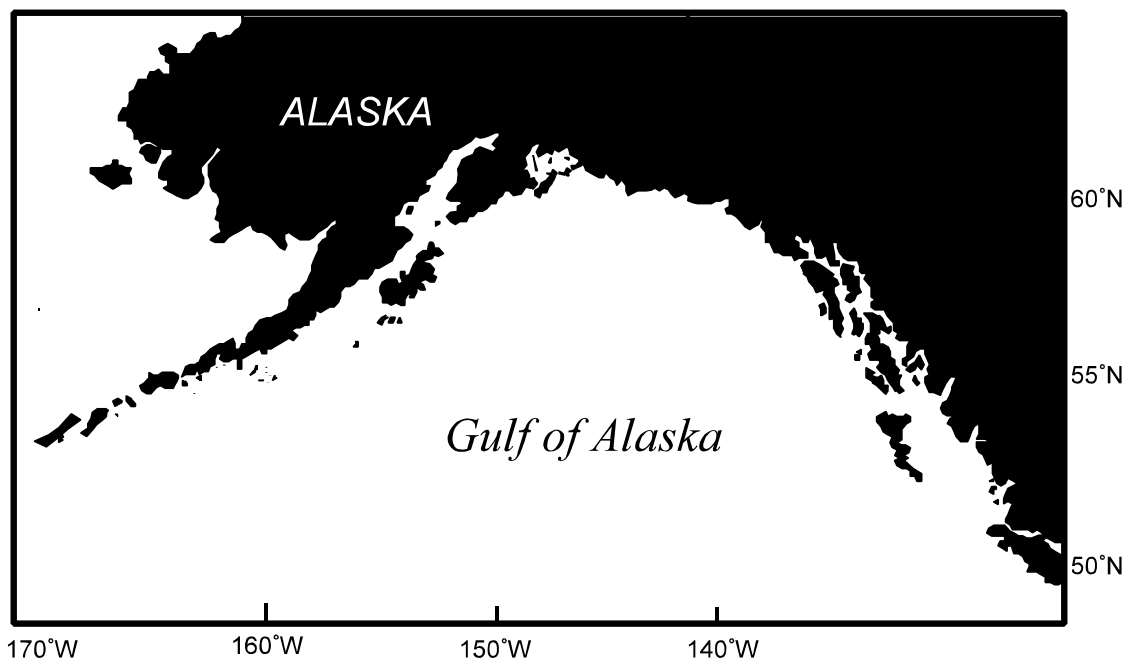


**Summary
of the
Gulf of Alaska
Groundfish Fishery Management Plan**



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TABLE OF CONTENTS

Management Unit 1

Boundaries and Regulatory Areas 1

Plan and Management Objectives 1

Definitions 2

Species Categories 4

Determination of Total Allowable Catches 5

Status of Groundfish Stocks 6

Allocation of Total Allowable Catches 6

Total Allowable Catch Closures 7

Inseason Adjustments 7

Limited Entry Programs 7

Improved Retention/Improved Utilization 8

Prohibition on Pollock Roe-Stripping 9

Crab Bycatch Measures 9

Halibut Bycatch Measures 9

Recordkeeping and Reporting Requirements 10

Observer Program 10

Forage Fish 10

Marine Mammal Avoidance 10

Seabird Avoidance 11



Acknowledgments: This document is modeled after the BSAI FMP summary prepared by D. Witherell and L. Roberts. Portions of this document were provided in a previous GOA FMP summary (NPFMC 1993).

Summary of the Gulf of Alaska Groundfish Fishery Management Plan

The Gulf of Alaska Groundfish Fishery Management Plan was implemented on December 1, 1978 and has been amended over 50 times. Those amendments passed by the North Pacific Fishery Management Council (NPFMC) are incorporated in this summary to reflect current management of the domestic groundfish fisheries in the Gulf of Alaska. A history of plan amendments is listed in Table 1. Dozens of regulatory amendments have also modified the groundfish and halibut fishing regulations.

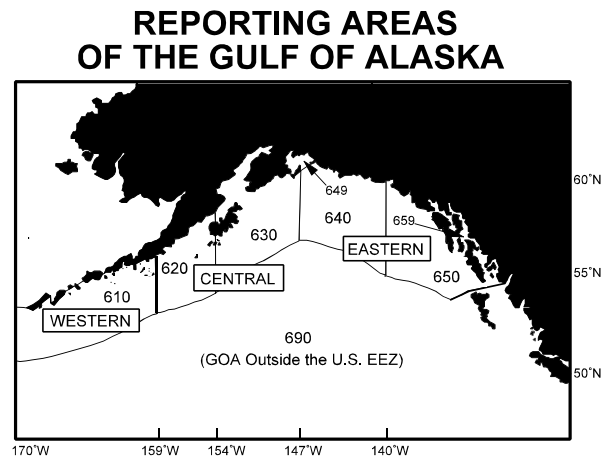
In December 1986, the Council determined that no groundfish would be made available to directed foreign fisheries in the Gulf beginning in 1987. Therefore, references to foreign regulations have been deleted from this summary. In 1989, a small joint venture allocation was approved but was not harvested due to halibut bycatch constraints. No joint venture fishery has been approved since that time.

Management Unit

The plan covers all foreign and domestic fisheries for all finfish except salmon, steelhead trout, halibut, herring, and tuna in the Gulf of Alaska. Harvest allocations and management are based on the calendar year.

Boundaries and Regulatory Areas

The plan encompasses that portion of the Gulf of Alaska within the 3- to 200-mile Exclusive Economic Zone (EEZ) between 132°40' W and 170° W. This area is divided into three regulatory areas: Eastern (132°40' W to 147° W), Central (147° W to 159° W), and Western (159° W to 170° W). For sablefish management only, the Eastern area is further divided into two districts: West Yakutat (140° W to 147° W), and East Yakutat/Southeast Outside (all waters of the EEZ between 140° W and 132°40'W). For rockfish management the Southeast Outside District, as described above, is specified. For pollock management, the combined Western/Central areas are further subdivided into three pollock management districts: Statistical Area 61 between 170° and 159° W longitude; Statistical Area 62 between 159° and 154° W longitude; and, Statistical Area 63 between 154° and 147° W longitude.



Plan and Management Objectives

The Council is committed to develop long-range plans for managing the Gulf of Alaska groundfish fisheries that will promote a stable planning environment for the seafood industry and will maintain the health of the resource and environment. In developing allocation and harvesting systems, the Council gives overriding consideration to maximizing social and economic benefits to the United States. Such management will:

- (1) Conform to the National Standards and to NPFMC Comprehensive Fishery Management Goals.
- (2) Be designed to assure that to the extent possible:
 - (a) Commercial, recreational, and subsistence benefits may be obtained on a continuing basis.
 - (b) Minimize chances of irreversible or long-term adverse effects on fishery resources and the marine

environment.

- (c) A multiplicity of options will be available with respect to future use of the resources.
- (d) Regulations will be long-term and stable with changes kept to a minimum.

Principal management goal

Groundfish resources of the Gulf of Alaska will be managed to maximize positive economic benefits to the United States, consistent with resource stewardship responsibilities for the continuing welfare of the Gulf of Alaska living marine resources. Economic benefits include, but are not limited to, profits, benefits to consumers, income, and employment.

Primary objectives

1. The Council will establish annual harvest guidelines, within biological constraints, for each groundfish fishery and mix of species taken in that fishery.
2. In its management process, including the setting of annual harvest guidelines, the Council will account for all fishery-related removals by all gear types for each groundfish species, sport fishery and subsistence catches, as well as by directed fisheries.
3. The Council will manage the fisheries to minimize waste by:
 - (a) developing approaches to treating bycatches other than as a prohibited species. Any system adopted must address the problems of covert targeting and enforcement.
 - (b) developing management measures that encourage the use of gear and fishing techniques that minimize discards.
4. The Council will manage groundfish resources of the Gulf of Alaska to stimulate development of fully domestic fishery operations.
5. The Council will develop measures to control effort in a fishery, including systems to convert the common property resource to private property, but only when requested to do so by industry.
6. Rebuilding stocks to commercial or historic levels will be undertaken only if benefits to the United States can be predicted after evaluating the associated costs and benefits and the impacts on related fisheries.
7. Population thresholds will be established for economically viable species or species complexes under Council management on the basis of the best scientific information, and acceptable biological catches (ABCs) will be established as defined in this document. If population estimates drop below these thresholds ABC will be set to reflect necessary rebuilding as determined in Objective 6.

Definitions

Acceptable Biological Catch (ABC) is a preliminary description of the acceptable harvest (or range of harvests) for a given stock or stock complex. Its derivation focuses on the status and dynamics of the stock, environmental conditions, other ecological factors, and prevailing technological characteristics of the fishery. The fishing mortality rate used to calculate ABC is capped as described under “overfishing” below.

Directed fishing means the retention on board a fishing vessel of a quantity of any groundfish species or species group in an amount equal to or greater than specified percentages of the total amount of fish and fish products on board, as calculated in round weight equivalents. The standards for directed fishing are specific to gear type and target species.

Optimum Yield (OY) is that which provides the greatest overall benefit to the nation with particular reference to food production, recreational fisheries, and protection of marine ecosystems. In the case of an overfished fishery, OY provides for rebuilding to a level consistent with producing maximum sustainable yield. OY is based upon the maximum sustainable yield for a given fishery, as reduced by relevant economic, social or biological factors. It may be obtained by a deviation from ABC for purposes of promoting economic, social or ecological objectives as established by law and the public participation process. The definition of OY prescribes that the benefits of the fishery resources be allocated among all of the people affected by the fishery. These include commercial fishermen, processors, foreign fishermen, sport fishermen, distributors, consumers, governments, and a host of manufacturing and service industries. These groups usually have different and often conflicting ideas about the best use of the resources. Optimum yield then involves judgmental decisions that must be made by the Council based upon the best obtainable information.

Overfishing, or overfishing level (OFL), is defined as any amount of fishing in excess of a prescribed maximum allowable rate. This maximum allowable rate is prescribed through a set of six tiers which are listed below in descending order of preference, corresponding to descending order of information availability. The Scientific and Statistical Committee (SSC) has the final authority for determining whether a given item of information is "reliable" for the purpose of this definition, and may use either objective or subjective criteria in making such determinations. Abbreviations used in the overfishing definition include fishing mortality rate (F), natural mortality rate (M), biomass (B), and probability density function (pdf). For tiers (1-3), the coefficient a is set at a default value of 0.05, with the understanding that the SSC may establish a different value for a specific stock or stock complex as merited by the best available scientific information. For tiers (2-4), a designation of the form " $F_{X\%}$ " refers to the fishing mortality rate associated with an equilibrium level of spawning per recruit (SPR) equal to $X\%$ of the equilibrium level of spawning per recruit in the absence of any fishing. If reliable information sufficient to characterize the entire maturity schedule of a species is not available, the SSC may choose to view SPR calculations based on a knife-edge maturity assumption as reliable. For tier (3), the term $B_{40\%}$ refers to the long-term average biomass that would be expected under average recruitment and $F = F_{40\%}$.

Reserve is a portion of the total allowable catch (20%) of pollock, Pacific cod, flounders, and other species which is set aside at the beginning of the fishing (calendar) year for later allocations. Any amount of the reserve may be apportioned to a target species (except for fixed gear allocation for sablefish, or the other species category) so long as apportionments do not result in overfishing. Any reserve of Pacific cod is apportioned between inshore and offshore sectors. Reserves are scheduled to be released by the Regional Administrator

Tiers used to determine ABC and OFL for groundfish stocks.

- (1) Information available: Reliable point estimates of B and B_{MSY} and reliable pdf of F_{MSY} .
 - 1a) Stock status: $B/B_{MSY} > 1$
 $F_{OFL} = m_A$, the arithmetic mean of the pdf
 $F_{ABC} \leq m_H$, the harmonic mean of the pdf
 - 1b) Stock status: $a < B/B_{MSY} \leq 1$
 $F_{OFL} = m_A \times (B/B_{MSY} - a)/(1 - a)$
 $F_{ABC} \leq m_H \times (B/B_{MSY} - a)/(1 - a)$
 - 1c) Stock status: $B/B_{MSY} \leq a$
 $F_{OFL} = 0$
 $F_{ABC} = 0$
- (2) Information available: Reliable point estimates of B, B_{MSY} , F_{MSY} , $F_{30\%}$, and $F_{40\%}$.
 - 2a) Stock status: $B/B_{MSY} > 1$
 $F_{OFL} = F_{MSY} \times (F_{30\%}/F_{40\%})$
 $F_{ABC} \leq F_{MSY}$
 - 2b) Stock status: $a < B/B_{MSY} \leq 1$
 $F_{OFL} = F_{MSY} \times (F_{30\%}/F_{40\%}) \times (B/B_{MSY} - a)/(1 - a)$
 $F_{ABC} \leq F_{MSY} \times (B/B_{MSY} - a)/(1 - a)$
 - 2c) Stock status: $B/B_{MSY} \leq a$
 $F_{OFL} = 0$
 $F_{ABC} = 0$
- (3) Information available: Reliable point estimates of B, $B_{40\%}$, $F_{30\%}$, and $F_{40\%}$.
 - 3a) Stock status: $B/B_{40\%} > 1$
 $F_{OFL} = F_{30\%}$
 $F_{ABC} \leq F_{40\%}$
 - 3b) Stock status: $a < B/B_{40\%} \leq 1$
 $F_{OFL} = F_{30\%} \times (B/B_{40\%} - a)/(1 - a)$
 $F_{ABC} \leq F_{40\%} \times (B/B_{40\%} - a)/(1 - a)$
 - 3c) Stock status: $B/B_{40\%} \leq a$
 $F_{OFL} = 0$
 $F_{ABC} = 0$
- (4) Information available: Reliable point estimates of B, $F_{30\%}$, and $F_{40\%}$.
 - $F_{OFL} = F_{30\%}$
 $F_{ABC} \leq F_{40\%}$
- (5) Information available: Reliable point estimates of B and natural mortality rate M.
 - $F_{OFL} = M$
 $F_{ABC} \leq 0.75 \times M$
- (6) Information available: Reliable catch history from 1978 through 1995.
 - OFL = the average catch from 1978 through 1995, unless an alternative value is established by the SSC on the basis of the best available scientific information
 - $ABC \leq 0.75 \times OFL$

on or about April 1, June 1, and August 1. Since 1997, reserves have only been used for Pacific cod.

Total Allowable Catch (TAC) is an annually determined catch which is species-specific and based on consideration of maximum sustainable yield, equilibrium yield, and optimum yield for the groundfish complex as a whole. The sum of all TACs must fall within the OY range of 116,000 to 800,000 metric tons (mt).

Species Categories

Four categories of species or species groups are likely to be taken in the groundfish fishery. The optimum yield concept is applied to all except the "prohibited species" category. These categories are described as follows:

1. Prohibited species are those species and species groups the catch of which must be returned to the sea with a minimum of injury except when their retention is authorized by other applicable law. Foreign fisheries must maintain catch records. Groundfish species and species groups under this FMP for which the quotas have been achieved shall be treated in the same manner as prohibited species. Prohibited species include: Pacific halibut, Pacific herring, salmonids, king crab, and Tanner crab.
2. Target species are commercially important and generally targeted upon by the groundfish fishery. Sufficient data exist to specify total allowable catch (TAC) and to manage each species or species group separately. Catch records must be kept. Target species, as defined in the regulations, include:

<u>Target Species</u>	<u>Other Species</u>	<u>Prohibited Species</u>
Pollock	Atka mackerel	Domestic:
Pacific cod	Squid	Pacific halibut
Flounders	Sculpins	King crab
Sablefish	Sharks	Tanner crab
Rockfish	Skates	Pacific salmon
- demersal shelf assemblage	Eulachon	Steelhead trout
- pelagic shelf assemblage	Capelin	Pacific herring
- thornyhead rockfish	Smelts	
- Pacific ocean perch	Octopus	Foreign:
- shortraker/rougeye		All of the above and other
- 'other' slope rockfish		unallocated species.
- northern rockfish		

A species or species group from within the target species category may be split out and given its own ABC/TAC. Similarly, species in the target species category may be combined and a single ABC/TAC assigned to the new aggregate species group.

Non-specified Species

All other species of fish and invertebrates taken incidentally that are not managed by other FMPs and are associated with groundfish fisheries are designated as "non-specified species" and catch records need not be kept.

State Regulation of Demersal Shelf Rockfish Assemblage

The TAC for demersal shelf rockfish (DSR) in the Eastern Regulatory Area is specified by the Council each year. The State of Alaska manages State registered vessels fishing for demersal shelf rockfish in the

Eastern Area with Council oversight. Under this oversight, the State's management regime for DSR will be directed at managing these rockfish stocks within the TAC specified by the Council. 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 DSR in each FMP regulatory area at levels no greater than that provided for in the FMP. Such regulations may apply only to those vessels registered/licensed under the laws of the State of Alaska.

3. Other species have little economic value and are not usually targeted upon, but they may be significant components of the ecosystem or have economic potential. A single TAC applies to this category as a whole. Catch records must be kept. Other species include: sculpins, eulachon, capelin, sharks, skates, smelts, and octopus.
4. Nonspecified species are those species and species groups of no current economic value taken by the groundfish fishery only as an incidental catch in the target fisheries. Non-specified species include numerous fish and invertebrates such as grenadiers, eelpouts, sea urchins, mussels, etc. Virtually no data exist which would allow population assessments. No record of catch is necessary. No TAC is established for this category; the allowable catch is the amount which is taken incidentally while fishing for target and other species, whether retained or discarded.

Determination of Total Allowable Catches

The groundfish complex is a distinct management unit and has more than 15 commercially important species and many others of lesser or no commercial importance. This complex forms a large subsystem of the Gulf of Alaska ecosystem with intricate interrelationships between predators and prey, between competitors, and between those species and their environment. Therefore, the productivity and Maximum Sustained Yield (MSY) of groundfish are conceived for the groundfish complex as a unit rather than for many individual species groups. MSY for the complex, including the target and other species categories, was estimated to be 116,000 to 800,000 mt based on groundfish catches for 1965-85. The lower end of the MSY range approximates the lowest historical groundfish catch during the 21 year period, 1965-85. The upper end is approximately 95% of the mean MSY (845,670 mt) for 1983-1987. More recent estimates of MSY are not available.

Optimum Yield (OY) for the complex is below MSY, reported as a range of 116,000 and 800,000 mt, plus such amounts of "nonspecified species" as may be taken incidentally. The OY range was established under Amendment 15 in 1986 and a change in OY outside this range would require a plan amendment.

Total Allowable Catch (TAC) for each target species and for the "other species" category will be determined by the Alaska Regional Administrator of the National Marine Fisheries Service based on the Council's recommendations. The sum of these TACs, or the TAC for the groundfish complex excluding nonspecified species shall be within the OY range of 116,000 to 800,000 mt and is subject to the management measures prescribed in this FMP. TAC for the nonspecified species category is the amount taken incidentally to the harvest of target and "other" species. A summary of the 1998 catch specifications is shown in Table 2.

The Council recommends TACs for each target species and the "other species" category based on the best available data concerning the stocks and the fisheries. The Council's recommendations concerning TACs for the upcoming fishing year are based on the following:

1. Biological conditions of stocks as noted in an annual Stock Assessment & Fishery Evaluation (SAFE) prepared each year by the Plan Team with the assistance of NOAA Fisheries and other agencies. The

SAFE contains historical catch trends, biomass and ABC estimates, assessments of harvest impacts, and alternative harvesting strategies.

- Socioeconomic considerations including promotion of efficiency, optimum marketable size of fish, impacts on prohibited species and dependent domestic fisheries, desire to enhance depleted stocks, seasonal access to the groundfish fishery by U.S. vessels, commercial importance to local communities, subsistence needs, and the need to promote utilization of certain species.

The Council sets preliminary TACs in September, takes public comment through early December, and finalizes the TACs at its December meeting for the following fishing year. Twenty-five percent of the preliminary groundfish specifications adopted in September go forward as interim specifications until superseded by publication of the final specifications in the *Federal Register*. This permits the groundfish fisheries to start on January 1, and for in-season management actions to take place, even if the publication of the final specifications is delayed past January 1. Final specifications are generally published by mid-February each year.

The Council is scheduled to take final action in April 1998 to revise the specification process by eliminating publication of proposed and interim specifications in the *Federal Register*, and increase NMFS authority to adjust harvest levels on an inseason basis, based on scientific or socioeconomic concerns. Under this change, ABCs and TACs and PSC amounts would remain unchanged from year to year until revised in a final rule.

Status of Groundfish Stocks

Harvest of groundfish in the Gulf of Alaska began in the 1950's. Conservative quotas have allowed for sustained yields, with catches averaging 215,000 mt for the last ten year period. Consequently, most groundfish stocks are at levels considered to be healthy. As shown in Table 3, some stocks are currently above their long term average, and some below. In general, stock size increases and decreases with variable recruitment strengths. The adjacent table shows the relative abundance and catch levels from the 1997 fishing year. Catches are closely monitored, and kept within ABC limits. For all stocks, ABCs are less than overfishing levels.

Catch	Relative Abundance		
	Low	Medium	High
< 50% of ABC	Atka mackerel, rex sole	deep & shallow water flatfish, flathead sole, slope & demersal shelf rockfish	Arrowtooth flounder
50-90% of ABC	thornyhead rockfish	northern rockfish	pelagic shelf rockfish
90-100% of ABC	Pacific cod, sablefish		
>100% of ABC		pollock, shortraker/rougheye	Pacific ocean perch

Allocation of Total Allowable Catches

Since 1990, the Council has recommended that all TAC be allocated to the domestic fishery. No joint venture fisheries or foreign allocations have been approved, so the groundfish fishery has been wholly U.S.-processed since 1990. There were no directed foreign allocations in the Gulf after 1986, and no foreign joint ventures after 1988.

Allocations by Gear Type. Sablefish in the Western and Central Gulf is allocated 80% to hook-and-longline gear and 20% to trawl gear; in the Eastern Gulf sablefish is allocated 95% to fixed gear and 5% to trawl gear. In 1998, the Secretary approved a ban on the use of trawl gear east of 140° W. longitude. The trawl ban in GOA Regulatory Area 650 (East Yakutat/Southeast Outside), therefore, conflicted with the trawl gear allocation to the Eastern Gulf. For 1998, the Council combined the ABC for Areas 640 and

650 and reallocated the trawl gear allocation for Area 650 to the trawl gear allocation to Area 640, leaving the fixed gear allocations in both subareas unaffected.

Seasonal Allocations. Harvest allocations and management are based on a calendar year. The fishing year is defined as the January 1 through December 31 calendar year. Fishing seasons for specific species or gear types may be set by regulatory amendment and may differ from the fishing year. The fixed gear IFQ sablefish fisheries are tied to the halibut IFQ opening set by regulation to the International Pacific Halibut Commission Pacific halibut season, which has run from March 15-November 15 since 1995. The pollock TAC in the Western and Central Gulf are released in trimesters beginning January 1, April 1, and September 1. All trawl fisheries are delayed until January 20. Trawl fisheries also open and close based on seasonal allocation of Prohibited Species Catches (PSCs) (e.g., halibut and crab bycatch limits). The 1998 fishing periods are shown in Figure 1.

Inshore/Offshore Allocation. The pollock TAC in the GOA was allocated 100% to the inshore sector of the fishery beginning in 1992. For Pacific cod, 90% of the TAC is allocated to the inshore sector and 10% to the offshore sector. This allocation is not expected to change in the near future.

Total Allowable Catch Closures

The Regional Administrator (RA) may close an area in whole or part to directed fishing for a species whose remaining TAC is needed as bycatch in other directed fisheries. If directed fishing is prohibited, the species may be retained in amounts less than what would constitute directed fishing. If a TAC is fully reached, the RA will publish a notice declaring that species as prohibited and it must be discarded. If continued fishing on other species may constitute a threat of overfishing on a species whose TAC is exhausted, the RA has the authority to stop the other directed fisheries or require gear adjustments. In taking such action, the RA must consider:

1. Risk of biological harm to the species whose TAC has been reached.
2. Risk of socioeconomic harm to authorized users of the species for which TAC has been reached.
3. Impacts of a continued closure on the socioeconomic well-being of other domestic fisheries.

Inseason Adjustments

The Secretary of Commerce, acting through the RA, is authorized to make three types of in-season adjustments:

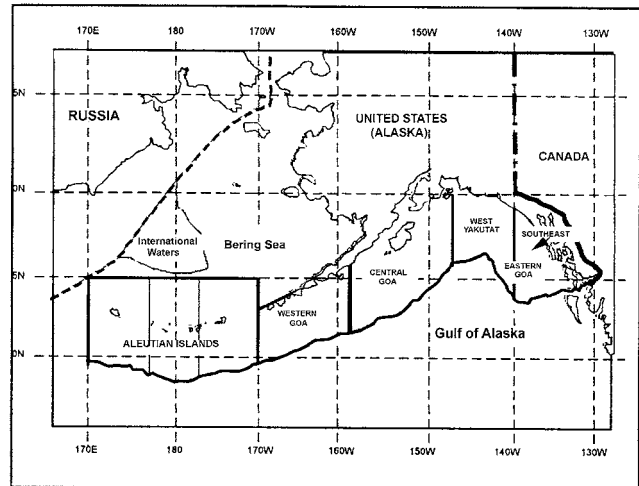
1. Modify seasons in part or all of a management area.
2. Modify allowable gear in all or part of a management area.
3. Adjust TAC and PSC limits.

It must be determined first, however, that the adjustment is necessary to prevent overfishing of any species, finfish or shellfish; or prevent further harvest of a target groundfish species or bycatch of a prohibited species because the TAC or PSC has been found, scientifically, to be mis-specified. In choosing whether to modify seasons or gears, the Regional Administrator must use the least restrictive action of the following which will still serve the purpose:

1. A gear modification which would protect a species needing conservation but still allow other fisheries to continue.
2. A time/area restriction which would allow other fisheries to continue in noncritical areas and times.
3. A complete closure of an area to all groundfish fishing.

Limited Entry Programs

An Individual Fishing Quota (IFQ) program for halibut and sablefish in the GOA began in 1995, after nearly ten years of Council consideration and public debate. Quota share (QS) ownership was limited to vessel owners who had sablefish landings in 1988, 1989, or 1990. Calculation of individual QS was based on the best five of six years during 1985-90. As of December 31, 1997, 1,029 persons and 1,925 vessels fished for sablefish and 4,118 persons and 504 vessels fished for halibut in the GOA and Bering Sea/Aleutian Islands IFQ fixed gear fisheries. The IFQ program has numerous restrictions on the transfer and use of QS to maintain an owner-operated fleet and to prevent consolidation into too few hands.



In 1996, a moratorium on entry of new vessels into the groundfish fishery was also implemented. The large number of vessels fishing for a limited resource had created a “race for fish,” characterized by short seasons and economic inefficiency. Although a moratorium may not resolve the underlying problems of existing overcapitalization and excess effort in the groundfish fisheries, the intent of the moratorium was to prevent these problems from worsening while comprehensive solutions were being developed. The eligibility period for moratorium qualification was January 1, 1988 through February 9, 1992, during which time a vessel must have made at least one legal landing of groundfish.

In June 1995, the Council adopted a license limitation program (LLP) to supersede the vessel moratorium. The LLP is the first step in fulfilling the Council’s commitment to develop a comprehensive rationalization program for the Alaska groundfish and crab fleet. The LLP would limit the number, size, and specific operation of vessels that may be used in fisheries for groundfish, other than demersal shelf rockfish east of 140 deg. W. long. and sablefish managed under the Individual Fishing Quota (IFQ) program for Pacific halibut and sablefish, in the exclusive economic zone (EEZ) off Alaska. Licenses would be issued to eligible applicants based on fishing that occurred from a

Number of vessels that caught groundfish in the GOA in 1996, by vessel length class (LOA in ft.), catcher type, and gear (64 vessels are in multiple categories).

	<60'	60-124'	>125'	Total
<u>Catcher vessels</u>				
Fixed gear	1,206	199	9	1,414
Trawl gear	58	108	20	186
<u>Catcher/processors</u>				
Fixed gear	5	18	16	39
Trawl gear	0	8	28	36
Total all vessels	1,269	333	73	1,675

qualifying vessel in endorsement areas in BSAI, GOA, or BSAI/GOA management areas during the general qualification period. Licenses would be issued to either catcher vessel or catcher/processor vessel categories. Minimum landings requirements vary according to vessel length category, the area, and vessel length designation. The LLP was approved by the Secretary in September 1997. Implementation is planned for the year 2000.

Improved Retention/Improved Utilization

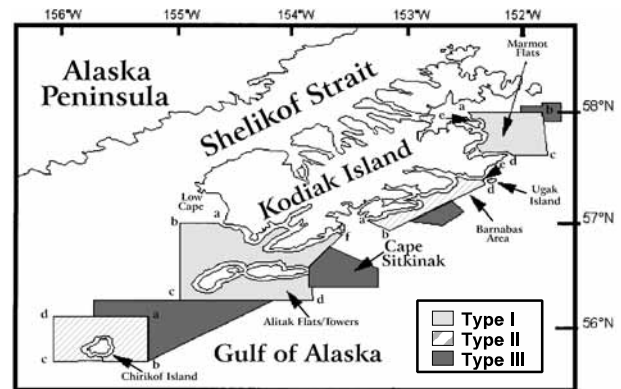
Following nearly two years of analyses, Council discussions, and industry participation, the Council approved requiring 100% retention (IR/IU) of pollock and Pacific cod in all BSAI and GOA fisheries beginning on January 1, 1998. Rock sole and yellowfin sole retention requirements will follow, but will be delayed until 2003, to allow for development of markets and gear technological responses by the vessels engaged in these fisheries. The Council addressed the utilization side of the program by not mandating specific product forms, but by allowing individual operations the flexibility to process pollock and Pacific cod into whatever product forms they wish, subject to a minimum required product recovery rate of 15%. State regulations to extend these requirements to onshore processing plants have also been implemented.

Prohibition on Pollock Roe-Stripping

The Council has prohibited the practice of roe-stripping of pollock (defined as the taking of roe from female pollock and the subsequent discard of the carcasses of females and all male pollock) since 1989. It is the Council's policy that pollock shall be utilized to the maximum extent possible for human consumption. The IR/IU program requirements noted above have effectively superseded the ban on roe stripping.

Crab Bycatch Measures

The Council has designated Type I, Type II and Type III areas for special bottom trawl restrictions to protect king crab. Type I areas have very high king crab concentrations and, to promote rebuilding of the crab stocks, are closed all year to all trawling except with pelagic gear. Type II areas have lower crab concentrations and are only closed to non-pelagic gear from February 15 through June 15. Type III areas are adjacent to Type I and II areas and have been identified as important juvenile king crab rearing or migratory areas. Type III areas become operational following a determination that a "recruitment event" has occurred. The Regional Administrator will classify the expanded Type III area as either Type I or II, depending on the information available. A "recruitment event" is defined as the appearance of female king crab in substantially increased numbers (when the total number of females estimated for a given district equals the number of females established as a threshold criterion for opening that district to commercial crab fishing). A recruitment event closure will continue until a commercial crab fishery opens for that district or the number of crabs drops below the threshold level for that district.



These restrictions are considered necessary because of the poor condition of the king crab resource off Kodiak and because trawl bycatch and mortality rates are highest during the spring months when king crab migrate inshore for reproduction. The molting period off Kodiak begins around February 15 and ends by June 15.

The Alitak Flats/Towers and Marmot Flats areas are Type I areas, closed to non-pelagic trawls all year. Chirikof Island and Barnabas are Type II areas, closed to non-pelagic trawls from February 15 to June 15. These areas encompass 80% to 90% of the known female king crab stocks.

When necessary Type III areas will be closed by regulatory amendment; the Regional Administrator will specify which of the Type III areas are closed and, whether the closure is for an entire year or only a portion of a year.

All pelagic trawls in these areas must have recording net-sonde devices. Footropes of the trawls cannot be in contact with the seabed for more than 10% of any tow as indicated by the net-sonde device. During restricted periods no other trawl types can be attached or on board.

Halibut Bycatch Measures

Halibut bycatch limits are established in terms of total mortality. Currently, overall bycatch mortality is limited to 2,300 mt (2,000 mt for trawl and 300 mt for hook-and-line fisheries). The trawl halibut bycatch limits are apportioned by quarter: 600, 400, 600, and 400 mt respectively. The 1998 apportionments are shown in Table 4.

Since 1996, hook-and-line PSC limits have been seasonally apportioned by trimester: 250, 15, and 25 mt, with 10 mt set aside for bycatch in the demersal shelf rockfish fisheries. Careful release requirements have been implemented in addition to bycatch limits for longline fisheries.

Recordkeeping and Reporting Requirements

Recordkeeping and reporting requirements have been implemented to keep track of fishing effort, landings, processing, and transfers. Fishing vessel operators making landings in Alaska and, if requested, the purchasers of the catch must report the catch on Alaska Department of Fish and Game (ADF&G) fish tickets. Catcher/processor and mothership/processor vessel operators are required to have a federal permit and also must submit fish tickets. There are numerous other requirements for recordkeeping and reporting, to ensure timely and effective in-season management of bycatch and individual groundfish stocks.

Observer Program

A domestic observer program was implemented beginning with the 1990 fishing year. Observers collect biological and catch and discard information which complements the revised recordkeeping and reporting requirements. All vessels capable of hosting an observer may be required to do so at the vessel's expense. As currently implemented, vessels over 125 feet length overall (LOA) are required to have an observer on-board at all times when groundfishing, vessels of 60 - 124 ft. LOA are required to have observers on-board 30% of the time, and vessels under 60 ft. LOA are generally exempt from the requirements for observer coverage.

Forage Fish

Beginning in 1998, the development of a commercial directed fishery for forage fish, which are a critical food source for many marine mammal, seabird, and fish species, was prohibited. Forage fish are abundant fishes that are preyed upon by marine mammals, seabirds, and commercially important groundfish species. Significant declines in marine mammals and seabirds in the BSAI and GOA have raised concerns that decreases in the forage fish biomass may contribute to the further decline of marine mammal, seabird, and commercially important fish populations. Forage fish are the principal diet of more than two thirds of Alaskan seabirds. In addition, many seabirds can subsist on a variety of invertebrates and fish during nonbreeding months but can only raise their nestlings on forage fish. Small forage fish such as capelin, herring, sandlance, and eulachon have also been recognized as important prey items for a variety of marine mammal species including Northern fur seal, Steller sea lion, harbor seal, spotted seal, bearded seal, humpback whale, and fin whale.

Marine Mammal Avoidance

As a result of precipitous declines in the U.S. population of Steller sea lions, the species was first listed as threatened under provisions of the Endangered Species Act (ESA) in 1990. Coincident with the 1990 listing as threatened, NMFS implemented several sea lion protection measures. In 1991, 1992, and 1993, NMFS promulgated regulations to reduce the effects of fishing activity on Steller sea lions, including the establishment of buffer zones around Steller sea lion rookeries west of 150°W. long., seasonal trawl exclusion zones, and seasonal apportionments of the pollock TAC. In 1993, NMFS designated critical habitat for the species, which includes all U.S. rookeries, major haulouts in Alaska, as well as three aquatic foraging areas in N. Pacific waters (Seguam Pass, southeastern Bering Sea Shelf, and the Shelikof Strait area of the GOA). In 1996, the third and fourth quarter apportionments of pollock TAC in the Western/Central Regulatory Areas were combined into a single release. In 1998, 10 percent of the pollock TAC in the W/C Areas were reallocated from the from the third trimester (September 1) to the second trimester (June 1) resulting in a 25/35/40 split. This action was taken to minimize fishing impacts of the 1998 pollock TAC, which increased by 60% in those areas.

When the Steller sea lion population was listed as threatened under the ESA, the species was not delineated into separate stocks. Subsequently, mitochondrial DNA and phylogeographic analyses provided sufficient evidence to delineate two discrete populations separated to the east and west of 144°W longitude. Further analyses on the decline in the western population led NMFS to list this population, i.e. west of 144°W longitude, as endangered. The eastern population was determined as likely to maintain current abundance for the foreseeable future and remains listed as threatened. Results of population modeling indicated that the next 20 years will be crucial to the survival of the western population of Steller sea lions. The GOA management area encompasses both the eastern and western populations of Steller sea lions.

Biological opinions or Section 7 consultations have been initiated in 1990, 1996, 1997, and 1998. They concluded that the groundfish fisheries and harvest levels are unlikely to jeopardize the continued existence and recovery of the Steller sea lion or adversely modify critical habitat.

Seabird Avoidance

The Council approved requiring gear modifications, seabird avoidance devices, or changes in fishing methods designed to reduce the incidental mortality of seabirds while fishing with hook-and-line gear in U.S. Convention waters off Alaska. Measures were implemented for groundfish fisheries in 1997 and the halibut fishery in 1998. The following measures would apply to all vessels using hook-and-line gear.

All applicable hook-and-line fishing operations would be conducted in the following manner:

- Use hooks that when baited, sink as soon as they are put in the water. This could be accomplished by the use of weighted groundlines and/or thawed bait.
- Any discharge of offal from a vessel must occur in a manner that distracts seabirds, to the extent practicable, from baited hooks while gear is being set or hauled. The discharge site onboard a vessel must either be aft of the hauling station or on the opposite side of the vessel from the hauling station.
- Make every reasonable effort to ensure that birds brought aboard alive are released alive and that wherever possible, hooks are removed without jeopardizing the life of the bird.

Vessels less than 26 ft LOA using hook-and-line gear in the Pacific halibut fishery and the GOA and BSAI groundfish fisheries would be exempt from the following measures:

All applicable hook-and-line fishing operations would be required to employ one or more of the following seabird avoidance measures:

- Set gear between hours of nautical twilight (as specified in regulation) using only the minimum vessel lights necessary for safety;
- Tow a streamer line or lines during deployment of gear to prevent birds from taking hooks;
- Tow a buoy, board, stick or other device during deployment of gear at a distance appropriate to prevent birds from taking hooks. Multiple devices may be employed; or
- Deploy hooks underwater through a lining tube at a depth sufficient to prevent birds from settling on hooks during deployment of gear.

Table 1. History of amendments to the fishery management plan (FMP) for the Gulf of Alaska groundfish fisheries.

<u>Year</u>	<u>Amendment</u>	<u>Action</u>
1978	Am. 1	Extended OYs, DAHs, & TALFFs to October 31, 1979; changed fishing year to November 1 - October 31.
1979	Am. 2	Allowed directed foreign longline fishery for Pacific cod west of 157° W outside of 12 miles year-round.
1978	Am. 3	Established special joint venture reserve wherein TALFF = 0.8 OY - DAH - JVP.
1979	Am. 4	Modified foreign fishing regulations; removed prohibition on exceeding 25% TALFF during December 1 to May 31; increased squid & Atka mackerel OY; reduced number of management areas; removed tow restriction on off-bottom trawls from December to May; required annual review of domestic permits & catch reporting .
1979	Am. 5	Established separate rattail OY.
1979	Am. 6	Released unused DAH to TALFF and reapportioned DAH by regulatory areas.
1979	Am. 7	Extended plan year through October 31, 1980; modified foreign fishing regulations; increased Pacific cod & Atka mackerel OY; created separate OY for <u>Sebastolobus</u> spp.; reporting requirements.
1980	Am. 8	Changed to calendar year & eliminated expiration date; distributed OYs Gulfwide for squid, other species, <u>Sebastolobus</u> spp., & other rockfish; established four species categories; divided Eastern Area into subareas for sablefish only; set a reserve release schedule; required biodegradable panels in sablefish pots.
1981	Am. 9	Established king crab closed area.
1982	Am. 10	Modified foreign fishing regulations; limited POP fishery in Eastern Area.
1983	Am. 11	Increased pollock OY in Central area; added management objective; divided Yakutat district into 2 sablefish districts; set sablefish OY =ABC ; gave RA authority to adjust time/area restrictions on foreign fisheries; modified reporting requirements.
1982	Am. 12	Prohibited use of pots for sablefish off Southeast; trawls only for sablefish bycatch (<u>withdrawn September 1984</u>).
1984	Am. 13	Combined Western and Central areas for pollock and set a combined OY .
1985	Am. 14	Modified OY apportionments; implemented framework for setting prohibited species caps; set sablefish seasons by gear.
1987	Am. 15	Modified goals & objectives; established single OY range; set framework for annual species harvest levels; established PSC framework for foreign fisheries; revised reporting requirements; established time/area restrictions on non-pelagic trawling around Kodiak to protect king crab until December 31, 1989; authorized RA to make inseason adjustments.
1988	Am. 16	Revised definition of prohibited species; updated the plan; revised recordkeeping & reporting requirements.
1989	Am. 17	Modified reporting requirements.
	Am. 18	Established a new observer program & reporting system; frameworked target species definition and seasons; established She of District in Central Area; added Type III crab trawl closure zone; revised PSC procedure & established 2,750 mt halibut PSC; revised recordkeeping & reporting; clarified framework procedure to split or combine species groups.
1990	Am. 19	Prohibited pollock roe-stripping; divided the pollock TAC into equal quarterly allowances in the Western & Central Gulf.
1994	Am. 20	Implemented Halibut and Sablefish IFQ Program.
1991	Am. 21	Amended overfishing definition; established interim harvest levels specifications; provided limited authority to the State of Alaska to manage DSR; allowed legal fishing gear to be defined by regulatory amendment; revised existing framework for managing halibut bycatch (vessel incentive program (VIP)).
1992	Am. 22	Authorized RA to approve experimental fishing permits; combined Area 68 (East Yakutat) with Area 65 (Southeast Outside); require identification of groundfish pots (regulatory amendment).
1992	Am. 23	Allocated 90% of P. cod & 100% of pollock to onshore sectors; 10% of P. cod TAC and bycatch pollock to offshore sector.
1992	Am. 24	Established hot spot authority; establish time/area closures fort bycatch reduction; expanded VIP to trawl ; delayed rockfish opening July 1 (regulatory amendment); redefined VIP & PSC allowance limits.
1992	Am. 25	Established 3 new districts in Western/Central Area for pollock; limited maximum amount of quarterly pollock TAC to carry over to 150% of the initial quarterly allowance; established trawl closures around 14 Steller sea lion rookeries.
1992	Am. 26	Reinstated King Crab Protective Zones around Kodiak Island permanently.
1992	Am. 27	Established legal trawl testing zones when fishing is otherwise prohibited.
1992	Am. 28	Approved vessel moratorium for groundfish, crab, and halibut fisheries.
1992	Am. 29	Established exclusive area registration for vessels engaging in directed fishing for pollock.
1992	Am. 30	Established fee-based Research Plan for groundfish and crab Observer Programs (<u>later withdrawn</u>).
	Am. 31	Set separate ABC and TAC for Atka mackerel.
1995	Am. 32	Defined POP rebuilding schedule.
1995	Am. 34	Raised CDQ allocation limit to 33%.
1995	Am. 35	Implemented modified block plan in halibut and sablefish IFQ program; clarified IFQ transfer process.
1996	Am. 36	Established a one-time transfer of halibut and sablefish IFQ & CDQ.
1996	Am. 37	Allowed freezing of non-IFQ species when fishing sablefish IFQ.
1996	Am. 38	Modified POP rebuilding plan.
	Am. 39	Established plan to protect forage fish species from exploitation (<u>pending</u>).
1996	Am. 40	Extended provisions of Amendment 18, inshore/offshore allocation.
	Am. 41	Established a licence limitation system for groundfish fisheries.
1997	Am. 42	Allowed halibut and sablefish IFQ assigned to larger vessel categories to be used on smaller vessels.
1997	Am. 43	Modified sweep-up provisions in halibut and sablefish IFQ program.
1997	Am. 44	Established more conservative definition for overfishing.
1996	Am. 45	Established pollock trimester apportionments in Western and Central GOA.
	Am. 46	Removed black and blue rockfishes from the plan.
1996	Am. 47	Approved modified observer program.
	Am. 48	Revised specification process (<u>draft</u>).
	Am. 49	Implemented Improved Retention/Improved Utilization for GOA groundfish fisheries.
	Am. 50	Allow donations of trawl-caught halibut to food banks.
1998	Am. 51	Inshore/Offshore pollock and P. Cod allocation (III) (<u>draft</u>).
	Am. 52	Pollock and P. Cod Registration and Stand-down (<u>pending</u>).
	Am. 53	Rockfish retention rates (<u>draft</u>).
	Am. 54	IFQ indirect ownership, 10% leasing, and sablefish use caps (<u>draft</u>).

Table 2. Exploitable biomass and harvest specifications (mt) of Gulf of Alaska groundfish, 1998 (biomass projected for 1998).

<u>Species</u>	<u>Biomass</u>	<u>OFL</u>	<u>ABC</u>	<u>TAC</u>
Pollock	1,156,000	186,100	130,000	124,730
Pacific Cod	785,000	141,000	77,900	66,060
Deepwater flatfish	101,430	9,440	7,710	7,710
Rex sole	72,330	11,920	9,150	9,150
Flathead sole	206,340	34,010	26,110	9,040
Shallow water flatfish	314,960	59,540	43,150	18,630
Arrowtooth flounder	2,062,740	295,970	208,340	35,000
Sablefish	166,000	23,450	14,120	14,120
Other slope rockfish	103,710	7,560	5,260	2,170
Northern rockfish	83,870	9,420	5,000	5,000
Pacific Ocean Perch	243,170	18,090	12,820	10,776
Shortraker/Rougheye	65,380	2,740	1,590	1,590
Pelagic shelf rockfish	55,580	8,390	5,260	4,880
Demersal shelf rockfish	25,030	950	560	560
Atka mackerel	NA	6,200	600	600
Thornyheads	52,270	2,840	2,000	2,000
Other species	NA	NA	NA	15,570
TOTAL (all species)	5,493,810	817,620	549,030	327,046

Table 3. Relative abundance (mt) of Gulf of Alaska groundfish, 1998.

<u>Species</u>	<u>1998 Biomass</u>	<u>Mean Biomass</u>	<u>Reference Years</u>	<u>1998 Biomass relative to mean**</u>	<u>3-Survey trend***</u>
Pollock	1,156,000	1,527,400	1969-98	stable	down
Pacific cod	785,000	840,300	1978-98	stable	down
Deepwater flatfish*	101,400	112,800	1978-98	stable	down
Rex sole*	72,300	82,500	1990-98	stable	down
Flathead sole*	206,300	214,600	1990-98	stable	down
Shallow water flatfish*	315,000	308,800	1990-98	stable	up
Arrowtooth flounder	2,062,700	1,528,200	1984-98	above	down
Sablefish	166,000	372,500	1979-98	below	down
Other slope rockfish*	103,700	100,100	1984-98	stable	up
Northern rockfish*	83,900	99,500	1984-98	stable	stable
Pacific ocean perch*	243,200	344,900	1984-98	below	up
Shortraker/rougheye*	65,400	70,140	1984-98	stable	up
Pelagic shelf rockfish*	55,600	56,200	1984-98	stable	up
Demersal shelf rockfish	25,000	25,800	1984-98	stable	stable
Atka mackerel	NA	NA	NA	NA	NA
Thornyheads	52,300	58,400	1967-98	below	stable

*1996 stock assessment survey biomass estimate

**significant at one standard deviation from the mean

***1990, 1993, and 1996 GOA trawl surveys

Table 4. Gulf of Alaska halibut bycatch (prohibited species caps) for 1998.

	Trawl gear	Hook and Line		
1st quarter	600 mt (30%)	1st trimester	250 mt	(86%)
2nd quarter (5%)	400 mt (20%)	2nd trimester		15 mt
3rd quarter	600 mt (30%)	3rd trimester	25 mt	(9%)
4th quarter	400 mt (20%)	DSR	10 mt	
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	2,000 mt		300 mt	

The trawl gear PSC cap is further apportioned between “shallow” and “deep” water species complexes as follows:

<u>Quarter</u>	<u>Shallow water Complex</u>	<u>Deep water Complex</u>	<u>Total</u>
1	500 mt	100 mt	600 mt
2	100 mt	300 mt	400 mt
3	200 mt	400 mt	600 mt
4	No apportionment		400 mt