V	84	12	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	84		W GULF	8018	578.0	305	566	18	199.8	1	60	1441.1	283.4	1	141	0	0

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	85	1	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	85	2	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	85	3	W GULF	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0
US	J V	85	4	W GULF	762	0.0	5	1	0	0.0	0	1	0.8	0.0	0	4	0	0
US	J V	85	5	W GULF	238	0.0	2	1	0	0.0	0	0	0.0	0.0	0	1	0	0

Table 6. -- Central Gulf joint-venture catch and bycatch in metric tons, 1983-1985

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	83	1	C GULF	3614	0.0	15	1	0		0.0	0	23	0.4	0.1	1	0	0	0
US	J V	83	2	C GULF	41292	0.0	109	4	0		0.0	1	41	0.4	0.5	1	0	0	0
US	J V	83	3	C GULF	84092	0.0	194	11	0		0.1	1	91	1.7	2.9	1	1	0	0
US	J V	83	4	C GULF	2392	0.0	10	0	0		0.0	0	4	0.1	0.0	0	0	0	0
US	J V	83	5	C GULF	0	0.0	2	3	0		0.1	0	0	2.3	4.4	0	1	0	0
US	J V	83	6	C GULF	0	0.0	0	0	0		0.0	0	0	0.0	0.0	0	0	0	0
US	J V	83	7	C GULF	109	0.0	161	88	0		0.7	0	5	0.8	25.9	1	9	0	0
US	J V	83	8	C GULF	175	0.0	388	460	0		2.2	0	31	2.6	10.1	1	59	3	19
US	J V	83	9	C GULF	56	0.0	100	361	0		0.6	0	12	0.4	0.6	0	34	4	14
US	J V	83	10	C GULF	102	0.0	31	183	0		0.8	0	20	3.7	8.2	0	21	0	2
US	J V	83	11	C GULF	351	0.6	288	562	1		4.7	0	77	17.2	50.5	2	72	6	0
US	J V	83	12	C GULF	1451	0.3	659	847	0		8.7	0	41	11.5	37.6	4	84	2	19
US	J V	83		C GULF	133634	1.0	1957	2521	1		17.9	3	346	41.1	140.9	11	280	15	55

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	84	1	C GULF	5003	0.6	394	300	0		1.2	0	80	13.6	45.6	2	40	1	4
US	J V	84	2	C GULF	82794	0.1	513	115	0		1.2	3	947	33.9	8.6	14	11	0	2
US	J V	84	3	C GULF	89151	0.1	301	32	0		1.8	1	59	3.5	0.9	5	3	0	0
US	J V	84	4	C GULF	999	2.2	36	17	0		0.9	0	4	0.3	0.0	0	3	0	0
US	J V	84	5	C GULF	224	0.3	388	159	0		1.8	0	13	2.6	2.9	0	25	0	2
US	J V	84	6	C GULF	216	0.0	445	224	0		30.0	0	18	70.5	7.8	0	30	0	0
US	J V	84	7	C GULF	510	1.1	382	367	0		6.8	0	12	2.0	21.2	3	24	5	5
US	J V	84	8	C GULF	377	2.6	500	435	0		23.5	0	16	142.4	55.1	0	48	4	5
US	J V	84	9	C GULF	4633	0.0	721	335	1		9.0	0	18	7.4	29.2	4	84	4	3
US	J V	84	10	C GULF	8015	0.1	376	482	0		5.7	0	14	6.2	42.4	47	68	4	4
US	J V	84	11	C GULF	4710	0.0	254	329	0		1.4	0	9	7.7	23.6	51	80	1	4
US	J V	84	12	C GULF	2456	0.0	35	85	0		0.7	0	20	2.5	7.6	29	13	0	1
US	J V	84		C GULF	199086	7.1	4344	2882	1		84.1	4	1209	292.6	244.9	156	431	18	29

NATION	VESSEL	YR	MO	AREA	POLLOK	ATKAMK	PACCOD	FLOUND	THY	RF	RKFISH	SQUID	OTHER	POPC	BLKCOD	SALMON	HALBUT	K CRAB	T CRAB
US	J V	85	1	C GULF	4594	0.2	32	3	0		1.0	0	74	0.7	0.1	0	0	0	0
US	J V	85	2	C GULF	92520	0.0	549	44	0		0.1	5	1595	10.2	0.7	0	0	0	0
US	J V	85	3	C GULF	108311	0.0	339	22	0		0.0	1	146	0.0	1.9	0	0	0	0
US	J V	85	4	C GULF	13036	0.0	14	3	0		0.1	0	87	1.6	0.0	0	0	0	0

Problem 4. The fourth problem addressed by the proposed changes to the halibut PSC regulations is that although the PSC limits are for all domestic trawlers, only the bycatch of the joint venture trawlers is monitored because bycatch cannot be effectively monitored without extensive onboard observer coverage and such coverage exists for joint venture but not wholly domestic operations. Therefore, if the PSC limits are set on the basis of acceptable bycatch levels for all domestic trawlers as they appear to have been set in the initial FMP and subsequent emergency rules, and if only joint venture bycatch is monitored, the prohibition on domestic trawling will not be imposed until the joint ventures take the PSC limits and by that time the total bycatch of all domestic trawlers will have exceeded the acceptable level by the unknown amount taken in wholly domestic operations. This problem was not addressed by the emergency rules implemented for the 1984 and 1985 fisheries.

Problem 5. The development of the first four problems since the FMP was implemented and the need to change the bycatch regulation by emergency rules and the lengthy amendment process demonstrate that the FMP is not sufficiently flexible with respect to bycatch regulations to remain effective as conditions change. The need for flexibility is particularly important for rapidly growing and changing fisheries such as the wholly domestic and joint venture fisheries.

6. Implement the NMFS Habitat Policy

The proposed action amends the FMP by modifying and adding certain sections specifically to address the habitat requirements of individual species in the Gulf of Alaska groundfish fishery. The amendment describes the diverse habitat types within the Gulf of Alaska, delineates the life stages of the species, identifies potential sources of habitat degradation and the potential risk to the fishery, and describes existing programs, applicable to the area, that are designed to protect, maintain, or restore the habitat of living marine resources. The amendment responds to the Habitat Conservation Policy of the National Marine Fisheries Service, which advocates emphatic consideration of habitat concerns in the development or amendment of FMPs, and the strengthening of NMFS' partnerships with states and the councils on habitat issues.

7. Sablefish Fishing Seasons

Current federal regulations open all groundfish fisheries including sablefish on January 1 and close the season on December 31. The objective of this proposal is to delay the sablefish season opening date in one or more areas. There are several reasons which have been presented in support of a later season. They are: (1) resource allocation; (2) fishermen safety; and (3) fish quality.

The delay of the sablefish fishing season is considered a viable management tool for resource allocation purposes. Due to poor weather conditions in the Gulf of Alaska, vessel size plays an important role in a fisherman's ability to fish. During times when fishing effort for this species was low, fishermen would wait for favorable weather before fishing. This factor was extremely important given that most of the vessels used in this fishery are small, longline-type vessels. In the last few years, as fishing effort grew there has been more pressure on fishermen to harvest "their share of the resource."

Large vessels fishing both hook and longline and pots have also entered the fishery. These vessels are more capable of fishing in poor weather than the more common small boats and put pressure on fishermen to fish in poor conditions. Fishing by any vessel in poor weather increases the risks to fishermen's safety. By delaying the sablefish opening date until better weather all segments of the fleet have equal chances in harvesting the OY. Weather impacts on vessel safety are also minimized.

Fish quality problems associated with spawning sablefish has been presented in support of a later fishing season. Product quality is lower during periods of spawning or immediately following reproduction. Since sablefish is a low-OY species, and there exists a fishing fleet capable of taking the OY at any time of the year, it may be desirable to schedule the fishing season to produce the highest quality product and obtain the greatest value possible.

It should be noted that prior to the enactment of the Groundfish FMP sablefish fishing was closed by regulation during the winter and spring months. This regulation was first enacted by the federal government in 1945 to halt the observed decline in sablefish CPUE, to protect the sablefish stocks during the spawning period and to minimize the incidental catch of halibut which tend to overlap sablefish in depth range during the winter months. Inferior quality of flesh and viscera during and after spawning was also cited as a reason for the winter closure. During 1945 and 1946 the closure was in effect from December 1 through March 15. In 1947 the closure was extended to April 30 since the shorter closure failed to halt the observed decline in sablefish CPUE. Because the same vessels fished both sablefish and halibut, the closure actually extended until after the end of the IPHC Area 2 halibut season, usually in mid- to late-August. For that reason the sablefish fishery evolved into a fall fishery as reflected in the timing of the current northern inside area season in state waters.

The winter closure regulation was adopted by the state at statehood and remained in effect until 1977. It was rescinded then only to allow the U.S. vessels to compete effectively with the foreign fleet that was operating off the coast of Southeastern Alaska at that time. Because the season was closed during the winter and spring for over a thirty-year period, there is no time series of information available concerning the effects of a winter closure on quality or CPUE. Management memorandums and letters written during the mid-1940s indicate that a substantial decline in incidental halibut catch would be directed attributed to the winter closure.

III. ALTERNATIVE MANAGEMENT MEASURES INCLUDING THOSE PROPOSED

Certain alternatives to each amendment proposal have been considered by the Council. A summary of each alternative, including those proposed, follows:

1. Establish a Gear and/or Area Restriction in the Sablefish Fishery

For purposes of this plan amendment, there are four alternatives which should be considered. These alternatives encompass a wide range of public proposals including a call for a hook and longline only fishery for sablefish for various areas of the Gulf. The Council's alternatives, in terms of gear and area restrictions, were narrowed to limiting areas eastward of a series of

longitudinal lines in the Gulf for hook and longline only, while leaving all other areas for multiple gear use; allocating portions of OY to specific gear types; placing a ceiling on the number of vessels using pot gear; and license limitation. The eligible gear types for multiple gear use are: hook and longline, pot, trawl and gillnet. The four alternatives are:

Alternative 1 - Maintain status quo.

Under this alternative, use of all eligible sablefish gear would be allowed throughout the Gulf of Alaska. This alternative would not address any of the problems identified in Section II.

Alternative 2 - Allocate the sablefish OY to specific gear types.

The Council has long been aware that many of the questions it faces involve the allocation of scarce fishery resources between competing groups of users. Any regulatory measure which affects the pattern of catch in the industry technically can be thought of as having allocational effects. Where a fishery is resource constrained, or fully harvested by all the gear groups, actions which increase the share of harvests to one group of fishermen will necessarily decrease the share to other groups.

The most common approaches to the regulation or management of fishing effort have involved the institution of time and area closures, restrictions on the amount of gear or on the types and size of vessels that can be used, or (as in the case of prohibited species) the amounts of incidental catch that may be taken by different groups of vessels. Only the latter can be considered a direct form of allocation, since it involves telling one group what the limit on the catch of a particular species may be. This is typically done for species taken incidentally to target operations for some other species and then as a further disincentive to capture, all of the species are prohibited; they must be returned to the sea.

The other types of regulation just mentioned have definite allocational effects, but they are indirect in the sense that the Council (or, for state-managed fisheries, the Board of Fisheries) does not tell members of each gear group how much of a species they can take. Rather, through the institution of various types of restrictions, the amounts which each group will ultimately take is affected. However, the managing body often has not established exactly what the allocational outcome might be, and is sometimes surprised by unexpected outcomes of some types of regulations. It is for this reason that the alternative of allocating specific amounts to different gear groups in the directed sablefish fishery is proposed. The Council may wish, after weighing all of the pertinent testimony and analysis, to make a decision regarding the amounts of the resource which each gear group can take, rather than selecting a strategy which will generally favor one group, but to an unknown extent.

Alternative 3 - Establish hook and longline-only areas.

(a) Designate the area east of 147°W. longitude as a hook and longline-only area for directed sablefish fishing.

This area includes the existing Southeast Outside, East Yakutat, and West Yakutat Districts which together make the Eastern Regulatory Area (Figure 1). A large number of longline boats operate in this area and the Southeast Alaska fish processing industries have come to rely on this resource as a method of maintaining stability in their operations. Ground preemptions and gear conflicts between hook and longline fishermen and other gear would be eliminated if this alternative were approved. Apart from the crab fisheries, there are few fishermen who fish with gear other than hook and line in this area.

(b) Designate the area east of 159°W. longitude as a hook and longline-only area for directed sablefish fishing.

This alternative would encompass a much larger area than option (a), because it would include all of the Eastern and Central Regulatory Areas. If this alternative were approved, a multiple gear sablefish fishery would be limited to waters west of 159°W. longitude, or the Western Regulatory Area. Gear conflict between sablefish fishermen using multiple gear would be eliminated in the two areas. Conflicts between fishermen fishing on a variety of species can still occur, especially in the Central area where an established crab fishery utilizing pots and a developing groundfish trawl fishery is conducted.

(c) Designate the area east of 170°W. longitude as a hook and longline-only area for directed sablefish fishing.

This alternative would restrict the gear used to harvest sablefish to hook and longline only throughout the Gulf of Alaska. All three regulatory areas, the Eastern, Central and Western, would be included under this proposal. When reviewing the other alternatives, this option is the most extreme in comparison to the status quo situation. The alternative if approved, would shift the sablefish fishery from a multiple gear fishery to one of a single gear type. Gear conflicts and grounds preemption between longline fishermen and other gear targeting on sablefish would be eliminated. However, the potential gear conflict between longline sablefish fishermen and fishermen targeting on other groundfish species with a variety of gear will still exist.

Alternative 4 - Place a ceiling on the number of vessels harvesting sablefish using pot gear.

The objective of this alternative is to place a ceiling on the number of vessels using pot gear to harvest sablefish. The ceiling would be based on current participants using pots to harvest sablefish prior to March 1, 1985. It would prevent expansion of this gear into the fishery. An increase in number of participants or vessels using hook and longline, trawl, or gillnet would be permitted under this alternative. As the proportion of these other gears increase within the fleet, the number of gear conflict or grounds preemption problems associated with pot gear would decline but would not be necessarily eliminated.

2. Establish Quotas and Areas in the Rockfish Fishery

Alternative 1 - Maintain a Gulfwide OY for other rockfish.

This alternative would maintain status quo in the other rockfish fishery. Other rockfish could be harvested anywhere in the Gulf of Alaska up to a total all-species OY of 5,000 mt.

Alternative 2 Set the Southeast District shelf demersal rockfish OY at 600mt between 56°N. latitude and 57°30'N. latitude with the remainder of the 5,000 mt OY (4,400 mt) to be taken elsewhere in the Gulf.

This alternative proposes establishing three districts within the Eastern Regulatory Area for purposes of managing other rockfish. As currently used for managing the sablefish fisheries, Southeast, East Yakutat and West Yakutat districts would be created (Figure 2). This alternative addresses the immediate management concern for the heavily exploited shelf demersal rockfish stocks in the northern southeast outer coastal area by placing a cap on the fishery at approximately the 1984 harvest level.

Alternative 3 - Set the Southeast District shelf demersal rockfish OY at 600 mt between 56°N latitude and 57°30'N. latitude and set the OY for the pelagic and slope rockfish species within the Southeast-East Yakutat District at 880 mt for a combined other rockfish OY of 1,480 mt. The remaining 3,520 mt of the other rockfish resource would be harvested from the other areas of the Gulf. (Recommended by the Alaska Board of Fisheries).

(a) Change the accounting year to October 1 through September 30 as part of this alternative (Board recommendation).

(b) Retain January 1 - December 31 as the accounting year.

Alternative 3 addresses the immediate management concern for the heavily fished southeastern outercoastal stocks and sets the total OY for other rockfish in the Southeast District at 1480 mt further minimizing the risk of overharvest in that area. In addition option (a) presents the Board recommendation to provide a fall and winter fishery.

Alternative 4 - Set the shelf demersal rockfish OY at 600 mt for the area where the 1984 domestic fishery was concentrated and establish separate OYs for slope, shelf pelagic, and shelf demersal rockfish species groups by Gulf of Alaska management area based on the best available data.

This alternative addresses the need for immediate management action in the Southeastern area. It would also provide the lowest risk of overharvesting any one component of the rockfish stock by establishing separate OYs for the various species groups and management areas.

Alternative 5 - Set the OY for shelf demersal rockfish at 600 mt between 56°N. latitude and 57°30'N. latitude. Subtract this amount from the Gulfwide OY of 5,000 mt and apportion the remaining 4400 mt by regulatory area as follows: Southeast-East Yakutat, 880 mt, West Yakutat, 880 mt, Central Gulf, 1,760 mt, and Western Gulf, 880 mt.

This alternative sets OY levels for other rockfish by regulatory area throughout the Gulf using a simple division of the established OY of 5,000 mt less the 600 mt OY for Southeastern into the five INPFC areas that make up the Gulf of Alaska regulatory districts (Figure 2).

Alternative 6 - Redefine the "other rockfish" category in the Southeast Outside District to exclude shelf rockfish, thereby removing shelf rockfish from federal management under the FMP.

When the FMP was developed initially, the twelve species of shelf rockfish identified in Table 1 including six species of demersal and six species of pelagic rockfish were not considered when the "other rockfish" category was included in the management unit. Under this alternative, the Council would recommend to the Secretary that demersal shelf rockfish are not in need of federal management. Responsibility for their management would return to the State of Alaska. The OY for "other rockfish" would continue to be specified for slope and pelagic rockfish species and would be set at the current Gulfwide amount of 5,000 mt or be apportioned according to one of the alternatives described above.

3. Implement new optimum yields for pollock, Pacific ocean perch, Other rockfish, Atka mackerel, and other species.

Certain alternatives for the OY changes for each species, including the preferred action, have been considered and are hereby addressed as follows:

A. Pollock

Alternative 1 = preferred action. Reduce the optimum yield for pollock to 305,000 mt in the Western/Central Area.

This alternative is preferred, because it recognizes the apparent weakness of the 1980 and 1981 year classes and that the 1985 harvest will likely be dependent on the 1978 and 1979 year classes, which are been in the fishery for four and three years, respectively.

Alternative 2 - Maintain the optimum yield at 400,000 mt.

This alternative is not acceptable, because over-exploitation of old and weak year classes would likely result.

B. Pacific ocean perch

Alternative 1 = preferred action. Reduce the optimum yield for POP to 1,302 mt and 3,906 mt in the Western and Central Areas, respectively.

This is the preferred action, because it is less constraining to developing domestic fisheries while at the same time does allow for some rebuilding of stocks.

Alternative 2 - Maintain the optimum yields for POP at their existing levels.

This alternative would likely result in a continued decline in the condition of POP stocks and therefore is not acceptable.

C. Other Rockfish

Alternative 1 = preferred action. Reduce the Gulf of Alaska-wide optimum yield for rockfish to 5,000 mt.

This alternative is preferred, because it accommodates some growth in small rockfish fisheries in the Central Regulatory Area, while accounting for the poor condition of stocks generally throughout the Gulf of Alaska.

Alternative 2 - Reduce the optimum yield to an amount that would provide for a bycatch only to support other target fisheries.

The total incidental catch of rockfish in 1984 was approximately 700 mt. To set the OY at this level in 1985 as a bycatch amount would severely constrain developing target rockfish fisheries in the Eastern and Central Regulatory Areas. This alternative, therefore, is unacceptable.

Alternative 3 - Maintain the optimum yield at 7,600 mt.

This alternative grossly exceeds the 1982-1984 average harvest of 1,500 mt which currently represents the best estimate of EY for incidental slope rockfish. There is no evidence that a 7,600 mt harvest can be sustained even with the developing shelf rockfish fisheries.

D. Atka mackerel

Central + Eastern

Alternative 1 = preferred action. Reduce the OYs in the ~~Western~~ Eastern and Central Areas to bycatch amounts only, or 500 mt and 100 mt, respectively. This alternative is preferred, because it reflects the current availability of stocks that is based on the best available information.

Alternative 2 - Maintain the OYs in the Western and Central areas at their current values of 20,836 mt and 3,186 mt, respectively.

This status quo alternative sets OYs equal to amounts that are not available for harvest, according to preliminary results of the 1984 triennial survey.

E. Other species

Alternative 1 = preferred action. The other species OY is set equal to 5% of the total OYs for each of the other groundfish categories on the basis of an equation contained in the FMP. This is the only viable alternative under the current FMP.

4. Establish a Reporting System for Catcher/Processors

Alternative 1 - Maintain the current reporting requirements.

With the present system catches are reported on ADF&G fish tickets at the time of landing.

Alternative 2 - Require an FCZ processing permit with check-in/check-out and weekly catch reporting.

Under this alternative, catcher/processor and mothership/processor vessels would be required to obtain an FCZ processing permit. These catcher/processor and mothership/processor vessels would be required to notify NMFS via U.S. Coast Guard radio each time they entered or left an FMP management area. Catcher/processor and mothership/processor vessel operators or their representatives would also be required to submit a report to NMFS by U.S. mail or telex for each fishing week documenting the hail weight estimates of catch by FMP species group in each FMP area. These weekly reports would be due within 7 days of the end of the fishing week. ADF&G fish tickets would continue to be required to be submitted within one week of the date of landing to document more precise catch or product weights and specific ADF&G statistical areas. A completed logbook may be submitted with the ADF&G fish ticket showing total catch by species for a trip as a means of documenting catch by specific ADF&G statistical area.

Alternative 3 - Require an FCZ processing permit with a weekly catch report, but without check-in/check-out reporting.

Under this alternative, catcher/processor and mothership/processor vessels would be required to obtain an FCZ processing permit. These catcher/processor and mothership/processor vessel operators or their representatives would be required to submit a report to NMFS by U.S. mail or telex for each fishing week documenting the hail weight estimates of catch by FMP species group in each FMP area. These weekly reports would be due within 7 days of the end of the fishing week. ADF&G fish tickets would continue to be required to be submitted within one week of the date of landing to document more precise catch or product weights and specific ADF&G statistical areas. A completed logbook may be submitted with the ADF&G fish ticket showing total catch by species for a trip as a means of documenting catch by specific ADF&G statistical area.

Alternative 4 - Place observers aboard a portion of the catcher/processor and mothership/processor vessels and extrapolate the catch from these vessels to the entire fleet.

Under this alternative, catcher/processor and mothership/processor vessels would be required to obtain an FCZ processing permit which would require that observers be allowed onboard if requested. These catch/processor and mothership/processor vessels would be required to notify NMFS via U.S. Coast Guard radio each time they entered or left an FMP management area. Observers would be placed aboard a portion of the catcher/processor and mothership/processor vessels. Radio reports of catch from the observed sample would be extrapolated to all vessels in each management area. ADF&G fish tickets would continue to be required to be submitted within one week of the date of landing to document more precise catch or product weights and specific ADF&G statistical areas. A completed logbook may be submitted with the ADF&G fish ticket showing total catch by species for a trip as a means of documenting catch by specific ADF&G statistical area.

Alternative 5 - Place observers aboard all catcher/processor and mothership/processor vessels.

Require catcher/processor and mothership/processor vessels to obtain an FCZ processing permit which would require that an observer be aboard at all times. Total catch would be computed directly from observer radio reports.

5. Establish Measures to Control the Pacific Halibut Bycatch

Each regulatory alternative for controlling halibut bycatch in trawl fisheries consists of a unique combination of a large number of regulatory elements or options. For example, PSC limits can be stated in terms of numbers or metric tons of halibut; the PSC limits can be in effect for part of the year or the entire year; some fisheries can be exempt from the PSC limits; the limits can be held in common or allocated to individual fisheries or operations; the sanctions imposed when a limit is reached can include a closure, gear restrictions, the imposition of bycatch fees, or merely a request that efforts be taken to control bycatch; and PSC limits or other mechanisms to encourage trawl fleets to control bycatch can be used. A more complete list of these elements and a qualitative evaluation of them is presented by Terry (1984, 1985). The alternatives presented below are specific combinations of these regulatory elements or options. The alternatives are:

Alternative 1 - Maintain the Western and Central Gulf PSC limits of 29 mt and 52 mt, respectively (status quo).

This alternative is defined by the following set of regulatory elements.

(a) PSC limits of 29 mt and 52 mt of halibut for the Western and Central Areas, respectively, are specified in the FMP.
(b) The PSC limits are in effect six months each year, December 1 through May 31.
(c) The PSC limits apply to all domestic trawlers (i.e., domestic trawlers in both wholly domestic and joint venture operations).
(d) Separate PSC allocations are not made by individual fishery or operation.
(e) All further domestic trawling is prohibited in an area until June 1 once the PSC is taken.

Alternative 2 - Raise the Western and Central Gulf PSC limits to 270 mt and 768 mt, respectively (currently implemented by emergency rule).

As noted Section III, the FMP and the emergency rule for 1984 and 1985 set PSC limits for all domestic trawlers but only the bycatch of joint ventures is monitored. To account for this problem, this alternative includes an option with respect to the level of the PSC limits. The option proposes a PSC limit based on the observed joint venture bycatch of halibut in 1984. This alternative can, therefore, be considered as two separate alternatives or as one with a suboption. This alternative is defined by the following set of regulatory elements with the suboption defined by element a'.

(a) PSC limits of 270 mt and 768 mt of halibut for the Western and Central Areas, respectively, are specified in the FMP.
(a') PSC limits of 120 mt and 330 mt of halibut for the Western and Central Areas, respectively, are specified in the FMP.

(b) The PSC limits are in effect six months each year, December 1 through May 31.
(c) The PSC limits apply to all domestic trawlers (i.e., domestic trawlers in both wholly domestic and joint venture operations).
(d) Separate PSC allocations are not made by individual fishery or operation.
(e) All further on-bottom domestic trawling is prohibited in an area until June 1 once the PSC limit is taken; however, further off-bottom domestic trawling is permitted.

Alternative 3 - Develop a framework procedure for the annual adjustment of PSC limits.

Two versions of alternative 3 are defined below as two sets of regulatory elements. The differences are in terms of the number of elements that are frameworked and the allocation of PSC limits among fisheries.

(a) The FMP specifies the procedure that will be used to annually determine and make inseason adjustments to the PSC limits for the Western, Central, and Eastern Areas. The limits are specified in terms of metric tons of bycatch.
(b) The PSC limits are in effect 12 months each year (i.e., they are in effect all year).
(c) In each area there are separate PSC limits for wholly domestic, joint venture, and foreign fisheries and a procedure is specified for changing the number of PSC limits per area as the fisheries change or as new information becomes available.
(d) Further on-bottom trawling during a year is prohibited in a fishery and area once a fishery takes its PSC limit in that area.
(e) The FMP specifies a procedure to be used to change the types of operations that may continue to fish once a PSC limit is taken and to impose alternative sanctions for selected types of operations.

Possible modifications to this alternative are outlined below. These modifications are for a subset of the elements of alternative 3 and are presented using the reference letters used above.

(a') A method for changing the areas for which PSC limits are established is specified in the FMP.
(c) Each year individual operations will be allocated PSC limits for each area, individual PSC limits are transferable. The method that will be used to make the initial and supplemental allocations will be determined by procedures specified in the FMP.

The procedures referred to above are presented below using the same reference letters. Note that not all of the elements require a procedure and that the reference letters a' and c' are for the second or modified version of Alternative 3.

(a) Procedure for Setting and Adjusting PSC Limits

The halibut PSC limit for each fishery and area will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to

him halibut PSC limits for each fishery and area based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend PSC limits by December 15, the PSC limits already established shall automatically constitute the Council's recommendations to the Regional Director.

The Council's recommendations will be based on the following types of information:

1. estimated bycatch in years prior to that for which PSC limits are being set,
2. expected change in groundfish catch,
3. estimated change in groundfish biomass,
4. estimated change in halibut biomass and stock condition,
5. potential impact on halibut stocks,
6. potential impacts on domestic halibut fishery,
7. methods available to reduce bycatch,
8. the cost of reducing bycatch, and
9. other biological and socioeconomic factors that affect the appropriateness of specific PSC limits in terms of FMP objectives.

For example, the 1984 halibut bycatch in the joint venture fisheries was 141 mt in the Western Area and 431 mt in the Central Area; therefore, if after reviewing the above factors the Council determines that a 25% increase in bycatch is appropriate, it would recommend that the joint venture be set at 176 mt and 539 mt, respectively for the two areas.

The Regional Director may change the PSC limits during the year for which they were set, if as new information becomes available, it is apparent to him that his initial determination has become inappropriate with respect to meeting FMP objectives. The Council may recommend such inseason changes based on new information.

(c) Procedure for Changing the Number of PSC Limits for Each Area

The number of halibut PSC limits for each area will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to him the number of halibut PSC limits for each area based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend numbers of PSC limits by December 15, the number of PSC limits already established shall automatically constitute the Council's recommendations to the Regional Director.

The Council's recommendations will be based on the types of information listed above and additional information as appropriate to meet the FMP objectives.

The Regional Director has the same authority to change the number of PSC limits inseason as he has to change the PSC limits.

(e) Procedure for Changing the Sanctions to be Imposed Once a PSC Limit is Taken

The procedure for changing the sanctions to be imposed once a PSC limit is taken are similar to those for setting both the PSC limits and the number of limits per area; and as with either of these two aspects of PSC regulations, the Regional Director may make inseason changes.

(a') Procedure for Changing the Areas for which PSCs are Defined

The procedure will be similar to that presented above for determining the other aspects of PSC regulations and the Regional Director will have correspondingly similar authority to make inseason changes.

(c') Procedure for Determining Initial Annual and Supplemental Allocations to Individual Operations

The method of allocation will be determined by the Regional Director by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to him a method of allocating halibut PSC limits for each fishery and area based on the best available information concerning the appropriateness of alternative methods with respect to the FMP objectives. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend an allocation method by December 15, the method already established shall automatically constitute the Council's recommendations to the Regional Director.

The method of allocation may include, but is not limited to, the following:

1. allocate based on historical and/or expected catch,
2. auction, or
3. sell at a predetermined price per unit of bycatch.

Alternative 4 - Establish bycatch fees.

Alternative 4 which includes the use of bycatch fees is defined by the following set of regulatory elements.

(a) Bycatch fees would be imposed in terms of dollars per metric ton of halibut bycatch. The procedure used to annually set the fees is specified in the FMP.
(b) Fees would be applicable to all fleets for which bycatch is adequately monitored.
(c) A procedure is specified in the FMP for imposing alternative bycatch control regulations for fisheries in which adequate monitoring is not available.

The procedures referred to in elements a and c are presented below.

(a) Procedure for Determining Bycatch Fees

The halibut bycatch fee for each fishery and area will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year.

Prior to the Regional Director's determination, the Council will recommend to him a halibut bycatch fee for each fishery and area based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend bycatch fees by December 15, the bycatch fees already established shall automatically constitute the Council's recommendations to the Regional Director.

The Council's recommendations will be based on the following types of information:

1. estimated change in halibut biomass and stock condition,
2. potential impact on halibut stocks,
3. potential impacts on domestic halibut fishery,
4. methods available to reduce bycatch,
5. other biological and socioeconomic factors that affect the appropriateness of specific bycatch fees in terms of FMP objectives.

For example, based on an estimate of the potential impact of bycatch on the halibut fishery of approximately $1,000 per metric ton, it may be determined that the appropriate fee is $1,000 per metric ton. In the 1985 Shelikof Strait joint venture pollock fishery which took 0.5 mt of halibut in a 221,000 mt fishery, a fee of $1,000 per ton would have increased the harvesting costs by $0.002 per ton of groundfish. For a fishery with a bycatch rate of one percent, this bycatch fee would increase the harvesting cost by $10 per ton of groundfish if no actions were taken to reduce the bycatch rate.

The Regional Director may change the bycatch fees during the year for which they were set if as new information becomes available it is apparent to him that his initial determination has become inappropriate with respect to meeting FMP objectives. The Council may recommend such inseason changes based on new information.

(c) Procedure for Determining Alternative Bycatch Regulations for Fisheries with Inadequate Bycatch Monitoring

The control of bycatch in fisheries for which bycatch is not well monitored require a separate set of regulations. The halibut PSC regulations for such fisheries will be determined by the Alaska Regional Director of NMFS by the end of the preceding fishing year. Prior to the Regional Director's determination, the Council will recommend to him halibut PSC regulations for such fisheries based on the best available information concerning the affected stocks and fisheries. The Regional Director will make these recommendations and supporting information available to the public for comment. If the Council does not recommend PSC regulations by December 15, the PSC regulations already established shall automatically constitute the Council's recommendations to the Regional Director.

The Council's recommendations will be based on the following types of information:

1. estimated bycatch in years prior to that for which PSC limits are being set,
2. expected change in groundfish catch,
3. estimated change in groundfish biomass,
4. estimated change in halibut biomass and stock condition,
5. potential impact on halibut stocks,
6. potential impacts on domestic halibut fishery,
7. methods available to reduce bycatch,
8. the cost of reducing bycatch,
9. the cost effectiveness of onboard observers in such fisheries,
10. other biological and socioeconomic factors that affect the appropriateness of specific PSC regulations in terms of FMP objectives.

Examples of the regulations include, but are not limited to, the following:

1. Improved monitoring methods can be implemented.
2. Gear, time, and/or area restrictions can be imposed.
3. Fleets may be requested to use voluntary measures.

6. Implement the NMFS Habitat Policy

Alternative 1 - Amend the FMP to address habitat considerations, based on the best available information, to meet standards set forth in the National Marine Fisheries Service's Habitat Conservation Policy.

This alternative focuses, within the FMP, on habitat as the source of productivity of a fishery and demonstrates Council awareness of potential adverse and cumulative effects of man-induced habitat alterations on the health and size of the harvest. It would provide legal foundation for future Council expressions of concern and action should the need arise, and would provide the Secretary with a basis for implementing appropriate Council habitat recommendations to the extent possible within legal and budget limitations.

Alternative 2 - Amend the FMP to add a general habitat conservation objective. However, the more detailed material that is under the Alternative 1 proposed amendment would be included in a separate Council Habitat Document that would be referenced in, but not part of, the FMP.

This alternative would issue the amendment text as a Council Habitat Document separate from, but referenced in, the FMP. Not subject to Secretarial approval, it would provide essentially the same information without the need for FMP amendment should the information change. Whether future Council action based on information published separately from the FMP would have the same legal effect is uncertain and is being evaluated.

Alternative 3 - Do not amend the FMP to address habitat considerations.

Under this alternative, the FMP would not be responsive to the NMFS Habitat Conservation Policy.

7. Sablefish Fishing Seasons

Alternative 1 - Maintain the current sablefish fishing season of January 1 through December 31 or until closed by field order (status quo).

This alternative would maintain the status quo and open the sablefish fishery with all other groundfish fisheries in the Fishery Conservation Zone.

Alternative 2 - Change the opening date of the sablefish fishery in the Southeast and East Yakutat Districts from January 1 to March 15.

This alternative is being requested by Southeast Alaska fishermen and processors. A later opening is considered more desirable given the fish quality problems associated with spawning and the increased dangers to vessel and crew when fishing in this area during the winter. A March 15 opening would also bring the federal season into conformity with the State for most of this area.

Alternative 3 - Change the opening dates of the Southeast - East Yakutat and Central area sablefish fisheries to March 15 and May 1, respectively.

This alternative is similar to Alternative 2 and would meet the request of Southeast Alaska fishermen and processors. It differs from the above alternatives by delaying the opening date in the Central Regulatory Area from January 1 to May 1. A later opening in this area is being considered due to reports of poor fish quality and bad weather in the area during the winter and early spring months.

IV. ENVIRONMENTAL IMPACTS OF THE AMENDMENT PROPOSALS AND THEIR ALTERNATIVES

Environmental impacts on the quality of the human environment are categorized as physical, biological, and socioeconomic. The socioeconomic analysis is presented under the Initial Regulatory Impact Review/Initial Regulatory Flexibility Analysis prepared for Amendment 14. The remaining physical and biological impacts are discussed as follows:

1. Establish a Gear and/or Area Restriction in the Sablefish Fishery

Since pots, longline and gillnets are fixed gear types, only moving generally up and down when set and retrieved, impacts on the physical environment are thought to be insignificant and likely immeasurable above natural physical perturbations. However, pots lost during fishing operations become a part of the bottom substrata and may impact the benthic environment. Trawl gear is a moving gear type and is almost always in contact with the bottom when used to harvest sablefish. A trawl net dragged in this manner will disturb the benthos by mixing sediment and water. However, with trawl fishing on sablefish being nearly non-existent in the Gulf of Alaska at the present time, physical impacts attributed to directed sablefish trawl and fixed gear is considered insignificant.

The biological impacts are categorized as changes in predator-prey relationships among invertebrate and vertebrates, changes in status of marine mammals and birds, and nutrient changes due to processing and dumping of fresh

wastes. Biological impacts of a continued harvest will not be measurably different from those of previous years. U.S. fishermen are expected to take an amount of sablefish equal to the optimum yields regardless of the type of gear used. No changes, therefore, in predator-prey relationships or in the status of marine mammals and birds will occur under any of the discussed alternatives with the exception that a hook and longline only restriction would remove from use trawl gear, a gear that is most productive on the continental shelf where larger concentrations of small sablefish are found. An increase in use of this gear type could effect the proportion of juvenile sablefish to the remaining sablefish population. Trawl gear is also associated with high incidental catches of other species including halibut, Pacific cod, and rockfish. While longline and pot gear will also catch a variety of species, the amounts will be small. There currently is insufficient data to assess the full impact of incidental catches of other groundfish species.

Longline, pots and gillnets are usually fished on the edge or slope of the continental shelf where concentrations of larger more marketable fish can be found. Since these three forms of fixed gear can be designed to select for larger fish and are fished on the same grounds where the optimum yield is currently taken, no significant change to predator-prey relationships beyond the status quo is to be expected. No substantial nutrient changes will occur, because all caught sablefish are treated similarly when brought on board the catcher vessels (i.e., they undergo some degree of primary processing before icing or freezing). No differences in amounts of fish wastes entering the marine system will exist. The small number of sablefish pots which are lost during fishing operations, will continue to fish until the biodegradable panel required on each by regulation deteriorates to release those fish that enter them. No data exist to quantify such fishing mortality, but it is not believed to be significant due to the low level of fishing effort with pot gear at this time. However, impacts of lost pot gear on the environment would increase proportional to the extent of pot use in the fishery.

2. Establish Rockfish Quotas and Management Areas

Any decrease in optimum yield is normally expected to result in a reduction of harvest which could have a beneficial impact on the biological and physical environment by resulting in less potential physical disruption of the ecosystem. However, in the case of the five alternatives presented in the other rockfish category, actual harvest is not expected to decline regardless of the Council action and the selection of a preferred alternative.

In any of the alternatives, the other rockfish harvest could increase from the 1984 level of 1,500 mt to a Gulfwide harvest of 5,000 mt. The impact of that increase on the biological and physical environment would be largely dependent on the type of gear utilized and the distribution of effort. Currently other rockfish are harvested in the Central and Western Gulf areas by trawl gear incidental to target fisheries for other species and in the Eastern Gulf by a rapidly expanding target longline fishery. Attempts at target rockfish trawl fisheries have so far proven unsuccessful but could be a major consideration in the future.

The biological and physical impacts of the rockfish fishery are not fully understood. Trophic interaction of rockfish with other species and dependence of other species on rockfish for food are just beginning to be explored.

Perhaps the greatest potential risk is the impact of overharvest on the rockfish stocks themselves. On-bottom trawl gear may result in some short term damage to the benthic environment. The longterm effect is likely to be a function of the type of gear, the duration of the effort and the area fished. Data is not currently available that would allow potential impact to be quantified. Longline gear is set and retrieved vertically through the water column rather than drug across the bottom and therefore impacts on the environment are thought to be insignificant. Both gear types catch and kill other non-target species to varying degrees, but accurate data is not available. The five alternatives presented would very the degree of potential impact.

Under Alternative 1 all harvest of other rockfish up to a Gulf wide OY of 5,000 mt could be taken by any gear type in any area of the Gulf. This could have a negative impact on the rockfish stocks as well as an impact on distribution and abundance of marine mammals, sea birds, and other marine animals that may rely on adult or juvenile rockfish for food. As mentioned above, the extent of dependence if any is not known. Concentrated on bottom trawl effort could have a short term impact on the benthic environment.

Alternative 2 would result in no change to the environment in the area described for the 600 mt OY since the harvest would remain at the 1984 level. However, the potential impacts discussed in alternative A could occur in the remaining areas of the Gulf.

Alternative 3 would minimize potential environmental changes in the Southeastern Gulf, but impacts as a result of concentrated effort could occur in the remaining areas.

Alternative 4 would distribute the effort throughout the Gulf based on abundance of rockfish by species assemblage. Of the five alternatives this one would result in the least potential environmental impact. The distribution of fishing effort would be directly tied to the availability of the resource.

Alternative 5 would also distribute the effort throughout the Gulf, however the extent of fishing effort and the resulting environmental impact would not necessarily be proportional to resource abundance.

Under Alternative 6, the state would be the sole manager of shelf demersal rockfish in the Southeast Outside District. The state currently is the only agency that is monitoring the status of demersal shelf rockfish stocks and which has an existing management program to monitor the progress of the fishery at ports of landing. Hence, under this alternative, results of ongoing state management of demersal shelf rockfish could be reviewed to determine whether any additional conservation and management under an FMP is necessary or could even be realized given current budget constraints imposed on the federal government. No significant biological or physical impacts are expected under this alternative. A uniform management regime by the State is expected. To the extent that the state would be able to optionally manage stocks under a single management regime could prove to be a net positive impact on the well being of those stocks due to the greater extent of management flexibility under the state system. However, it should be noted

that at the current level of funding, the State may not have the resources needed to adequately monitor and manage this fishery independently. Luck of adequate management could lead to a negative impact on rockfish stocks.

More detailed information on the impacts of fisheries on the environment is included in Section IV. 3.

3. Implement New Optimum yields for pollock, Pacific ocean perch, Other rockfish, Atka mackerel, and other species

A. Implement new optimum yields as described under Alternative 1 for each of the above species.

Any increases or decreases in optimum yields are expected to have certain impacts on the biological and physical environment. These impacts are categorized as changes in predator-prey relations among invertebrate and vertebrates, changes in status of 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. All such impacts could be cause to varying degrees by taking of any amount of fish, but this analysis is limited primarily to discussion concerning impacts of the reduction of the pollock optimum yield. These impacts are discussed as follows:

Stress to Marine Mammals

In general, changes in optimum yields are calculated to account for amounts of fish consumed by marine mammals. On the other hand, certain conflicts occur between marine mammals and fishermen as a result of both "predators" being on the same grounds, sometimes in direct competition with each other. Twenty-six species of marine mammals permanently reside in or seasonally frequent the Gulf of Alaska. Many species occur in large numbers each spring and summer, but are few in number during the winter.

The pinniped species that are found in the Gulf of Alaska are all protected by the Marine Mammal Protection Act of 1972 (MMPA). All species are believed to be at their level of optimum sustainable population as defined under the MMPA so that permits for their taking may be issued under carefully limited circumstances. Because groundfish trawl operations generally do involve conflict with pinnipeds, domestic and foreign fishermen proposing to engage in such operations must obtain certificates of inclusion under a general permit for the taking of marine mammals incidental to commercial trawling operations. Under the general permit not more than 1,000 northern sea lions (Eumetopias jubatus), 10 northern fur seals (Callorhinus ursinus), 10 harbor seals (Phoca vitulina), and 10 small cetaceans may be killed or seriously injured annually by domestic trawl operations off Alaska. The incidental taking of pinnipeds in the groundfish fisheries is a significant problem only with respect to northern sea lions. While these sea lions may avoid areas of conspicuous human activity, they do tend to congregate around commercial groundfish operations and are caught in the moving trawls. They also have been known to damage fishing gear and the catch before it can be taken aboard a fishing vessel. Such activities by sea lions can result in defensive action by the affected fishermen who may harm or harass them in an attempt to keep them away from their gear.

The effect on sea lions as a result of the 1985 joint venture fishery should be similar to that in 1984, because the size of the 1984 joint venture harvest (200,000 mt), is about equal to that part of the new joint venture allocation (212,500 mt) of the optimum yield. Sea lion mortality from the 1984 pollock joint venture fishery in Shelikof Strait was well within the limits provided by the Certificates of Inclusion. A total of 254 sea lions were reportedly taken during this fishery. A total of 80 sea lions were reportedly taken in the foreign fishery. U.S. fishermen now have three years of experience in this fishery and are mostly familiar with the protection afforded sea lions. Because sea lions are usally highly visible during daytime, fishermen are able to avoid them while trawling, thus minimizing confrontations. Observations by the National Marine Fisheries Service suggest, however, that trawling conducted during periods of darkness is likely to increase encounters with sea lions. Potential methods to reduce such encounters include: (1) scheduling fishing operations to reduce or eliminate the need to trawl during periods of darkness; and (2) adopting certain technical devices, eg. noise emitters, that would repel sea lions in the vicinity of the a trawl. Fishermen should be encouraged continually to consider and adopt such measures to mitigate the effect of their operations on sea lions in order to enjoy fishing activities without additional measures that could be imposed on them under the Marine Mammal Act.

Stress to Marine Birds

Harvesting operations during the groundfish fisheries may cause marine birds, including those protected by the Migratory Bird Treaty Act, to avoid areas that they might otherwise frequent. Such displacement of these birds would not appear to be a prohibited taking for purposes of the Migratory Bird Treaty Act, but its long-term effect on them is largely unknown. Birds protected under this act could theoretically be captured in trawl gear in the course of their feeding activities. Any such capture that is intentional or negligently caused by fishermen would be a violation of this Act.

Food Competition with Marine Mammals and Birds

Many of the marine mammals and birds that occur in the Gulf of Alaska feed on juvenile and adult groundfish and also on the same animals that the groundfish feed on. Because the groundfish stocks themselves are declining, harvesting a reduced amount of groundfish is not anticipated to result in a surplus of fish in the system that marine mammals and birds could then consume. Theoretically, these reductions in allowable levels of harvest should have a zero net effect on the ecosystem; in reality, predator/prey relationships are not well understood and any resulting changes are not possible to measure against natural perturbations in the ecosystem, given the existing technology to measure them.

Physical changes As a Direct Result Of On-bottom Fishing Practices

Depending on the species, changes in OYs could entail certain combinations of trawls (on-bottom and midwater), longlines, pots, and gillnets. Only the bottom trawl has been identified as a gear type that impacts the bottom. It may cause abrasion of the bottom as it is pulled along, killing or injuring any animals and plant life that may have been in its path. Most bottom trawls are also equipped with rollers, or bobbins, that protect the trawl from

damage, but which may also kill or injure animals and plant life. The actual severity of such impacts are not known, but are largely believed to be insignificant over the long term providing that the impact is periodic because of capacity of the ecosystem to repair itself.

Under this alternative, the total available harvest of groundfish will be decreased by more than 100,000 mt. Because most of this amount is attributed to the decrease in the pollock OY, no change in physical impacts are expected, because most of the pollock harvest is currently conducted with off-bottom gear. This fishing method would rarely come into contact with the bottom, and any physical changes would be immeasurable.

Nutrient Changes Due to Processing and Dumping Fish Wastes

Increases and decreases in OYs will change amounts of fish wastes that are discarded at sea. Processes of change in the ocean are dynamic given the biological and physical interactions that occur. An assessment of the true effects caused as a result of changes are not quantifiable given present technology.

B. Maintain the current optimum yields as described under Alternative 2 for each of the above species.

Stress to Marine Mammals and Birds

Under this alternative, more than 100,000 mt of groundfish could be made available for harvest than in Alternative A. Because the food requirements of marine mammals and birds are factored into the calculations of OYs, the amount being made to the fishery must come partly from the amounts required by marine mammals and birds. If the additional amounts of groundfish were actually harvested, then some adverse impacts must occur on marine mammals and birds through additional harassment or mortality. Whether these impacts would prove deleterious to them is not known. Certain substitutions in prey needed by marine mammals and birds might occur. Likely, however, adverse impacts would accelerate as excess removals of groundfish biomass caused groundfish species to decline in status.

Food Competition with Marine Mammals and Birds

As discussed above for Alternative 1, certain interspecific competition must occur among marine mammals, birds, and fishermen. Harvesting the current specified OYs when the best available information indicates insufficient biomass to support such harvests would cause changes in predator/prey relationships. Fewer large fish would remain in the system to prey on smaller fish etc. Marine mammals may have to forage further than normal. On the other hand, more small organisms may be available to birds and mammals as a result of their not being consumed by larger fish. Again, predator/prey relationships are not well understood and any resulting changes are largely no measurable.

4. Establish a Reporting System for Catcher/Processors

The primary effects imposed upon the biological and physical environment by the catcher/processor reporting alternatives result from the varying potential

for overfishing under each alternative. Both targeted groundfish species and non-targeted incidental or prohibited species could be overfished by catcher/processor and mothership/processor vessels. Since many of the groundfish species concerned are slow growing and long-lived, overharvesting can have considerable impacts on future population levels and production of the targeted groundfish species. Similar effects on population levels and production are possible for incidental and prohibited species catches by these vessels. In addition, considerable socioeconomic impacts on catches by other user groups could result from excessive harvests of prohibited species by catcher/processors, particularly for crab, salmon and halibut. Secondary biological impacts of overharvests would result from changes in trophic interactions caused by the altered population levels of the overfished species.

The potential for resource depletion through overfishing results from the large hold capacities of the catcher/processor and mothership/processor vessels and the potential for these vessels to remain at sea for long periods of time. Under Alternative 1, fishery managers have no knowledge of the catch aboard these vessels until the time of landing. By the time these vessels land, OYs and possible PSC levels could have been greatly exceeded by the aggregate catch aboard the catcher/processor vessels and shore-based domestic vessels. Alternative 2 would greatly reduce the risk of overfishing of targeted groundfish species by requiring weekly catch reports from the catcher/processor and mothership/processor vessels. In addition, this alternative requires vessels to check-in and check-out of each management area fished. This requirement increases the compliance and enforceability of this alternative, further reducing the risk of overfishing. Alternative 3 would require only the weekly catch report, with a somewhat larger risk of overfishing of targeted groundfish species, because of reduced compliance and enforceability. The risk of overfishing is also increased under alternative 3 because the precision of catch estimates is reduced. This results from catch projections for the most recent two week reporting period being based on a two week old effort distribution provided by the preceding catch report, rather than basing the effort distribution on current information from the check-in/check-out system. The onboard observer catch reporting of alternatives 4 and 5 provide the least risk of overfishing targeted groundfish species. Observer based catch reporting provides the only reduction of the risk of overfishing prohibited species catches of the alternatives.

5. Establish Measures to Control the Pacific Halibut Bycatch

Each of the alternatives will affect the biological and physical environment to varying degrees. These impacts are related to changes resulting from removing different numbers of halibut and other bottom organisms and from perturbations of the benthos caused by trawls being dragged along the bottom. Halibut are important predators. Larval halibut feed on plankton, whereas halibut one to three years old, that usually are less than 30 cm long, feed on shrimp-like organisms and small fish. As halibut increase in size, fish and crabs become a more important part of the diet. The species of fish frequently observed in stomachs of large halibut include Pacific cod, pollock, sculpins, sandlance and herring. Octopus and clams also contribute to their diet.

The effect of changes in the amounts of halibut that are taken by domestic groundfish fishermen also depends on halibut management measures undertaken by

the International Pacific Halibut Commission (IPHC). If the incidental catch can instead be taken in the directed halibut fishery.

Under Alternative 1, very little bottom trawling would occur during December-May, and the incidental mortality of halibut, crab and other bottom organisms would be low during this period. A much larger catch would be allowed under Alternative 2. Neither Alternative 1 or 2 has any affect on the halibut and crab catch during the remainder of the year (June-November) and thus the total environmental impact of the groundfish fishery cannot be determined. Under Alternative 3, the total environmental impact would be specified according to the framework procedure and environmental factors would be considered in setting the PSC limit. This alternative proposes exemptions for vessels sorting halibut on deck. This exemption is based on the assumption that on-deck sorting will result in a higher survival rate of released halibut. This assumption is valid only if the sorting occurs immediately after the catch is brought aboard and would not be valid if cod ends are transferred or if the halibut are not immediately released. Enforcement of this alternative with the on-deck exemption may be difficult, leading to higher incidental catches of halibut and/or lower survival rates. As with Alternatives 1 and 2, the environmental impact of Alternative 4 cannot be determined.

6. Implement the NMFS Habitat Policy

This proposal is descriptive in nature, focusing on the environment within which the product for harvest is generated and nurtured. It's purpose is to alert users of the marine environment to the elemental influence of habitat on the productivity of the fishery and to the potential for alteration by man's actions. The intended effect is to provide the basis for a common awareness among these users and for appropriate expressions of Council concern should the need arise. Because this statement is informational only, there is no immediate environmental impact, although the residual effect of increased knowledge may serve, in the long-term, to protect, maintain, or restore the habitats of the Gulf of Alaska groundfish fishery. In the absence of such an amendment, the benefits of increased public awareness of habitat issues would be lost.

7. Sablefish Fishing Seasons

This amendment proposes delaying the opening of the sablefish fisheries in one or more areas for both biological and socioeconomic reasons. The primary biological rationale is that fish quality (i.e. soft belly, soft muscle texture, easy bruising, etc.) is dependent in part on time of year. Detailed biological information on spawning times for sablefish in the Gulf of Alaska is limited. In general it appears that these species reproduce during the winter and early spring months. This spawning period is shared by other groundfish species in the Gulf of Alaska. Harvesting on a spawning stock of fish has always been questionable. The biological impacts of such harvesting remains unknown. Given that sablefish is a low-OY species and that the existing fleet is capable of harvesting the OY at any time of the year in a relatively short period, consideration to spawning periods and the resulting fish quality to processors and the consumer is logical. However, commercial harvesting of sablefish, taken in either the winter, spring, summer, or all year is thought to have no significant impact on the physical and biological environments at the present time.

V. EFFECTS ON ENDANGERED SPECIES AND ON THE ALASKA COASTAL ZONE

None of the seven amendment proposals or their alternatives 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. Thus, consultation procedures under Section 7 on the final actions and their alternatives will not be necessary.

Also, for the reasons discussed above, each of the management proposals, or their alternatives, would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Zone Management Program within the meaning of Section 307(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

VI. FINDINGS OF NO SIGNIFICANT IMPACT

For the reasons discussed above, it is hereby determined that neither approval and implementation of any of the reasonable alternatives concerning the six topics presented would significantly affect the quality of the human environment, and that the preparation of an environmental impact statement on these actions is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

_____ _____

Assistant Administrator for Fisheries, NOAA Date

AGENCIES AND PERSONS CONSULTED

The purpose of this draft environmental assessment is to solicit comments from the public and government agencies. After an appropriate review of this draft, a final environmental assessment will be written that incorporates qualified and reasonable comments. Persons and agencies will be listed at that time.

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LIST OF PREPARERS

Steven K. Davis
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, AK 99510
(907)274-4563

Barry Bracken
Alaska Department of Fish and Game
P.O. Box 667
Petersburg, AK 99833

Fritz Funk
Alaska Department of Fish and Game
P.O. Box 3-2000
Juneau, AK 99802

Ronald J. Berg, Jim Wilson, and
Daphnie White
National Marine Fisheries Service
P.O. Box 1668
Juneau, AK 99802
(907)586-7230

Steve Hoag
International Pacific Halibut
Commission
P.O. Box 5009, University Station
Seattle, WA 98105

Gary Stauffer and Joe Terry
Northwest & Alaska Fisheries Ctr.
National Marine Fisheries Service
7600 Sand Point Way NE, Bldg 4
BIN C15700
Seattle, WA 98155

GULF OF ALASKA GROUNDFISH PLAN TEAM

DISCUSSION PAPER
SINGLE SPECIES OPTIMUM YIELD CLOSURES
MAY 1985

I. INTRODUCTION

The purpose of this discussion paper is to describe a recurrent inseason management problem resulting from the existing management regime under the FMP for Groundfish of the Gulf of Alaska and to propose a regulatory amendment to current domestic and foreign fishing regulations that would resolve the problem. Specifically, current domestic and foreign regulations require, with certain exceptions noted below, the Regional Director to terminate fishing for all groundfish in a regulatory area or district when the optimum yield (OY) for any one species is reached. These regulations were promulgated initially to minimize the risk of overfishing a species, which might otherwise occur if bycatches of the species were allowed after reaching the OY. Severe economic hardship could be imposed on other fisheries, however, if they were forced to forego fishing through closure of a regulatory area or district. Certain types of fishing could be allowed to continue if additional mortality would not be inflicted on the species for which an OY had been reached.

II. DESCRIPTION OF AND NEED FOR REGULATORY AMENDMENT

The Fishery Management Plan for Groundfish of the Gulf of Alaska was developed by the North Pacific Fishery Management Council, approved by the Secretary of Commerce, and implemented with final regulations on December 1, 1978. Ten species or species groups (species) of groundfish are managed under the FMP, which establishes optimum yields (OY) for each species. Each OY represents the best estimate of a harvest level for that species, taking into account biological, ecological, and economic information. Since the FMP was implemented, OYs for each species have been managed as a "cap", above which additional harvesting would not be allowed to prevent overfishing. Such management has been in response to (1) Management Objective A of the FMP "Rational and optimal use, in both the biological and socioeconomic sense, of the region's fishery resources as a whole" and (2) National Standard 1 of the Magnuson Act "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery." To avoid such possible overfishing, both foreign and domestic regulations implementing the FMP contain measures that require closures of entire regulatory areas or districts whenever an OY for any species is reached. These respective regulations read as follows:

Foreign Fishery

50 CFR Part 611.92(c)(2)(ii) Each year, the Secretary shall issue a notice of closure pursuant to the procedures of §611.15(c), prohibiting fishing with specified gear types for any groundfish species, species group, or species category in the applicable regulatory area or district

by vessels subject to this section, when the Regional Director determines that one or more of the following catch limitations will be reached:

(A) OY for any groundfish species, species group, or species category in a regulatory area or district: the Secretary shall issue a notice prohibiting, through December 31, fishing using trawl gear for groundfish in that regulatory area or district by vessels subject to this section, except that if the optimum yield for sablefish or Pacific cod in a regulatory area or district will be reached, the Secretary shall prohibit fishing for groundfish in that regulatory area or district by all vessels subject to this section through December 31. [Note: sablefish is now treated as a prohibited species in the foreign and joint venture fisheries].

Domestic Fishery

50 CFR Part 672.20(b) (1) If the Regional Director determines that the OY for any species in any regulatory area or district ... will be reached, he shall issue a field order pursuant to §672.22(a) prohibiting fishing for all species in that fishing area, except that the Regional Director shall not prohibit, under this section, fishing for sablefish by fishing vessels using longline gear unless he determines that the OY for sablefish in that fishing area will be reached.

Both domestic and foreign regulations were apparently written in recognition that some gear take few, if any, of certain species, thereby justifying continued fishing when the OYs for those species have been reached. See the above cases where hook-and-line foreign fisheries for Pacific cod and domestic fisheries for sablefish are allowed to continue when the OYs for other species have been reached. Only when the OYs for Pacific cod and sablefish have been reached, are all fisheries in a regulatory area consequently prohibited, thus stopping additional mortality on the species for which the closure was instituted.

Other fisheries that could be allowed to continue are: (1) the hook-and-line fishery for demersal shelf rockfish, which is conducted at depths of 80-90 fathoms compared to the sablefish fishery, which is conducted at depths of 150+ fathoms; and (2) the Shelikof Strait pollock fishery using off-bottom trawls, which take almost no other species except Pacific cod. Certain other fisheries could be allowed to continue, then, if additional mortality on the species for which the closure was instituted would be neglible.

The likelihood that the sablefish OYs will be taken early in 1985 is high, thus requiring the Regional Director to prohibit further fishing by all gear users in a regulatory area or district. The Southeast/East Yakutat District was closed to a directed sablefish fishery on April 21; only about 80 mt of the 2,570 mt-OY are available to support other directed fisheries. The West Yakutat District was closed to a directed sablefish fishery on May 15, 1985; the final catch to-date is not certain. Closures of the Central Area and possibly the Western Area are expected during the early summer months. OYs for some other species, eg. Atka mackerel, Pacific ocean perch, and rockfish, are constraining also, because they may not be sufficiently abundant to support even bycatches in other fisheries.

III. MANAGEMENT ALTERNATIVES

A "framework" amendment could be designed that would negate the problem of single species OY closures. The Council considered "frameworking" the FMP during the present 1985 amendment cycle, but because other management needs were higher in priority, directed the Plan Team to develop a "framework" amendment for possible consideration by the Council during the 1986 amendment cycle. Another Council FMP - " The Groundfish Fishery of Bering Sea and Aleutian Islands Area" - has instituted a single, multispecies OY range that allows for harvesting larger amounts of some species as long as the total harvest does not exceed the OY. The management regime under that FMP, or some other form of "framework" management, may be adopted for the Gulf of Alaska groundfish FMP. A "framework" plan amendment, however, will not be in effect until 1987. A solution to the management problem at hand is needed for the remainder of 1985 and for all of 1986, or until the FMP is amended.

Certain management alternatives in addition to "frameworking" the FMP are possible concerning the problem of inseason single species OY closures. Some alternatives such as redefining the OY to (1) allow fishing to exceed a point value by "X %" or (2) allow biologically small bycatches to exceed the OY would also require an FMP amendment.

Alternatives considered in this discussion paper would be accomplished by a regulatory amendment. One alternative would give greater inseason management authority to the Regional Director to allow certain fishing segments to continue operations if certain findings could be made. Another alternative would establish prohibited species catch limits when the OYs for certain species were achieved. A third alternative would be to continue with the "status quo", i.e., terminating fishing in regulatory areas or districts when OYs were reached. Each of these alternatives are discussed in more detail below.

ALTERNATIVE 1. Amend the current domestic and foreign fishing regulations as follows:

(A) Exempt certain fisheries that are known to take negligible amounts of certain species from area closures when the OY for those species is reached.

(B) Exempt certain gear types used in target fisheries that are known to take negligible amounts of certain species from area closures when the OY for those species is reached.

(C) Authorize the Regional Director to manage the OY for each target species such that the directed fishery is closed short of a percentage of the OY to allow a buffer amount as a bycatch in other target fisheries.

(D) Subsequent to a closure when the OY is reached, authorize the Regional Director to reopen a fishery by field order on the basis of the most recent scientific and technical information available after he has considered all of the following criteria in descending order of priority:

    (1) The need to protect a groundfish species for biological and other conservation reasons;

(2) The impact that additional fishing mortality might have on other target fisheries that depend on the species being protected if the closed fishery were reopened;

(3) The impact that a continued closure might have on the development and operation of domestic fisheries; and

(4) The impact that a continued closure might have on foreign groundfish fisheries.

Under (A) of this alternative, certain fisheries would be recognized that do not take some groundfish species or the take is so small that any impacts on the status of that species would be negligible or even unmeasurable. Examples are the hook-and-line fisheries for demersal shelf rockfish species that take negligible amounts of sablefish. Fisheries on demersal rockfish could be exempt from a regulatory area closure.

Under (B) of this alternative, the Regional Director would be authorized to prohibit by field order certain gear types, eg. bottom trawls, that would continue to catch species for which the OY had been achieved. Thus, certain gear types could still be allowed, eg. pelagic trawls used in a pollock fishery, because they are known to take almost no sablefish, flounder, and "other species".

Under (C) of this alternative, the Regional Director would terminate those target fisheries that were not exempt from the possibility of a closure when their catches reached some appropriate level that would leave an adequate amount "on the table" to support fisheries for other target species. Such bycatch amounts could be treated as prohibited species to remove any economic incentive for "opportunity targeting" on the bycatch species.

Under (D) of this alternative, the Regional Director would be authorized to make real time determinations as to the costs and benefits of a regulatory area closure when an OY had been reached. He could thus take into account newly obtained information about areas or times of the year being fished and stock conditions that could lead to a rational determination to let certain fisheries continue. Resulting bycatches would be evaluated by the Plan Team. If bycatches were large compared to the supporting biomass, the Plan Team could recommend that the Council reduce the following year's OY to account for the additional mortality. The condition of some stocks may at times be in a state of decline such the EY would be lower than OY. This situation currently exists relative to pollock stocks. This example represents one of the factors the Regional Director would review prior to issuing a field order.

ALTERNATIVE 2. Establish prohibited species catch limits (PSCs) for species such that bycatches in other target fisheries would be authorized, after the OY had been achieved, up to an amount not to exceed the PSC.

Under this alternative, the Regional Director would be authorized to inform all user groups that a species for which the OY had been reached must be treated as a prohibited species and discarded at sea regardless of its condition. A PSC must be established at the beginning of the fishing year and thus made available as a contingency to account for the additional mortality that would be inflicted. PSCs could be established for a species when (1) its

biomass is less than that which theoretically produce MSY, justifying an OY being set less than EY to rebuild stocks, (2) an OY for that species is set less than the acceptable biological catch for reasons addressing socioeconomic factors, and (3) an OY is set less than acceptable biological catch to protect some other species (eg. the flounder OY is set at 50% of its acceptable biological catch to protect Pacific halibut).

ALTERNATIVE 3. Designate a species for which the OY had been reached as a prohibited species, authorizing other target fisheries to continue without further accounting for the prohibited species.

Under this alternative, any species for which the OY had been reached would be treated as a prohibited species and discarded at sea. This alternative is not feasible without a plan amendment, because any taking of species that would result in their mortality in excess of the OY would be inconsistent with the provisions of the FMP, which provides only for a harvest equal to the specified OY for any species category.

ALTERNATIVE 4 = Status quo.

Under this alternative, the Regional Director would utilize his current authority and prohibit all domestic and foreign fishing in a regulatory area after the OY for a species had been reached. This alternative is not acceptable, because it would not solve the problem discussed above. Severe and unnecessary economic hardship could be imposed on certain fishermen under this alternative.

North Pacific Fishery Management Council
Fishery Management Plan for the
Gulf of Alaska Groundfish Fishery

Outline for Habitat Sections of
Amendment 14

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[3.0 Description of Fishery. 3.1 Areas and Stocks Involved. 3.2 History of Exploitation. 3.3 History of Management. 3.4 History of Research. 3.5 Socio-Economic Characteristics.]

3.5.7 Other Activities Directly Related to Fishing.
3.5.7.1 Potential for Habitat Alteration.
(a) Offshore petroleum production.
(b) Coastal development and filling.
(c) Marine mining.
(d) Ocean discharge and dumping.
(e) Derelict fragments of fishing gear and general litter.
(f) Benthic habitat damage by bottom gear.

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[4.0 Biological descriptors.]

4.1 Life History Features and Habitat Requirements.
4.1.1 Walleye pollock.
4.1.2 Pacific cod.
4.1.3 Flounder.
4.1.4 Pacific ocean perch.
4.1.5 Sablefish.
4.1.6 Atka mackerel.
4.1.7 Squid.
4.1.8 Grenadiers.
4.1.9 Thornyhead rockfish.
4.1.10 Pacific halibut.

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4.9 Future Research Needs.
[Add text at end of section.]

4.10 Habitat Areas of Particular Concern.

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[8.0 Management Regime.]

8.1 Management Objectives.
(5) [Add habitat objective.]

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[8.2 Areas, Fisheries, and Stocks Involved. 8.3 Management Measures and Rationale. 8.4 Enforcement Requirements. 8.5 Reporting Requirements. 8.6 Observers. 8.7 Cooperative Research Requirements. 8.8 Permit Requirements. 8.9 Financing Requirements.]

8.10 Management Measures to Address Identified Habitat Problems.

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[10.0 References.]

Sources used in preparing habitat amendment.

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[11.0 Appendices. 11.1 Appendix I.]

11.2 Appendix II: Description of Habitat of Gulf of Alaska Groundfish Stocks.

A. Description of habitat types.

B. Habitat protection: existing programs.
   1. Federal legislative programs and responsibilities related to habitat.
   2. Specific actions taken by the Council and NMFS related to habitat for the Gulf of Alaska fishery.

C. Non-regulatory techniques to address identified habitat problems.

[3.0 Description of fishery. 3.1 Areas and Stocks Involved. 3.2. History of Exploitation. 3.3 History of Management. 3.4 History of Research. 3.5 Socio-economic characteristics.]

3.5.7 Other Activities Directly Related to Fishing.

3.5.7.1 Potential for habitat alteration. This section discusses types of human activities that have a potential to cause pollution and habitat degradation that could affect groundfish populations in the Gulf of Alaska fishery management area. It is not intended as a statement of present conditions; rather, it is designed to identify those areas of uncertainty that may reasonably deserve Council attention in the future.

Habitat alteration may lower both the quantity and quality of groundfish products through physical changes or chemical contamination of habitat. Species and individuals within species differ in their tolerance to effects of habitat alteration. It is possible for the timing of a major alteration event and the occurrence of a large concentration of living marine resources to coincide in a manner that has significant effects on fishery stocks and their supporting habitats. It is also possible the effects of lesser events may be masked by other natural phenomena or may be delayed in becoming evident. It is, therefore, generally difficult to separate the effects of habitat alteration from those of other factors such as fishing mortality, predation, and natural environmental fluctuations.

Species dependent on coastal areas during various stages of their life, particularly for reproduction, are more vulnerable to habitat alterations than are species that remain offshore. Also, the effects of habitat alteration on fish species offshore are not as apparent as they are in coastal areas. Concern is warranted, however, to the extent that (1) the offshore environment is subject to habitat degradation from either inshore activities or offshore uses, and (2) some species living offshore depend directly or indirectly on coastal habitats for reproduction and food supply.

At present, there is no indication that human activities have had any measurable effect on the existing groundfish habitats in the Gulf of Alaska, though there have been localized effects. The present primary human use of the offshore area is commercial fishing, and, to a lesser degree, shipping. While the establishment of other activities could potentially generate user conflicts, pollution, and habitat deterioration, it is the collective opinion of the Council and NMFS that the status of the habitat in this management area is generally unaffected by other human activities at this time.

(a) Offshore Petroleum Production. This material is drawn from Berg (1977); Deis et al., (1983); Thorsteinson and Thorsteinson (1982); and Weise (1984).

The Alaska offshore area comprises 74 percent of the total area of the U.S. continental shelf. Because of its size, the Alaska outer continental shelf (OCS) is divided into three subregions: Arctic, Bering Sea, and Gulf of Alaska. The Gulf of Alaska Subregion presently contains four planning areas where lease sales have been held or are currently scheduled: Gulf of Alaska, Cook Inlet/Shelikof Strait, and Shumagin. Exploration activities on past lease sales in the Gulf of Alaska have been conducted since 1977, but have

failed to yield any oil discoveries. With the exception of one company drilling in the Shelikof Strait, no further drilling plans in the area have been announced.

If a commercial quantity of petroleum is found in the Gulf of Alaska, its production would require construction of facilities and all the necessary infrastructure for either pipelines to onshore storage and shipment terminals or to build offshore loading facilities. It is believed that any commercial discoveries in the Gulf of Alaska would be pipelined to shore for transportation by oil tankers.

Oil and gas related activities in the Gulf of Alaska have the potential to cause pollution of habitats, loss of resources, and use conflicts. Physical alterations in the quality and quantity of existing local habitats may occur because of the siting of offshore drilling rigs and platforms, loading platforms, or pipelines.

Pollution risks. Large oil spills are the most serious potential source of pollution related to oil and gas exploration and development in the Gulf of Alaska. Offshore oil and gas development will inevitably result in some oil entering the environment. Most spills are expected to be of small size, although there is a potential for spills greater than 1,000 barrels to occur. In large quantities, this oil can affect habitats and living marine resources. Many factors determine the degree of damage from a spill; the most important variables are the type of oil, size and duration of the spill, geographic location of the spill, and the season. Although oil is toxic to all marine organisms at high concentrations, certain species are more sensitive than others. In general, the early life stages (eggs and larvae) are most sensitive; juveniles less sensitive, and adults least so (Rice et al., 1984).

Habitats most sensitive to oil pollution are typically located in those coastal areas with the lowest physical energy because once oiled, these areas are the slowest to repurify. Examples of low energy environments include tidal marshes, lagoons, protected embayments, and seafloor sediments. Exposed rocky shores and ocean surface waters are higher energy environments where physical processes will more rapidly remove or actively weather spilled oil.

It is possible for a major oil spill (i.e., 50,000 bbls) to produce a surface slick covering up to several hundred square kilometers of surface area. Oil would generally be at toxic levels to some organisms within this slick. Beneath and surrounding the surface slick, there would be some oil-contaminated waters. Mixing and current dispersal would act to reduce the oil concentrations with depth and distance. If the oil spill trajectory moves toward land, habitats and species could be affected by the loading of oil into contained areas of the nearshore environment. In the shallower waters an oil spill could be mixed throughout the water column and contaminate the seabed sediments. Suspended sediment can also act to carry oil to the seabed.

Toxic fractions of oil mixed to depth and under the surface slick could cause mortalities and sublethal effects to individuals and populations. However, the area contaminated would appear negligible in relation to the

overall size of the area inhabited by commercial groundfish in the Gulf of Alaska. As a result, oil spills at sea are believed to be local and transitory, and would have only minor effects on fish populations overall. Measurable damage to fishery stocks from an oilspill would appear to be the exception rather than the rule. Even if concentrations of oil are sufficiently diluted not to be physically damaging to marine organisms or their consumers, it still may be detected by them, and could alter certain of their behavior patterns. Other exceptions are where the spill reaches nearshore areas with productive nursery grounds or areas containing high densities of fish eggs and larvae. A year class of a commercially important species of fish or shellfish could possibly be reduced, and any fishery dependent on it may be affected in later years. An oil spill at an especially important habitat (i.e., a gyre where larvae are concentrated) could result in disproportionately high losses of the resource compared to other areas.

The shipment of up to 1.5 million barrels a day of oil out of Valdez is presently the greatest risk of a major oil spill in the Gulf of Alaska. A major tanker accident could release over 100,000 barrels of crude oil into these waters. Since these oil tanker routes transit important commercial fishing grounds enroute from Valdez, the potential for damage to groundfish resources exists.

Other sources of potential habitat degradation and pollution from oil and gas activities include the disposal of drilling muds and cuttings to the water and seabed, disposal of drilling fluids and produced waters in the water column, and dredged materials from pipeline laying or facilities construction. These materials might contain heavy metals or other chemical compounds that would be released to the environment, but the quantities are generally low and only local impacts would be expected to occur. Again, these activities may be of concern if they occurred in habitats of special biological importance to a resource.

Interference by seismic vessel operations. Seismic vessels operate in the Gulf of Alaska fishery management area for oil and gas exploration purposes. The potential exists for interference between commercial fishing vessels and seismic vessels if both are operating in an area at the same time. The effect of seismic noises on groundfish is being studied off the coast of California, since concern has been expressed by fishermen that the seismic pulse has the effect of dispersing schools of fish and making them difficult to catch. Results of these studies are not yet available.

(b) Coastal development and filling. Developmental pressure to the coastal habitat of the Gulf of Alaska has been largely due to residential and industrial support activities generated by the fishing, mining, timber, and oil industries.

Coastal fills are regulated by permits issued under Section 10 of the River and Harbor Act and Section 404 of the Clean Water Act. In 1983, for example, the Department of the Army issued 91 permits in southeast Alaska and 25 from Prince William Sound over to the Aleutians, which involved fill to be placed in coastal or intertidal areas. Effects of fill in these wetland and intertidal areas are felt by the marine resources through loss of the nutrients that would have been produced intertidally and transported to surface and deep waters. Development of marinas and small boat harbors can also

affect resources by increased hydrocarbon discharge and heavy metal accumulation in the biota and sediments (Karinen, 1983). Without special considerations these facilities could affect local flushing, water temperatures, water quality, and access by fishes.

Another effect of coastal development is the timber harvest on the Tongass National Forest mandated in the Alaska National Interest Lands Act. This Act has been interpreted by the USDA Forest Service to require that 450 million board feet of timber be made available for harvest each year. Additional harvest is occurring from private lands in southeast Alaska. Effects of this harvest on groundfish are thought to be minimal.

Hard rock mining in the coastal areas, such as the proposed U.S. Borax Molybdenum mine at Quartz Hill will have an impact on marine organisms by the discharge of approximately 16 million tons of finely ground quartz into a marine fjord (either Boca de Quadra or Smeaton Bay). These mine tailings will effectively cover the benthic habitat in the fjord for as long as it takes recolonization to occur on top of them.

(c) Marine mining. The advisability of developing a program for leasing of nonenergy minerals on the outer continental shelf is being considered by the Minerals Management Service. They have indicated that the most promising sand and gravel deposits are associated with glacial moraines and drift, outwash plains, and glaciofluvial deltas - dominant characteristics of the Gulf of Alaska coastline. Areas where onshore lode deposits of gold are near enough to the continental shelf to merit investigation include lower Cook Inlet in Kamishak Bay extending around the lower end of Kenai Peninsula, and possibly Resurrection Bay near Seward. Offshore areas possessing potential for placer mining include Shelikof Straits, offshore of the Copper River Delta, and most of the inside waters in southeast Alaska. Currently there are some placer mining claims on the beach in the Yakataga area, and some storage and transfer activities associated with native allotments of mineral deposits in the Copper River area. Neither the future extent nor the effects of marine mining activities on groundfish addressed by this plan is known.

(d) Ocean discharge and dumping. The largest point source discharge of hydrocarbon pollution entering the Gulf of Alaska may be the discharge from the ballast water treatment facility at the terminal of the Transalaska Pipeline System at Valdez. Federal law requires ballast water to be treated to recover residual crude oil prior to returning it to port. This effluent criteria is set at five parts per million oil and grease; the treatment plant processes 10 to 20 million barrels of bilge water per day. During the first 74 months of operation, a total of 350 metric tons of oil and grease were discharged, which corresponds to about 170 kilograms per day (Shaw, 1984). The effect of this chronic pollution on fisheries of the FCZ has not been determined. Other sources of possible contaminants would be ocean dumping of sewage sludge, industrial waste, dredged material, or radioactive waste. The city of Acutan, for example, has a permit to dump waste at sea from the city's incinerator.

(e) Derelict fragments of fishing gear and general litter. The introduction of debris into the marine environment occurs when commercial fisheries take place. The debris includes netting, pots, longline gear,

packing bands, and other material. Because of the lack of a monitoring program, estimates of debris have been based on 1) observations of debris at sea and on beaches, and 2) occasional reports of accidental or deliberate discards of fishing gear. Studies by Merrell (1984) and other have shown that much of the observed debris consists of fragments of trawl netting. Much of this netting may be discarded carelessly at the time nets are repaired.

The quantity of marine debris that is produced by commercial fisheries depends on a variety of factors including the types and amount of gear used and the efforts fishermen make to reduce both accidental and deliberate discards of debris. It is not known how the type and amount of gear used will change or how such change will affect the level of debris.

Debris may result in the mortality of marine fish, marine mammals, and birds that become entangled in or ingest it. Descarded trawl netting that floats at the surface is not a threat to most fish, but it has been identified as a source of mortality for marine mammals and birds. Similarly, discarded packing bands have been identified as a source of mortality for marine mammals. Other discarded gear including pots continue to function unattended for varying lengths of time. Neither the extent of debris-related mortality nor the effects of such mortality on the abundance of various species is known.

(f) Benthic habitat damage by fishing gear. Trawling, potfishing, gillnets, and longlines are the methods of fishing for groundfish in the Gulf of Alaska management area. Bottom type varies from the rocky complex to the flatter sand and mud.

Any effect of gear dragged along the bottom depends on the type of gear, its rigging, and the type of bottom and its biota. In addition to the target species, movement of a bottom trawl through an area primarily affects the slow moving macrobenthic fauna such as seastars and sea urchins. Some bivalves can also be damaged. Although little is known of the effects these disturbances and damages have on the affected species or their local communities, only minor impacts are suspected.

Numerous studies to determine these impacts have been conducted (notably in European waters) since World War II. Most of the studies and their results have been summarized in a report by Natural Resource Consultants (1984) titled "Trawl Evaluation Study". The consensus of these investigators is that the overall effect of trawling on sea bottom may not be harmful, and may, in fact, be beneficial. They found, for example: that trawl doors on sand and soft bottom stir up sand and silt which settle quickly. On muddy bottoms, the stirred up mud settles in a few hours, depending on the current speed and resulting turbulence near the bottom. Trawls have not been observed to kill flatfishes. The damaged organisms, as well as the infauna which might have been dug up by the trawl are quickly preyed upon by fish and crabs. Several researchers observe that fishing by trawls with tickler chains has not resulted in any apparent effects on the sea bed or its biota (Hempel, 1979).

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[4.0 Biological Descriptors.]

4.1 Life History Features and Habitat requirements. This section describes the particular habitat requirements of the different species and their life stages in the Gulf of Alaska. This information is derived from Carlson and Haight (1976), Carlson and Straty (1981), Gunderson (1971), Lisovenko (1964), Major and Shippen (1970), and Morris et al., (1983).

4.1.1 Walleye pollock are found throughout the water column from shallow to deep water, frequently forming large schools at depths of 100 to 400 m along the outer continental shelf and slope, as well as in deep water. Seasonal movements between inshore-offshore habitats have been observed, with adult fish moving in the spring from deep water to shallower depths where they remain throughout the summer. In the fall, they return to deep water. In addition to seasonal movements, there may be vertical movements in the water column associated with time of day and feeding patterns.

Spawning is seasonal and occurs during the winter-spring period. Important spawning habitats include the Kilfuda and Chirikof-Shelikof Troughs. Eggs, larvae, and young pollock are found in near-surface waters in great numbers.

Feeding is opportunistic; walleye pollock feed on free-swimming pelagic animals. They feed predominantly on small to medium size planktonic and nektonic prey such as copepods, euphausiids, amphipods, and shrimps, smelt, and other small fish. At times they are cannibalistic. They are preyed upon by marine mammals and other large pelagic fish.

4.1.2 Pacific cod is a widespread demersal species found along the continental shelf of the Gulf of Alaska from inshore waters to the upper slope. Maximum abundance of adult cod in summer is generally in depths less than 100 m. In the Gulf of Alaska, Pacific cod is most abundant in the western Gulf, where large schools may be encountered at varying depths depending upon the season of the year. During the winter and spring, cod appear to concentrate in the canyons that cut across the shelf and along the shelf edge and upper slope between depths of 100-400 m where they overwinter and spawn. In summer, they shift to shallower depths.

Pacific cod spawn in winter. They are very fecund and can produce from 200,000 to 5,700,000 eggs, which are benthic and initially slightly adhesive. Larvae are pelagic.

Pacific cod feed on a variety of prey and prey sizes. Their principal prey are fish such as herring and sand lance as well as invertebrates such as crabs, shrimp, polychaetes, clams, and snails.

4.1.3 Flounders. This group includes arrowtooth flounder, flathead sole, rock sole, Dover sole, yellowfin sole, and rex sole. All are demersal, but have varying depth ranges.

Distribution. Arrowtooth flounder are abundant over a depth range of 100-500 m. During the winter months, they aggregate in the deeper portion of their range. High densities of arrowtooth flounder, as indicated from trawl surveys, have also been found in waters off southeastern Alaska at depths of 200-400 m. Flathead sole are most abundant at depths less than 350 m. Rock sole are most abundant in the Kodiak and Shumagin area. They are a

shallow-water species, preferring depths less than 100 m. Dover sole and rex sole are closely associated with the soft bottom community of benthic animals that occurs in the deepwater portions of submarine canyons. They are found throughout the northwestern Pacific and in the Bering Sea at depths usually less than 275 m. There is a population of yellowfin sole in outer Cook Inlet. Although yellowfin sole are only an incidentally caught species in the Gulf of Alaska, they are the second most abundant demersal fish (after pollock) in Cook Inlet, and are also found in Prince William Sound.

Spawning. Spawning seasons of these flatfish vary by species. Rock sole spawn in the winter, flathead sole in the spring, and starry flounder (a nearshore species) spawn in February in southeast Alaska. Female flatfishes release pelagic eggs which are simultaneously fertilized by the male. The buoyant eggs develop in the water column. After a period of one or two weeks, the eggs hatch and planktonic larvae emerge. Aberrant among flatfishes, the rock sole is a demersal spawner. The duration of larval development varies among species - a few weeks in some species and almost a year in others such as the Dover sole. Juvenile flatfishes are found in the bottom habitat of bays, inlets, and other nearshore areas where they grow and develop. As they approach maturity, they move into deeper water to join the adults.

Feeding. Among the commercially important flatfish, the soles (Dover, rex, and rock) feed on small invertebrates that live on or in the seafloor sediments. Dover and rex sole, the small-mouthed soles, are especially adapted to feeding on small detrital-consuming invertebrates that live within the sediment (polychaete worms, clams) or at the sediment surface (amphipods and other small crustaceans, shrimp, snails, and brittlestars). Small crustaceans that swim close to the seabed may also be consumed by these soles. The flathead sole is also a bottom feeder but will feed on small nektonic animals such as shrimp, krill, herring, and smelt when the opportunity arises, while arrowtooth flounders feed predominantly on nectonic prey.

4.1.4 Pacific ocean perch. Concentrations of the rockfish (Sebastes) group are located at the shelf edge, and particularly along the upper slope of the shelf (300-500 m).

Pacific ocean perch is the major component of this group. Before intensified fishing by foreign fleets in the 1960's, Pacific ocean perch, together with other rockfish species, inhabited the outer shelf and slope in the Gulf of Alaska. In any region of the Gulf of Alaska there may, however, be 20 or more rockfish species (most of the genus Sebastes) occurring at the shelf edge and upper slope.

Among the rockfishes, members of the genus Sebastes are confined to the the upper slope and outer shelf. Pacific ocean perch is an abundant species in the Gulf of Alaska, with maximum abundance between 200-300 m. Productive habitats for Pacific ocean perch are off southeastern Alaska, Yakutat, the Kenai Peninsula, and Kodiak Island.

Pacific ocean perch occur in schools and make diel migrations off the sea bottom. They feed on small to medium size prey which they capture off the bottom or at mid-depths, such as planktonic crustaceans, primarily

euphausiids, and copepods. Seasonal migrations onto the shelf and shelf edge habitats from May to September for feeding are believed to occur. After feeding throughout the summer, the fish descend off the shelf to the upper slope waters for mating and fertilization of eggs that will be retained in females and later released as larvae. Feeding ceases during mating after which the fish segregate by sex.

4.1.5 Sablefish is an important offshore/demersal species of the bathyal or slope region (400-1200 m). Adult sablefish occur over a wide range of depths that includes the outer shelf, slope, and abyssal habitats. The center of abundance by depth of adult sablefish appears to lie at 400-1000 m along the continental slope, especially within or near submarine canyons and gullies. Adult fish also inhabit the cold deep waters of bays, straits, fjords, and the seamount habitats that dot the abyssal plain of the Gulf of Alaska. During seamount studies by the NMFS in 1979, these species were found to be the dominant component of deepwater trap catches.

Tagging studies to determine sablefish migrations have been conducted. The results of these studies have yet to determine whether sablefish perform significant migrations.

Adults spawn during the fall to spring months at depths of 250-750 m. The eggs are bouyant and rise toward the surface as they develop and hatch. The later-stage larvae are found near the surface waters of the shelf and in shallow bays and inlets during the late spring and early summer. As juveniles, they return to deeper waters on the outer shelf and upper slope.

Sablefish is an omnivorous bottomfish, roaming from near the to mid-depths of the slope region to feed on semipelagic animals such as squid and lantern fish, as well as on bottom-dwelling fish and invertebrates. Common food items are polychaetes, crustaceans, sand lance, and herring. It is also a scavenger and will consume refuse and remains of animals.

4.1.6 Atka mackerel is a widespread species throughout the Gulf of Alaska, forming large schools in the upper water layer of the outer continental shelf. During the winter, Atka mackerel are predominantly found aggregated near the shelf edge off Kodiak Island, the Alaska Peninsula, and the Aleutian Islands. The species is pelagic during much of the year, but the fish annually migrate inshore to moderately shallow waters and become demersal during their spawning season (May through October). During this time they are patchily distributed in dense schools near the bottom. Preferred spawning habitat is in straits between islands that have tidal currents. The locations of many spawning areas are not yet known. Although Atka mackerel are not strictly bottom-dwelling animals, they lay demersal eggs on the sea bottom. The adhesive egg mass attach to rocks and other surfaces on the sea bottom. Development and hatching of the eggs takes place on the seafloor; then the larvae are planktonic. Adults feed largely on euphausiids.

4.1.7 Squid. At least ten species of squid are known from Alaska waters, but two species comprise most of the commercial catch. Although some squid species inhabit the continental shelf, the pelagic species that live farther to sea seem to be the most abundant in Alaska waters. They are probably most abundant in areas with abrupt change in depth, and areas of

upwelling on the continental slope. Little else is known of their distribution, migrations, or biology. Most squid are short-lived; few live beyond two years.

4.1.8 Grenadiers. Grenadiers, or rattails, are composed of a number of species, of which Albatrossia pectoralis and Coryphaenoides acrolepis may be the most abundant. Grenadiers are an important component in the Japanese longline fishery for sablefish in the slope region, and may at times be a greater proportion of the total catch than sablefish. They are generalized feeders, consuming a variety of benthic and semipelagic prey.

4.1.9 Thornyhead rockfish. Information on the distribution patterns of the various rockfish species in the Gulf of Alaska is generally inadequate. In any region of the Gulf of Alaska there may be, however, 20 or more rockfish species (most of the genus Sebastes) occurring at the shelf edge and upper slope. Thornyhead rockfish (Sebastolobus) have a depth range extending from the outer shelf into the lower slope region. Thornyheads are benthic, and unlike rockfishes of the genus Sebastes, do not live in schools, and seldom swim far off the bottom. They feed on small to medium-sized nectonic prey which they capture near the bottom. Female thornyheads release a mass of eggs that are held together by a gelatinous material. The gelatinous mass then rises to surface waters where it becomes free-floating. Whether fertilization takes place within the female or at the moment when the eggs are extruded is not known.

4.1.10 Pacific halibut inhabit bottom depths of the continental shelf and slope of the Gulf of Alaska. They are a relatively abundant offshore/demersal species, having a wide bathymetric range depending on season and age of fish. They are intensively fished in the Gulf of Alaska at depths of 25 to 300 m. Highest abundances are often in submarine canyons at depths less than 150 m.

Some along-shelf migrations of juveniles and adult halibut are observed, mainly from west to east. Adult halibut, five years and older, also perform annual migrations from shallow feeding grounds in the summer to deeper spawning grounds in the winter. Spawning occurs in concentrated areas off the shelf edge from November to March at depths of 180 to 450 m. Major spawning areas in the Gulf of Alaska are off Yakutat, from Cape Suckling to Cape Yakataga, Cape Spencer, Cape St. Elias, Portlock Bank, Chirikof Bank, and Trinity Island.

The eggs are buoyant; larvae are planktonic in near-surface waters for up to seven months. During this time the eggs and larvae may drift hundreds of miles along the coast. Juveniles descend to the bottom in May and June in shallow near-shore nursery areas, where they reside for one to three years. Important nursery habitats for juveniles have been identified in Yakutat Bay and on the Fairweather Grounds. Subadults shift farther offshore where they eventually enter the fishery at about age five to seven.

Pacific halibut are omnivorous and opportunistic feeders, preying on a variety of organisms. They are apex predators in the demersal animal community. As their size increases, the frequency and size of fish in their diet increases.

* * * * * *

4.9 Future Research Needs. [Add the following to end of existing section.]

Research needs related to maintaining the productive capacity of fish habitat can be broadly classified as those which (a) examine the direct affects of man's activities (such as fishing, oil exploration, or coastal development), (b) apply fisheries oceanography in an ecosystem context (such as migration and transport patterns, predator/prey relationships, life histories). Both categories of research serve to increase the ability to perceive and measure change caused by externalities, whether man-made or natural. The following represents areas that are potential cause for concern, and where extra precaution should be taken.

Under category (a), further observations should be made and maintained on the short- and long-term effects of habitat alteration caused by fishing and oil exploration in the Gulf of Alaska groundfish management area. These include derelict fragments of fishing gear, discarded catches and waste products, the recovery rate of oil-polluted environments, and long-term cumulative effects of discharged and spilled oil.

Under category (b), expanded research is needed on factors affecting the ecosystem such as currents, temperatures, geologic structures, and the influence of ice on biological and physical events. More information about life histories, food chains, and predator/prey relationships is needed for a clearer understanding of an organism's responses to perturbations in the habitat. For example, more information is needed on the use and dependence of coastal estuarines and wetlands by groundfish species in the Gulf of Alaska.

In deciding which of these research needs are to be addressed, it is important that they be examined and ranked in order of importance and likelihood of success.

4.10 Habitat areas of particular concern. As outlined in section 4.1, the groundfish resources of the Gulf of Alaska are abundant and widely distributed. The waters of the continental shelf and upper slope are the sites of the major commercial groundfish fisheries, with little effort on offshore deep basin fisheries.

Although there is good general knowledge of the fishery resources of the Gulf of Alaska, and locations of major concentrations of many finfish and shellfish can be broadly mapped, knowledge of this region is by no means complete. Spatial and temporal changes in distribution and abundance of these resources occur and and are poorly known, both offshore and in the nearshore areas. Adjacent bays may be very dissimilar from each other and very few coastal inlets have been even superficially studied. For example, four bays on the east side of Kodiak Island that were recently studied showed significant differences in their fish and shellfish communities from bay to bay, and by depth of habitat. Important seasonal changes were also observed.

Few fisheries investigations have been conducted in the offshore areas of the Gulf of Alaska. Much of what is known is derived from periodic NMFS exploratory surveys and from catch statistics gathered by NMFS observers

aboard foreign fishing vessels, and is primarily focused on the shelf and upper slope. The biota of the lower slope, seamounts, and the ocean basins is poorly known.

It is difficult, therefore, to designate particular habitats that can be spatially and temporally defined as holding substantially more important resource values than other areas. Adults of many of the commercially important groundfish species are known to form dense aggregations on feeding or spawning grounds at certain seasons. Most often these concentrations are found on the shelf or shelf edge in spring and early summer when and where suitable environmental conditions have formed. However, these areas can shift in size and location from year to year, presumably due to a combination of environmental and population variables that are not yet well understood.

Eggs and larvae of the groundfish species are usually more widely distributed spatially than the adults, but may be confined to a specific range of water depths. Walleye pollock lay buoyant eggs that float to the sea surface; other species such as Pacific cod, Atka mackerel, and rock sole lay demersal eggs that sink or adhere to the bottom.

In a general way, the following areas, among others, of the Gulf of Alaska and Aleutians can be described as particularly rich in groundfish:

- The shelf edge in the western Gulf from Kodiak southwest along the Alaska Peninsula contains abundant schools of walleye pollock, Pacific cod, and rockfish.

- The shelf edge and upper slope in the eastern Gulf contains the dense spawning and feeding aggregations of sablefish.

- Submarine canyons along the continental slope from southeast Alaska to Kodiak harbor contains dense concentrations of Pacific ocean perch and other rockfish species.

- The nearshore, extremely uneven rocky areas off southeastern Alaska appear to be a major nursery for juvenile rockfish (ages one to three years old).

- Atka mackerel spawning occurs on certain restricted shelf areas with suitable bottom characteristics, and may be particularly concentrated in the western Gulf, such as the straits nearby Kodiak Island.

- An isolated population of yellowfin sole inhabits lower Cook Inlet.

Significant increases in knowledge of the habitat requirements of the groundfish species in the Gulf of Alaska are yet to be made. With this additional understanding, it may be possible to provide a finer definition of habitat areas of particular concern and a better ability to manage both single and multispecies fishery resources.

* * * * * *

[8.0 Management Regime.]

8.1 Management objectives.

(5) Seek to maintain the productive capacity of the habitat required to support the Gulf of Alaska groundfish fishery.

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8.10 Management Measures to Address Identified Habitat Problems. An FMP may contain only those conservation and management measures which pertain to fishing or to fishing vessels. The Secretary, upon the recommendation of the Council, may adopt regulations of the kinds and for the purposes set forth below.

- Propose regulations establishing gear, timing, or area restrictions for purposes of protecting particular habitats or life stages of species in the Gulf of Alaska groundfish fishery. An example would be the winter halibut savings area designed to protect juvenile Pacific halibut concentrations during the winter months.

- Propose regulations establishing area or timing restrictions to prevent the harvest of tainted fish in contaminated areas, in the interests of public health and safety. An example would be that if fish taken at or near dumpsites or areas of concentrated discharge were shown to be harmful to human health or to be less valuable commercially or nutritionally, an area closure could be established.

- Propose regulations restricting disposal of fishing gear by domestic fishing vessels.

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[11.0 Appendices. 11.1 Appendix I.]

11.2 Appendix II: Description of Habitat of Gulf of Alaska Groundfish Stocks.

A. Description of Habitat Types in the Gulf of Alaska.

In terms of both the variety and diversity of habitats and species of marine life, the Gulf of Alaska is incomparable within Alaska. Marine habitats within this region include estuaries, tideland marshes, bays, fjords, sandy beaches, unprotected rocky shores, river deltas, and a variety of continental shelf, slope, seamounts, and deep ocean habitats. No other coastal or shelf waters of Alaska provide the variety of seafood produced from the Gulf of Alaska. Only the Bering Sea shelf outranks this area as the major seafood producer in the western hemisphere.

The Gulf of Alaska is a large body of water bordered by the Alaska coast from Dixon Entrance to Unimak Pass. This coast is unusually rugged and mountainous and deeply indented by numerous fjords and inlets. Tidewater glaciers flow down into the heads of many bays. Thousands of streams and rivers flow into these waters, including many that are glacier-fed and silt-laden.

The continental shelf parallels the southeastern Alaska coast and extends around the Gulf of Alaska. Although its width is less than 10 miles at some points, it is generally 30 to 60 miles wide. Off the Kenai Peninsula and Kodiak Island it is more than 100 miles broad.

The continental shelf reflects the rugged coastline; it is irregular and frequently interrupted by submarine valleys. These deepwater valleys, or troughs, separate broad bank areas such as Albatross and Portlock Banks near Kodiak Island and Davidson Bank south of Unimak Island. In the western Gulf of Alaska, these submarine banks are generally covered with sand and gravel, indicating a vigorous current flow in the overlying water. In contrast, the sea valleys adjacent to these banks are usually sediment-laden. Rock outcroppings occasionally occur along the edge of these banks and where the continental shelf meets the deeper water of the slope. A pronounced feature of the western portion of the Gulf is a greater frequency and expansiveness of plateau-like banks and offshore islands than in the eastern part.

The continental shelf extends from the coast seaward to depths of approximately 200 m. At its edge, bottom depths increase rapidly toward the ocean basin or abyssal plain of the Gulf of Alaska. This region of rapidly increasing depth is known as the continental slope, which can be subdivided into an upper slope from 200 to 500 m in depth and a lower slope greater than 500 m. The 2000-m depth line can be considered the boundary between the continental slope and the abyssal plain. In general, bottom sediment becomes finer with increasing depth so that in the lower slope and abyssal plain the sediment consists mainly of a mixture of clay and silt. The abyssal plain of the Gulf of Alaska contains submarine mountains that rise thousands of meters from the ocean floor. These seamounts, or guyots, are remnants of extinct volcanoes whose peaks have been eroded away to form flat-topped features.

Coastal waters overlying the continental shelf are subject to considerable seasonal influences. Winter cooling accompanied by turbulence and mixing due to major storms results in a uniform cold temperature in the upper 100 m.

Seaward of the continental shelf, there is a surface flow of water called the Alaska Current which moves in a northwesterly direction in the eastern Gulf of Alaska and swings to the west and southwest off Kodiak Island and westward toward Unimak Pass. Its rate of flow varies by season and is highest during the winter where, off Kodiak Island, its speed may exceed one knot. There is also evidence of an interannual eddy off the coast of southeast Alaska named the Sitka Eddy. This is a large (300 km in diameter) clockwise-rotating vortex that is observed in some years centered near 57 degrees North, 138 degrees West. Currents in the eddy can exceed one knot and could affect distribution of fish and larvae (Hamilton and Mysak, 1985, and Tabata, 1982).

Seasonal changes in temperature and salinity diminish with increasing depth and distance from shore. Along the outer shelf and upper slope, bottom water temperatures of four to five degrees C persist year-round throughout the periphery of the Gulf of Alaska. With further increase in depth, water temperature shows no significant seasonal change but gradually decreases with depth, reaching two degrees C or less at greater depths.

Most of the commercial fisheries on pelagic and demersal fishes take place in the habitats of the shelf and upper slope. Longline fisheries for sablefish and rattails extend deeper into the lower slope habitat to about 1200 m. No fisheries take place in the abyssal plain where commercial quantities of fishery resources are believed to be lacking. Fisheries of limited duration have taken place on selected seamounts.

Associated with seasonal temperature changes in the bottom water of the shelf habitat are bathymetric shifts in the distribution of many demersal fish and shellfish populations from shallow to deeper water during the winter cooling period and the reverse movement to shallower water during the summer warming period.

B. Habitat protection: existing programs.

This section describes (a) general legislative programs, portions of which are particularly directed or related to the protection, maintenance, or restoration of the habitat of living marine resources; and (b) specific actions taken within the Gulf of Alaska area for the same purpose.

1. Federal legislative programs and responsibilities related to habitat. The Department of Commerce, through NOAA, is responsible for, or involved in, protecting living marine resources and their habitats under a number of Congressional authorities that call for varying degrees of interagency participation, consultation, or review. Those having direct effect on Council responsibilities are identified with an asterisk. A potential for further Council participation exists wherever Federal review is required or encouraged. In some cases, State agencies may share the Federal responsibility.

* (a) Magnuson Fishery Conservation and Management Act (Magnuson Act). This Act provides for the conservation and management of U.S. fishery resources within the 200-mile fishery conservation zone, and is the primary authority for Council action. Conservation and management is defined as referring to "all of the rules, regulations, conditions, methods, and other measures which are required to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining, any fishery resource and the marine environment, and which are designed to assure that...irreversible or long-term adverse effects on fishery resources and the marine environment are avoided." Fishery resource is defined to include habitat of fish. The North Pacific Council is charged with developing FMPs, FMP amendments, and regulations for the fisheries needing conservation and management within its geographical area of authority. FMPs are developed in consideration of habitat-related problems and other factors relating to resource productivity. After approval of FMPs or FMP amendments, NMFS is charged with their implementation.

(b) Fish and Wildlife Coordination Act of 1958 (FWCA). The FWCA provides the primary expression of Federal policy for fish and wildlife habitat. It requires interagency consultation to assure that fish and wildlife are given equal consideration when a Federal or Federally-authorized project is proposed which controls, modifies, or develops the Nation's waters. For example, NMFS is a consulting resource agency in processing Department of the Army permits for dredge and fill and construction projects in navigable waters, Environmental Protection Agency (EPA) ocean dumping permits, Federal Energy Regulatory Commission hydroelectric power project proposals, and Department of the Interior (DOI) Outer Continental Shelf (OCS) mineral leasing activities, among others.

* (c) National Environmental Policy Act of 1969 (NEPA). NEPA requires that the effects of Federal activities on the environment be assessed. Its purpose is to insure that Federal officials weigh and give appropriate consideration to environmental values in policy formulation, decisionmaking and administrative actions, and that the public is provided adequate opportunity to review and comment on the major Federal actions. NEPA requires preparation of an Environmental Impact Statement (EIS) for major Federal actions that significantly affect the quality of the human environment, and

consultation with the agencies having legal jurisdiction or expertise for the affected resources. NMFS reviews EISs and provides recommendations to mitigate any expected impacts to living marine resources and habitats. An EIS or environmental assessment for a finding of no significant impact is prepared for FMPs and their amendments.

(d) Clean Water Act (CWA). The purpose of the CWA, which amends the Federal Water Pollution Control Act, is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters; to eliminate the discharge of pollutants into navigable waters; and to prohibit the discharge of toxic pollutants in toxic amounts. Discharge of oil or hazardous substances into or upon navigable waters, contiguous zone and ocean is prohibited. NMFS reviews and comments on Section 404 permits for deposition of fill or dredged materials into U.S. waters, and on EPA National Pollutant Discharge Elimination System permits for point source discharges.

(e) River and Harbor Act of 1899. Section 10 of this Act prohibits the unauthorized obstruction or alteration of any navigable water of the United States, the excavation from or deposition of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such water. Authority was later extended to artificial islands and fixed structures located on the Outer Continental Shelf. The Act authorizes the Department of the Army to regulate all construction and dredge and fill activities in navigable waters to mean high water shoreline. NMFS reviews and comments on Public Notices the Corps of Engineers circulates for proposed projects.

* (f) Endangered Species Act of 1973 (ESA). The ESA provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by DOI (terrestrial, freshwater, and some marine species such as walrus) and DOC (marine fish, and some marine mammals including the great whales). Federal actions that may affect an endangered or threatened species are resolved by a consultation process between the project agency and DOC or DOI, as appropriate. For actions related to FMPs, NMFS provides biological assessments and Section 7 consultations if the Federal action may affect endangered or threatened species or cause destruction or adverse modification of any designated critical habitat.

* (g) Coastal Zone Management Act of 1972 (CZMA). The principal objective of the CZMA is to encourage and assist States in developing coastal zone management programs, to coordinate State activities, and to safeguard the regional and national interests in the coastal zone. Section 307(c) requires that any Federal activity directly affecting the coastal zone of a State be consistent with that State's approved coastal zone management program to the maximum extent practicable. Under present policy, FMPs undergo consistency review. Alaska's coastal zone program contains a section on Resources and Habitats. Following a January 1984 U.S. Supreme Court ruling, the sale of OCS oil and gas leases no longer requires a consistency review; such a review is triggered at the exploratory drilling stage.

* (h) Marine Protection, Research and Sanctuaries Act (MPRSA). Title I of the MPRSA establishes a system to regulate dumping of all types of materials into ocean waters and to prevent or strictly limit the dumping into ocean waters of any material which would adversely affect "human health,

welfare or amenities or the marine environment, ecological systems, or economic potentialities." NMFS may provide comments to EPA on proposed sites of ocean dumping if the marine environment or ecological systems may be adversely affected. Title III of the MPRSA authorizes the Secretary of Commerce (NOAA) to designate as marine sanctuaries areas of the marine environment that have been identified as having special national significance due to their resource or human-use values. The Marine Sanctuaries Amendments of 1984 amend this Title to include, as consultative agencies in determining whether the proposal meets the sanctuary designation standards, the Councils affected by the proposed designation. The Amendments also provide the Council affected with the opportunity to prepare draft regulations, consistent with the Magnuson Act national standards, for fishing within the FCZ as it may deem necessary to implement a proposed designation.

(i) Outer Continental Shelf Lands Act of 1953, as amended (OCSLA). The OCSLA authorizes the Department of Interior's Minerals Management Service (MMS) to lease lands seaward of state marine boundaries, design and oversee environmental studies, prepare environmental impact statements, enforce special lease stipulations, and issue pipeline rights-of-way. It specifies that no exploratory drilling permit can be issued unless MMS determines that "such exploration will not be unduly harmful to aquatic life in the area, result in pollution, create hazardous or unsafe conditions, unreasonably interfere with other uses of the area, or disturb any site, structure or object of historical or archaeological significance." Drilling and production discharges related to OCS exploration and development are subject to EPA NPDES permit regulations under the CWA. Sharing responsibility for the protection of fish and wildlife resources and their habitats, NOAA/NMFS, FWS, EPA and the States act in an advisory capacity in the formulation of OCS leasing stipulations that MMS develops for conditions or resources that are believed to warrant special regulation or protection. Some of these stipulations address protection of biological resources and their habitats. Interagency Regional Biological Task Forces and Technical Working Groups have been established by MMS to offer advice on various aspects of leasing, transport, and environmental studies. NMFS is represented on both groups in Alaska.

The Secretary of the Interior is required to maintain an oil and gas leasing program that "consists of a schedule of proposed lease sales indicating, as precisely as possible, the size, timing, and location of leasing activity" that will best meet national ~~energy needs for a 5-year~~ period following its approval or reapproval. In developing the schedule of proposed leases, the Secretary is required to take into account the potential impacts of oil and gas exploration on other offshore resources, including the marine, coastal, and human environments.

Once a lease is awarded, before exploratory drilling can begin in any location, the lessee must submit an exploration plan to the Minerals Management Service (MMS) for approval. An oilspill contingency plan must be contained within the exploration plan. If approved by MMS and having obtained other necessary permits, the lessee may conduct exploratory drilling and testing in keeping with lease sale stipulations and MMS Operating Orders. If discoveries are made, before development and production can begin in a frontier lease area, a development plan must be submitted and a second EIS process begun. At this time, a somewhat better understanding of the

location, magnitude, and nature of activity can be expected, and resource concerns may once again be addressed before development can be permitted to proceed.

* (j) National Fishing Enhancement Act of 1984. Title II of this Act authorizes the Secretary of Commerce (NOAA) to develop and publish a National Artificial Reef Plan in consultation with specified public agencies, including the Councils, for the purpose of enhancing fishery resources. Permits for the siting, construction, and monitoring of such reefs are to be issued by the Department of the Army under Section 10 of the River and Harbor Act, Section 404 of the Clean Water Act, or Section 4(e) of the Outer Continental Shelf Lands Act, in consultation with appropriate Federal agencies, States, local governments and other interested parties. NMFS will be included in this consultation process.

(k) The Northwest Power Act of 1980 (NPA). The NPA includes extensive and unprecedented fish and wildlife provisions designed to assure equitable treatment of fish and wildlife, particularly anadromous fish, in making decisions about hydroelectric projects. Under the NPA, a detailed Fish and Wildlife Program has been established to protect, mitigate, and enhance fish and wildlife in the Columbia River Basin. In addition, general fish and wildlife criteria for hydroelectric development throughout the region have been established in the Regional Energy Plan developed under the Act. NMFS has a statutory role in the development of the Program and the Plan and encourages their implementation by Federal agencies such as the Federal Energy Regulatory Commission, the Corps of Engineers, and the Bureau of Reclamation.

(l) Alaska National Interest Lands Conservation Act of 1980. The purpose of this Act is to provide for the designation and conservation of certain public lands in Alaska. The Department of Agriculture Forest Service has authority to manage surface resources on National Forest Lands in Alaska. Under Title V of this Act, any regulations for this purpose must take into consideration existing laws and regulations to maintain the habitats, to the maximum extent feasible, of anadromous fish and other foodfish, and to maintain the present and continued productivity of such habitat when they are affected by mining activities. For example, mining operations in the vicinity of the Quartz Hill area in the Tongass National Forest must be conducted in accordance with an approved operations plan developed in consultation with NMFS; consultation continues through the monitoring and altering of operations through an annual review of the operations plan. Title XII of the Act establishes an Alaska Land Use Council to advise Federal agencies, the State, local governments and Native Corporations with respect to land and resource uses in Alaska. NOAA is named as a member of this Council.

?. Specific actions taken by the Council and NMFS related to habitat for the Gulf of Alaska Groundfish fishery.

(a) Gear limitations that act to protect habitat or critical life stages. Section 611.16 of the foreign fishing regulations prohibits discard of fishing gear and other debris by foreign fishing vessels. Section 672.24 requires biodegradable escape panels for all sablefish pots in order that lost pots do not continue fishing.

(b) Seasonal restrictions that act to protect habitat or critical life stages. Section 611.92 of the foreign fishing regulations prohibits foreign trawling during specified periods in the West Yakutat area to provide protection against a possible directed fishery on spawning halibut and prevent disturbance of the spawning grounds. It also restricts foreign trawling from December 1 through May 31 in the Western and Central Gulf to protect winter concentrations of juvenile halibut.

(c) Recommendations to permitting agencies regarding lease sales. Recommendations have been made to permitting agencies on all past proposed lease sales on the Alaska OCS, in the interests of protecting or maintaining the marine environment. These recommendations have ranged from calling for delay or postponement of certain scheduled sales such as in Bristol Bay and Kodiak, requesting deletions from sales of certain areas such as in Shelikof Strait, identifying the need for additional environmental studies and for protective measures such as burial of pipelines, seasonal drilling limitations, and oilspill countermeasure planning.

C. Non-regulatory Techniques to Address Identified Habitat Problems.

The following is a list of "real time" possible actions or strategies the Council may wish to take in the future, based on concerns expressed and data presented or referenced in this FMP. Actions taken must also be consistent with the goals and objectives of the FMP. Authorities for Council participation are described in section Appendix II.

- Hold hearings to gather information or opinions about specific proposed projects having a potentially adverse affect on the Gulf of Alaska groundfish fishery.

- Write comments to regulatory agencies during project review periods to express concerns or make recommendations about issuance or denial of particular permits.

- Respond to "Calls for Information" from MMS regarding upcoming oil and gas lease areas affecting the Gulf of Alaska/Cook Inlet areas.

- Identify research needs and recommend funding for studies related to habitat issues of new or continuing concern and for which the data base is limited. Examples would include research to identify critical habitats or to determine the long-term effect of various levels and types of toxicity on marine fish and their food webs in the Gulf of Alaska region. Other examples: underwater TV observations of trawl impacts, and investigations as to how to modify gear to reduce these impacts.

- Establish review panels or an ad hoc task force to coordinate or screen habitat issues.

- Propose to other regulatory agencies additional restrictions on industries operating in the fisheries management area, for purposes of protecting the fisheries or habitat against loss or degradation. Examples are waste discharge restrictions for floating processors, or drilling restrictions for oil and gas exploration.

- Join as amicus in litigation brought in furtherance of critical habitat conservation, consistent with FMP goals and objectives.

DATE: May 3, 1985

TO: F/AKR - Robert W. McVey
NPFMC Members and Staff
GCF - Jay S. Johnson
FM1 Staff

FROM: GCAK - Patrick J. Travers

SUBJECT: Legal Analysis of Public Hearing Documents for Amendment 14 to the Gulf of Alaska Groundfish FMP and Amendment 9 to the Bering Sea/Aleutians Groundfish FMP

INTRODUCTION

The purpose of this memorandum is to provide a legal analysis and comments on certain public hearing documents issued by the North Pacific Fishery Management Council in April 1985 concerning proposed amendments to each of the Council's groundfish fishery management plans (FMPs). These are Amendment 14 to the FMP for the Groundfish Fishery of the Gulf of Alaska (GOA FMP), and Amendment 9 to the FMP for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area (BSA FMP). The documents under review for each amendment include a draft regulatory impact review (RIR), a draft environmental assessment (EA), and a draft habitat protection text that would be added to the FMP (habitat text). The RIR describes the measures proposed under each amendment, the reasons for those proposed measures, the alternatives to them, and the potential social and economic impacts of the proposed measures and alternatives. The EA describes the potential biological and physical impacts of the proposed measures and alternatives on the environment. The main purpose of the RIR is to assist the Council and NOAA in satisfying the requirements of Executive Order 12291 and the Regulatory Flexibility Act. The EA is intended to satisfy the requirements of the National Environmental Policy Act (NEPA), providing the basis for a determination by the Council and NOAA whether the amendment will significantly affect the quality of the human environment. An amendment having such a significant effect would require preparation of an environmental impact statement. The habitat text sets forth language proposed for addition to the FMP if the Council and NOAA adopt and implement the habitat protection proposal of the amendment.

The following discussion is divided into three sections. The first of these evaluates the RIR and EA for Amendment 14 to the GOA FMP, and the second treats the RIR and EA for Amendment 9 to the BSA FMP. The RIR for each amendment is currently the primary vehicle for describing the proposed measures and alternatives, as well as their underlying reasons, with the exception of the habitat protection proposal. All substantive legal analysis of the proposed measures and alternatives other than the habitat proposal will therefore appear in the discussion of the RIR for each amendment. The third section will address the legal issues raised by the habitat texts of the two amendments.

RIR

The RIR on GOA FMP Amendment 14 is divided into two parts. Part I of the RIR, referred to here as RIR I, treats proposals and alternatives for gear limitations in the sablefish fishery of the Gulf of Alaska. Part II of the RIR, referred to as RIR II, deals with all other proposals and alternatives being considered for the amendment. The following discussion will treat RIR I and RIR II in sequence.

The most serious legal concerns raised by RIR I derive from its treatment of the objectives to be furthered by the proposed measures and alternatives and of its own underlying theoretical assumptions. The entire discussion of the "objectives for regulation" is confined to the bottom half of page 10. This is despite the fact that the four objectives set forth are not currently contained in the FMP and that their realization could have massive allocative effects. It is critical for compliance, not only with Executive Order 12291 and the Regulatory Flexibility Act but also with the Administrative Procedure and Magnuson Acts, that a detailed justification of the objectives set forth at page 10 be added to RIR I. This justification should discuss the social and economic implications of each objective, with a special focus on the consistency of those implications with the National Standards of Magnuson Act Section 301(a). The selection of objectives for management necessarily affects the evaluation of specific proposals and alternatives, and is thus too fundamental to the entire administrative process to be dealt with in a cursory manner.

The treatment of the theoretical assumptions underlying RIR I that appears at pages 25-27 raises similar concerns. In extremely summary fashion, and using highly technical language, this discussion appears to assume away the major arguments that have in the past been presented against gear restrictions in the sablefish fishery. There is no reason to doubt the soundness of these theoretical assumptions. The problem is that they are not described and justified clearly in language appropriate to the lay audience to which RIR I is directed. Compliance with the Magnuson Act and other applicable law requires that the theoretical assumptions on which RIR I is based, like the objectives for management discussed above, be identified and justified with special attention to the National Standards. In its current form, RIR I fails to do this.

The deficiencies just discussed result in a skewing of the analysis of RIR I sharply in favor of proposals to impose restrictions on the use of gear other than hook-and-line in the Gulf of Alaska sablefish fishery. If, without reasonable explanation, an agency limits its attention to less than the full range of relevant factors or alternatives involved in a rulemaking, giving the appearance of an absolute bias against certain proposals or alternatives, this is a basis for judicial invalidation of the agency's final action. Unless the general problems with RIR I discussed above can be resolved before the Council takes action on the amendment, the risk of such judicial action in the event of a lawsuit would be significant. This risk is

increased by certain other language of RIR I that gives evidence of a strong predilection for limitations on sablefish gear other than hook-and-line. For example, the discussion at pages 9-10 that attributes the nonimplementation of GOA FMP Amendment 12, a previous proposal for such gear limitations, almost entirely to NOAA shortsightedness would best be removed from RIR I to eliminate the appearance of insuperable agency bias. The failure of RIR I to identify and consider alternatives under which certain areas would be closed to hook-and-line fishing of sablefish, discussed below, is another feature that could lead to a finding of agency predecision.

The rest of this discussion of RIR I will consist of more specific comments about its contents.

At page 23, the management area referred to as "State waters" is defined to include the territorial sea plus FCZ areas "recently ceded over to the State". In order to avoid misunderstanding with other Federal agencies, notably the Departments of Justice and State, concerning the status of these FCZ areas, I suggest that they be described as areas "over which State fishery management authority has for certain purposes recently been extended by amendment of the Magnuson Act".

At pages 28-29, RIR I notes that the cost and price data that are necessary to assess the net benefits of the sablefish pot fishery are not readily available, and it therefore forbears from making such an assessment. In light of the importance of such an assessment to a full consideration of the merits of the proposed measures and alternatives, some attempt should be made, if at all possible, to estimate the net benefits of the pot fishery using the best information available.

The discussion in the second full paragraph of page 32 of the legal permissibility of allocation under the Magnuson Act would best be included in the expanded justification of the objectives of management, proposed above

In the same paragraph of page 32, the reference to "fishermen who currently have claim to the resource" should be deleted. It reflects the belief, which is incorrect under the Magnuson Act, that past exploitation of a fishery resource alone establishes an entitlement to that resource in the future. Such past exploitation is, of course, a factor that can, indeed must, be considered under the Act in the allocation of fishery resources, but only in combination with a wide range of other factors that may outweigh it. A similar reference in the third full paragraph of page 40 to "roughly equal claims to the rights to harvest the resource" raises the same difficulty.

The discussion of the relative importance of management objectives that appears at pages 38-40 could be included in the expanded justification of those objectives that is proposed above. One feature of this discussion is that no attempt is made to estimate the additional costs imposed on pot vessels by forcing them to move from the Eastern to the Central or Western areas of the Gulf of Alaska.

While specific information on these costs may not be readily available, they are so important to a full consideration of the merits of the proposed measures and alternatives that some attempt should be made to estimate them.

The discussion of alternative gear area restrictions that is presented at pages 34-45 assumes that any such restrictions would establish two kinds of areas: those in which hook-and-line fishing for sablefish alone is permitted; and those in which both hook-and-line and other types of gear would be allowed. There is no consideration of establishing areas from which hook-and-line gear would be excluded in favor of the other gear types, as well as hook-and-line only areas. I recommend that consideration of this alternative be added. It would address the objectives of avoiding gear conflicts and slowing the development of excess capacity (in this case, by longliners) in ways that might better satisfy the equity requirements of the National Standards than the existing proposals. Analysis of the additional alternative might, of course, disclose that it presents disadvantages that require its rejection, but such analysis should at least be carried out.

The discussion of imposing an effort ceiling appearing at pages 45-47 considers such a ceiling in detail only for pot gear. There is a summary discussion and dismissal of such a ceiling for hook-and-line gear at the top of page 47. Further consideration of a hook-and-line ceiling is ruled out for the current amendment because it is "not easily implementable in the near future (i.e., in 1986)", because of the "sheer numbers" of longliners, and because testimony by hook-and-line fishermen at Council meetings indicated that pot fishermen were the greater source of gear conflict. These assertions may be true, but they are not, in my opinion, sufficient under the Administrative Procedure Act, Executive Order 12291, and the Regulatory Flexibility Act to justify omission of a hook-and-line ceiling proposal as a full alternative in RIR I.

In light of the patent illegality under Magnuson Act Section 304(d) of the license fees and fish taxes proposed in the discussion of license limitation at pages 47-52, the treatment of this alternative might be shortened somewhat. The current illegality of the alternative does not, however, prevent its discussion in either the RIR or the EA, as long as the legal impediments to it are clearly noted.

The objective of promoting the economies of small Alaskan communities suggests another alternative that has not been treated in RIR I. This would be a requirement that all sablefish caught in the Gulf of Alaska be landed in Alaska. This would be a much more direct approach to this objective than is provided by any of the current alternatives. If the objective itself is found to be consistent with the Magnuson Act and other law, there seems to be no necessary reason that this direct approach to its accomplishment should not at least receive formal consideration.

The most general legal problem with RIR II concerns the proposals and alternatives for management of other rockfish that would provide f

a total OY for that species group of 5000 mt, even if that OY were divided into smaller area quotas. Throughout the discussions of the status of other rockfish stocks, appearing at pages 2-4, 5-6, and 18-20, the almost total lack of reliable biological information about this species group is emphasized. It is proposed in one part of the Southeastern Gulf of Alaska to respond to this situation by suppressing OY for demersal shelf rockfish to the 1984 catch level of 600 mt, so that incipient overfishing can be quickly detected and prevented. In contrast, for all other stocks of shelf and slope rockfish throughout the Gulf, the total 1984 domestic harvest of which was about 900 mt, the preferred alternatives would allow that harvest to increase to up to 4400 mt, even though information on these stocks is no better than that for the stocks to which the OY of 600 mt is proposed. If biological information exists supporting such disparate treatment of stocks that otherwise appear to be similarly situated, it should be presented at length. If such information does not exist, then the proposals that would allow the harvest of other rockfish outside the special area of the Southeastern Gulf to increase up to 4400 mt would violate the requirement of National Standard 1 that conservation and management measures under the Magnuson Act "prevent overfishing". RIR II itself states at page 19 that "[t]here is no evidence that a 5000 mt OY can be maintained for other rockfish." Even the strong Magnuson Act policy to promote the development of domestic fisheries upon which the proposed 5000 mt OY for other rockfish is based must give way to the paramount requirement of National Standard 1. Under this analysis, alternatives 1 and 2 for "quotas and areas in the rockfish fishery" (pages 9-12) would plainly run afoul of National Standard 1. In the absence of further biological information, dividing the 4400 mt OY that would apply outside the special management area among smaller management areas, as proposed in alternatives 3, 4, and 5, would not seem to solve the problem. For the same reasons, adoption of other rockfish OY alternatives 1 and 3, described at page 14, would also violate National Standard 1.

The remaining legal concerns with RIR II are less extensive. At pages 6 and 15, RIR II fails to address a "no action" alternative to the proposed reduction of the other species OY, apparently assuming that there is no discretion to depart from the GOA FMP's current definition of the other species OY as 5 per cent of the total OY. Because RIR II deals with an FMP amendment, it need not be limited to the 5 per cent formula which, like other parts of the FMP, is subject to change by amendment. Because NEPA implementing regulations require that a no action alternative be considered for each proposed measure, such an alternative should be included in RIR II for the sake of uniformity among the documents supporting the amendment. All that need be noted is that there is no reason to depart from the current 5 per cent formula in calculating the other species OY, and that the no action alternative is therefore unacceptable.

In the discussions of the proposal to delay the season opening date for sablefish, appearing at pages 9 and 40-41, one of the reasons for the proposal is stated to be "resource allocation" and giving "all segments of the fleet...equal chances in harvesting the OY". There is insufficient justification and analysis of this allocation

objective to assure compliance with the allocation standards of National Standard 4. In the same discussions, two other reasons, reduction of the risks of unsafe weather and improvement of fish quality, are given for the proposal, and appear to be sufficiently supported. In light of this, I suggest that the reference to allocation as an objective for the proposal be deleted, unless that objective is justified and analyzed in much greater detail than in the current version of RIR II.

Alternative 6 under "quotas and areas in the rockfish fishery" (pages 12 and 19-20) proposes that demersal shelf rockfish in the Southeast Outside District be excluded from management under the GOA FMP, and left to management by the State of Alaska. Implementation of this alternative would violate Magnuson Act Section 302(h)(1), which requires that the Council prepare an FMP for "each fishery within its geographical area of authority that requires conservation and management". In contrast with certain other fisheries, in which there is a well-established system of State management and in which fishing takes place primarily within State waters, the demersal shelf rockfish fishery appears clearly to require Federal conservation and management under this provision of the Magnuson Act. To the extent detailed State management exists for this fishery, that management is untried and in its infancy. At least half the fishing grounds for this fishery are located in the FCZ. There thus appears to be no guarantee that the State of Alaska will have jurisdiction over the entire fishery, particularly with the advent of catcher-processors that may not be obliged to register in Alaska. An alternative to total Federal withdrawal from management of this fishery would be a plan provision that authorizes, subject to certain criteria, State regulations of this fishery in the FCZ that are in addition to and stricter than Federal regulations. Such a provision would overcome the general presumption that State regulations purporting to impose additional restrictions on FCZ fisheries covered by an FMP are in conflict with that FMP, and therefore invalid.

It appears that the reduction of the Pacific ocean perch OY to bycatch levels has, in fact, been considered in connection with the amendment. This alternative should therefore be added to the discussions of POP OY alternatives at pages 14 and 23-25.

Alternative 4 of "measures to control the Pacific halibut bycatch" would establish fees to be paid by groundfish fishermen for each metric ton of halibut that they incidentally caught. Exceptions would be provided for fishermen who took certain precautionary measures, such as use of off-bottom trawls or immediate on-deck sorting of their catch. In the absence of action by the International Pacific Halibut Commission, the halibut would have to be returned to the sea. This alternative would violate one or the other of two provisions of the Magnuson Act. If it were found to constitute a fee, it would violate Section 304(d), which limits the amount of fees charged to domestic fishermen under the Act to the administrative costs of permit issuance. If it were found to constitute a penalty, it would violate Section 308, which prescribes specific procedures for the imposition of civil penalties under the Act, including the opportunity for a trial-type hearing on the

particular facts of each case. The current illegality of this alternative does not prevent its discussion in the RIR or EA. The discussions of this alternative at pages 17, 35-36, 38, and 39 should, however, clearly acknowledge that it is not viable under current law.

EA

Pages 1-21 of the EA generally duplicate material contained in the RIR, and the comments on that material set forth above therefore apply. This large proportion of common material suggests the possibility of combining the RIR and EA in a single document, and this might be considered for a future amendment.

The third full paragraph of page 27 states that the environmental impacts of several alternatives "cannot be determined". If, in fact, it is believed that these undetermined impacts will not be significant, this should be stated clearly. The reason for this is that a failure to state this could undermine the "finding of no significant impact" at the end of the EA, thus raising the argument that an environmental impact statement may be required for the amendment.

The determination of consistency with the Alaska Coastal Management Program which appears in the final paragraph of page 28 may not be detailed enough to meet the requirements of 15 CFR Section 930.39. If additional analysis is requested by the Alaska Division of Governmental Coordination (DGC), we should be prepared to provide it. In the past, DGC does not appear to have required such further analysis.

I have marked numerous editorial comments on my copies of the RIR and EA. These are available for the use of the plan team and Council and NMFS staff.

BSA FMP AMENDMENT 9

RIR

The legal concerns raised by the RIR on BSA FMP Amendment 9 are all fairly specific.

Alternative 4 under "reduce the incidental catch of chum salmon by joint venture trawlers", discussed at page 25, would impose fees on such trawlers based upon their incidental catches of chum salmon. These fees would be intended as a disincentive to high chum salmon bycatches. Like the similar proposal discussed on the preceding page to deal with halibut bycatches under the GOA FMP, this alternative would violate either or both of Magnuson Act Sections 304(d) (prohibiting domestic fishing fees in excess of administrative costs of permit issuance) and 308 (prescribing formal procedures for the imposition of civil penalties). The current illegality of this

alternative does not, however, prevent its discussion in the RIR or EA.

In the discussion at pages 25-27 of the effects of chum salmon bycatches on directed salmon fisheries, any likely effects of those bycatches on implementation of the new U.S./Canada Pacific Salmon Treaty should be addressed.

The discussion at pages 29-32 summarizes the reasons for the 20-mile closure to foreign trawling around the Aleutians. I had been under the impression that, in addition to the domestic fishery promotion reasons that are stated, there had been some law enforcement reasons for the proposed closure. If this is so, then these should be described.

At page 32, it would be helpful if the existing restrictions on foreign trawling in the area that would be affected by the 20-mile closure around the Aleutians were described in somewhat more detail.

There is no discussion of why 20 miles, specifically, was chosen as the extent of the proposed foreign trawl closure around the Aleutians. The analysis of this proposal would be strengthened significantly if alternative distances other than 20 miles were considered. It would be significant, for example, if most of the benefits attributed to the 20-mile closure could be attained through a 15-mile closure, especially if the costs to foreign fishermen would be considerably lower than with the 20-mile restriction.

The discussion at page 48 of the results of imposing zero TALFFs on all species in the Aleutians except pollock is incorrect, and should be rewritten completely. If a zero TALFF were specified for any species that would be taken incidentally to pollock, National Standard 1 would require that fishing for pollock also be closed unless measures were taken to ensure that the additional mortality of the zero TALFF species would not result in the overfishing of that species. This could be done, for example, by establishing a PSC for that species that, together with TAC, would not exceed that species' EY. This is the approach that has been taken under the GOA FMP. It is also important to note that, under the BSA FMP in its current form, TALFF for a species that is not fully utilized by domestic fishermen is reduced or eliminated by a corresponding reduction of TAC for that species.

At page 49, the discussion of possible adverse foreign reaction to the 20-mile trawl closure around the Aleutians is limited to the Japanese trawl fleet. Because this closure would affect all foreign trawlers, the possibility of adverse reactions by the fishing industries of other nations should also be considered.

EA

The material at pages 2-20 generally duplicates material contained in the RIR, and the comments on the RIR set forth above would apply.

As in the case of the EA on GOA FMP Amendment 14, the coastal zone managment consistency determination at page 28 may require supplementation if requested by DGC.

My marked-up copies of the RIR and EA are available for the use of the Plan team and Council and NMFS staff.

HABITAT TEXTS

The habitat text proposed as part of GOA FMP Amendment 14 (GOA habitat text) and that proposed as part of BSA FMP Amendment 9 (BSA habitat text) are very similar, and in some sections practically identical, in their content. The legal issues raised by the habitat texts do not concern their specific content as much as they concern a comparison between the two main alternative actions on those texts that the Council has under consideration. Under the first of these alternatives, each habitat text would be incorporated fully into its respective FMP. Under the second alternative, only a general habitat protection objective would be incorporated into the FMP itself. The remaining content of the habitat text would be published in a separate document, not constituting part of the FMP, which could be revised and updated periodically without invoking the FMP amendment process.

The Council has requested advice whether its ability to pursue the recommendations set forth at GOA habitat text pages 23-24 and BSA habitat text pages 18-21 would depend on the selection of one or the other of these alternatives. The recommendations in question are of two kinds. Most of them are "nonregulatory", dealing with habitat related actions that the Council might take in its advocacy or research role, either on its own or through participation in the proceedings of other agencies. Some of these nonregulatory recommendations are general, while others are quite specific, dealing with particular habitat concerns or development proposals. Other recommendations are "regulatory", describing regulations that the Council and NOAA might develop under the FMP to address habitat problems directly. Three kinds of such regulations are described: gear, time, and area restrictions to protect particular habitats or life stages of fish species; time and area restrictions to prevent the harvest of fish in contaminated areas, in the interest of public health and safety; and restrictions on disposal of fishing gear by domestic vessels. I understand that the intent underlying the inclusion of these regulatory recommendations in the habitat texts is to authorize the Council and NOAA to adopt such regulations in the future without further amendment of the FMP.

The authority of the Council and NOAA to pursue the nonregulatory recommendations would probably not be affected in any significant way by the presence or absence of the habitat texts in the FMPs themselves. The advocacy and research activities treated in these recommendations are ones that do not depend upon the underlying authority of an FMP. In fact, many of them are the types of activities that any interested member of the public could undertake.

Thus, the Council could adopt either of the two alternatives described above, and even the third, no action, alternative, without significantly affecting its ability to carry out the nonregulatory recommendations of the habitat texts.

The same cannot be said of the regulatory recommendations. NOAA has taken the fairly consistent position that nonemergency regulations of domestic fishing activities under the Magnuson Act must be specifically authorized in the underlying FMP. My examination of the GOA FMP and BSA FMP has not revealed any current provisions of those FMPs that even arguably provide such authority for the kinds of regulations treated in the habitat texts. Thus, exclusion of the habitat texts from the FMPs themselves, as proposed under the second alternative, would prevent the Council and NOAA from adopting such regulations in the future without amendment of the FMPs. I understand that this might raise an immediate problem in the Council's current consideration of regulations to restrict disposal of fishing gear by domestic vessels.

Reasons

* In this connection, the Council might want to consider one slight change to the habitat texts. In determining whether an FMP authorizes a particular type of regulation, NOAA has in the past paid special attention to the "management regime" or "management measures" section of the FMP. In the current versions of the habitat texts, the regulatory recommendations do not appear in that section, but in a separate descriptive section. In order to clarify the Council's intention that adoption of the regulatory recommendations be authorized without further amendment of the FMP, I recommend that the following sentence be added to the foreign and domestic management measures sections of each FMP: "The Secretary, upon the recommendation of the Council, may adopt regulations of the kinds described in [insert paragraph number of the regulatory recommendations] for the purposes set forth in that paragraph."

The remaining legal issues raised by the alternative proposed actions on the habitat texts concern the extent to which they would satisfy the NMFS Habitat Conservation Policy, 48 FR 53142 (November 25, 1984) (Policy). The habitat texts attempt to respond to the Policy provisions on "implementation strategies", some of which specifically address the habitat protection material that should appear in FMPs. The Policy plainly comes within the Administrative Procedure Act's definition of a "rule", and thus constitutes "other applicable law" for Magnuson Act purposes.

The Policy's provisions on FMP contents state that Councils "should address habitat considerations in their Fishery Management Plans, where applicable," and that FMPs "should include" certain minimum material about habitats (emphasis added). There is thus a significant question whether the FMPs would comply with the Policy if most of the habitat texts were confined to documents not constituting part of the FMPs. Such an interpretation of the Policy by the Secretary would be a reasonable one, and could be the basis for rejection by him of the limited incorporation of the habitat texts envisioned under the second alternative discussed above.

Please feel free to call me if you desire any clarification or expansion of the preceding analysis. I will be prepared to supplement it before the May Council meeting, either orally or in writing, in light of the public comments that are received on the documents discussed above.

cc: Jim Brennan
Thorn Smith
Ron Berg
Jim Wilson
Daphne White

FILE NO. 502-10.8(8), 502-10.8(9)

DRAFT

EMPLOYMENT IMPACTS OF CHANGING SABLEFISH HARVESTS

by Douglas M. Larson and Biing-Hwan Lin
NPFMC and University of Alaska
May 17, 1985

INTRODUCTION

The proposed Amendment 14 to the Fishery Management Plan for Gulf of Alaska Groundfish was sent out to public comment for a 30-day period from April 4 to May 3, 1985. One important component of the Amendment 14 package is an analysis and discussion of possible economic impacts associated with the allocation of sablefish. Because of a pervasive lack of data and a lack of models of regional impact of fisheries, this and other previous analyses of economic impact of fisheries regulation have been forced to confine themselves to the harvesting sector, a relatively narrow slice of potential impact in the marketing chain from the fishermen to the consumer. This great absence of useful and reliable information has been a source of frustration to many participants in the North Pacific fishery management process.

During the recent public comment on Amendment 14, data on monthly employment of process workers in Southeast Alaska processing plants was submitted. This information, while not terribly revealing about the impacts on processing workers and plants of sablefish regulation in and of itself, provides an extremely valuable foundation for work in the area of processing level and community level impacts of regulation. This paper was developed using the raw data on processing employment submitted as public comment, and data from other sources, in an effort to show the kinds of inferences that can be made by employment impacts if data becomes available. It is hoped that this paper, if it is found useful, will be a catalyst toward submission of other data on the economics of harvesting, processing, and consuming various North Pacific seafoods, and a provision of such additional information will improve the quality of the analysis which the Council uses in its decision making, and thereby improve the quality of the regulations which result.

NATURE AND SOURCES OF DATA

The impetus for this brief paper was the submission of raw data on employment and hours worked at six Southeast Alaska processing plants. This data covered the period April 1983 to February 1985, and consisted of monthly observations on number of employees (floor workers, not including managerial personnel) and hours worked at six Southeast Alaska processing plants. These plants are all represented by the International Longshoremen's and Warehousemen's Union, and the data submitted was from the records of the ILWU Pension and Health Plans.

By itself, this data reveals interesting trends in the employment of processing workers. However, it is of limited use with respect to the immediate question at hand, which is the processing-level impacts associated with regulation of the sablefish fishery. This employment and hours worked covers a broad variety of different species processed at different, but sometimes overlapping, periods of the year. Major species produced by Southeast Alaska processors include salmon, caught by troll and net gear; halibut, caught by longline gear; sablefish, caught by longline and pot gear; shellfish, caught by pot gear; and other species, notably herring, caught by a variety of net and other gear.

To provide a better basis for making inferences about the employment impacts of regulating the sablefish fishery, data provided in aggregate form by the Alaska Department of Fish and Game were also utilized. These data consisted of monthly observations on the deliveries of sablefish, salmon, shellfish, and other finfish delivered to the group of six processors for which there was employment data. The data on landings cover the period 1982 to 1984, for all species, and the period January through March of 1985 for sablefish only.

The data provided by Alaska Department of Fish and Game did not contain landings of halibut, since the Department does not maintain catch records for halibut. A halibut variable was created for both 1983 and 1984 by examination of IPHC records on the timing of seasons in areas 2C and 3A and the landings of halibut made to Petersburg, Ketchikan, Pelican, and Juneau, the location of processors in our sample. In 1983, the 2C and 3A halibut seasons were open

for a total of seven days in late June, from June 16 to June 23, while in 1984 the bulk of the halibut catch was taken in a four-day period, May 21 to May 25 with an additional opening in Area 3A for one day, August 20-21. A halibut landings variable was constructed which contains zeros for all months in 1983 except for July, and the value for July was the sum of the landings to each of the four cities just mentioned. (July is the month when the bulk of the processing of halibut from the late June opening occurred.) For the year 1984, this variable contained all zeros except for the month of June and the month of August, and the values of the variable for June and August were the deliveries to Petersburg, Ketchikan, Juneau, and Pelican, prorated based on the proportion of the total fishery in Areas 2C and 3A that was taken in June versus that taken in August.

OVERVIEW OF THE CONCEPTUAL MODEL

Because of the aggregated nature of the data, for purposes of this paper it is necessary to envision, or assume, that we are dealing with a single, multiple product firm. This abstracts from reality somewhat, because individual plants may, at any given period of time, be producing just a single fishery product, or a very limited number of products. When several plants, each of whom may be processing one or two different species, are combined, the appearance is one of a firm with many products produced simultaneously.

Processing firms have a number of capital and variable input requirements for production, including the physical plant and processing equipment as cost items that are fixed in the short-run; and the labor, raw fish, water, electricity, packaging materials, and other variable expenses. By a wide margin, the first two variable inputs listed (labor and raw fish) are the two most significant variable inputs in terms of cost.

By assuming that technology for processing fish is constant over the sample period, the firm can be viewed as having two major inputs to production, raw fish of various species and labor. We will assume that the use of other inputs, such as electricity, water, packaging, etc. are used in direct proportion to the fish input, and they therefore can be considered as

negligible. Our sample observations used in this analysis cover a 21-month period, so the assumption that capital is fixed over the sample period seems quite reasonable.

By having observations on the two major inputs to production, one can observe changes in the ratios of these inputs as production increases and decreases. Presuming that these amounts of usage of both labor and fish are optimal, or near optimal, we are observing adjustments by the firm in its use of inputs over a portion of the range of its production function, given the technology which used in the production of finished fish products. This relationship between inputs is known as an expansion path.

By examining this expansion path, or the relationship between inputs of labor and inputs of fish, one can make inferences about the changes in labor input as the amount of the fish input changes. In the case of sablefish, where regulation by the Council, or perhaps absence of regulation by the Council, has a definite effect on the amount of landings of sablefish to Southeast Alaska processors, this relationship can be very important. By observing the changes in landings of sablefish in Southeast Alaska ports and the relationship of landings of sablefish to the amount of laobr used, inferences can be made about the changes in processing hours worked and employment as a result of the regulation of the sablefish fishery. This is precisely the kind of community level impact which is needed to better understand the benefits and costs of regulating, though of course in and of itself it does not provide all the answers.

Our approach, then, was first to relate landings of all species to the Southeast Alaska processors in our sample to the total hours worked by floor workers in those plants. By isolating the partial relationship between landings of sablefish and total hours worked, the effects of changes in the amount of sablefish landed, resulting from regulation of the sablefish fishery, can be identified.

A second step in the analysis is to attempt to determine what a change in total hours worked means in terms of employment, or the number of people working at the six Southeast Alaska processing plants. This is done by

assuming a two-step decision process by plant managers, in considering their labor requirements and how to fill them. The first step involves a calculation of the total hours of labor work needed, which we have assumed is explained entirely in the short run by the landings of different species that the plant processes. Once the total worker hour requirements are known, the plant manager must decide how to fulfill that requirement. This can be done by either increasing or decreasing the size of the work force (the number of employees), or by adjusting the average number of hours worked per month by each employee. The second stage of our analysis, then, focused on identifying the relationship between number of employees per month and total hours worked per month. Since, by definition, the product of total employees and average hours per employee equals total hours worked, by looking at the relationship between employees and hours worked, we can derive the relationship between average hours per employee and total hours worked.

With this overview of the analysis in mind, we turn to a discussion of the results. The interested reader can turn to the Appendix for a listing of the dates used in the models.

RESULTS

Table 1 presents the results of two models which appear to best explain variations in the total hours worked at the complex of six plants in Southeast Alaska. Due primarily to the extremely compressed time frame for this analysis (four days), the models run were typically linear. Initial explanatory variables included salmon non-troll landings, salmon troll landings, shellfish landings, other finfish landings, and halibut landings. Not surprisingly, salmon troll and salmon non-troll landings were extremely highly correlated ($r = 0.8$), so to avoid multicollinearity problems the two variables were lumped into a single, salmon landings variable. The highest pairwise correlation after this was done was 0.55, which suggests at least tentatively that there is not a severe problem with multicollinearity, although examination of pairwise correlations by no means guarantees this. The other finfish and shellfish variables were combined into an other species variable, based on the fact that we were not interested in coefficients of each variable separately, and combining them increased the degrees of freedom.

Table 1. Summary of Model Results for the Hours Worked-Landings Relationship.

Model	Dependent Variable	Constant	SB	SM	OTH	HAL
(a)	HW	7085 (1.83)**	.0140 (1.62)*	.0024 (9.69)***	.0038 (0.72)	.0084 (2.89)***
$p = 0.29$	$adjR^2 = 0.89$	$F_{(4,14)}=33.1$	n=21	D-W=2.01		
(b)	HW		.0288 (3.33)***	.0025 (8.68)***	.0018 (0.86)	.0070 (2.29)**
			n=21	D-W=2.01		

* Denotes significance at the α=0.10 level (one-tailed test)
** Denotes significance at the α=0.05 level (one-tailed test)
*** Denotes significance at the α=0.01 level (one-tailed test)

Two different models are presented in Table 1, one with a constant term and one without a constant term. There are theoretical justifications for expansion paths to go through the origin, though this is not necessary for all production functions. Our data on employment is primarily, if not entirely, from process floor workers, who would be laid off during times of no production at the plant. Thus, our hours worked variable represents employees who are essential to the production of fish, and when there are no hours worked, there is no production of fish. Conversely, because these are employees not needed for managerial or maintenance functions, when there are no fish to be processed, there are no hours worked by these employees.

Many classical production functions in economic theory have expansion paths which emanate from the origin, but this is by no means a requirement. One way to address this theoretical ambiguity is to let the sample data determine which model is most appropriate. In model A, which includes a constant term, the sablefish variable (SB) is significant at approximately the 10% level in a one-tailed test. The interpretation of the coefficient is that for each pound of sablefish landed, .014 total hours of processed labor is required; for 1,000 lbs. of sablefish, approximately 14 process hours is required. Not surprisingly, the coefficients on the salmon variable and the halibut variable are highly significant, perhaps due in part to their highly concentrated fishing seasons.

In model B, which forces the expansion path through the origin, the significance of the sablefish variable increases dramatically, so that it becomes significant at the 0.5% significance level. Sablefish is the only species for which the coefficient changes substantially. While model B has a much more significant sablefish variable, and sablefish is the variable of interest, model A has a significant constant term (at the 5% level), and this empirical evidence should not necessarily be ignored. In model A the 95% confidence interval of the sablefish coefficient is -0.004 to 0.032, while in model B it is 0.0104 to 0.047.

Both models were examined for heteroskedasticity and autocorrelation, and model A is based on an autocorrelation-corrected model. Heteroskedasticity did not appear to be a problem, nor did multicollinearity from an examination of the pairwise correlation coefficients.

In the second stage of our analysis, the hours worked were regressed against employment, the number of people employed by month. Table 2 presents the results of a linear and two nonlinear employment models. Both hours worked and the constant term proved highly significant in explaining variations in total hours worked, in each model.

Some caution is needed in interpreting the highly significant constant term in the employment equation. It would not necessarily be appropriate to interpret the constant term in, say, the linear equation as meaning that when there are zero hours worked, there are 80 employees at the six Southeast Alaska processing plants, because this would be an extrapolation of the model results beyond the range of sample data. The minimum total hours worked in our sample is 1,557; at this level of total hours, predicted employment by the linear model would be $80.58 + (1{,}557)(.0046) = 88$ employees. During our sample period, the maximum hours worked in a month is 95,287, and the linear model's prediction of corresponding employment would be $80.5842 + (95{,}287)(.0046) = 523$. At the sample period mean hours worked per month (27,370), predicted employment by that model is $80.5842 + (.0046)(27{,}370) = 208$.

Although the linear model is somewhat autocorrelated (DW statistic is inconclusive), no effort was made to correct this model for the presence of autocorrelation because the non-linear specifications appeared to fit the data better. Both the quadratic and the log-linear functions (Models B and C) were corrected for the presence of positive autocorrelation, and in both cases there is strong empirical evidence of non-linearity in the relationship between hours worked and employment. All variables are significant at the 95% level (one tail test). The models were checked for heteroskedasticity by regressing the error terms against the explanatory variables, and there was no strong evidence of the presence of heteroskedasticity.

POTENTIAL POLICY IMPLICATIONS

The models presented in Tables 1 and 2 were applied to the question of changing patterns of sablefish landings in 1985. As a result of the entrance into the sablefish fishery of vessels using pot gear, processing onboard and delivering to Seattle, the portion of the sablefish harvest landed in

Table 2. Summary of Model Results for the Employment-Hours Worked Relationship.

Model	Dependent Variable	C	HRS	HRS^2	In HRS
(a)	EMP	90.75 (5.18)***	0.0047 (10.53)***		
	$adjR^2$=0.85	$F_{(1,19)}$=111.0***		n=21	D-W=1.07
(b)	EMP	49.93 (1.85)***	0.0075 (4.56)***	-0.3011×10^{-7} (-1.80)**	
p=0.32	$adjR^2$=0.87	$F_{(2,18)}$=67.8***		n=21	D-W=1.85
(c)	InEMP	-0.8792 (-1.80)**			0.6206 (12.37)***
p=0.26	$adjR^2$=0.89	$F_{(1,17)}$=153.1		n=21	D-W=2.03

* Denotes significance at the α=0.10 level (one-tailed test)
** Denotes significance at the α=0.05 level (one-tailed test)
*** Denotes significance at the α=0.01 level (one-tailed test)

southeast Alaska has been reduced. For the fishery as a whole, in the Southeast and East Yakutat areas of the Eastern Gulf of Alaska, as of early May 2,513 tons of sablefish had been landed by all gear, with 1,657 tons landed by hook and longline gear, 849 tons landed by pot gear and 6 tons landed by other gear. All of the pot catch was landed outside the state of Alaska; nearly all of the longline catch was landed in southeast Alaska. To derive policy implications from this model we will assume that all of the longline catch actually taken in 1985 was landed in southeast Alaska, and that had there been no entrance of pot gear to the fishery in 1985, all of the additional longline catch that would have resulted (approximately 849 tons) would also have been landed in southeast Alaska.

Table 3 presents the actual landings of sablefish at six southeast Alaska processing plants from January through April 1985, and projected amounts which would have been landed under the assumptions just mentioned. Compared with actual landings of 1.1 million pounds of sablefish, projected landings in the absence of the structural shift in the landings pattern which occurred in 1985 would have been approximately 1.7 million pounds.

In order to project the differences in total hours worked at these southeast Alaska processing plants in these two situations, it would be ideal to have landings to these plants of all other species (salmon, halibut, and other species). However, the other species data is not available on a real time basis like the groundfish (particularly sablefish) data are, so they are not available for this period. In order to make hours worked and employment projections, the values of landings for these other species were held at the 1983-84 average for each month. That is, value for salmon landings at the plants for January of 1985 was assumed to be equal to the average of actual landings in 1983 and 1984, and so on.

Based on these assumptions about the nature of the 1985 fishery, the change in processing hours worked and employment in southeast Alaska resulting from a change in the pattern of landings of sablefish was generated. These estimates are contained in Table 4.

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Table 4. Predicted levels of employment and hours worked in Southeast Alaska processing plants with current levels of sablefish landings, and 100% of sablefish landed in Southeast.

	I-A, II-B			I-A		
	Predicted Actual Employment	Predicted Employment With 100% Landed in SE	Difference	Predicted Actual Hours Worked	Predicted Hours Worked With 100% Landed in SE	Difference
January	229	242	13	3,968	5,694	1,726
February	254	271	23	7,431	10,631	3,200
March	385	431	46	26,021	33,183	7,162
April	269	300	31	9,524	14,077	4,553
	I-B, II-B			I-B		
January	273	279	6	9,987	10,826	839
February	292	304	12	12,618	14,173	1,555
March	472	496	24	39,286	42,767	3,481
April	293	309	16	12,715	14,928	2,213

Table 3. Actual landings of sablefish at 6 Southeast Alaska processing plants vs. projected landings of sablefish in the absence of a pot fishery, by month, 1985.

	Actual	Projected
January	116,937 lbs.	176,852 lbs.
February	216,888	328,015
March	485,292	733,942
April	308,489	466,550
TOTAL	1,127,606 lbs.	1,705,359 lbs.

CONCLUSIONS AND CAUTIONS

Raw data on processing employment and hours worked at six Southeast Alaska processing plants was combined with data on landings of salmon, sablefish, shellfish and other finfish from the Alaska Department of Fish and Game, and estimates of halibut landings by the IPHC, in two simple models to predict the effects of changes in the pattern of sablefish landings on hours worked and employment. The first model related the changes in total hours worked at the plants to changes in the quantity of sablefish landed at the plants, and the second model predicted the change in employment that would result from a given change in total hours worked. These models, while simple, do provide some of the first estimates of processing labor force changes which result from regulations (or the absence of regulations) that alter the regional pattern of landings in the sablefish fishery. Information of this sort is potentially valuable to the Council in its decision making, because it sheds light on consequences in other sectors of the industry other than the harvesting sector.

Due to the exceptionally compressed time period available for the analysis of the data, the estimates which result should be treated carefully. While there appears to be good theoretical justification for linear "expansion paths" (the relationship between inputs to production), and there also appears to be good justification for excluding an intercept term in the relationship, there is some empirical evidence, based on sample data, that an intercept term should be specified in that relationship. (This is not necessarily inconsistent with economic theory.) For the second model, explaining monthly employment at plants as a function of changes in total hours worked, linear forms were discarded in favor of non-linear functions, based on the statistical significance of non-linear terms in the specifications. There does not appear to be substantial theoretical guidance as to the appropriateness of linear versus non-linear function forms for the employment-hours worked relationship. Time constraints precluded development of a fuller theoretical model that might have provided such guidance.

Because of the nature of the data available, the relationships postulated and estimated are necessarily simple ones, and abstract somewhat from the complex

decision environment which plant managers face in determining what their labor requirements are and how to fulfill them. While it is not obvious at this writing that major decision variables have been omitted, that possibility, nonetheless, exists.

A most important qualification is that this brief study, by necessity, focuses only on the part of the processing industry involved with the sablefish fishery, the southeast Alaska processors. While data provided for this sector of the industry did permit the generation of estimates of changes in employment and in hours worked as a result of changes in landings, there were undoubtedly increases in hours worked and employment elsewhere, both onboard vessels doing partial or full processing of sablefish, and in Seattle and other ports outside the state of Alaska. Necessarily, these other areas experienced increased landings as southeast Alaska experienced decreased landings. Thus, any empirical estimates from this study which are used must be placed in their proper context: they are illustrations of the utility of data from the processing sector, and how such data can be used to generate estimates of the sort the Council would like to see. They are by no means a sufficient basis for concluding that we fully understand the nature of the employment impacts and tradeoffs associated with different sablefish regulatory alternatives.

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APPENDIX

Table 1. Data used in the Employment - Hours worked Models.

	HRS	EMP	AVH
April 1983	15806.3	261.000	60.5603
May	14172.5	177.000	80.0706
June	36104.8	359.000	100.570
July	95287.3	556.000	171.380
August	81665.3	397.000	205.706
September	33030.3	218.000	151.515
October	11475.8	194.000	59.1534
November	4060.50	67.0000	60.6045
December	2871.50	54.0000	53.1759
January 1984	3258.75	99.0000	32.9167
February	5708.50	82.0000	69.6159
March	8728.75	138.000	63.2518
April	22738.5	256.000	88.8223
May	22263.8	249.000	89.4127
June	22219.3	249.000	89.2339
July	67189.0	470.000	142.955
August	78324.8	400.000	195.812
September	28317.0	162.000	174.796
October	15206.0	133.000	114.331
November	4780.50	63.0000	75.8810
December	1557.00	35.0000	44.4857

Variable Definitions

HRS: Total process worker (non-managerial) employment, in hours.

EMP: Number of process workers employed.

AVH: Average number of hours worked per employee ($\frac{HRS}{EMP}$).

Table 2. Data Used in the Hours Worked-Landings Models.

	HRS	SB	SM	HALIBUT	OTH
April 1983	15806.3	120201.	13215.0	0.	15486.0
May	14172.5	476737.	178037.	0.	130294.
June	36104.8	308256.	.109032E+07	0.	358456.
July	95287.3	243351.	.163611E+08	.393000E+07	301323.
August	81665.3	267456.	.334771E+08	0.	176923.
September	33030.3	416512.	.209714E+07	0.	88201.0
October	11475.8	442519.	324969.	0.	64435.0
November	4060.50	0.	6028.00	0.	280792.
December	2871.50	0.	242.000	0.	245185.
January 1984	3258.75	10676.0	210.000	0.	582933.
February	5708.50	14950.0	1099.00	0.	712194.
March	8728.75	98962.0	5011.00	0.	.619101E+07
April	22738.5	530437.	14054.0	0.	657630.
May	22263.8	833145.	2335.00	0.	94904.0
June	22219.3	899036.	.136024E+07	.271300E+07	65847.0
July	67189.0	446720.	.155515E+08	0.	313484.
August	78324.8	310263.	.307245E+08	718000.	202199.
September	28317.0	320483.	.555882E+07	0.	86065.0
October	15206.0	0.	311206.	0.	364388.
November	4780.50	0.	14443.0	0.	249326.
December	1557.00	0.	5409.00	0.	14300.0

Variable Definitions

HRS: Total process worker (non-managerial) employment, in hours.

SB: Landings of sablefish at 6 southeast Alaskan processing plants, in pounds.

SM: Landings of salmon, in pounds.

HAL: Landings of halibut, in pounds.

OTH: Landings of other species, in pounds.

BSAI for Catcher/Processors

w/ amendments

GULF OF ALASKA GROUNDFISH FMP AMENDMENT 14

Item 1: Gear restrictions and OY allocations for sablefish fishery by United States vessels.

50 CFR Part 672 is amended as follows:

1. In Section 672.2, add the following definition:

Directed fishing, with respect to any species, stock or other aggregation of fish, means fishing that is intended or can reasonably be expected to result in the catching, taking or harvesting of any significant quantity of such fish. It shall be a rebuttable presumption that, when any species, stock or other aggregation of fish composes 20% or more of the catch, take, or harvest that results from any fishing over any period of time, such fishing was directed fishing for such fish during that period.

2. Section 672.24 is redesignated as Section 672.24(a), and a new subsection (b) is added as follows:

(b) Sablefish Gear Restrictions and Allocations.

1. In the Eastern Area, no person may use any gear other than hook-and-line gear to engage in directed fishing for sablefish. When vessels using trawl gear have harvested 5% of the OY for sablefish in the Eastern Area during any year, the Regional Director shall by field order close that Area to all fishing with trawl gear. No person may use any gear other than hook-and-line and trawl gear in fishing for groundfish in the Eastern Area.

2. During 1986 in the Central Area, and during 1986, 1987 and 1988 in the Western Area, hook-and-line gear may be used to take up to 55% of the OY for sablefish; pot gear may be used to take up to 25% of that OY; and trawl gear may be used to take up to 20% of that OY. After the years specified above, hook-and-line gear may be used to take up to 80% of the sablefish OY in each respective area; and

trawl gear may be used to take up to 20% of that OY. When the share of the sablefish OY assigned to any type of gear for any year under this paragraph has been taken, the Regional Director shall by field order close all fishing for groundfish in that area with that type of gear, subject to Section 672.20(b) of this Part. No person may use any gear other than hook-and-line, pot and trawl gear in fishing for groundfish in each respective area during the years specified above. After those years, no person may use any gear other than hook-and-line and trawl gear in fishing for groundfish in each respective area.

Item 4: Reporting Requirements for Catcher/Processors.

50 CFR Part 672 is amended as follows:

1. In §672.5, a new paragraph (a)(3) is added, as follows:

(3) Catcher/Processor Vessels.

(A) The operator of any fishing vessel regulated under this Part that retains any part of its catch of groundfish on board that vessel for a period of more than 14 days from the time it is caught shall, in addition to the requirements of paragraphs (a)(1) and (a)(2) of this section, meet the following requirements:

(i) Twenty-four hours prior to starting and upon stopping fishing in a fishing area, the operator of that vessel shall notify the Regional Director of the date and hour in GMT, and the fishing area ~~and position~~ of such activity. No such operator may retain any part of that vessel's catch on board that vessel for a period of more than 14 days from the time it is caught unless the Regional Director received all notifications required under this paragraph during that period.

(ii) Prior to shifting fishing operations in a new area the operator of that vessel shall notify the Regional Director of the date and hour in GMT of the new fishing area ~~and the position of the new fishing activity.~~ This notice shall be delivered to the Regional Director within 48 hours of occurrence.

(iii) The notices required in paragraphs (i) and (ii) should be delivered by a private or commercial communications facilities to Coast Guard Juneau who will relay them to the Regional Director. If adequate private or commercial communications faciiities have not been successfully contacted, only then may the required notices be delivered via the closest Coast Guard communications station.

(iv) Within 7 days after the first catch of groundfish by that vessel during that period, and every 7 days thereafter until that vessel's entire catch has been offloaded, the operator of that vessel shall report the following information to the Regional Director through such means as the Regional Director may prescribe upon issuing that vessel's permit under §672.4 of this Part:

(a) the estimated round weight, by species group, of all fish caught by that vessel during the preceding 7 days, whether retained, discarded, or offloaded;

(b) the estimated share by species groups of such fish that was caught in each regulatory area and district in which that vessel fished during the preceding 7 days.

(B) The operator of any vessel regulated under this Part that receives groundfish at sea from a fishing vessel regulated under this Part shall meet the following requirements:

(i) Twenty-four hours prior to starting and upon stopping fishing in a fishing area, the operator of that vessel shall notify the Regional Director of the date and hour in GMT, and the fishing area ~~and position~~ of such activity. No such operator may retain any part of that vessel's catch on board that vessel for a period of more than 14 days from the time it is caught unless the Regional Director received all notifications required under this paragraph during that period.

(ii) Prior to shifting fishing operations in a new area the operator of that vessel shall notify the Regional Director of the date and hour in GMT of the new fishing area ~~and the position of the new fishing activity~~. This notice shall be delivered to the Regional Director within 48 hours of occurrence.

(iii) The notices required in paragraphs (i) and (ii) should be delivered by a private or commercial communications facilities to Coast Guard Juneau who will relay them to the Regional Director. If adequate private or

commercial communications facilities have not been successfully contacted, only then may the required notices be delivered via the closest Coast Guard communications station.

(iv) Within 7 days after the first receipt of groundfish by that vessel at sea from a fishing vessel regulated under this Part, and every 7 days thereafter until that vessel's entire cargo of fish has been delivered to a port, the operator of that vessel shall report the following information to the Regional Director through such means as the Regional Director may prescribe upon issuing that vessel's permit under §672.4 of this Part:

(a) the estimated weight, by species groups, of all fish received by that vessel during the preceding 7 days, whether retained, discarded, or offloaded;

(b) the form in which such fish was received, by species groups.

2. In §672.4, paragraph (b)(5) and subsection (d) are revised as follows:

§672.4 Permits.

* * * * *

(b) * * *

(5) whether the vessel is to be used in fish harvesting, in which case the type of fishing gear to be used must be specified; or for support operations, including the receipt of fish from United States vessels, at sea; and

* * * * *

(d) Notification of change.

(1) Except as provided in paragraph (d)(2) of this section, any person who has applied for and received a permit under this section shall give written notification of any change in the information provided under paragraph (b) of this section to the Regional Director within 30 days of the date of that change.

(2) A permit issued under this section shall authorize either harvesting or support operations, but not both. The notification of the Regional Director under paragraph (d)(1) of this section of a change in the type of operations in which that vessel is to engage must be completed before that vessel begins the new type of operation.

Item 5: Framework procedure for annual adjustment of halibut PSC limits.

50 CFR Part 672 is amended as follows:

1. Section 672.20(e) is revised to read as follows:

(e) Halibut.

(1) If during any year the Regional Director determines that the catch of halibut for that year by United States vessels delivering their catch to foreign vessels (JVP vessels) or United States vessels delivering their catch to United States fish processors (DAP vessels), will reach the applicable prohibited species catch (PSC) limit for halibut established under paragraph (e)(2) of this section, he shall by field order prohibit fishing with trawl gear other than off-bottom trawl gear for the rest of the year by the vessels and in the area to which the PSC applies, subject to paragraph (e)(3) of this section.

(2) (A) As soon as is practicable after October 1 of each year, the Secretary, after consultation with the Council, shall publish a rule-related notice in the FEDERAL REGISTER specifying the proposed halibut PSC for JVP vessels and DAP vessels, respectively. Each halibut PSC may be apportioned among the regulatory areas and districts of the Gulf of Alaska, as parts thereof. Public comment on the proposed halibut PSCs will be accepted by the Secretary for a period of 30 days after they have been published in the FEDERAL REGISTER. The Secretary shall consider all timely comments in determining, after consultation with the Council, the final halibut PSCs for the next year. These final halibut PSCs will be published in a rule-related notice in the FEDERAL REGISTER as soon as practicable after December 15, and shall be made available to the public through other suitable means by the Regional Director.

(B) The Secretary shall base the annual determination of halibut PSCs upon the following types of information:

(i) estimated halibut bycatch in years before that for which halibut PSCs are being set;
(ii) expected changes in groundfish catch;
(iii) expected changes in groundfish biomass;
(iv) current estimates of halibut biomass and stock condition;
(v) potential impacts of expected fishing for groundfish on halibut stocks and United States halibut fisheries;
(vi) the methods available for and costs of reducing halibut bycatches in groundfish fisheries; and
(vii) other biological and socioeconomic information that affects the consistency of halibut PSCs with the objectives of this Part.

(C) The Secretary may, by rule-related notice; change halibut PSCs during the year for which they were specified, based on new information of the types set forth in paragraph (e)(2)(B) of this section.

(D) When the JVP or DAP vessels to which a halibut PSC applies have caught an amount of halibut equal to that PSC, the Regional Director may by field order permit some or all of those vessels to continue to engage in fishing for groundfish using bottom-trawl gear under specified conditions, subject to the other provisions of this Part. In authorizing and conditioning such continued fishing with bottom-trawl gear, the Regional Director shall take into account the following considerations, and issue relevant findings:

(i) the risk of biological harm to halibut stocks and of socioeconomic harm to authorized halibut users posed by continued bottom trawling by the vessels in question;
(ii) the extent to which the vessels in question have avoided incidental halibut catches up to that point in the year;

(iii) the confidence of the Regional Director in the accuracy of the estimates of incidental halibut catches by the vessels in question up to that point in the year;

(iv) whether observer coverage of the vessels in question is sufficient to assure adherence to the prescribed conditions, and to alert the Regional Director to increases in their incidental halibut catches; and

(v) the enforcement record of owners and operators of the vessels in question, and the confidence of the Regional Director that adherence to the prescribed conditions can be assured in light of available enforcement resources.

Note: If the Council extends this procedure to foreign vessels, conforming changes will be made to 50 CFR §611.92.

Item 7: Sablefish Fishing Season.

50 CFR Part 672 is amended as follows:

1. Section 672.23 is revised to read as follows:

Section 672.23 Seasons

(a) Fishing for groundfish in the regulatory areas and districts of the Gulf of Alaska is authorized from January 1 to December 31, subject to the other provisions of this Part, except as provided in subsection (b) of this section.

(b) Directed fishing for sablefish with hook-and-line and pot gear in the regulatory areas and districts of the Gulf of Alaska is authorized from April 1 through December 31, subject to the other provisions of this Part.

Table 1. Initial (as of January , each year) optimum yield (OY), domestic annual harvest (DAH), do estic annual processing (DAP), joint venture processing (JVP), r serve, and total allowable level of foreign fishing (TALFF), all in m tric tons. OY=DAH+RESERVE+TALFF; DAH=DAP+JVP.

Species		OY	DAH	DAP	JVP	Reserve	TALFF
Pollock	W/C	305000	256871	44371	212500	23129	25000
	E	16600	13280	13280	0	3320	0
Pacific cod	W	16560	5748	2539	3209	3312	7500
	C	33540	24332	19901	4431	6708	2500
	E	9900	7920	7920	0	1980	0
Flounders	W	10400	8320	7398	922	1880	200
	C	14700	11760	8292	3468	2690	250
	E	8400	6720	6720	0	1680	0
POP	W	1302	1302	1302	0	0	0
	C	3906	3906	3906	0	0	0
	E	875	875	875	0	0	0
Sablefish	W	1670	1670	1670	0	0	0
	C	3060	3060	3060	0	0	0
	W.YK	1680	1680	1680	0	0	0
	E.YK	850	850	850	0	0	0
		-1135	1135	-1135			
	SE	470	470	470	0	0	0
		-1435	-1435	-1435			
Atka mackerel	W	4678	3742	50	3692	836	100
	C	500	380	350	30	100	20
	E	100	80	80	0	20	0
Rockfish *	G-W	5000	4733	4600	133	267	0
Thornyhead	G-W	3750	3000	2990	10	700	50
Squid	G-W	5000	4000	3990	10	950	50
Other sp	G-W	22397	17944	16544	1400	4191	262

Footnote: The harvest of the 5,000 mt OY is limited to 600 mt between 56 deg. N. Latitude and 57 deg. 30' N. latitude. The remaining 4,400 mt may be taken in the remaining parts of the managment unit.