



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, Maryland 20910

APR 11 2000

MEMORANDUM FOR: Distribution
FROM: *George H. Darcy*
George H. Darcy
Chief, Domestic Fisheries Division
SUBJECT: Amendment 64 to the Fishery Management Plan for
the Groundfish Fishery of the Bering Sea and
Aleutian Islands Area (FMP)

The North Pacific Fishery Management Council has submitted to the National Marine Fisheries Service (NMFS) the attached amendment for Secretarial review, approval, and implementation. The document includes an environmental assessment, regulatory impact review, and initial regulatory flexibility analysis. On April 11, 2000, NMFS published a notice of availability of Amendment 64 for public review and comment (65 FR 19354).

Amendment 64 would allocate the total allowable catch (TAC) of Pacific cod among the fixed gear sectors in the Bering Sea and Aleutian Islands off Alaska, after the estimated incidental catch of Pacific cod in directed fisheries for groundfish, other than Pacific cod, by vessels using hook-and-line or pot gear is deducted from the TAC. The remainder would be allocated as follows: Catcher/processor vessels using hook-and-line-80 percent; catcher vessels using hook-and-line gear-0.3 percent; vessels using pot gear-18.3 percent; and catcher vessels less than 60 feet length overall that use either hook-and-line or pot gear-1.4 percent. The allocation is intended to promote stability in the fixed gear fishery for Pacific cod.

Please provide your comments (including "no comment") by June 12, 2000. If you have any questions, please call Don Leedy at 301-713-2341.

Attachments

*Distribution

F/SF	- Matlock/Morehead	F/PR	- Jeffers
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OGC	- Cohen	PSP	- Fruchter/Schreiber
		N/ORM3	- Uravitch





AMENDMENT 64 TO THE FISHERY MANAGEMENT PLAN FOR THE GROUND FISH
FISHERY OF THE BERING SEA AND ALEUTIAN ISLANDS AREA

Section 13.4.9.2 Pacific Cod, is revised to read as follows:

13.4.9.2.1 Gear allocations. The Bering Sea and Aleutian Islands management area Pacific cod TAC shall be allocated among gear groups as follows: 2 percent to vessels using jig gear; 51 percent to vessels using hook-and-line or pot gear; and 47 percent to vessels using trawl gear. The trawl apportionment will be divided 50 percent to catcher vessels and 50 percent to catcher processors.

13.4.9.2.2 Seasonal apportionments. The amount of Pacific cod allocated to gear groups under section 13.4.9.2.1 may be seasonally apportioned. Criteria for seasonal apportionments and the seasons authorized to receive separate apportionments will be set forth in regulations.

13.4.9.2.3 (Applicable through December 31, 2003) Gear allocation among vessels using hook-and-line or pot gear. The Regional Administrator, NMFS, Alaska Region, annually will estimate the amount of Pacific cod taken as incidental catch in directed fisheries for groundfish other than Pacific cod by vessels using hook-and-line or pot gear and deduct that amount from the portion of Pacific cod TAC annually allocated to hook-and-line or pot gear under section 13.4.9.2.1. The remainder will be further allocated as directed fishing allowances as follows:

- (a) 80 percent to catcher/processor vessels using hook-and-line gear;
- (b) 0.3 percent to catcher vessels using hook-and-line gear;
- (c) 18.3 percent to vessels using pot gear; and
- (d) 1.4 percent to catcher vessels less than 60 feet length overall that use either hook-and-line or pot gear.

Specific provisions for the accounting of these directed fishing allowances and the transfer of unharvested amounts of these allowances to other vessels using hook-and-line or pot gear will be set forth in regulations.



Draft for Secretarial Review

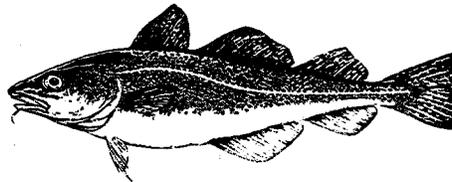
**ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW/
INITIAL REGULATORY FLEXIBILITY ANALYSIS**

for proposed

AMENDMENT 64

to the Fishery Management Plan for
Bering Sea/Aleutian Islands Groundfish

Allocation of Pacific Cod Among Fixed Gear Sectors



Prepared by staff of the
North Pacific Fishery Management Council
and
National Marine Fisheries Service

March 8, 2000

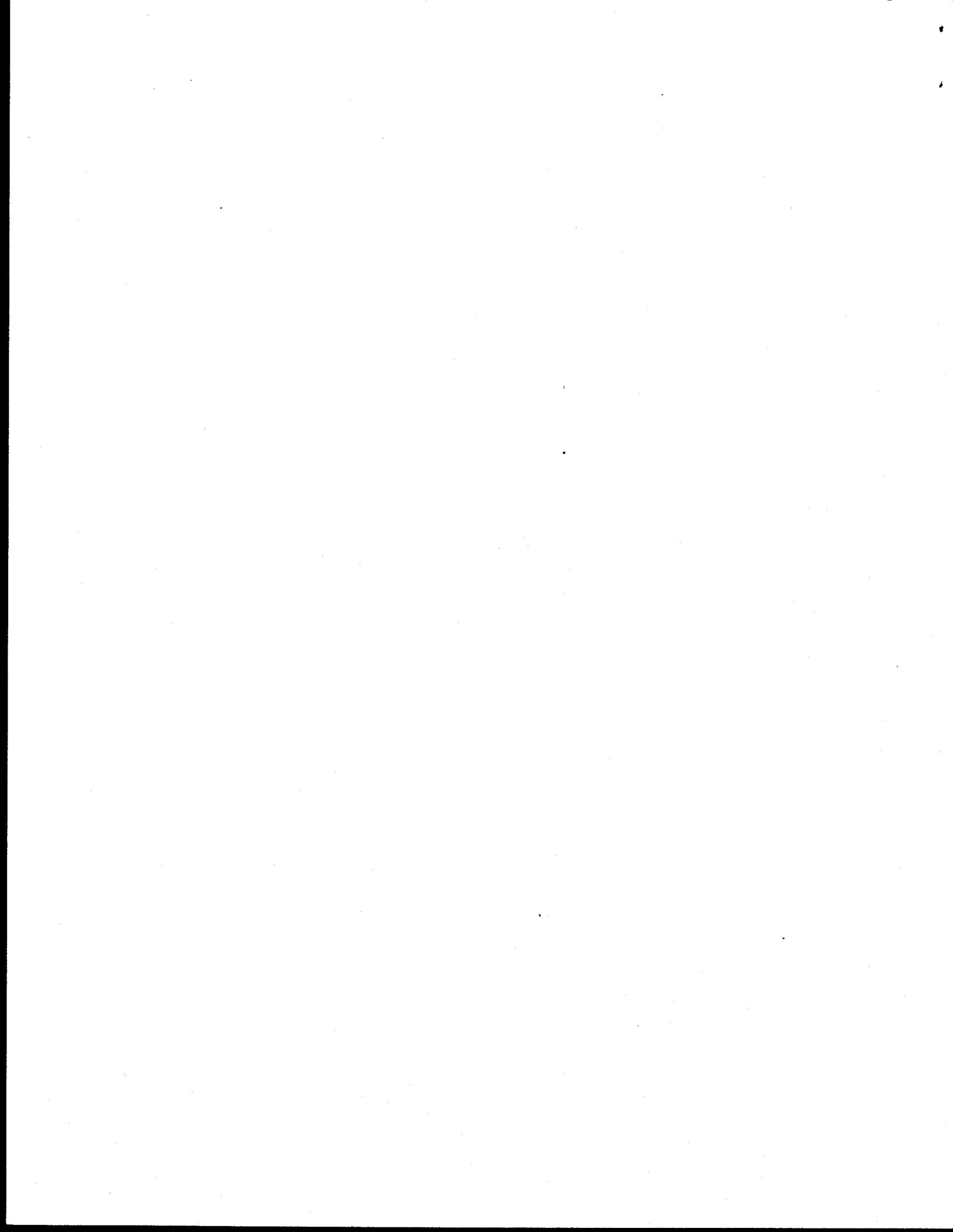


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Executive Summary

Beginning in 1997, Amendment 46 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area (FMP) allocated the total allowable catch (TAC) for Bering Sea/Aleutian Island (BSAI) Pacific cod among jig gear, trawl gear, and fixed gear. It reserved two percent of the TAC for jig gear, 51 percent for fixed gear, and 47 percent for trawl gear. The amendment also split the trawl apportionment between catcher vessels and catcher processors 50/50, but did not split the fixed gear apportionment between longline and pot vessels.

At its April 1999 meeting, the North Pacific Fishery Management Council (Council) initiated an analysis to examine the effects of splitting the fixed gear allocation of Pacific cod between the various components of the fixed gear sector in the BSAI. This action was proposed to promote stability in the BSAI fixed gear cod fishery until a comprehensive rationalization of the North Pacific Groundfish fisheries is completed. The proposed amendment to divide the BSAI Pacific cod was brought to the Council for initial review in June 1999. The Council made a final decision in October, following a review by the Statistical and Scientific Committee in September. The intent is for implementation in year 2000 if approved by the U.S. Secretary of Commerce. This proposal will not affect the trawl apportionment of BSAI Pacific cod. The analysis examined separate apportionments of the Pacific cod TAC among freezer longline vessels, longline catcher vessels, and pot gear vessels. An option would make the split between all longline vessels and all pot gear vessels. Two primary alternatives, with several options, were examined in this analysis:

Alternative 1: Status Quo. Pacific cod TAC would not be allocated among fixed gear sectors.

Alternative 2: Apportion the BSAI Pacific cod fixed gear TAC among freezer longline vessels, non-freezer longline vessels, and pot gear vessels. The split may be apportioned according to recent catch histories to be determined as a percentage of cumulative catches of the fixed gear TAC of BSAI Pacific cod by gear type for:

- Option 1:** 1996, 1997
- Option 2:** 1997, 1998
- Option 3:** 1996, 1997, 1998
- Option 4:** 1995, 1996, 1997, 1998

In general, the options considered by the Council would allocate between 80 and 85 percent of the fixed gear Pacific cod TAC to longline vessels, between 15 and 20 percent to pot vessels. These percentages fairly closely represent harvests in this fishery over the past four years. The action taken by the Council in October 1999 was based on historical data through 1998, the best scientific information available at the time. Since then, catch data for 1999 has become available. Although not available to the Council when it took final action on proposed amendment, the 1999 catch data and a brief discussion are provided below on page 13.

After reviewing the options, the Council selected an allocation of 80 percent to freezer longline vessels, 0.3 percent to longline catcher vessels, 1.4 percent to pot and longline catcher vessels < 60' length overall (LOA), and 18.3 percent to pot vessels. These percentages fall within the range considered by the Council under Options 1 through 4. The Council also requested that bycatch of cod in other fixed gear fisheries in the BSAI be taken off the top of the fixed gear allocation.

Because a sector of the BSAI Pacific cod fishery may not be able to harvest their entire allocation in a year due to halibut bycatch constraints or, in the case of the jig fishery, insufficient effort in the fishery, the

Council also provided direction on how "roll-overs" should be treated. Roll-overs from the jig or trawl sectors will be apportioned among the freezer longline and pot sectors according to the actual harvest of roll-overs from 1996-98. Projections indicate that 94.7 percent of the cod "roll-overs" would be allocated to the freezer longline fleet and the remaining 5.3 percent would go to the pot fleet. In addition, any unharvested portion of the catcher vessel longline and the under 60' pot and longline vessel allocation that is projected to remain unused shall be rolled over to the freezer longliner fleet in September.

The Council voted to sunset this amendment package on December 31, 2003. Continuing the allocations of Pacific cod among the fixed gear sectors (or selecting new allocation percentages) in the BSAI after that date will require Council and Secretarial approval of a new amendment.

The alternatives and options are expected to have no significant biological impacts. The intent of the proposed amendment is to stabilize the different gear sectors of the BSAI fixed gear Pacific cod fishery at harvest levels approximating recent historical levels. By stabilizing the harvests of the different gear sectors, the proposed action would also be expected to stabilize the fixed gear Pacific cod fishery's environmental impacts. Any increase or decrease in harvest of Pacific cod by hook-and-line and pot fisheries and any substantial shift in effort between these fisheries would likely have a corresponding impact on incidental catch of "other species," such as octopus, sharks, and skates. By preventing any significant change in the relative percentages of the Pacific cod fixed gear TAC taken by the different fixed gear sectors, the proposed amendment would likely have the ancillary impact of stabilizing incidental catches of the "other species" management group also at their historical levels and percentages according to gear sector. Bycatch of halibut is limited by longline PSC caps, so no additional bycatch would be expected.

The analysis used 1998 first wholesale prices and the 1999 TAC to derive gross revenues across all sectors, under each of the alternatives and options as well as the 1998 fishery which is used as a point of reference. The 1998 fishery is not considered the status quo. The status quo represents the catch and revenue distributions that would occur if no allocation of the fixed gear TAC was implemented. Given the difficulty associated with making that prediction, no attempt to estimate the status quo was made in this document.

Freezer longliners' estimated gross revenues range from \$66.66 million to \$73.89 under the Council's preferred alternative and the baseline (1998) respectively. Therefore the Council's preferred alternative allocates slightly less cod to the freezer longline vessels than they have historically harvested, and slightly more to the other members of the fixed gear sector.

Ex-vessel prices for 1998 were estimated so a range of ex-vessel revenues for catcher vessels could be calculated. Assuming 1998 prices and the 1999 TAC as the baseline, ex-vessel revenues for pot catcher vessels range from \$3.0 million (baseline) to \$5.4 million (Council's preferred alternative). For hook and line catcher vessels, the range is from \$0.01 (baseline) and \$0.35 million (Council's preferred alternative).

None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866. None of the alternatives is likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations, fisheries, regulations, gear used, revenues generated, etc.

1.0 INTRODUCTION

The groundfish fisheries in the Exclusive Economic Zone (EEZ) (3 to 200 miles offshore) of the Bering Sea and Aleutian Islands off Alaska are managed under the Bering Sea/Aleutian Islands Groundfish Fishery Management Plan. This fishery management plan (FMP) was developed by the North Pacific Fishery Management Council (Council) under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The FMP was approved by the Secretary of Commerce and became effective in 1982.

Actions taken to amend the FMPs or implement other regulations governing the BSAI groundfish fisheries must meet the requirements of Federal laws and regulations. In addition to the Magnuson-Stevens Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), Executive Order (E.O.) 12866, and the Regulatory Flexibility Act (RFA).

NEPA, E.O. 12866 and the RFA require a description of the purpose and need for the proposed action as well as a description of alternative actions which may address the problem. This information is included in Chapter 1 of this document. Chapter 2 contains information on the biological and environmental impacts of the alternatives as required by NEPA. Impacts on endangered species and marine mammals are also addressed in this section. Chapters 3 through 5 contain a Regulatory Impact Review (RIR) which addresses the requirements of both E.O. 12866 and the RFA that economic impacts of the alternatives be considered. This Environmental Assessment/Regulatory Impact Review (EA/RIR/IRFA) addresses alternatives for allocating BSAI Pacific cod total allowable catch (TAC) among fixed gear sectors.

1.1 Purpose of and Need for the Action

Beginning in 1997, Amendment 46 allocated the total allowable catch (TAC) for BSAI Pacific cod among jig gear, trawl gear, and fixed gear. Two percent of the TAC is reserved for jig gear, 51 percent for fixed gear, and 47 percent for trawl gear. The trawl apportionment was split between catcher vessels and catcher processors 50/50, but no split was adopted among the longline and pot vessels in the fixed gear sector.

At its April 1999 meeting, the Council initiated an analysis to examine allocation of Pacific cod in the BSAI among the various sectors of the fixed gear fleets. The proposed amendment responds to concerns that the stability of this fully utilized fishery is threatened by increased competition, driven in part by recent increases in the market value of cod products. (The complete Council problem statement is included in the box to the right.) While participants in the BSAI fixed gear Pacific cod fishery include longline and pot fishermen with extensive catch histories, there is no mechanism currently in place that would limit entry into the fishery by substantial numbers of participants with limited histories until comprehensive rationalization is implemented.

The analysis was brought back to the Council for initial review in June 1999, with a final decision made in October. The intent is for implementation in year 2000 if approved by the Secretary of Commerce. This

Problem Statement adopted by the Council for proposed Amendment 64 to the BSAI groundfish FMP.

The hook-and-line and pot fisheries for Pacific cod in the Bering Sea/Aleutian Islands are fully utilized. Competition for this resource has increased for a variety of reasons, including increased market value of cod products and a declining ABC/TAC.

Longline and pot fishermen who have made significant long-term investments, have long catch histories, and are significantly dependent on the BSAI cod fisheries need protection from others who have little or limited history and wish to increase their participation in the fishery.

This requires prompt action to promote stability in the BSAI fixed gear cod fishery until comprehensive rationalization is completed.

proposal will not affect the trawl apportionment of BSAI Pacific cod. Specifically, the amendment would create separate apportionments of the fixed gear Pacific cod TAC among freezer longline vessels, longline catcher vessels, and pot gear vessels. An option was included that would make the split between all longline vessels and all pot gear vessels. While not included as an explicit alternative, the Council requested that 1999 fisheries participation be discussed, including any available data from the 1999 fisheries.

1.2 Alternatives Considered

1.2.1 **Alternative 1: Status Quo.** Pacific cod TAC would not be allocated among fixed gear sectors.

1.2.2 **Alternative 2:** Apportion the BSAI Pacific cod fixed gear TAC among freezer longline vessels, non-freezer longline vessels, and pot gear vessels. The split may be apportioned according to recent catch histories to be determined as a percentage of cumulative catches of the fixed gear TAC of BSAI Pacific cod by gear type for:

- Option 1: 1996, 1997
- Option 2: 1997, 1998
- Option 3: 1996, 1997, 1998
- Option 4: 1995, 1996, 1997, 1998

The four specific options provided by the Council comprise recent catch histories from 1995 through 1998, from which the Council may select a percentage that falls within the range of the options being considered. For example, if the Council wished to allocate 80 percent of the fixed gear allocation to longline vessels and 20 percent to pot vessels they would have that option available. A sub-option would combine the longline catcher vessels and freezer longliners into a single class. An additional sub-option under consideration would allocate 2 percent of either the entire TAC or the fixed gear quota to longline catcher vessels less than 60 feet LOA.

Future trawl or jig roll-overs could be apportioned according to the same formula applied to the overall allocation of the BSAI Pacific Cod TAC among fixed gear components, or they could be allocated based on the catch history of roll-overs. An additional provision was approved for consideration by the Council as follows:

During each year that an allocation of Pacific cod between the components of the fixed gear sector that is under Council consideration is not implemented, the Council would, at the time that it adopts final groundfish specifications in December of the prior year, apportion 10 percent of the BSAI Pacific cod fixed gear TAC to the 2nd trimester, and apportion no halibut PSC bycatch to the 2nd trimester.

In addition to the above alternatives, the Council also requested that 10 percent of the fixed gear Pacific cod TAC be apportioned to the second trimester if no fixed gear allocation could be implemented in time for the year 2000. Under this scenario, no halibut PSC would be allowed during the second trimester, effectively making this period a pot vessel fishery.

The action taken by the Council in October 1999 was based on recent historical data to 1998, the best scientific information available at the time. Harvest data from 1999 could not have been taken into account by the Council when it took final action on proposed Amendment 64. Moreover, at its meeting in December 1998, the Council had voted to clarify its intent that, if it decided to develop a management program to further limit access to any non-salmon fishery under its jurisdiction, participation in that fishery in 1999 would not be used as an indicator of a fishing operation's historical dependence on, or intent to remain in, that fishery.

On the Council's recommendation, NMFS published a notice in the Federal Register announcing the Council's stated intent that participation in 1999 will not be taken into account by the Council in granting participation credit for future access to any non-salmon fishery, pursuant to section 211 of the American Fisheries Act or under the Magnuson-Stevens Act, if a management regime that limits the number of participants is developed and implemented under those authorities (64 FR 2870, January 19, 1999).

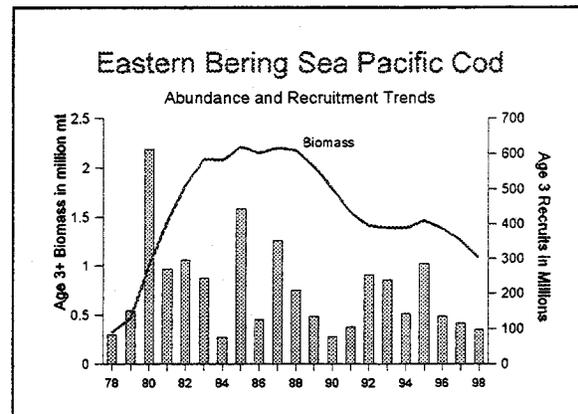
Nevertheless, NMFS here provides the 1999 harvest data for the different gear sectors of the fixed gear Pacific halibut fishery in the BSAI which has become available since the Council action (Table 1.2).

1.3 Status of Pacific Cod Stocks and Other Fixed Gear Target Stocks

Biological and economic impacts of the proposed action depend to some extent on current and future abundance of groundfish and crab stocks that are also targeted by these sectors. A status report on major groundfish and crab stocks targeted by fixed gear is provided below. This information is summarized from the Stock Assessment and Fishery Evaluation Reports (NPFMC 1998). Where applicable, species specific management measures (such as gear allocations) are highlighted.

Pacific cod

Pacific cod (*Gadus macrocephalus*), also known as grey cod, are moderately fast growing and short-lived fish. Females reach 50% maturity at 67 cm (about 5.8 years old) and are highly fecund. A 67 cm cod will produce well over 1 million eggs. Spawning occurs January through April in the Bering Sea and February through July in the Gulf of Alaska. Annual natural mortality of adults has been estimated to be about 30% ($M = 0.37$). Cod prey on clams, worms, crabs, shrimp, and juvenile fish. In turn, they are eaten by halibut and marine mammals. Cod are demersal and concentrate on the shelf edge and upper slope (100-250 m) in the winter, and move to shallower waters (generally <100 m) in the summer. Cod begin to recruit to trawl fisheries at age 3, but are not fully recruited to all gear types until about age 7. Maximum age has been estimated at 18 years based on otolith samples.



The BSAI Pacific cod stock increased to high levels in the mid 1990's, then declined. The 1999 exploitable biomass was projected to be 1,210,000 mt. An $F_{40\%}$ harvest strategy ($F=0.29$), adjusted downward by a risk-averse optimization procedure, resulted in an ABC for 1999 of 177,000 mt. The cod stock is projected to decline in the near term as a result of below average year-classes in recent years.

Biomass (mt, from survey data), pre-season catch specifications (mt), and total catches (mt, including discards) of Pacific cod in the BSAI, 1980-1999.

Year	EBS Biomass	BSAI ABC	BSAI TAC	BSAI Catch
1980	905,000	148,000	70,700	51,649
1981	1,035,000	160,000	78,700	62,458
1982	1,021,000	168,000	78,700	56,566
1983	1,176,000	298,200	120,000	93,167
1984	1,001,000	291,300	210,000	133,160
1985	961,000	347,400	220,000	145,426
1986	1,134,000	249,300	229,000	140,887
1987	1,142,000	400,000	280,000	157,746
1988	959,000	385,300	200,000	197,891
1989	960,000	370,600	230,681	168,918
1990	709,000	417,000	227,000	171,008
1991	532,000	229,000	229,000	172,158
1992	547,000	182,000	182,000	206,129
1993	690,000	164,500	164,500	167,390
1994	1,368,000	191,000	191,000	196,572
1995	1,003,000	328,000	250,000	233,029
1996	891,000	305,000	270,000	240,590
1997	605,000	306,000	270,000	234,641
1998	534,000	210,000	210,000	179,115
1999	*	177,000	177,000	*

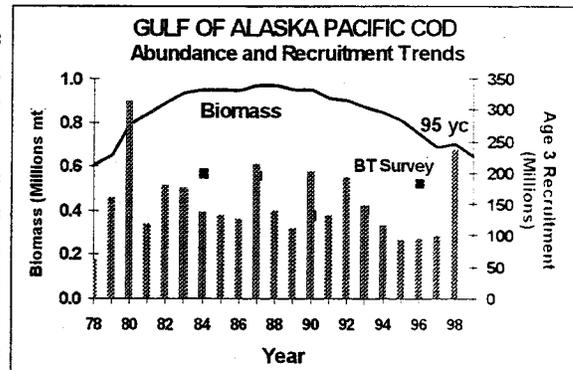
Under Amendment 46, two percent of the BSAI Pacific cod TAC is reserved for jig gear, 51 percent for fixed gear, and 47 percent for trawl gear. The trawl apportionment is split between catcher vessels and catcher processors 50/50. Amendment 24 regulations allow seasonal apportionment of the Pacific cod TAC allocated to vessels using hook-and-line or pot gear.

Projected age 3+ biomass and ABC (mt) of Pacific cod in the BSAI.

Year	Biomass	ABC
1999	1,213,000	177,000
2000	1,072,000	164,000
2001	1,021,000	152,000
2002	1,019,000	145,000

Seasonal apportionments will be divided among trimesters and established through the annual specifications process. Any unused TAC from the jig gear quota will become available to fixed gear on September 15.

The Pacific cod stock in the GOA has also declined since peaking in the late-1980's. The 1999 exploitable biomass (age 3+) was projected to be 648,000 mt. The 1999 specifications were: ABC = 84,400 mt and TAC = 67,835 mt. The difference between TAC and ABC was that some TAC was set aside as the guideline harvest level for State of Alaska pot and jig fisheries. Pacific cod are of medium relative abundance and are fully exploited. The stock is projected to decline as a result of poor year-classes produced from 1990-1994. Preliminary indications of the 1995 year class indicate it may be above average, however.

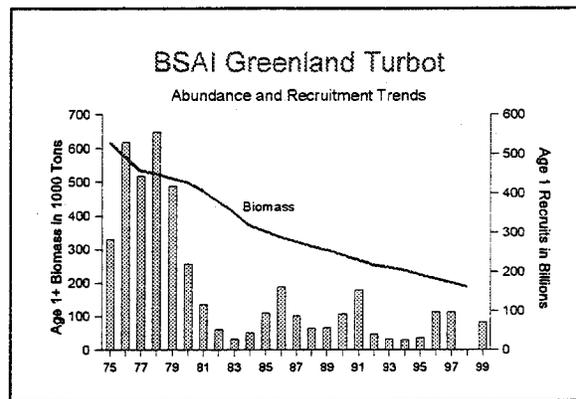


The Pacific cod stock is exploited by a multiple-gear fishery, principally by trawls and smaller amounts by longlines, jigs, and pots. A state water fishery for pot and jig gear began in 1997, with a guideline harvest level set at 15% of the federal quota in the Western and Central areas and 25% in the Eastern area. The state fishery ramped up to 20% in the Western Area and Kodiak and Chignik subareas of the Central area for 1999. The state has limited its GHs to no more than 25% of the federal quota when area guideline harvest levels are achieved. For trawl fisheries in the EEZ, cod harvests have been constrained by halibut bycatch limits.

In 1993, the Council apportioned 90% of GOA Pacific cod TAC to the inshore sector and 10% to the offshore sector. Beginning in 1998, the IR/IU program was implemented, requiring full retention of all Pacific cod caught.

BSAI Greenland Turbot

Unlike biomass of other flatfish species in the BSAI, biomass of Greenland turbot is at low levels and declining. Biomass has declined due to poor year classes from 1981-1997. Catch has also declined from a peak of 57,000 mt in 1981 to only about 9,000 mt in 1998. Biomass is projected to continue declining due to poor recruitment. Greenland turbot were harvested almost exclusively (>90%) by trawl gear until the early 1990's when longlines became the dominant gear type for this species. No halibut bycatch has been apportioned for a directed trawl fishery since 1996, effectively prohibiting this gear type from targeting turbot.

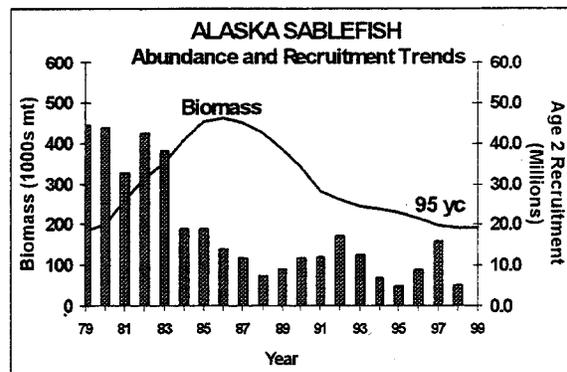


BSAI Rockfish

Numerous species of rockfish inhabit the BSAI, and are managed by species complex. Shortraker and roughey rockfish are managed as one unit in the Aleutian Islands. The projected 1999 exploitable biomass of shortraker/roughey is 46,500 mt, with an ABC of 965 mt. Northern and sharpchin are also managed together with a projected 1999 exploitable biomass of 94,000 mt, with an ABC of 4,230 mt. In the eastern Bering Sea, all other species are managed together as "other red rockfish." The projected 1999 exploitable biomass of other red rockfish is 11,600 mt, with an ABC of 267 mt. The "other rockfish" complex is composed of thornyheads and other *Sebastes* species. The 1999 ABCs for "other rockfish" are 369 mt in the eastern Bering Sea and 685 mt in the Aleutian Islands area. Abundance trends for these species are not available. Amendment 53 allocated the AI shortraker/roughey TAC between trawl and fixed gear fisheries. Thirty percent of the TAC is allocated to fixed gear and 70% to vessels using trawl gear.

Sablefish

The sablefish resource of the Bering Sea, Aleutian Islands, and Gulf of Alaska are considered one stock. However, the resource is managed by discrete regions to distribute exploitation throughout its range. Large catches of sablefish (up to 26,000 mt) were made in the Bering Sea during the 1960's, but have since declined. Smaller catches have been made in the Aleutian Islands area, peaking at 3,800 mt in 1987. The projected 1999 exploitable biomass is 17,000 mt in the Bering Sea, with an ABC of 1,340 mt. In the Aleutians, projected 1999 biomass is 26,000 mt with ABC specified at 1,860 mt. The GOA ABC was set at 12,700 mt. Biomass of the sablefish stock off Alaska is projected to decline somewhat in coming years.



It is important to note that the TAC for sablefish is apportioned among gear types. In the Bering Sea, 50% of the sablefish is allocated to trawl gear, and 50% to fixed gear. In the Aleutians region, 25% is allocated to trawl gear, and 75% to fixed gear. Longlined pots are a legal gear type for sablefish in the Bering Sea and Aleutian Islands, but not in the Gulf of Alaska. Sablefish in the Western and Central Gulf of Alaska is allocated 80% to hook-and-line gear and 20% to trawl gear. In the Eastern Gulf of Alaska, the sablefish TAC is allocated 95% to hook-an-line gear and 5% to trawl gear. The fixed gear apportionment of the sablefish

TAC is managed under the IFQ program, which began in 1995. Twenty percent of the fixed gear allocation is reserved for use by CDQ participants. Important state water sablefish fisheries occur in Chatham Strait, Clarence Strait, Prince William Sound, and the Aleutians.

Other Species

The “other species” category has been established to account for groundfish species that are currently of slight economic value and for which there is little, if any, directed fishing. The category includes squid, which are considered separately from the rest of the “other species” management group, sculpins, sharks, skates, and octopus. Many of these species are important components of the ecosystem as prey for commercial species, marine mammals, and seabirds. Octopus, for example, are consumed by Steller sea lions, northern fur seals, harbor seals, sperm whales, and other beaked whales. For most of the “other species,” only minimal assessment data are available.

Among fixed gear sectors of the Bering Sea Pacific cod fishery, pot gear vessels catch a relatively high number of octopus, while the hook-and-line vessels account for a high proportion of the sharks and skates taken by the groundfish fisheries. The table below lists the catches of “other species” incidental to the hook-and-line and pot gear Pacific cod fisheries in the Bering Sea from 1996-1998.

Catch (mt) of other species by Eastern Bering Sea Pacific cod fisheries, 1996-1998

year	gear sector	Octopus	Sculpins	Sharks	Skates	total	% of total other species catch
1996	pot	262	517	0	2	781	4%
	hook & line	16	705	93	8,113	8,927	45%
1997	pot	104	356	0	1	461	2%
	hook & line	25	1,031	90	13,308	14,454	61%
1998	pot	120	280	0	0	400	2%
	hook & line	14	950	157	12,991	14,112	61%

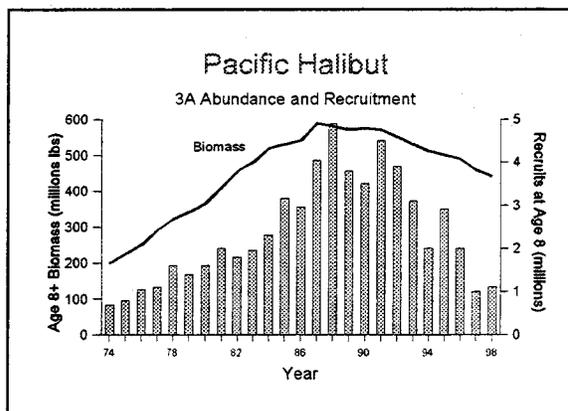
In 1996, the pot gear Pacific cod fishery took 4 percent, and the hook-and-line fishery took 45 percent, of the 19,733 mt total catch of “other species” by the Bering Sea groundfish fisheries. In 1997 and 1998, the pot gear sector took 2 percent and the hook-and-line sector 61 percent of the respective totals of incidental catch of “other species” by Bering Sea groundfish fisheries (23,656 mt and 23,077 mt).

Any increase or decrease in harvest of Pacific cod by hook-and-line and pot fisheries and any substantial shift in effort between these fisheries would likely have a corresponding impact on incidental catch of “other species.” The intended impact of the proposed amendment, however, is to prevent any significant change in the relative percentages of the fixed gear Pacific cod TAC taken by the different fixed gear sectors by allocating catch among these sectors according to recent historical levels. The ancillary impact on “other species” would likely

be to stabilize incidental catches of these species also at their historical levels and percentages according to gear sector.

Pacific Halibut

Large year-classes produced in the late 1970's and into the mid-1980's resulted in a buildup of halibut biomass to current high levels. The 1999 total exploitable biomass was projected to be 568.25 million pounds (258,000 mt). Over half of the biomass is found in areas 3A and 3B (central and western Gulf of Alaska). Recruitment of 8 year-olds appears to have fallen off after a strong 1987 year-class recruited in 1995. Declines in halibut biomass should be expected in the near term.

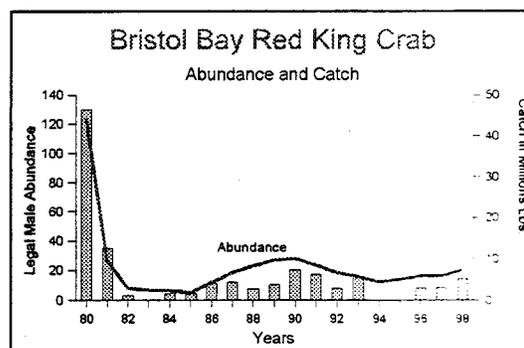


The directed halibut longline fishery is prosecuted under the halibut/sablefish individual fishing quota (IFQ) program, which began in 1995. The Pacific halibut stock is managed by the International Pacific Halibut Commission (IPHC), who sets the annual catch specifications. The 1999 total IFQ TAC for all areas (2C to 4E) was established at 58.39 million pounds.

Limits are placed on halibut taken as bycatch in groundfish target fisheries. In the Bering Sea, 900 mt of halibut mortality is allocated to longline fisheries as bycatch, and 3,775 mt of mortality allocated as trawl bycatch.

Bristol Bay Red King Crab

After declining abundance throughout the 1960s and reaching a low during the years 1970-1972, recruitment to the Bristol Bay red king crab stock increased dramatically. New all-time record landings were established in each year from 1977 to 1980. Declining recruitment, fishing pressure, and probably increased incidence of disease and predation led to an abrupt decline in fisheries in 1981 and 1982. These precipitous declines led to a closure of the Bristol Bay fishery in 1983. In 1984, the stock showed some recovery and a limited fishery was reestablished. Between 1984 and 1993, the fishery continued at levels considerably below those of the late 1970's.



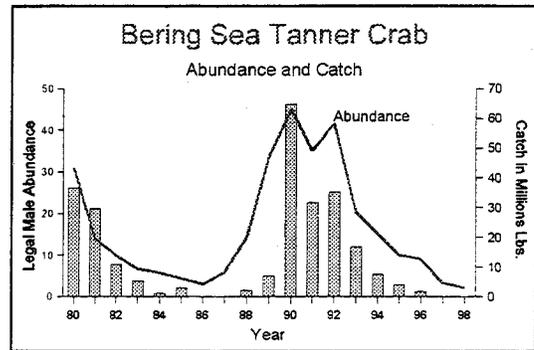
Throughout the 1980s and 1990s there was little sign of a large year-class in this stock. Because the abundance of female crab was below threshold, the Bristol Bay red king crab fishery was closed in 1994 and 1995, as was the fishery for Tanner crab in Zone 1 east of 163° West longitude. The fishery reopened in 1996, and catches have increased to 16.4 million pounds in 1998. A large year-class (presumably the 1990 year-class) is entering the fishery, and should provide stable catches for the next couple of years.

Tanner Crab

The Bering Sea Tanner stock has undergone two large fluctuations. Catches increased from 5 million pounds in 1965 to over 36 million pounds in 1980. The 1980 peak catch was followed by a collapse resulting in low landings (<0.5 million lbs) from 1981-1985, and finally no fishery in 1986 and 1987. The fishery reopened in

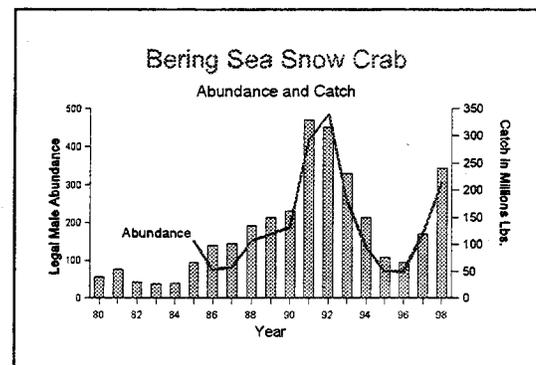
1988, and landings increased to over 60 million pounds in 1990. A decline followed, and the fishery has been closed since 1996.

This stock is currently at very low abundance. The 1998 estimates of legal males and large females are the lowest in the history of the NMFS bottom trawl survey. Based on overfishing definitions adopted under Amendment 7, the bairdi stock is below the established minimum stock size threshold, and will consequently be declared "overfished." A rebuilding plan is under development by the Council, and the Alaska Board of Fisheries is re-evaluating its management strategy for Tanner crab fisheries. Although the near-term outlook for this stock is bleak, some signs of recruitment are beginning to appear in the NMFS survey data.



Snow Crab

Catch of Bering Sea snow crab (*C. opilio*) increased from under 1 million pounds in 1974 to over 315 million pounds in 1992. The 1992 peak catch was followed by reduced landings through 1996. The stock quickly rebounded with good recruitment, however, and landings increased to 250 million pounds in 1998. The 1999 fishery opens on January 15 with a guideline harvest level of 196 million pounds. The abundance of this stock has peaked, and is expected to decline rapidly in the coming year or two. Based on length frequency data from the NMFS trawl survey, there does not appear to be any significant level of recruitment forthcoming.



1.4 Pacific Cod Fishery Information

1.4.1 Pacific Cod Catch

A history of Pacific cod catch in domestic fisheries is shown in the adjacent table. Catches from foreign trawl and longline vessels (through 1987) and joint venture trawling (1980-1990) are not included in the table. Trawl landings have generally remained stable at about 110,000 mt per year since the late 1980's, as PSC halibut limits and later allocation decisions prohibited additional cod from being taken with trawl gear. Catches from fixed gear vessels increased as these fisheries developed. Longline fishery catch greatly increased from 1988 (2,611 mt) through 1995 (101,249 mt) and has since fluctuated around 95,000 mt. Catch by vessels using pot gear began to make significant landings in 1990 (1,389 mt) then picked up in 1995 (20,248 mt). Pot fishery catches have fluctuated around 25,000 mt since that time.

Baseline information on the fixed gear Pacific cod fishery from 1992-98 is presented in Table 1.1. That table shows the number of vessels that participated in the Pacific cod fishery and the amount of catch they accounted for by vessel type.

DAP catch (mt) of Pacific cod in the BSAI by gear type, 1985-1999. 1985-97 data from November 1998 SAFE report. 1998-99 data are from NMFS Blend files. Includes 'roll-over' catch.

<u>Year</u>	<u>Trawl</u>	<u>Longline</u>	<u>Pot</u>	<u>Jig</u>	<u>Total</u>
1985	51,885	50	0	0	51,935
1986	38,430	49	63	0	38,542
1987	48,701	1,417	89	0	50,207
1988	95,404	2,611	329	0	98,344
1989	123,864	14,219	164	0	138,247
1990	122,425	47,716	1,389	0	171,530
1991	131,684	79,696	6,673	0	218,053
1992	90,264	101,249	13,681	117	205,311
1993	99,074	66,153	2,098	35	167,360
1994	100,542	87,138	8,254	730	196,664
1995	121,349	102,939	20,248	599	245,135
1996	113,089	94,701	32,617	267	240,674
1997	111,273	124,159	22,068	262	257,762
1998	81,903	99,921	13,632	192	195,648
1999*	59,954	58,307	13,203	98	131,562

* Data through July 24, 1999

All catch from the fixed gear TAC as well as the roll-overs¹ are included. The table shows that freezer longline vessels harvested over 80 percent of the TAC in every year except 1996. That year they harvested about 75 percent. Longline catcher vessels harvested the smallest percentage—less than 1%—of Pacific cod each year. Those vessels never harvested more than 1,000 mt. Pot vessel's harvests were greatest in percentages caught during the years 1995-97, with pot catcher-processors taking between 4 and 7% and pot catcher vessels between 10 and 19%. These years, and 1998, represent the time period being considered in this amendment package to determine the TAC split among sectors.

¹The portion of the TAC that was allocated to the trawl or jig sectors of the Pacific cod fishery at the beginning of the year, but reallocated to the fixed gear sector in September because it would not have been harvested otherwise. Typically the trawl sector would not have harvested the entire allocation because they reached their halibut bycatch cap, and the jig sector because they had insufficient effort to harvest their 2 percent of the BSAI TAC.

Table 1.1: Catch of Pacific cod in the BSAI fixed gear Pacific cod target fishery from 1992-98 (in mt).

Year	Length	Longline						Pot						Fixed Gear Total	
		Catcher/Processors			Catcher Vessels			Catcher/Processors			Catcher Vessels			Unique #	Catch
		#	Catch	%	#	Catch	%	#	Catch	%	#	Catch	%		
92	0-59	-	-	-	44	291	97%	-	-	-	3	10	3%	47	301
	60-124	22	29,862	89%	24	336	1%	1	9	0%	32	3,445	10%	74	33,652
	125+	34	68,663	86%	1	14	0%	18	9,077	11%	20	1,975	2%	67	79,729
92 Total		56	98,525	87%	69	640	1%	19	9,087	8%	55	5,429	5%	188	113,681
93	0-59	-	-	-	9	121	98%	-	-	-	2	3	2%	11	124
	60-124	22	18,114	94%	3	169	1%	1	2	0%	10	1,065	6%	34	19,350
	125+	31	43,412	97%	-	-	-	2	518	1%	7	754	2%	40	44,684
93 Total		53	61,527	96%	12	291	0%	3	520	1%	19	1,821	3%	85	64,158
94	0-59	1	4	1%	6	210	56%	-	-	-	6	161	43%	13	374
	60-124	21	25,557	83%	2	312	1%	2	174	1%	17	4,640	15%	41	30,683
	125+	26	57,941	95%	-	-	-	3	1,669	3%	8	1,499	2%	36	61,108
94 Total		48	83,502	91%	8	522	1%	5	1,843	2%	31	6,299	7%	90	92,166
95	0-59	1	0	0%	26	627	63%	1	1	0%	14	375	37%	40	1,003
	60-124	16	24,632	65%	3	103	0%	3	1,182	3%	78	11,759	31%	99	37,675
	125+	26	71,914	91%	-	-	-	4	3,377	4%	24	3,801	5%	54	79,093
95 Total		43	96,546	82%	29	731	1%	8	4,560	4%	116	15,934	14%	193	117,771
96	0-59	-	-	-	13	88	51%	-	-	-	3	83	49%	16	171
	60-124	14	23,162	55%	7	100	0%	4	1,491	4%	64	17,528	41%	87	42,281
	125+	25	67,951	85%	-	-	-	9	6,775	8%	22	5,067	6%	53	79,793
96 Total		39	91,112	75%	20	188	0%	13	8,266	7%	89	22,678	19%	156	122,245
97	0-59	-	-	-	7	44	36%	-	-	-	5	78	64%	12	122
	60-124	14	28,357	68%	12	171	0%	6	1,472	4%	62	11,754	28%	92	41,755
	125+	24	91,711	92%	-	-	-	7	3,543	4%	20	4,841	5%	49	100,094
97 Total		38	120,068	85%	19	215	0%	13	5,015	4%	87	16,673	12%	153	141,971
98	0-59	-	-	-	7	16	14%	-	-	-	4	101	86%	11	118
	60-124	11	22,609	74%	2	3	0%	2	806	3%	52	6,936	23%	65	30,354
	125+	25	72,270	94%	-	-	-	5	2,729	4%	22	1,993	3%	50	76,992
98 Total		36	94,879	88%	9	19	0%	7	3,536	3%	78	9,030	8%	126	107,465
Grand Total		79	646,159	85%	123	2,606	0%	40	32,827	4%	211	77,865	10%	421	759,457

Source: ADF&G Fishtickets and NMFS Blend data 1992-98.

Catch from the 1999 Pacific cod fishery was not available at the time the Council took initial action on this proposed amendment and is not included in any of the alternatives under consideration by the Council. Moreover, at its meeting in December 1998 the Council voted that if it decided to develop a management program to further limit access to any non-salmon fishery under the Council's jurisdiction, participation credit for fishing in that fishery in 1999 not be granted. NMFS published a Federal Register notice of proposed rulemaking informing the public of the Council's intent on January 19, 1999 at 64 FR 2870. For completeness, however, information that is available from NMFS Blend data on the 1999 fishery is included in Table 1.2. That table reports the catch of Pacific cod through 1999, by gear type and delivery mode.

The longline and pot Pacific cod fisheries were both closed at noon on April 17, 1999, to prevent the first seasonal fixed gear TAC apportionment from being exceeded. The second trimester pot cod fishery was reopened on May 1, 1999. The pot cod fishery then was closed again on June 1, 1999. Both fisheries remained closed until September, at which time the pot cod fishery reopened on the first and the hook and line fishery reopened on the 15th.

Table 1.2: 1999 catch (mt) of Pacific cod by the hook-and-line and pot gear fisheries in the Bering Sea/Aleutian Islands (Source: NMFS Blend data 1999)

Gear	Catch	Percentage	Allocation percentage proposed in Amd. 64
hook & line catcher processors	88,971	84%	80%
hook & line catcher vessels	311	0.3%	0.3%
pot gear catcher processors	3,136	3%	18.3% ¹
pot gear catcher vessels	13,013	12.7%	
total	105,431	100%	98.6 % (+ 1.4% vessels <60') ² 100 %

¹ The proposed amendment would not separate the pot gear allocation between catcher processors and catcher vessels.

² The proposed amendment would also establish a separate allocation of 1.4% for hook-and-line vessels and pot vessels under 60 feet LOA.

Harvest locations are also important to consider, especially in light of recent Steller sea lion concerns. Pacific cod harvests by gear type and location are documented using observer data (Fritz, 1998). The information presented in that document indicates that pot vessels had a greater percentage of observed sets in sea lion critical habitat, when compared to longline vessels.

In addition to the number of vessels and their aggregate total catch, information on their participation patterns is also important to consider. Tables which represent each vessel's participation history are included in this section. A separate table was developed for each of the four vessel classes under consideration. The shaded cells in the tables represent participation in that year. The column on the left side of the table reports the number of vessels that are represented by that participation pattern. The column on the right side of the tables is simply a sum of the years that the vessels participated in the Pacific cod fishery between 1992-98. So, if a vessel fished in all seven years the Year Total column would report 7.

Two important issues were being considered by the Council that would affect Pacific cod vessels during this time period. The first was LLP. Qualifying years for LLP area endorsements were January 1, 1992 through June 17, 1995. The second issue was the Pacific cod TAC split among fixed and trawl gear vessels, which was scheduled to sunset on December 31, 1996. The Council made their final decision on that amendment package during the June 1996 meeting. These two issues may have provided motivation for vessels to fish in a manner that they would not have otherwise. However, it is not possible to determine exactly how participation patterns were influenced by these amendments. It is obvious that the first and last year for LLP endorsement qualification were years that vessels fishing in just one year participated. This trend is consistent across all vessel sectors.

Table 1.3: Annual Participation in the Pacific Cod Fishery by Freezer Longliners, 1992-98

Number of Vessels	92	93	94	95	96	97	98	Year Total
26								7
1								6
2								6
2								5
3								5
1								5
1								4
1								4
1								4
2								4
1								4
2								3
1								3
1								3
2								2
3								2
7								2
1								2
8								1
2								1
3								1
1								1
4								1
3								1
79	56	53	48	43	39	38	36	Vessel Total
	154,700	164,500	92,040	121,800	138,200	152,700	110,567	TAC*

* TAC represents the fixed gear portion of the TAC for the years 1994-98. Prior to 1994 the Pacific cod TAC was not split among vessels using fixed or trawl gear.

Table 1.4: Annual Participation in the Pacific Cod Fishery by Longline Catcher Vessels, 1992-98

Number of Vessels	92	93	94	95	96	97	98	Year Total
1								6
1								5
1								3
1								3
2								3
1								3
1								3
1								3
1								3
1								3
1								3
4								2
2								2
2								2
2								2
2								2
2								2
2								2
2								2
1								2
1								2
4								1
53								1
1								1
14								1
7								1
10								1
6								1
123	69	12	8	29	20	19	9	Vessel Total
	154,700	164,500	92,040	121,800	138,200	152,700	110,567	TAC*

* TAC represents the fixed gear portion of the TAC for the years 1994-98. Prior to 1994 the Pacific cod TAC was not split among vessels using fixed or trawl gear.

Table 1.5: Annual Participation in the Pacific Cod Fishery by Pot Catcher Processors

Number of Vessels	92	93	94	95	96	97	98	Year Total
1								7
1								5
1								5
2								4
1								2
1								2
1								2
1								2
1								2
1								2
2								2
1								2
15								1
4								1
3								1
1								1
1								1
2								1
1								1
40	19	3	5	8	13	13	7	Vessel Total
	154,700	164,500	92,040	121,800	138,200	152,700	110,567	TAC*

* TAC represents the fixed gear portion of the TAC for the years 1994-98. Prior to 1994 the Pacific cod TAC was not split among vessels using fixed or trawl gear.

Table 1.6: Annual Participation in the Pacific Cod Fishery by Pot Catcher Vessels

Number of Vessels	92	93	94	95	96	97	98	Year Total
4								7
2								6
1								6
5								6
3								5
1								5
1								5
2								5
3								4
13								4
3								4
1								4
2								4
1								4
1								4
1								4
3								3
3								3
1								3
1								3
9								3
3								3
3								3
4								3
2								2
2								2
2								2
4								2
2								2
7								2
9								2
1								2
6								2
8								2
17								1
20								1
14								1
35								1
3								1
2								1
6								1
211	55	19	31	116	89	87	78	Vessel Total
	154,700	164,500	92,040	121,800	138,200	152,700	110,567	TAC*

1.4.2 Products Produced by Processors of Pacific Cod

Once groundfish are harvested they must be processed. The types of product produced depend on the production facilities' capabilities and the demand for specific products in the market. This section will focus on primary processing. Fish that have been processed once and are then reprocessed will not be included. Including only fish that are processed the first time will eliminate double counting problems which may arise if secondary processing was also counted. A second reason for including only primary processing is the lack of data available on secondary processing.

Production information has been compiled for the years 1992-98. These data were derived from Weekly Production Reports (WPR) submitted to NMFS AKR by shorebased and floating processors. WPR's collect data on the tons of each product form that was produced by a processor. Product forms reported in the WPR data have been aggregated in this analysis. A summary table of the original product forms and those used in this analysis, listed in the aggregation columns, are included in Table 1.7.

Table 1.7: List of Product Forms Included in the Analysis

WPR Code	Aggregation	WPR Code	Aggregation	WPR Code	Aggregation
01-Whole/food	Whole	17-Cheeks/chins (<90)	Other	34-Milt	Other
02-Whole/bait	Bait	18-Chins (90+)	Other	35-Stomachs	Other
03-Bled	Bled	19-Belly flaps (meat)	Other	37-Split - no backbone	Other
04-Gutted only	Gutted	20-Fillets w/skin & ribs	Fillets	39-Bones	Other
06-H&G w/roe	H&G	21-Fillets w/skin-no ribs	Fillets	92-Whole	Whole
07-H&G western	H&G	22-Fillet w/ribs no skin	Fillets	95-Personal use- not sold	Other
08-H&G eastern	H&G	23-Fillets - no skin/ribs	Fillets	96-Previously caught	Disc
10-H&G,tail removed	H&G	24-Fillet - deep skin	Fillets	97-Other	Other
12-Salt & split	Salt & Split	30-Surimi	Surimi	98-Discarded at sea	Disc
14-Roe	Roe	31-Minced fish	Minced	99-Discarded landed	Disc
15-Pectoral girdle only	Other	32-Fish meal	Meal		
16-Heads	Other	33-Fish oil	Other		

Tables 1.8 through 1.10 report the annual production by processors using Pacific cod harvested in the directed, fixed gear fishery from the BSAI. In addition to Pacific cod harvested in the directed fixed gear fishery, the tables show the products made from all other groundfish species and fisheries for which these processors have operated, except for IFQ halibut. The first set of tables shows the amount of each product produced from various species. Within those tables are the Pacific cod products. Variations in the products produced by the different sectors can then be compared using information from the tables. This information can then be used to help illustrate changes in product mix that may result from changing the allocations to different sectors.

Freezer longline vessels primarily harvest and process Pacific cod. Between 1992 and 1998, Pacific cod products comprised anywhere from 84% to 97% of all other processed fish, averaging 93% for the seven year period. While this ratio hovered slightly above and below 95% for the years 1995 through 1997, the trend changed slightly in 1998 when increased retention for pollock under the IRIU program likely caused the ratio to fall to about 90%. The preponderance of product, upward of 95% in most years, has taken the form of headed and gutted, frozen fish. In recent years roe, followed by a combination of ancillary products have made up the remainder.

Pot catcher processors on the other hand have consistently produced Pacific cod in excess of 99% of their total product. Much like freezer longliners, pot catcher processors favor head and gut processing, although salted and split Pacific cod has accounted for as much as 15% of total product form in some years.

Shoreside processors purchase Pacific cod from both the fixed gear and other sectors. However, the resulting products cannot be tracked back to the amounts of unprocessed fish landed by each gear type, thus making it difficult to portray the exact role that fixed gear Pacific cod plays in terms of overall processed product. Since 1992, when Pacific cod accounted for about 6% of total groundfish product to shore plants, this ratio grew until culminating at 16% in 1996, and then tapered off to 13% by 1998. Pollock have dominated processing output in terms of volume with an average of almost 112,000 mt for the seven year period, followed by Pacific cod with an average of 14,000 mt.

Table 1.8: Production by Product form and Species by Freezer Longline Vessels, 1992-98

Species	Products	Year						
		92	93	94	95	96	97	98
Atka mackerel	Bait			2				
	H&G	12						2
Atka mackerel Total		12		2				2
Flatfish	Bait			2	2			
	H&G	53	125	133	128	140	186	116
Flatfish Total		53	125	135	130	140	186	116
Greenland Turbot	H&G	133	3,113	463	1,225	1,792	2,074	2,714
	Roe			3				
	Whole							3
Greenland Turbot Total		133	3,113	466	1,225	1,792	2,074	2,717
Other	Gutted	22						1
	H&G	32						
	Other	198						389
Other Total		252						390
Pacific cod	Bait	21	40	44	15	18	5	36
	Bled	78	23					
	Fillets	776	471	288	79			126
	Gutted				4		43	
	H&G	43,344	25,142	35,815	42,117	40,043	52,656	41,536
	Minced	144	52	107	23			41
	Other	326	338	626	858	1,084	1,094	709
	Roe	435	515	395	316	483	590	457
Whole	17	14	1	75	171	4	22	
Pacific cod Total		45,141	26,594	37,276	43,487	41,799	54,392	42,928
Pollock	Bait							8
	Fillets	3	1	143				
	H&G	32	147	162	169	121	252	570
	Minced			49				
	Other							45
	Roe	1	2	12	13	6	8	29
Whole							49	
Pollock Total		36	150	366	182	127	260	701
Rockfish	Bait							1
	H&G	240	267	126	80	58	38	140
	Other	3	18	1	1	2	1	3
	Roe			1				
	Whole							5
Rockfish Total		243	285	128	81	60	39	149
Sablefish	H&G	711	1,269	808	424	372	225	800
	Other	4	14	4	4	7	3	40
	Roe	2	4					
Sablefish Total		717	1,287	812	428	379	228	840
Grand Total		46,587	31,555	39,185	45,533	44,297	57,179	47,844

Table 1.9: Production by Product Form by Pot Catcher/Processors in Metric Tons, 1992-98

Species	Products	Year						
		92	93	94	95	96	97	98
Atka mackerel	Other					1		
Atka mackerel Total						1		
Flatfish	Whole							8
Flatfish Total								8
Other	Bait	10						
	Gutted	24						
	Whole (blank)	3						
Other Total		37						
Pacific cod	Bait	58		34		5	14	
	Fillets	6						
	Gutted	15						
	H&G	3,836	288	726	1,347	3,160	2,304	1,337
	Minced							
	Other	28				127	3	1
	Salt & Split			61	155	625	144	113
Whole							1	
Pacific cod Total		3,943	288	821	1,502	3,917	2,465	1,450
Grand Total		3,981	288	821	1,502	3,918	2,465	1,458

Table 1.10: Production by Product Form by Shore Plants in Metric Tons, 1992-98

Species	Products	Year						
		92	93	94	95	96	97	98
Atka mackerel	Meal	2	0	1	1	2	0	
	Other	20						
Atka mackerel Total		21	0	1	1	2	0	
Flatfish	Bait	0						
	Fillets	77			0	0		
	H&G	29		0	7	108	116	
	Meal	232	10	211	402	282	1,042	170
	Other	9	0	137	158	16	261	15
	Surimi	305		484	532	6	1,525	
	Whole			1,490	3,865	3,574	3,865	
Flatfish Total		652	10	2,322	4,965	3,986	6,809	185
Greenland Turbot	Bled				0			
	Fillets				1			
	H&G	37	349	575	572	153	71	294
	Meal	3	0	16	51	0	0	2
	Other	1		3	17			
	Whole						0	2
Greenland Turbot Total		41	349	594	641	154	71	298
Other	Bait	16			1			
	Gutted				4			
	Meal	1	2	6	15	4	36	11
	Other	0					0	2
	Whole		2	5	1		4	
Other Total		17	4	11	21	4	41	13
Pacific cod	Bait	185	738	469	905	699	443	1,562
	Bled	93	1	248	338	67	63	2
	Fillets	1,040	2,645	2,538	4,363	5,418	6,287	4,871
	Gutted	10						
	H&G	607	757	2,666	2,032	1,384	132	595
	Meal	816	1,720	1,808	3,013	2,808	3,109	2,273
	Minced	138	529	373	446	29	24	50
	Other	190	162	395	1,145	1,670	1,162	634
	Roe	33	11	84	322	424	638	474
	Salt & Split	2,995	2,225	4,101	6,617	8,259	4,253	3,438
	Surimi	177		10	370	160	354	381
	Whole	130	6	160	265	733	376	127
Pacific cod Total		6,414	8,795	12,852	19,816	21,653	16,842	14,407

Pollock	Bait		16	32	22	3		75
	Fillets	1,877	4,906	1,065	3,377	5,199	4,361	5,718
	H&G							93
	Meal	26,764	27,369	28,138	26,219	22,868	24,595	23,949
	Minced		266	30	138	67	90	34
	Other	7,129	9,793	11,069	13,486	12,381	11,273	11,575
	Roe	4,298	1,377	2,551	3,668	3,379	4,127	2,440
	Salt & Split							933
	Surimi	62,585	66,292	77,421	73,172	68,586	65,155	62,666
Whole	172		41		6	20	24	
Pollock Total		102,825	110,019	120,345	120,082	112,488	109,620	107,507
Rockfish	Bait					0		
	Gutted	0						
	H&G	34	29	23	75	25	23	19
	Meal	1	0	2	15	14	24	
	Other	0			0			2
	Whole	3		3	1	22	92	189
Rockfish Total		38	29	29	92	61	140	210
Sablefish	H&G	410	248	253	607	304	387	272
	Meal	1	0	1	4		0	5
	Other	0		2	1			
	Whole	7					0	
Sablefish Total		418	248	255	611	304	388	277
Grand Total		110,427	119,454	136,410	146,230	138,651	133,910	122,897

Source: NMFS Weekly Production Report Data, 1992-98

1.4.3 Ex-processor Revenue (First Wholesale)

The production levels reported above can be multiplied by estimates of wholesale prices to determine ex-processor revenues. Ex-processor prices are derived from the Commercial Operators Annual Reports (COAR) for the years 1997 and 1998 and reported in chapter 3. At the time this analysis was prepared COAR reports for 1998 were still incomplete. Therefore prices may change as additional processors are entered into the computerized data base. The COAR collects information from processors operating onshore and within three miles from shore. Prices from 1994 were combined with 1995 production to estimate revenue in Amendment 46 to the BSAI (NPMFC 1996).

1.4.4 Bycatch in BSAI Fixed Gear Pacific cod Fisheries

Allocation of Pacific cod among fixed gear sectors (pot and longline) may have implications to bycatch of prohibited species (such as crab and halibut) as well as other groundfish species. A review of bycatch data for BSAI fixed gear fisheries is provided below. Implications are discussed in the EA section (Chapter 2).

Crabs

Crab bycatch in fixed gear fisheries is shown in the adjacent table. Virtually all of the bycatch taken by both gear types is attributable to Pacific cod fishing. Most of this bycatch is attributable to pot gear.

Regardless, crab bycatch in fixed gear groundfish fisheries is relatively small compared to crab bycatch taken in directed crab fisheries and to a lesser extent groundfish trawl fisheries.

Some crabs are caught incidentally by fixed gear in pursuit of groundfish, and a portion of these crabs die. No field or laboratory studies have been made to estimate mortality of crab discarded in these groundfish fisheries. However, based on condition factor information from the trawl survey, mortality of crab bycatch has been estimated and used in previous analyses (NPFMC 1993: Amendment 24 analysis). Discard mortality rates for red king crab were estimated at 37% in longline fisheries and 37% in pot fisheries. Estimated bycatch mortality rates for Tanner crab were 45% in longline fisheries and 30% in pot fisheries. No observations had been made for snow crab, but mortality rates are likely similar to Tanner crab. However, observer data collected on condition factor for crabs during the 1991 domestic fisheries suggested a lower mortality rate for red king crab in groundfish pot fisheries (Amendment 37 analysis, NPFMC 1996). In the analysis made for Amendment 37, a 37% mortality rate was assumed for red king crab taken in longline fisheries and an 8% rate for groundfish pot fisheries.

There are numerous laboratory studies that examine the mortality of crabs taken in crab fishery pot gear (e.g., Zhou and Shirley 1995, MacIntosh et al. 1996, Zhou and Kruse 1998, Shirley 1998). In the latest assessment of crab bycatch mortality studies, mortality rates of Bering Sea Tanner crab were estimated to be 8% in the Bristol Bay red king crab fishery, 20% in the Tanner crab fishery, and 25% in the snow crab fishery (for more information see Tanner crab rebuilding analysis, NPFMC 1999). No laboratory or field studies have assessed mortality of crabs in Pacific cod pot fisheries, based on a literature review conducted for this analysis.

Halibut

Bycatch mortality in BSAI fixed gear fisheries is limited by a prohibited species (PSC) cap of 900 mt. This cap is apportioned to the Pacific cod fishery, all other non-trawl fisheries including jig gear, and groundfish pot fisheries (exempt in recent years). The halibut mortality cap is further apportioned into three seasons. Fisheries are shut down when seasonal caps are reached and do not reopen until the next seasonal allowance becomes available. In recent years, the discard mortality rate applied to halibut was 12% for Pacific cod longline and 10% to pot fisheries.

Bycatch mortality of halibut in fixed gear groundfish fisheries is shown in Table 1.12. Most of the mortality is attributable to the Pacific cod target fishery. Some halibut is also taken as bycatch in directed longline fisheries for sablefish, turbot, and rockfish.

Table 1.11: Bycatch of crabs in Bering Sea/Aleutian Islands fixed gear groundfish fisheries, 1996-1998. Reported by NMFS Blend estimates.

<u>Species</u>	<u>Gear</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
red king	longline	1,541	4,477	3,019
	pot	74,134	21,102	3,993
bairdi	longline	17,543	11,442	5,943
	pot	262,016	38,775	40,609
opilio	longline	89,884	141,246	153,846
	pot	177,512	412,859	395,293

Table 1.12: Bycatch mortality (mt) of halibut in Bering Sea/Aleutian Islands fixed gear groundfish fisheries, 1996-1998. Reported by NMFS Blend estimates.

<u>Gear</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
P. cod longline	788	839	751
O. Species, jig	94	53	61
Pot Gear	18	14	43

Groundfish

Bycatch of groundfish in the fixed gear Pacific cod fisheries is mainly comprised of other species, pollock, and arrowtooth flounder. Most of the bycatch is discarded. Table 1.13 shows the bycatch and discards of these species in the Pacific cod target fishery, by vessel category for the years 1995-97.

Table 1.13: Bycatch and Discards in the Pacific cod Target Fishery, 1995-97

Species	1995			1996			1997		
	Catch	Retained	Discard Rate	Catch	Retained	Discard Rate	Catch	Retained	Discard Rate
Freezer Longliners									
Atka Mack.	38	0	100.0%	33	0	100.0%	40	1	98.0%
Pollock	3,018	367	87.8%	2,882	281	90.3%	4,470	742	83.4%
Y. Sole	62	0	100.0%	148	6	95.7%	235	19	91.8%
Rock Sole	33	22	32.0%	60	2	96.4%	35	1	97.0%
Flathead Sole	249	4	98.3%	270	11	95.9%	343	31	91.1%
O. Flatfish	10	0	100.0%	21	2	92.7%	27	1	98.0%
G.Turbot	320	133	58.3%	341	168	50.7%	458	224	51.0%
Arrowtooth	1,684	124	92.6%	2,094	226	89.2%	2,188	240	89.0%
POP	9	0	100.0%	2	0	95.2%	0	0	100.0%
SR/RE	-	-	-	116	68	41.4%	55	0	100.0%
O. Rockfish	13	1	90.2%	78	14	82.6%	79	11	85.5%
Sablefish	33	22	32.0%	81	63	22.9%	53	33	37.8%
O. Species	10,457	1,340	87.2%	8,345	1,327	84.1%	12,916	2,007	84.5%
Total	15,926	2,013	87.4%	14,471	2,168	85.0%	20,899	3,310	84.2%

Table 1.13: Bycatch and Discards in the Pacific cod Target Fishery, 1995-97 (Continued)

Species	1995			1996			1997		
	Catch	Retained	Discard Rate	Catch	Retained	Discard Rate	Catch	Retained	Discard Rate
Longline Catcher Vessels									
Pollock	1	0	100.0%	1	0	100.0%	3	0	100.0%
O. Flatfish	-	-	-	-	-	-	2	0	100.0%
G. Turbot	0	0	100.0%	49	0	100.0%	1	0	100.0%
Arrowtooth	1	0	100.0%	38	0	100.0%	3	0	100.0%
O. Rockfish	-	-	-	13	0	100.0%	0	0	100.0%
Sablefish	-	-	-	9	0	100.0%	0	0	100.0%
O. Species	0	0	100.0%	62	0	100.0%	14	0	100.0%
Total	2	0	100.0%	172	0	100.0%	23	0	100.0%
Pot Catcher/Processor									
Atka Mack.	0	0	100.0%	5	2	68.0%	5	1	72.9%
Pollock	0	0	100.0%	8	0	100.0%	12	0	100.0%
Y. Sole	1	0	100.0%	104	0	100.0%	32	0	100.0%
O. Species	72	0	100.0%	138	41	70.0%	48	20	58.2%
Total	73	0	100.0%	255	43	83.1%	97	21	78.4%
Pot Catcher Vessels									
Atka Mack.	72	0	100.0%	48	0	100.0%	45	0	100.0%
Pollock	13	0	100.0%	17	0	100.0%	30	1	97.9%
Y. Sole	61	0	100.0%	148	0	100.0%	39	0	100.0%
Arrowtooth	15	0	100.0%	12	0	100.0%	12	0	100.0%
O. Rockfish	3	0	100.0%	3	0	100.0%	3	0	100.0%
O. Species	442	2	99.4%	429	21	95.2%	307	15	95.3%
Total	606	2	99.7%	657	21	96.8%	436	16	96.3%

Source: Discards in the Groundfish Fisheries of the Bering Sea/Aleutian Islands & the Gulf of Alaska, 1995-97. September, 1998, Prepared for ADF&G by Pacific Associates, Inc. and Fisheries Information Services.

Discard rates for Pacific cod were not included in the Table. Currently Pacific cod are covered under the IR/IU program which requires full retention. Only in cases where retaining Pacific cod would potentially affect the quality of the other fish on board (i.e, previously caught fish) or when required by other regulations, can they be discarded. Therefore, it is assumed that under current fishing regulations almost all of the Pacific cod will be retained. Pollock is also currently included under the IR/IU program in the Bering Sea/Aleutian Islands. So pollock discards should also be lower in future years, when compared to the levels reported in the table above.

1.4.5 History of BSAI Pacific Cod Allocations

Allocations of the BSAI Pacific cod TAC among gear types began in 1993. Amendment 24 to the BSAI FMP established an explicit allocation of the Pacific cod Total Allowable Catch (TAC) between gear types. The percentage allocations for the 1994, 1995, and 1996 fishing seasons were: trawl gear - 54 percent, fixed gear - 44 percent, and jig gear - 2 percent. These percentages represented, roughly, the 1993 harvest percentages of the two major sectors, trawl and longline, while allocating 2 percent to jig gear specifically. The 2 percent allocation to jig gear was more than was being currently taken by that gear type, but was designed to allow for some growth in that sector. At that time, the Council was in the initial stages of developing its Comprehensive Rationalization Plan (CRP), and the allocations established were consistent with the 1993 Problem Statement shown below, which emphasized the allocation as a stabilizing mechanism and bridge to overall comprehensive rationalization:

The Bering Sea/Aleutian Islands Pacific cod fishery, through overcapitalized open access management exhibits numerous problems which include: compressed fishing seasons, periods of high bycatch, waste of resource, gear conflicts and an overall reduction in benefit from the fishery. The objective of this amendment is to provide a bridge to comprehensive rationalization. It should provide a measure of stability to the fishery while allowing various components of the industry to optimize their utilization of the resource.

Because the Amendment 24 Pacific cod allocations were scheduled to expire at the end of 1996, the Council placed discussion of this issue on the December 1995 meeting agenda, with the intent that an amendment be prepared to allow an allocation beyond 1996. At the December 1995 meeting, members of the Council identified changes which had taken place in the Pacific cod fishery since Amendment 24 went into effect on January 1, 1994. These changes were viewed as biological, economic, and regulatory in nature. In order to respond to these changes, staff was asked to incorporate these changes in the analysis, with specific focus on PSC mortality, impacts on habitat, and discards of Pacific cod by various industry sectors, under a range of possible percentage allocations to each gear type, which would be in place for another three years, through 1999. Though basic percentages were explicitly identified, the Council could choose an allocation percentage which is not explicitly identified, but is within that range. Further, the Council also requested that the analysis examine the sub-alternatives of further dividing the trawl sector allocation between catcher and catcher/processor vessels in the Pacific cod fisheries. The range of that allocation was 60/40 and 40/60. In developing these alternatives, the Council also developed the following Problem Statement in regards to the current allocation proposals:

The Bering Sea/Aleutian Islands Pacific cod fishery continues to manifest many of the problems that led the NPFMC to adopt Amendment 24 in 1993. These problems include compressed fishing seasons, periods of high bycatch, waste of resource, and new entrants competing for the resource due to crossovers allowed under the NPFMC's Moratorium Program. Since the apportionment of BSAI cod TAC between fixed gear, jig, and trawl gear was implemented on January 1, 1994, when Amendment 24 went into effect, the

trawl, jig, and fixed gear components have harvested the TAC with demonstrably differing levels of PSC mortality, discards, and bycatch of non-target species. Management measures are needed to ensure that the cod TAC is harvested in a manner which reduces discards in the target fisheries, reduces PSC mortality, reduces non-target bycatch of cod and other groundfish species, takes into account the social and economic aspects of variable allocations and addresses impacts of the fishery on habitat. In addition, the amendment will continue to promote stability in the fishery as the NPFMC continues on the path towards comprehensive rationalization.

At the June 1996 meeting, the Council adopted Amendment 46 to continue allocations of Pacific cod TAC. The Council essentially approved an agreement negotiated by affected industry groups allocating Pacific cod in the Bering Sea and Aleutian Islands. Under the agreement, 51% of the Pacific cod TAC was allocated to fixed gear, 47 percent to trawl gear and 2 percent to jig gear. Amendment 46 went into effect beginning in 1997. The specific provisions of the Amendment 46 as approved are shown in the box below.

Amendment 46: Pacific Cod Allocations in the Bering Sea and Aleutian Islands

1) TAC Apportionments:

The trawl sector will be allocated 47% of the Bering Sea and Aleutian Islands Pacific cod TAC. The trawl apportionment will be split between catcher vessels and catcher processors 50/50.

The fixed gear sector will be allocated 51% of the Bering Sea and Aleutian Islands Pacific cod TAC.

The jig gear sector will be allocated 2% of the Bering Sea and Aleutian Islands Pacific cod TAC.

2) Roll-overs:

On September 15 of each year, the Regional Director shall reallocate 100% of any projected unused amount of the Pacific cod allocated to jig vessels to the fixed gear vessels.

If, during a fishing year, the Regional Director determines that vessels using trawl gear or hook-and line or pot gear will not be able to harvest the entire amount of Pacific cod allocated to those vessels, then NMFS shall reallocate the projected unused amount of Pacific cod to vessels using the other gear type(s).

3) Halibut PSC Mortality Caps:

The trawl halibut PSC mortality cap for Pacific cod will be no greater than 1,600 mt.

The hook-and-line gear halibut PSC mortality cap for Pacific cod will be no greater than 900 mt.

4) Review:

There is no sunset provision, but the Council will review this agreement in four years following the date of implementation.

1.4.6 Other Sources of Pacific Cod Mortality

Another source of Pacific cod mortality is the bait fishery. Pacific cod is often used as bait by crab fishermen in the BSAI. To obtain bait, members of the crab fleet can either purchase the cod from other fishermen or harvest the cod themselves. Many vessel operators opt to harvest their own Pacific cod, however, not all of the cod caught for bait is reported to the State or NMFS. Over the 1995-98 time period a total of 507 mt of Pacific cod was reported as landed for bait by hook and line vessels. Pot vessels reported harvesting 822 mt over the same period. These amounts do not likely represent the entire amount of Pacific cod that was harvested for crab bait by the fixed gear sector.

Determining the amount of Pacific cod that was harvested for bait, but not reported is difficult to estimate. Amendment 46 to the BSAI FMP attempted to provide a rough estimate. Two different methodologies were used to make those estimates. The first looked at bycatch of cod in crab fisheries (NPFMC 1996). It was assumed that those fish would be used as bait. Estimates indicated that 8,452 mt and 5,428 mt of Pacific cod were taken during the years 1994 and 1995, respectively. These estimates were made by assuming that the average cod taken as bycatch weighed 10 pounds, and the number of fish were multiplied by the assumed average weight.

The second method assumed that 10 pounds of bait cod were used for each pot pull that occurred in the BSAI (NPFMC 1996). During 1993, 2.7 million pot pulls were reported in the BSAI crab fishery. That equates to about 12,000 mt of bait. Fewer pots were pulled during the 1996 and 1997 BSAI crab fisheries. During those years, 1.2 and 1.3 million pots were pulled. So, less than half the amount (5,500 to 6,000 mt) of bait was calculated to have been taken. Given these estimates of the amount of bait used, it appears that much of the bait harvested by fixed gear vessels is not reported.

Tracking the amount of cod taken for bait is likely becoming more important, since currently the BSAI Pacific cod ABC and TAC are set equal to each other. Prior to 1998, the TAC was often set below ABC. The gap that existed between ABC and TAC allowed the bait fishery to proceed with little concern by fisheries managers. However now that the buffer no longer exists, accounting for bait may become a higher priority. In addition, the national standard guidelines for National Standard 1 specify that all fishing mortality must be counted against the OY, including that resulting from bycatch, research fishing, and any other fishing activities. The implication of not including unreported catch is that the ABC for Pacific cod may have been exceeded unintentionally in some years.

If regulations are implemented requiring bait to be reported, those harvests may well reduce the directed catch of cod by the fixed gear sector. It is unknown if the pot or longline sectors would realize a greater negative impact if bait was accounted for in the future. The issue of bait accounting should be considered by the groundfish plan team, ADF&G, and NMFS.

The amount of cod bycatch in the halibut IFQ fishery is also currently unknown. Additional data collection programs would need to be implemented to estimate that bycatch. Recall that the majority of vessels in that fishery are small and currently observers are not required on those vessels. Therefore, accurate assessments of Pacific cod bycatch cannot be made.

Bycatch of cod in fixed gear groundfish fisheries is relatively small. Table 3.13 in Chapter 3 provides a breakdown of the cod bycatch by longline and pot vessels from 1995-99. In 1995 cod bycatch reached almost 1,500 mt. Primarily due to the longline catcher vessels which accounted for about 1,300 mt. Bycatch never exceeded 255 mt. in any of the other years considered.

2.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in significant impact on the human environment. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact statement (EIS) must be prepared for major Federal actions significantly affecting the human environment.

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives were discussed in Sections 1.1 and 1.2, and the list of preparers is in Section 6. This section contains the discussion of the environmental impacts of the alternatives including impacts on threatened and endangered species and marine mammals.

2.1 Environmental Impacts of the Alternatives

The environmental impacts generally associated with fishery management actions are effects resulting from (1) harvest of fish stocks which may result in changes in food availability to predators and scavengers, changes in the population structure of target fish stocks, and changes in the marine ecosystem community structure; (2) changes in the physical and biological structure of the marine environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and (3) entanglement/entrapment of non-target organisms in active or inactive fishing gear. The effects of the annual groundfish harvests on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are discussed in the final EA for the annual groundfish total allowable catch specifications.

This EA tiers off the Alaska Groundfish SEIS (NMFS 1998a) which analyzes the effects of groundfish fisheries in the EEZ and displays fishery induced impacts on all aspects of the ecosystem. NMFS notes that in a July 8, 1999 order, amended on July 13, 1999, the court in Greenpeace, et al., v. NMFS, et al., Civ No. 98-0492 (W.D. Wash.) held that the SEIS did not adequately address aspects of the GOA and BSAI groundfish fishery management plans other than TAC setting, and therefore was insufficient in scope under NEPA. In response to the Court's order, NMFS is currently preparing a programmatic SEIS for the GOA and BSAI groundfish fishery management plans. Notwithstanding the less expansive scope of the 1998 SEIS, NMFS believes that certain discussions contained therein are relevant to the present proposed action: in particular, Section 3.1.2. Fishing Gear Impacts on Substrates and Benthic Communities, Subsections 2 and 3 (Longline and Pot Gear); Section 3.3 Groundfish and Their Management, Subsections 2 (Pacific Cod) and 12 (Squid and Other Species); and Section 4.0 Environmental and Economic Consequences, Subsections 4.3.1.2 (To Bering Sea Pacific Cod) and 4.3.1.23 (To Squid and Other Species).

2.1.1 Impacts on the Pacific cod Stock

No changes to the total TAC of Pacific cod are proposed by this amendment. The amendment would allocate the fixed gear TAC among the pot and longline sectors of the fleet in apportionments that reflect recent historical harvests by the separate sectors. Any Pacific cod harvested must be landed under IR/IU regulations (there are a few narrowly defined exceptions). The total amount of Pacific cod harvested should be about the same under any option, since there should be few unaccounted for discards at-sea. The Pacific cod TAC will not be changed, and all bycatch should be counted against the TAC. Moreover, the intent of this proposed amendment is to prevent significant increase or change in the harvest shares of the gear sectors by establishing allocations that closely approximate recent historical activity. The proposed amendment,

therefore, would serve to prevent biological impacts that might be possible under the status quo, which does not allocate separate harvest shares to the different fixed gear sectors and which would thus leave the fishery open to changes in effort within the different gear sectors.

2.1.2 Impacts on other Groundfish and Crab Stocks

There are two prohibited species taken by fixed gear, and the impacts depend on the alternative chosen. Large numbers of crabs can be taken in pot fisheries for Pacific cod; longline fisheries have considerably lower crab bycatch rates. On the other hand, longlines targeting Pacific cod can have high bycatch rates of halibut.

An increase in the allocation of cod to pot gear (relative to the current levels) may allow a decrease in the overall halibut caps because the bycatch mortality is less with pot gear (and this gear has been exempt from limits). However, additional cod allocated to pot gear would be expected to increase the crab bycatch mortality somewhat. It should be noted, however, that bycatch of crabs in groundfish pot fisheries has been very small relative to other sources of crab bycatch mortality (i.e., groundfish trawl, crab pot fisheries).

Among fixed gear sectors of the Bering Sea Pacific cod fishery, pot gear vessels catch a relatively high number of octopus, while the hook-and-line vessels account for a high proportion of the sharks and skates taken by the groundfish fisheries. The table below lists the catches of "other species" incidental to the hook-and-line and pot gear Pacific cod fisheries in the Bering Sea from 1996-1998.

Catch (mt) of other species by Eastern Bering Sea Pacific cod fisheries, 1996-1998

year	gear sector	Octopus	Sculpins	Sharks	Skates	total	% of total other species catch
1996	pot	262	517	0	2	781	4%
	hook & line	16	705	93	8,113	8,927	45%
1997	pot	104	356	0	1	461	2%
	hook & line	25	1,031	90	13,308	14,454	61%
1998	pot	120	280	0	0	400	2%
	hook & line	14	950	157	12,991	14,112	61%

In 1996, the pot gear Pacific cod fishery took 4 percent, and the hook-and-line fishery took 45 percent, of the 19,733 mt total catch of "other species" by the Bering Sea groundfish fisheries. In 1997 and 1998, the pot gear sector took 2 percent and the hook-and-line sector 61 percent of the respective totals of incidental catch of "other species" by Bering Sea groundfish fisheries (23,656 mt and 23,077 mt).

Any increase or decrease in harvest of Pacific cod by hook-and-line and pot fisheries and any substantial shift in effort between these fisheries would likely have a corresponding impact on incidental catch of "other species." The intended impact of the proposed amendment, however, is to prevent any significant change in

the amounts and relative percentages of Pacific cod taken by the different fixed gear sectors by allocating catch among these sectors according to recent historical levels. The ancillary impact on "other species" would likely be to stabilize incidental catches of these species also at their historical levels and percentages according to gear sector.

2.1.3 Essential Fish Habitat Impacts (EFH) Analysis

The requirements for considering impacts of an agency action on Essential Fish Habitat (EFH) are described in the Interim Final Rule (IFR) (62 FR 66531, December 19, 1997) implementing the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act. The area included in this action includes EFH for all managed species in the BSAI. EFH for these species, to the extent that it is understood, is described and identified in four FMP amendments which were approved January 20, 1999. These are: Amendment 55 to the FMP for the Groundfish Fishery of the Bering Sea and Aleutian Islands; Amendment 8 to the FMP for the Commercial king and Tanner Crab Fisheries in the Bering Sea/Aleutian Islands; Amendment 5 to the FMP for Scallop Fisheries off Alaska; and Amendment 5 to the FMP for the Salmon Fisheries in the Exclusive Economic Zone off the Coast of Alaska. Further information on the life history and stock status of Pacific cod and of species caught as bycatch in the Pacific cod fishery, as well as a discussion of the effects of fishing on habitat, is contained in the SEIS (NMFS 1998a).

2.1.3.1 Direct Impacts of the Fixed Gear Pacific Cod Fishery on EFH

Direct effects to the substrate and water are primarily caused by fishing gear which touches the bottom. This section will first discuss the Pacific cod fisheries in the BSAI and the fishing gear that is used to pursue them, and then the impacts of the different types of fishing gear on EFH.

Most species (or species groups) are harvested predominately by one type of gear, which typically accounts for 85% or more of the catch. The one exception is Pacific cod. In 1998, 47.9% of the Pacific cod catch was taken by trawls, 42.8% by hook and line gear, and 9.3% by pots. The percentage of Pacific cod taken by trawl gear in 1994 was 58.5%. The decrease in trawl harvests of Pacific cod from 1994 to 1998 is accounted for by a 5% increase in pot gear use, and a 3% increase in the percentage taken by longliners over the past five years.

2.1.3.1.1 Hook-and-Line Gear

Very little information exists regarding the effects of hook-and-line gear (also known as "setline" or "longline" gear) on benthic habitat. Observations of halibut gear made by NMFS scientists during submersible dives off southeast Alaska provide some information (NPFMC 1992). The following is a summary of these observations: "Setline gear often lies slack on the sea-floor and meanders considerably along the bottom. During the retrieval process, the line sweeps the bottom for considerable distances before lifting off the bottom. It snags on whatever objects are in its path, including rocks and corals. Smaller rocks are upended, hard corals are broken, and soft corals appear unaffected by the passing line. Invertebrates and other lightweight objects are dislodged and pass over or under the line. Fish, notably halibut, frequently moved the groundline numerous feet along the bottom and up into the water column during escape runs disturbing objects in their path. This line motion was noted for distances of 50 feet or more on either side of the hooked fish."

Some crabs are caught incidentally by longline gear in pursuit of groundfish, and a portion of these crabs die. No field or laboratory studies have been made to estimate mortality of crab discarded in longline fisheries. However, based on information from the trawl survey, mortality of crab bycatch has been

estimated and used in analyses (NPFMC 1993). Discard mortality rates were estimated at 37% for red king crab and 45% for *C. bairdi* Tanner crab taken in longline fisheries. No observations were made for snow crab, but mortality rates may be similar to those of Tanner crab.

Mortality of groundfish discarded in longline fisheries has not been studied extensively in Alaska. Studies with Pacific halibut have shown that discards may have high mortality if not released carefully from hooks. Additionally, some species such as rockfish may not survive changes in pressure when they are hauled up quickly from the bottom. Mortality of discarded halibut has been estimated to be about 15% for most longline fisheries (Williams 1997).

A potential problem that does occur with longline gear is ghost fishing of lost gear. The extent to which this occurs and its effects on habitat have not been analyzed.

2.1.3.1.2 Pot Gear

Pot gear is used in the North Pacific to harvest crabs and groundfish. This gear type likely affects habitat during the process of settling and retrieving pots; however, no research has been conducted to date.

Like other fisheries, pot fisheries incur some bycatch of incidental fish and crab. The groundfish pot fishery targets Pacific cod, but takes other species such as crab and flatfish which are discarded. Mortality of incidental fish catch in groundfish pot fisheries has not been studied, with the exception of Pacific halibut. Based on viability data, it has been estimated that mortality of halibut bycatch in groundfish pot fisheries averages about 7% (Williams 1997).

Like longline gear, lost pot gear has the potential to cause ghost fishing. Biodegradable panels are required on pots to limit this effect, but they will continue to fish until the pot deteriorates.

2.1.3.2 Agency Views of the Proposed Action

The goal of the proposed action is to establish separate allocations for the different gear sectors fishing the fixed gear Pacific cod TAC in the Bering Sea. Those allocations would approximate recent historical harvest patterns. To the extent that this objective is realized, the impacts to EFH would be potentially less than under the status quo, which would allow fishing effort to increase within the discrete gear sectors and to shift between those sectors. Proposed Amendment 64, by limiting the gear sectors to their recent historical harvest patterns, would incidentally limit any significant change in the fishery's impact on EFH. Thus, the impacts the proposed amendment would have on EFH are within the scope of effects that were examined in the EFH Assessment for the 2000 Final Harvest Specifications for the Groundfish Fishery of the Bering Sea and Aleutian Islands Management Area (2000 specs). That assessment includes a discussion of the direct and indirect effects of fishing on EFH for FMP managed species, as well as a discussion of the effects of different types of fishing gear, on EFH. The 2000 specs assessment concludes that the North Pacific fisheries may have adverse impacts on EFH, and contains a description of the numerous actions which have been taken and are under development to mitigate those effects. A formal consultation on the 2000 specs assessment was signed on December 1, 1999 by the Habitat Division of NMFS, Alaska Region. Nothing in this rule is expected to change the effects of fishing on EFH in ways not considered in the 2000 specs assessment.

2.2 Endangered Species Act

The Endangered Species Act of 1973 as amended (16 U.S.C. 1531 *et seq.*; ESA), provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by the NMFS for most marine mammal species, marine and anadromous fish species, and marine plants species and by the USFWS for bird species, and terrestrial and freshwater wildlife and plant species.

The designation of an ESA listed species is based on the biological health of that species. The status determination is either threatened or endangered. Threatened species are those likely to become endangered in the foreseeable future [16 U.S.C. § 1532(20)]. Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. § 1532(20)]. Species can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NMFS, is authorized to list marine fish, plants, and mammals (except for walrus and sea otter) and anadromous fish species. The Secretary of the Interior, acting through the USFWS, is authorized to list walrus and sea otter, seabirds, terrestrial plants and wildlife, and freshwater fish and plant species.

In addition to listing species under the ESA, the critical habitat of a newly listed species must be designated concurrent with its listing to the "maximum extent prudent and determinable" [16 U.S.C. § 1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas that are essential to the conservation of a listed species and that may be in need of special consideration. Federal agencies are prohibited from undertaking actions that destroy or adversely modify designated critical habitat. Some species, primarily the cetaceans, which were listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA, have not received critical habitat designations.

Table 2.1: Species currently listed as endangered or threatened under the ESA and occurring in the GOA and/or BSAI groundfish management areas.

Common Name	Scientific Name	ESA Status
Northern Right Whale	<i>Balaena glacialis</i>	Endangered
Bowhead Whale ¹	<i>Balaena mysticetus</i>	Endangered
Sei Whale	<i>Balaenoptera borealis</i>	Endangered
Blue Whale	<i>Balaenoptera musculus</i>	Endangered
Fin Whale	<i>Balaenoptera physalus</i>	Endangered
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered
Sperm Whale	<i>Physeter macrocephalus</i>	Endangered
Snake River Sockeye Salmon	<i>Onchorynchus nerka</i>	Endangered
Short-tailed Albatross	<i>Phoebastria albatrus</i>	Endangered
Steller Sea Lion	<i>Eumetopias jubatus</i>	Endangered and Threatened ²
Snake River Fall Chinook Salmon	<i>Onchorynchus tshawytscha</i>	Threatened
Snake River Spring/Summer Chinook Salmon	<i>Onchorynchus tshawytscha</i>	Threatened
Puget Sound Chinook Salmon	<i>Onchorynchus tshawytscha</i>	Threatened
Lower Columbia River Chinook Salmon	<i>Onchorynchus tshawytscha</i>	Threatened
Upper Willamette River Chinook Salmon	<i>Onchorynchus tshawytscha</i>	Threatened
Upper Columbia River Spring Chinook Salmon	<i>Onchorynchus tshawytscha</i>	Endangered
Upper Columbia River Steelhead	<i>Onchorynchus mykiss</i>	Endangered
Snake River Basin Steelhead	<i>Onchorynchus mykiss</i>	Threatened
Lower Columbia River Steelhead	<i>Onchorynchus mykiss</i>	Threatened
Upper Willamette River Steelhead	<i>Onchorynchus mykiss</i>	Threatened
Middle Columbia River Steelhead	<i>Onchorynchus mykiss</i>	Threatened
Spectacled Eider	<i>Somateria fishcheri</i>	Threatened
Steller's Eider	<i>Polysticta stelleri</i>	Threatened

¹ The bowhead whale is present in the Bering Sea area only.

² Steller sea lion are listed as endangered west of Cape Suckling and threatened east of Cape Suckling.

Section 7 Consultations. Because groundfish and crab fisheries are federally regulated activities, any negative effects of the fisheries on listed species or critical habitat and any takings² that may occur are subject to ESA Section 7 consultation. NMFS initiates the consultation and the resulting biological opinions are issued to NMFS. The Council may be invited to participate in the compilation, review, and analysis of data used in the consultations. The determination of whether the action "is likely to jeopardize the continued existence of" endangered or threatened species or to result in the destruction or adverse modification of critical habitat, however, is the responsibility of the appropriate agency (NMFS or FWS). If the action is determined to result in jeopardy, the opinion includes reasonable and prudent measures that are necessary to alter the action so that jeopardy is avoided. If an incidental take of a listed species is expected to occur under normal promulgation of the action, an incidental take statement is appended to the biological opinion.

Endangered Cetaceans. NMFS concluded a formal Section 7 consultation on the effects of the BSAI and GOA groundfish fisheries on endangered cetaceans within the BSAI and GOA on December 14, 1979, and April 19,

² The term "take" under the ESA means "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct" (16 U.S.C. ' 1538(a)(1)(B)).

1991, respectively. These opinions concluded that the fisheries are unlikely to jeopardize the continued existence or recovery of endangered whales. Consideration of the bowhead whale as one of the listed species present within the area of the Bering Sea fishery was not recognized in the 1979 opinion, however, its range and status are not known to have changed. No new information exists that would cause NMFS to alter the conclusion of the 1979 or 1991 opinions. NMFS has no plan to open Section 7 consultations on the listed cetaceans for this action. Of note, however, are observations of Northern Right Whales during Bering Sea stock assessment cruises in the summer of 1997 (NMFS per. com). Prior to these sightings, and one observation of a group of two whales in 1996, confirmed sightings had not occurred.

Steller sea lion. The Steller sea lion range extends from California and associated waters to Alaska, including the Gulf of Alaska and Aleutian Islands, and into the Bering Sea and North Pacific and into Russian waters and territory. In 1997, based on biological information collected since the species was listed as threatened in 1990 (60 FR 51968), NMFS reclassified Steller sea lions as two distinct population segments under the ESA (62 FR 24345). The Steller sea lion population segment west of 144° W longitude (a line near Cape Suckling, Alaska) is listed as endangered; the remainder of the U.S. Steller sea lion population is listed as threatened.

NMFS designated critical habitat in 1993 (58 FR 45278) for the Steller sea lion based on the Recovery Team's determination of habitat sites essential to reproduction, rest, refuge, and feeding. Listed critical habitats in Alaska include all rookeries, major haul-outs, and specific aquatic foraging habitats of the BSAI and GOA. The designation does not place any additional restrictions on human activities within designated areas. No changes in critical habitat designation were made as result of the 1997 re-listing.

Beginning in 1990 when Steller sea lions were first listed under the ESA, NMFS determined that both groundfish fisheries may adversely affect Steller sea lions, and therefore conducted Section 7 consultation on the overall fisheries (NMFS 1991), and subsequent changes in the fisheries (NMFS 1992). The most recent biological opinion on the overall BSAI and GOA fisheries effects on Steller sea lions was issued by NMFS January 26, 1996. It concluded that these fisheries and harvest levels are unlikely to jeopardize the continued existence and recovery of the Steller sea lion or adversely modify critical habitat. On February 26, 1998, NMFS determined that the 1996 opinion on the effects of the BSAI groundfish fisheries on Steller sea lions remained valid for the 1998 BSAI groundfish fisheries.

Pursuant to Section 7 of the Endangered Species Act, NMFS completed a consultation in 1998 on the effects of the pollock and Atka mackerel fisheries on listed species, including the Steller sea lion, and designated critical habitat. The Biological Opinion prepared for this consultation, dated December 3, 1998, and revised on December 16, 1998, concludes that NMFS actions that authorize the pollock fisheries in the BSAI and the GOA jeopardize the continued existence of the endangered western population of Steller sea lions and adversely modify its designated critical habitat. The Biological Opinion contains reasonable and prudent alternatives (RPAs) to mitigate the adverse impacts of the pollock fisheries on Steller sea lions. An emergency rule to implement the RPAs was published on January 22, 1999 (64 FR 3437) with an effective date of January 20, 1999, through July 19, 1999. NMFS extended this emergency rule for an additional 180 days with revisions to the provisions for the pollock B and C seasons consistent with the Biological Opinion. The Biological Opinion concluded that NMFS actions that authorize the Atka mackerel fisheries in the BSAI would not likely jeopardize the continued existence of Steller sea lions or adversely modify their designated critical habitat.

On December 22, 1998, NMFS completed a consultation on the effects of the 1999 BSAI groundfish fisheries on listed and candidate species, including the Steller sea lion and listed seabirds, and on designated critical habitat. The Biological Opinion concluded that this action is not likely to jeopardize the continued existence of the Steller sea lion or adversely modify its critical habitat. The opinion is contingent upon development and implementation of reasonable and prudent alternatives as outlined in the December 16, 1998, Biological Opinion.

On October 15, 1999, NMFS issued a revised final reasonable and prudent alternatives (RFRPAs) to avoid the likelihood that the pollock fisheries jeopardize the endangered western population of Steller sea lions and adversely modify their critical habitat. The RFRPAs were implemented by emergency rule at the commencement of the 2000 pollock fisheries. 65 Fed. Reg. 3892 (January 25, 2000).

Pursuant to section 7 of the ESA, NMFS initiated consultation on the effects of the 2000 BSAI and GOA groundfish fisheries on candidate and listed species, including the Steller sea lion, and designated critical habitat. The biological opinion prepared for this consultation, dated December 23, 1999, concluded that the 2000 BSAI and GOA groundfish fisheries authorized under the 2000 TAC specifications are not likely to jeopardize candidate or listed species or adversely modify designated critical habitat. However, in an order dated January 25, 2000, the District Court for the Western District of Washington concluded that NMFS must consult pursuant to section 7 of the ESA on the fishery management plans for the groundfish fisheries of the BSAI and GOA. Greenpeace v. NMFS, Civ. No. 98-492Z (W.D. Wash). Prior to the issuance of the court's order, NMFS already had initiated consultation to evaluate the cumulative effects of the BSAI and GOA groundfish fisheries over a multi-year period on candidate and listed species and critical habitat. NMFS is currently reviewing this ongoing consultation for compliance with the court's January 25, 2000 order.

Although Steller sea lions do consume Pacific cod, none of the alternatives would be expected to reduce the availability of cod as a prey species in any manner not previously considered. The proposed amendment would establish allocations that approximate the recent historical harvests by the different gear sectors fishing the fixed gear Pacific cod TAC and, in so doing, would likely reduce the possibility of any significant change in fishing practices that might impact Steller sea lions in a manner not previously considered.

Short-tailed albatross. The entire world population in 1998 was estimated as approximately 1000 birds; 400 adults breed on two small islands near Japan. The population is growing but is still critically endangered because of its small size and restricted breeding range. Past observations indicate that older short-tailed albatrosses are present in Alaska primarily during the summer and fall months along the shelf break from the Alaska Peninsula to the Gulf of Alaska, although 1- and 2-year old juveniles may be present at other times of the year (FWS 1993). Consequently, these albatrosses generally would be exposed to fishery interactions most often during the summer and fall--during the latter part of the second and the whole of the third fishing quarters.

Short-tailed albatrosses reported caught in the groundfish longline fishery include one in 1983, one in 1987, two in 1995, one in October 1996, zero in 1997, and two in 1998. Both 1995 birds were caught in the vicinity of Unimak Pass and were taken outside the observer's statistical samples.

Formal consultation on the effects of the groundfish fisheries on the short-tailed albatross under the jurisdiction of the FWS was initially carried out in 1989. The FWS concluded that the BSAI and GOA groundfish fisheries would adversely affect the short-tailed albatross but would not jeopardize the continued existence of that species (FWS 1989). An incidental take of up to two birds per year was allowed. Subsequent consultations for changes to the fishery that might affect the short-tailed albatross also concluded no jeopardy and established non-discretionary reasonable and prudent measures to minimize the impact of the possible incidental take (FWS 1995, FWS 1997). The 1997 consultation resulted in an incidental take limit of up to 4 birds during the 2-year period, 1997 and 1998 and limited the scope of the consultation to the groundfish hook-and-line fisheries. The FWS issued a Biological Opinion on the effects of the BSAI and GOA hook-and-line groundfish fisheries on the short-tailed albatross for the 1999 and 2000 fisheries. ESA section 7 consultation will be reinitiated for fisheries beyond 2000.

Because the options under consideration would allocate Pacific cod among fixed gear sectors based on historical use, no additional impacts would be expected. Under the existing PSC limits for halibut, any increase in Pacific cod allocated to longline gear would not likely be taken by this gear type anyway.

Spectacled Eider. Spectacled Eider (*Somateria fischeri*), a threatened seaduck, feed on benthic mollusks and crustaceans taken in shallow marine waters or on pelagic crustaceans. The marine range for spectacled eider is not known, although Dau and Kitchinski (1977) review evidence that they winter near the pack ice in the northern Bering Sea. Spectacled eider are rarely seen in U.S. waters except in August through September when they molt in northeast Norton Sound and in migration near St. Lawrence Island. The lack of observations in U.S. waters suggests that, if not confined to sea ice polyneas, they likely winter near the Russian coast (FWS 1993).

Since 1994, NMFS has consulted with the USFWS annually on the crab FMP, which includes the winter Bering Sea *C. opilio* fishery, pursuant to Section 7 of the ESA (FWS 1996a, 1996b). In the past, Section 7 consultations on this fishery have been formal because it was perceived that the fishery was likely to adversely affect spectacled eiders. This perception of a likelihood of an adverse effect resulted from: (1) a lack of knowledge concerning the at-sea range of spectacled eiders and; (2) a lack of knowledge of the species of eiders that have struck, or were likely to strike crabbing vessels. Beginning in 1995, observers aboard crabbing vessels received training in bird identification and reporting. Observers were instructed to report all sightings of spectacled eiders to the USFWS either directly or through ADF&G. To date, no take of spectacled eiders associated with this crab fishery or any groundfish fishery has been reported.

Conditions for Reinitiation of Consultation. For all ESA listed species, consultation must be reinitiated if: the amount or extent of taking specified in the Incidental Take Statement is exceeded, new information reveals effects of the action that may affect listed species in a way not previously considered, the action is subsequently modified in a manner that causes an effect to listed species that was not considered in the biological opinion, or a new species is listed or critical habitat is designated that may be affected by the action.

Impacts of the Alternatives on Endangered or Threatened Species. None of the alternatives under consideration would affect the prosecution of the crab or groundfish fisheries of the BSAI in a way not previously considered in the above consultations. The proposed alternatives are designed to allocate the fixed gear Pacific cod TAC among sectors based on historic use. None of the alternatives would affect takes of listed species. Therefore, none of the alternatives are expected to have a significant impact on endangered or threatened species.

2.3 Marine Mammal Protection Act

Under the Marine Mammal Protection Act, commercial fisheries are classified according to current and historical data on whether or not the fishery interacts with marine mammals. Two groups, takers and non-takers, are initially identified. For takers, further classification then proceeds on the basis of which marine mammal stocks interact with a given fishery. Fisheries that interact with a strategic stock at a level of take which has a potentially significant impact on that stock would be placed in Category I. Fisheries that interact with a strategic stock and whose level of take has an insignificant impact on that stock, or interacts with a non-strategic stock at a level of take which has a significant impact on that stock are placed in Category II. A fishery that interacts only with non-strategic stocks and whose level of take has an insignificant impact on the stocks is placed in Category III.

Species listed under the Endangered Species Act present in the management area were listed in the previous section. Marine mammals not listed under the ESA that may be present in the BSAI and GOA management area include cetaceans, [minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon spp.*)] as well as pinnipeds [Pacific harbor seal (*Phoca vitulina*), northern fur seal (*Callorhinus ursinus*), Pacific walrus (*Odobenus*

rosmarus), spotted seal (*Phoca largha*), bearded seal (*Erignathus barbatus*), ringed sea (*Phoca hispida*) and ringed seal (*Phoca fasciata*), and the sea otter (*Enhydra lutris*).

Take of the above listed marine mammals in longline and trawl fisheries has been monitored through observer programs. The subject fisheries (Bering Sea/Aleutian Islands pot and longline Pacific cod fisheries) are classified as Category III. Very few of marine mammals have been recorded in these fisheries. However, Steller sea lion, northern fur seal, harbor seal, spotted seal, bearded seal, ribbon seal, ringed seal, northern elephant seal, Dall's porpoise, harbor porpoise, Pacific white-sided dolphin, killer whale, sea otter, and walrus were recorded as taken incidentally in the Bering Sea and Aleutian Islands groundfish trawl fisheries according to records dating back to 1990 (Hill et al 1997.)

Interaction between killer whales and longline fisheries has been an issue, as killer whale predation is a factor in the longline fisheries. However, most of the interactions have occurred with the turbot fisheries (33 deterrences in 1990-93) and sablefish fisheries (79 deterrences and one take), rather than longline fisheries for Pacific cod (13 deterrences).

None of the alternatives under consideration is likely to have any adverse impacts on endangered or threatened species of marine mammals.

2.4 Coastal Zone Management Act

Implementation of each of the alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Management Program within the meaning of Section 30(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

2.5 Conclusions or Finding of No Significant Impact

None of the alternatives for Amendment 64 are likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

Assistant Administrator for Fisheries, NOAA

Date

3.0 REGULATORY IMPACT REVIEW: ECONOMIC AND SOCIOECONOMIC IMPACTS OF THE ALTERNATIVES

The next two chapters provide information regarding the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, quantification of the economic impacts if possible, and discussion of the trade offs between qualitative and quantitative benefits and costs.

The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

This section also addresses the requirements of both E.O. 12866 and the Regulatory Flexibility Act (RFA) to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA.

E. O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be "significant." A "significant regulatory action" is one that is likely to:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described above. The RIR is designed to provide information to determine whether the proposed regulation is likely to be "economically significant."

3.1 Description of Fleet, Fishery, & Industry

The most recent description of the groundfish fishery is contained in the Economic Status of the Groundfish Fisheries Off Alaska. The report includes information on the catch and value of the fisheries, the numbers and sizes of fishing vessels and processing plants, and other economic variables that describe or affect the performance of the fisheries. Catch of groundfish in the Bering Sea has remained relatively stable over the past

10 years, averaging about 1.8 million metric tons, consisting primarily of pollock. About 2,000 vessels fish for groundfish in the BSAI and GOA each year. Data for 1997 indicate that in the BSAI area, 137 vessels fished with hook and line, 84 vessels fished with groundfish pot gear, and 167 vessels fished with trawls. Catch in the domestic groundfish fisheries off Alaska totaled over 2 million metric tons in 1997, worth \$583 million in ex-vessel value. The value of resulting products was over \$1.1 billion.

Table 3.1 presents data summarizing the number of vessels by gear and area that harvested Alaska groundfish in 1995-1997. More recent data were not available. However, the number of vessels participating in 1999 is expected to be less than, but not significantly different from the number of vessels participating in 1997. During both years the fishery was managed under the Vessel Moratorium program, which limits new entry into the fishery. Table 3.2 lists the number of vessels participating in the 1996 crab fisheries. Table 3.3 lists the number of vessels that harvested Pacific cod in the BSAI by gear type and processing category. Information on the number of vessels by length category was presented in Section 1.4. More detailed information is provided by Table 3.4, which excerpts information from Table 88 of the License Limitation Program analysis (NPFMC 1998). It shows that there will likely be more licenses available to fish Pacific cod in the BSAI than there are vessels that currently participate. This is true for both catcher vessels and catcher-processors. Information on the estimated number of entities in Bering Sea fisheries will be used to determine the universe of small entities that could be significantly negatively impacted by any regulation. These data include some vessels that would not be considered "small entities" for purposes of the RFA because their gross annual revenue exceeds \$3 million, although the preponderance of vessels experience annual revenues less than this amount.

Table 3.1. Numbers of vessels that caught groundfish in the BSAI by processing sector, vessel size category, and gear type (from 1998 Economic SAFE).

Year	<60'	60-124'	>125'	Total
1995				
<u>catcher vessels</u>				
H&L	73	63	0	136
Pot	14	80	24	118
Trawl	3	89	33	125
<u>catcher-processors</u>				
H&L	*	19	28	47
Pot	*	4	4	8
Trawl	*	10	57	67
1996				
<u>catcher vessels</u>				
H&L	59	58	2	119
Pot	5	64	24	93
Trawl	6	90	32	128
<u>catcher-processors</u>				
H&L	*	18	26	44
Pot	*	5	9	14
Trawl	*	9	53	62
1997				
<u>catcher vessels</u>				
H&L	49	52	0	101
Pot	5	52	19	76
Trawl	3	76	34	113
<u>catcher-processors</u>				
H&L	*	18	26	44
Pot	*	6	7	13
Trawl	*	12	47	59

Table 3.2. Number of vessels that caught crab in the BSAI area in 1996, by vessel length class (measured by length overall (LOA) in feet), catcher type, and gear.

	Catcher vessels			Catcher/ proc.s
	<60'	60-124'	>125'	
Bristol Bay red king	0	130	62	4
Bering Sea Tanner	0	102	40	4
Bering Sea Snow crab	0	154	70	15
Norton Sound red king	41	0	0	0

Table 3.3 Numbers of vessels that caught Pacific cod in the BSAI by processing sector and gear type (from 1998 Economic SAFE).

Year	Trawl	H&L	Pot	Total
1995				
catcher vessels	86	57	116	259
catcher-processors	40	44	8	92
1996				
catcher vessels	109	51	92	252
catcher-processors	39	39	13	91
1997				
catcher vessels	85	31	75	191
catcher-processors	41	38	13	92

Table 3.4: Projected Number of Qualified Vessels in the LLP Groundfish Program in the BSA and EEZ as a Whole.

Description of Vessel and Gear Designations	BSAI	Total
Catcher Vessels with Non-Trawl Gear Designations	241	2,003
Catcher Vessels with Trawl Gear Designations	64	82
Catcher Vessels with Both Trawl and Non-Trawl Gear Designations	89	181
Catcher Vessels with the Choice of Trawl or Non-Trawl Gear Designations	13	22
Range of Catcher Vessels Qualifying for Non-Trawl Gear Designations	330 - 343	2,184 - 2,206
Range of Catcher Vessels Qualifying for Trawl Gear Designations	153 - 166	263 - 285
Total of All Catcher Vessels	407	2,288
Catcher Processors with Non-Trawl Gear Designations	54	57
Catcher Processors with Trawl Gear Designations	40	42
Catcher Processors with Both Trawl and Non-Trawl Gear Designations	44	44
Catcher Processors with the Choice of Trawl or Non-Trawl Gear Designations	3	4
Range of Catcher Processors Qualifying for Non-Trawl Gear Designations	98 - 101	101 - 105
Range of Catcher Processors Qualifying for Trawl Gear Designations	84 - 87	86 - 90
Total of All Catcher Processors	141	147
Range of All vessels Qualifying for Non-Trawl Gear Designations	428 - 444	2,285 - 2,311
Range of All Vessels Qualifying for Trawl Gear Designations	237 - 253	349 - 375
Total of All Catcher Vessels and Catcher Processors Combined	548	2,435

Note: The range of projected numbers of gear designations occurs because vessel which used different gears in the qualifying years and in recent years may choose either trawl or non-trawl designations.

Table 3.5 is a summary of fixed gear Pacific cod harvests, excluding roll-overs from jig and trawl allocations, for the years 1995-98. This data will be used to calculate the allocation percentages of the options selected by the Council, in addition to the baseline. A discussion of the impacts of including TAC harvested by the fixed gear sector that was rolled over from the trawl and jig apportionments is included in Section 4.1 of this document. Table 1.1 provides data covering the years 1992-98, but includes cod harvested by the fixed gear sector as a result of roll-overs from other gear sectors.

Percentage allocations will be calculated by summing the catch of each sector over the specified time period and dividing that amount by the total catch in the fixed gear sector. The resulting percentages can be multiplied by the 1999 fixed gear TAC to provide an estimate of the future years catch under each of the alternatives and options. Revenues at the ex-vessel level for catcher vessel deliveries, and at the ex-processor level for all sectors will be made. The ex-processor revenue estimates will also depend on the products produced by that sector and will be discussed later.

It is important to note at this point that estimates of gross revenue do not provide estimates of net benefits to the nation under various allocations. Net benefit calculations depend on information not currently available to the analysts. Data on the costs of production and harvest are two examples of information that is currently unavailable. Therefore, this analysis will not attempt to estimate net national benefits. A qualitative discussion of the issue will be provided, however.

Table 3.5: Catch of Pacific cod in the BSAI fixed gear Pacific cod target fishery from 1995-98 (in mt, excluding roll-overs).

Year	Length	Longline						Pot						Fixed Gear Total	
		Catcher/Processors		Catcher Vessels		Catcher/Processors		Catcher Vessels		Catcher/Processors		Catcher Vessels		Unique #	Catch
		#	Catch	%	#	Catch	%	#	Catch	%	#	Catch	%		
95	0-59'	1	0	0.0%	26	627	0.6%	1	1	0.0%	12	366	0.3%	36	994
	60'-124'	16	22,758	21.0%	3	103	0.1%	3	1,164	1.1%	68	10,908	10.0%	90	34,933
	125'+	26	65,880	60.7%	-	-	0.0%	4	3,218	3.0%	23	3,436	3.1%	53	72,534
	95 Total	43	88,639	81.7%	29	731	0.7%	8	4,439	4.1%	103	14,654	13.5%	179	108,461
96	0-59'	-	-	0.0%	13	86	0.1%	-	-	-	3	81	0.1%	16	167
	60'-124'	14	21,791	18.9%	7	100	0.1%	4	1,479	1.3%	59	17,020	14.7%	82	40,390
	125'+	25	63,370	55.0%	-	-	0.0%	9	6,588	5.7%	22	4,788	4.2%	53	74,746
	96 Total	39	85,162	73.9%	20	187	0.2%	13	8,064	7.0%	84	21,892	19.0%	151	115,304
97	0-59'	-	-	0.0%	7	44	0.0%	-	-	-	5	78	0.1%	12	122
	60'-124'	14	26,154	19.5%	12	171	0.1%	6	1,466	1.1%	54	11,703	8.7%	84	39,494
	125'+	24	86,174	64.3%	-	-	0.0%	7	3,524	2.6%	16	4,814	3.6%	45	94,513
	97 Total	38	112,328	83.8%	19	215	0.2%	13	4,992	3.7%	73	16,593	12.4%	141	134,128
98	0-59'	-	-	0.0%	7	16	0.0%	-	-	-	4	101	0.1%	11	118
	60'-124'	11	20,690	20.6%	2	3	0.0%	2	790	1.0%	52	6,883	6.8%	65	28,366
	125'+	25	67,375	67.0%	-	-	0.0%	5	2,729	2.7%	22	1,994	2.0%	50	72,097
	98 Total	36	88,065	87.6%	9	19	0.0%	7	3,519	3.5%	78	8,987	8.9%	126	100,581
	Grand Total	53	374,193	81.6%	59	1,152	0.3%	40	21,014	4.6%	153	62,133	13.5%	295	458,492

Source: ADF&G Fishtickets and NMFS Blend data 1995-98.

3.2 Expected Effects of Each Alternative

Four specific combinations of years are being considered, in addition to the status quo, to determine the percentage of the TAC that will be apportioned to each fixed gear sector. They are:

Status Quo:	1998 Baseline
Option 1:	1996, 1997
Option 2:	1997, 1998
Option 3:	1996, 1997, 1998
Option 4:	1995, 1996, 1997, 1998

Pacific cod TAC will be allocated among freezer longliners, longline catcher vessels, pot catcher vessels, and pot catcher processors based on their historical catch during the time period selected. A sub-option would aggregate all longline vessels into a single category. In that case, the fixed gear Pacific cod TAC would be divided among all longline vessels and all pot vessels.

Harvest data were derived from NMFS Blend files for catcher/processors and ADF&G Fishtickets for catcher vessels. Fixed gear deliveries from the CDQ fisheries were excluded as was Pacific cod bycatch in directed fisheries other than Pacific cod. Pacific cod roll-overs from the jig and trawl gear apportionments are excluded in the data presented under section 3.2.3 (the analysis looks at the alternatives both ways - with and without the inclusion of roll-overs).

Not all landings of Pacific cod in the bait fishery or halibut IFQ fishery are reported or included in this data set. Vessels are not required to report Pacific cod that was harvested for use as bait. The extent that these landings occurred and are not reported would underestimate the Pacific cod harvests of pot and longline vessels. The issue of unreported bait landings is discussed in more detail in section 1.4.6 of this document.

3.2.1 Status Quo (1998 Fishing Season)

Table 3.5 provides a description of the BSAI fixed gear Pacific cod fishery from 1995 through 1998. During that time, the fishery has not been apportioned among the longline and pot gear components. The status quo would continue that management structure, with 51 percent of the BSAI Pacific cod TAC apportioned to fixed gear vessels. The status quo would allow pot and longline vessels to continue competing among themselves to harvest as much of the fixed gear TAC apportionment as possible. Between 1995 and 1998, these fishing practices have resulted in longline vessels harvesting 74 to 88 percent of the total fixed gear apportionment (including roll-over amounts from other gear groups) and pot vessels harvesting the remaining 12 to 26 percent (Table 3.5).

Under the status quo, this range of catch distribution would likely be expected to continue, barring disruptive changes in this and other fisheries. However, other factors beyond the Pacific cod apportionment could impact these percentages. A shorter *C. opilio* fishery, for example, may lead to increased catch of Pacific cod by pot vessels. Some members of the *C. opilio* fleet have historically entered the Pacific cod fishery after the crab season closed. A shorter crab season would allow them to enter the cod fishery earlier in the year. However, it is unknown if that alone would increase the pot component's portion of the catch above the level (26 percent) experienced in 1996, or if they would remain closer to the average of 18 percent they accounted for from 1995-98.

Allocation of TAC to specific gear groups will limit the flexibility of fishers to switch in response to annual variations in resource abundance or unexpected events. This can become a serious issue for overcapitalized fisheries. Fishermen have no place to use their vessel (and other not-so-malleable capital) when the stock is in

lower abundance, the market drops, or unexpected events occur (e.g., the Bristol Bay salmon fishery 1997-1998).

The abundance of fish stocks targeted by longline and pot vessels is projected to change over the foreseeable future. Pacific cod and Greenland turbot are expected to decline somewhat as are red king crab catches for which the 1999 GHIL represents a 29% decrease over the 1998 catch. Of major concern is the snow crab stock, which is projected to decline rapidly to less than ½ of its current abundance in the next two years (Bob Otto, NMFS personal communication). The snow crab fishery has been the mainstay of the pot gear fleet, accounting for a vast majority of the total revenue generated by this fleet (see Crab SAFE). So if the price of snow crab does not offset the reduced catches, the pot fleet on average is expected to be financially impacted in the foreseeable future. Allocation of Pacific cod would limit potential revenues by the pot fleet.

Given the wide range of influences that could have a sizable effect on the direction of this fishery, attempts at specifying a status quo would be highly conjectural. Because the status quo is affected by a very dynamic process, it is not appropriate to portray it as a static point of departure to compare against the alternatives should no action be taken. However, a point of reference is necessary in order to evaluate the options under consideration against a reasonable backdrop, and the most recent period for which data is available can provide such a baseline. This analysis will use the sectoral catch distribution from the 1998 fishing season to represent the baseline, bearing in mind that this represents a reasonable reference for current conditions rather than a projection of the no action alternative. This selection was made noting there was substantial variation in catch history by sectors across years, however, the long term (1992-98) average and that for 1998 are similar (within about 3 percentage points). Because of these similarities, and the fact that 1998 is representative of current conditions in the fishery, 1998 was selected as the baseline. The projected distributional impacts of each option will be compared to the baseline in the following sections of this analysis.

3.2.2 Options 1 - 4 With No Roll-overs to Fixed Gear Included

Table 3.6 represents the fixed gear catch distribution when roll-overs from the trawl and jig gear apportionments are not included. According to discussions with members of industry, it was their intent that the fixed gear split be calculated excluding roll-over amounts. However, this is a point that the Council will need to express their intent on when selecting their preferred alternative.

To exclude roll-overs, the amount of Pacific cod reallocated from the jig and trawl sectors was determined from NMFS news releases. The roll-over amount was then subtracted from the total fixed gear catch. If the fishery was closed because the longline fleet hit the halibut cap before the TAC was taken, then the amount of TAC left on the table was subtracted from the roll-over. This was done because not all of the TAC rolled over to the fixed gear sector would have been harvested that year. Weekly catch histories were then summed until the level of the initial fixed gear apportionment was reached.

For example, in 1996, the fixed gear apportionment of the TAC was 138,200 mt, which included 19,400 mt of roll-over from the trawl and jig sectors. Only 127,317 mt were caught before the fishery reached bycatch limits, so that a difference of 10,883 mt went unharvested. This difference of 10,833 mt was then subtracted from the roll-over amount of 19,400 mt, resulting in 8,517 mt of net roll-over to be excluded from the catch tally for the overall fishery. A cut off date for the fishery was then determined by adding the cumulative catch backwards from the end of the season until it summed to the net roll-over amount of 8,517 mt. This occurred during the 43rd week of the year, corresponding to a week ending date of October 26th.

Using this method to account for roll-overs, catch history stopped counting on October 21, October 26, December 13, and November 28 for the years 1995 through 1998, respectively. The catch by each gear sector was then calculated using the truncated data set.

The number of vessels participating in the fishery and the percentage of catch, when roll-over amounts were excluded are reported in Table 3.6. Freezer longline vessels accounted for the largest percentage of catch and had the fewest vessels participating under the baseline. They accounted for almost 88 percent of the fixed gear catch that year. Option 2, based on catch history in 1997 and 1998, would allocate over 85 percent of the fixed gear quota to freezer longline vessels. No other option would allocate over 82 percent. Option 1 allocates the smallest percentage, less than 80 percent, to freezer longliners.

As expected the option that allocated the smallest percentage of BSAI Pacific cod TAC to the freezer longline vessels, would also give the pot sectors their largest allocation. Longline catcher vessels would be allocated the largest percentage under option 4, because that is the only year that includes catch from 1995. The year they had their largest percentage of the total fixed gear catch.

Table 3.6: Distribution of Pacific cod catch within the fixed gear sector, excluding roll-over catch

Options	Freezer Longliners		Longline CV		Pot C/P		Pot CV	
	Vessels	%	Vessels	%	Vessels	%	Vessels	%
Baseline (98)	36	87.6%	9	0.0%	7	3.5%	78	8.9%
#1: (96, 97)	44	79.2%	36	0.2%	19	5.2%	110	15.4%
#2: (97, 98)	42	85.4%	26	0.1%	15	3.4%	108	10.9%
#3: (96-98)	48	81.6%	42	0.1%	20	4.7%	134	13.6%
#4: (95-98)	53	81.6%	59	0.3%	22	4.6%	171	13.5%

Source: ADF&G Fishtickets and NMFS Blend data 1995-98.

3.2.2.1 Revenue Estimates by Alternative

Estimates of Pacific cod revenue can be calculated using the 1999 TAC, the apportionments under each of the four options, and prices. There are well documented problems associated with comparing revenues between catcher vessel and catcher/processor sectors within an industry (NMFS 1998, NPFMC et al 94). Applying an ex-vessel price to vessels that catch and process their own fish assumes that they would need to pay the market price to catcher vessels if they were only processing cod. There is no market transaction between harvester and first processor in this case, so it is not possible to determine if this assumption represents reality. This assumption certainly would not provide a good estimate of a catcher processor's gross revenues, since the revenues generated from processing that fish was not included. A better method for determining catcher/processor gross revenues is comparing first wholesale revenue. That information will be provided in a later section of this chapter.

3.2.2.2 Estimating Ex-vessel Revenue

Ex-vessel BSAI Pacific cod prices for the fixed gear sector ranged between \$0.249 and \$0.342 per pound over the period 1993 through 1997 (Greig 1998). The highest price was reported in 1997. During this time period the prices paid to pot and longline vessels were similar. Some years pot catcher vessels received slightly more revenue per pound than longline vessels. Other years the longline vessels were paid a slightly higher price. According to the same report trawl vessels have historically received a lower price for their deliveries than fixed gear vessel. However, because the trawl allocation will be unaffected by this amendment those differences will not be reported.

For 1998, fishticket data were used to estimate ex-vessel prices for BSAI shorebased deliveries. Prices for pot and longline catcher vessels were estimated separately. The following steps were used to estimate ex-vessel prices from fishtickets:

1. Only deliveries of BSAI caught Pacific cod in an open access fishery were selected.
2. Delivery codes for processed products and discards were deleted.
3. Fishtickets that did not include value information were deleted.
4. The records that remained were then divided into gear types.
5. Records that did not fall within two standard deviations of the mean price were deleted.
6. A weighted average price for the remaining records was then calculated for each gear type.

This method of estimating ex-vessel prices yielded \$0.192 for pot gear (2,000 observations) and \$0.193 for longline (60 observations). It should be noted that these values may not reflect post-season price adjustments which may have been paid to fishermen. These prices are weighted averages based on the population of deliveries for which reasonable values were reported, and not a sample, so no tests of statistical significance were performed. The distribution of prices were negatively skewed for both gear types, with the pot deliveries also exhibiting bi-modality. The bi-modal distribution resulted from geographic regions paying different prices; differences which cannot be reported because of confidentiality regulations.

Anomalously low prices ranging far from the mean of an otherwise tightly bounded distribution accounted for the wide dispersion and skewness. Deletion of these records which did not fall within two standard deviations of the mean included deliveries with calculated prices of less than \$0.05/lb for longliners and \$0.08/lb for pot vessels, amounts which could not reasonably be expected to sustain a directed fishery for Pacific cod. These prices may have resulted from bycatch landings of Pacific cod in other fixed gear fisheries such as the sablefish and halibut IFQ fisheries. While the upper tails of the distributions for both gear types contained data that was also dropped as a consequence of selecting two standard deviations for an acceptance rate, these records were very few relative to the observations for each distribution (one record for the longline data and ten for the pot vessel data). For each gear type, these upper values occurred to the right of natural break points in the distribution, suggesting that these sales of Pacific cod were not representative of those clustered closely around the mean. Perhaps these landings sold at a premium due to the inclusion of other more valuable species in the delivery or perhaps these records were coded erroneously.

Had all records been included for ex-vessel price computation, a mean of \$0.187 and median of \$0.196 would have resulted for pot vessels, whose mean and median prices after outlier exclusion were \$0.191 and \$0.196, respectively. An analogous comparison for longline catcher vessels yields a mean of \$0.178 and median of \$0.167 before the exclusion of outliers, and a mean of \$0.185 and median of \$0.174 after their exclusion. However, one must bear in mind that the bi-modal price distribution for the longline catcher vessels hinders the usefulness of these statistics.

According to the above weighted average prices of \$0.192 for pot gear and \$0.193 for longline, longline catcher vessels would only generate an additional \$2.2 per metric ton, compared to pot vessels. When comparing a longline catcher vessel range between 16 and 235 metric tons (Table 3.7), this results in a maximum gross revenue difference of \$483. While it is not possible to determine the difference in net revenue, given current data constraints, it is likely they would also be relatively small.

Currently the ex-vessel price of BSAI cod harvested with fixed gear and delivered shoreside is assumed to be about \$0.30, based on discussions with members of industry. No differences in the pot and longline prices were reported during these discussions. The 1999 price is about 50 percent higher than was estimated from 1998 fishtickets. Fillet prices for pollock also increased about 74 percent between 1998 and 1999 (GAO 1999). The increases were likely due to several factors including tighter world wide groundfish supplies and stronger

demand. A stronger yen relative to the dollar has also likely increased prices. These same factors influencing pollock prices also affect the cod markets, so it is not surprising to see similar changes in cod prices over this time period.

Ex-vessel prices from 1998 will be used in this section to generate estimates of the distributional impacts the Council's alternatives will have on catcher vessels. General information on 1999 prices was included to provide the reader a sense of current market conditions. However, because these data were collected through informal discussions with members of industry, they will not be used to project changes in gross revenues among the sectors. The most current year of available data (1998) will be used to make the projections.

Table 3.7: Estimates of Ex-vessel BSAI Pacific cod revenue distribution within the fixed gear catcher vessel sector, based on 1999 TACs and 1998 ex-vessel prices.

Options	Pot Catcher Vessels			Longline Catcher Vessels			Total		
	%	Catch	\$ Mil	%	Catch	\$ Mil	%	Catch	\$ Mil
Baseline: (98)	8.9%	7,014	\$3.0	0.0%	15	\$0.01	8.9%	7,029	\$3.0
#1: (96, 97)	15.4%	12,859	\$5.4	0.2%	167	\$0.07	15.6%	13,026	\$5.5
#2: (97, 98)	10.9%	9,102	\$3.9	0.1%	84	\$0.04	11.0%	9,186	\$3.9
#3: (96-98)	13.6%	11,356	\$4.8	0.1%	100	\$0.04	13.7%	11,456	\$4.9
#4: (95-98)	13.5%	11,273	\$4.8	0.3%	217	\$0.09	13.8%	11,490	\$4.9

Assumptions: Price of \$0.192 per pound for pot vessels and \$0.193 per pound for catcher vessels. It is also assumed that 1999 TACs continued into the future (90,270 mt).

Note: Projected harvests by pot and longline catcher/processors are not included in this table, because no ex-vessel transaction occurs.

A sub-option was also included in the analysis that would combine the longline catcher vessels and freezer longliners into a single class. Table 3.6 shows that longline catcher vessels have traditionally had relatively small catch histories in the BSAI Pacific cod fisheries. They have never harvested more than 0.7 percent of the fixed gear cod apportionment. The number of vessels that would be eligible to participate in the longline Pacific cod fishery under the groundfish License Limitation Program is quite large, over 300 vessels (NPFMC, 1998). However, these numbers may be reduced if the follow-up amendment, which includes minimum landings requirements to participate in the Pacific cod fishery, is adopted later this year. If there is not a split between the longline catcher vessels and freezer longliners, the freezer longliners are at a greater risk of losing catch share in future years, simply because they have accounted for almost all of the longline catch in the past.

An additional sub-option was included that would allocate 2 percent of either the fixed gear quota or entire BSAI Pacific cod TAC to longline catcher vessels less than 60 feet LOA. Table 3.5 shows that this class of vessels has never harvested more than 0.6 percent of the fixed gear catch from 1995 to 1998. A 2 percent set aside of the fixed gear quota would amount to about a six fold increase in available quota over the largest allocation available to this class from the general suite of alternatives. If instead the set aside were 2 percent of the BSAI Pacific cod TAC, the available quota would increase by a factor of thirteen. A decision would need to be made regarding how the rest of the catch would be allocated, if this sub-option is selected. For example, the catcher vessels could receive their allocated 2 percent of the quota from the overall longline quota after the split had been made between pot and longline gear. Freezer longline vessels would have their allocation reduced under this scenario, but the pot vessels allocation would be unaffected. Alternatively, the pot vessels and freezer longline vessels could equally compensate the longline catcher vessels, either on a poundage or percentage basis. Using

the poundage basis would require the pot vessels to give up relatively more cod than the freezer longline boats, because the freezer longliner vessels accounted for a greater percentage of the overall catch.

3.2.2.3 First Wholesale Revenue

The amount paid to the first processors of fish for their product is first wholesale revenue. This section of the analysis will use 1998 production patterns and prices to project changes in product mix and first wholesale revenues under each alternative and option. A discussion of the impacts these changes will have on communities will be provided later in the document.

Data from the 1998 COAR reports were used to estimate first wholesale price by product form and gear type where possible. NMFS Weekly Production Reports were used to estimate production. Because both data sets report similar product forms, few adjustments were needed to match product forms to prices. Currently (as of August 12, 1998) the 1998 COAR data set cannot be used to estimate product mix, because not all of the data have been entered by ADF&G due to staff and budget constraints. It is also possible that not all at-sea processors would have opted to file COAR reports for the 1998 fishery. They were not required to do so in 1998, but should be in future years because of a regulation change in 1999. Table 3.8 reports the pounds and a calculated first wholesale price by product form and sector. Pounds were reported to provide the reader a reference point showing the amount of product used to derive a price. The amount of product in the inshore sector is large relative to the amount of fixed gear Pacific cod they processed. This is because product forms cannot be broken out by gear used to harvest the fish. Lumping all gear types in this calculation may underestimate the price of inshore fixed gear products. The price differences masked by including all gear types would likely have been due to the freshness and quality of the raw fish delivered.

Table 3.8: First wholesale pounds and prices by product form and processing sector, 1998.

Product	Inshore/MS		Pot CP		Freezer Longliner	
	Pounds	\$/Lb.	Pounds	\$/Lb.	Pounds	\$/Lb.
Belly flaps (meat)	64,766	\$0.70	-	-	-	-
Bled	-	\$0.77	-	-	-	-
Bones	4,000	\$0.07	-	-	-	-
Fillets with skin-no ribs	208,918	\$1.86	-	-	-	-
Fillets-no skin or ribs	15,290,541	\$1.70	-	-	-	\$1.70
Fish meal	1,661,632	\$0.30	-	-	-	-
Fish oil	196,363	\$0.23	-	-	-	-
Headed & gutted, eastern cut	-	\$0.81	289,569	\$0.89	26,751,396	\$0.91
Headed & gutted, western cut	245,139	\$0.86	1,200,397	\$0.95	8,065,595	\$1.03
H&G, tail removed	-	\$0.86	-	-	-	-
Milt	16,442	\$1.24	-	-	-	\$1.24
Minced fish	49,802	\$0.25	-	-	-	\$0.25
Other-specify	65,250	\$1.58	-	-	-	\$1.58
Pectoral girdle only	212,415	\$0.75	-	-	-	-
Roe only	91,419	\$0.74	-	-	160,690	\$0.75
Salted & split	6,590,911	\$1.23	274,065	\$1.80	-	-
Stomachs (internal organs)	324	\$0.86	-	-	371,435	\$0.69
Surimi	1,938,693	\$0.53	-	-	-	-
Whole bait	1,014,815	\$0.35	-	-	25,355	\$0.48
Whole fish/food fish	169,012	\$0.75	-	\$0.75	-	\$0.75

Source: 1998 COAR.

Prices were calculated by dividing the total value by the total pounds. The weighted average price was calculated for each product form reported by a sector. The inshore column includes deliveries by all gear types, because it is not possible to determine the products produced by gear type used to harvest the fish. This same problem arises in weekly production report data. There are also prices reported in the table that have no corresponding poundage. These were product forms that were reported in the WPR data, but not in the COAR for that sector. In most cases a price from another sector was used as a proxy. The freezer longline sector has proxy values for whole fish, other, minced, milt, and fillets taken from the inshore sector. The pot catcher/processor sector's whole fish price was taken from the inshore sector. Inshore sector prices for bled fish were estimated by dividing the whole fish price by the PRR for bled fish. The inshore H&G eastern cut price was calculated by multiplying the western cut price by the pot c/ps ratio of eastern cut to western cut prices. Finally, the H&G (tail removed) price inshore was assumed to equal the inshore H&G western cut price.

The product mix information for 1998 is provided in Table 3.9. Information in that table shows that the catcher/processors produce mostly H&G products. Shorebased processors, on the other hand, produce mostly fillets. Caution must be exercised when using the product mix for inshore processors. These plants often take cod deliveries from vessels using different gear types during the same reporting period. Because processors cannot be expected to track the flow of fish through a plant by gear type, it is not possible to report production by gear type used to harvest the fish. Trawl gear deliveries have been much larger than fixed gear catcher vessel deliveries. Therefore, the product mix information for catcher vessel deliveries may more closely represent products produced from trawl deliveries than fixed gear. Noting this problem, the analysis will still use the product mix from all gear type deliveries to shore based and inshore floating processors.

Table 3.9: Pounds of product produced by sector, 1998

Product	Inshore/MS	Pot C/P	Freezer Longliner
Belly flaps (meat)	497,572	0	0
Bled	5,020	0	0
Bones	404,293	0	0
Fillets - no skin or ribs	11,000,000	0	100,781
Fish meal	5,011,973	0	0
Fish oil	242,252	0	0
H&G eastern	123,799	1,536,871	63,000,000
H&G western	531,298	1,409,917	28,000,000
Headed & gutted, tail removed	657,610	0	0
Milt	170,651	0	432,875
Minced fish	109,577	0	91,229
Other	7,474	0	45,906
Roe	1,043,887	0	1,006,444
Salt&split	7,578,817	249,119	0
Stomachs (internal organs)	75,393	0	1,082,944
Surimi	839,362	0	0
Whole/bait	3,444,493	0	78,925
Whole/food	279,164	1,667	49,348
Grand Total	32,000,000	3,197,111	95,000,000

Source: 1998 Weekly Production Reports.

Note: Processors that did not take deliveries from fixed gear catcher vessels were excluded from the Inshore/MS column. Therefore, the overall production from these sectors are underestimated.

With the first wholesale price, the production by sector, and the product recovery rate, a measure of the first wholesale value per ton of round cod can be estimated. To make that calculation the price and product

information are multiplied to generate an estimate of value. Then the product weights are converted to round weight by dividing the pounds of product by the product recovery rate. The values and round weights can then be summed. Once summed, the value can be divided by round weight to generate a weighted average first wholesale price. Table 3.10 provides estimates of this calculation in dollars per metric ton, reported in bold print at the bottom of the second part of the table. The results show that inshore deliveries generate about \$923, pot c/p \$1,166, and freezer longliners \$1,010 per metric ton of round fish. Recall that the inshore values are likely underestimated because they also include trawl deliveries. However, it is not possible to determine the extent to which trawl deliveries impact the price per ton estimate without tracking product through the production process from delivery to first processed sale.

Table 3.10: Estimates of 1998 first wholesale value per ton of round cod.

Product	Inshore*	Pot C/P	Freezer Longliner	PRR
Belly flaps (meat)	\$348,300	\$0	\$0	
Bled	\$3,842	\$0	\$0	
Bones	\$28,300	\$0	\$0	
Fillets - no skin or ribs	\$18,257,067	\$0	\$171,328	0.25
Fish meal	\$1,503,592	\$0	\$0	
Fish oil	\$55,718	\$0	\$0	
H&G eastern	\$99,743	\$1,367,815	\$57,170,493	0.44
H&G western	\$456,916	\$1,339,421	\$28,483,724	0.57
Headed & gutted, tail removed	\$565,545	\$0	\$0	
Milt	\$211,608	\$0	\$536,766	
Minced fish	\$27,394	\$0	\$22,807	0.5
Other	\$11,808	\$0	\$72,532	0.5
Roe	\$772,476	\$0	\$754,833	
Salt&split	\$9,321,945	\$448,416	\$0	
Stomachs (internal organs)	\$64,838	\$0	\$747,231	
Surimi	\$444,862	\$0	\$0	
Whole/bait	\$1,205,573	\$0	\$37,884	1
Whole/food	\$209,373	\$1,250	\$37,011	1
Grand Total	\$33,588,900	\$3,156,902	\$88,034,609	

Estimated Tons Purchased	36,376	2,707	87,138
\$/Ton	\$ 923	\$ 1,166	\$ 1,010

* Includes deliveries from all gear types: trawl, jig, and fixed gear. Therefore, the value per ton for fixed gear deliveries is likely underestimated.

Given the allocation percentage estimates provided in Table 3.6 and an assumed fixed gear allocation of 83.500 metric tons (based on the 1999 TAC), estimates of the impacts of each option at the first wholesale level can be calculated (Table 3.11). The results indicate that the freezer longline vessels would generate between \$66.8 and \$73.9 million, depending on the option selected. Pot catcher/processors revenues from cod would be in the \$3.3 to \$5.1 million range. Pot catcher/vessel cod harvests would generate revenues in the \$6.9 to \$11.9 million range at the first wholesale level. Finally, the longline catcher vessels would harvest cod with a first wholesale value of less than \$0.25 million under every option.

Because the analysis assumes that the first wholesale revenue per ton is constant for each sector, the marginal impact of moving a ton of cod from one sector to another is the difference in the projected revenues per ton. Therefore, moving a ton of cod from the freezer longline sector to the pot c/p sector would increase overall revenues by about \$156 (\$1,166 - \$1,010). Moving the same ton of cod from the freezer longline sector to either

of the catcher vessel sectors would reduce projected revenues by about \$87 (\$1,010 - \$923). The \$87 figure likely overestimates the actual impacts, because of the lower value trawl catch included in the calculation.

Table 3.11: Estimates of first wholesale value generated by harvest sector under each option.

Options	Freezer Longliners		Longline CV		Pot C/P		Pot CV	
	Vessels	\$ Million	Vessels	\$ Million	Vessels	\$ Million	Vessels	\$ Million
Baseline: (98)	36	\$ 73.89	9	\$ 0.01	7	\$ 3.41	78	\$ 6.86
#1: (96, 97)	44	\$ 66.81	36	\$ 0.16	19	\$ 5.06	110	\$ 11.87
#2: (97, 98)	42	\$ 72.04	26	\$ 0.07	15	\$ 3.32	108	\$ 8.40
#3: (96-98)	48	\$ 68.84	42	\$ 0.07	20	\$ 4.57	134	\$ 10.48
#4: (95-98)	53	\$ 68.84	59	\$ 0.23	22	\$ 4.47	171	\$ 10.41

Summing the revenues across all sectors yields a total first wholesale gross revenue of \$84.18 million under the baseline, \$83.90 million under option 1, \$83.83 million under option 2, \$83.96 million under option 3, and \$83.95 million under option 4. The baseline and option 3 provide the upper and lower bounds of the range, respectively, in total revenue terms. This range of \$0.35 million accounts for less than a half of 1% of total revenues under either the baseline or option 3. Given the relatively small difference in total revenues and the level of uncertainty in their estimation, it is not advisable that these comparisons alone provide the basis for an allocation change. However, there are notable distributional impacts among sectors at the first wholesale level associated with the various options.

Regardless of the sector to sector differences in projected revenues, impacts on the overall profitability of the fleets cannot be estimated using a gross revenue analysis, thus precluding a quantitative assessment of net benefits. Furthermore, the lack of cost data also frustrates attempts to track the changes in sectoral expenditure that result from different revenues. Therefore, impacts across related industries are also difficult to realize. Additional information on the costs of production is needed for estimation of net revenue and impact analysis. These data are not currently available.

3.2.3 Impacts of Including Pacific Cod Roll-overs

Including roll-overs from the trawl and jig sectors would reduce the percentage of catch harvested by the pot sector by about 1 percent. This is likely due to two factors. First, many of the pot vessels leave the cod fishery to harvest crab before the roll-over portion of the TAC is harvested. Second, Pacific cod are generally more dispersed from late summer through early winter, when compared to spring spawning aggregations. Using pot gear to harvest cod is more difficult when the fish are less aggregated. Both of these factors likely contribute to the lower relative catch by pot vessels later in the year.

Figures 3.2 through 3.5 show the 1995 through 1998 catch by week for the longline and pot fleets. As expected, the pot vessels tend to flow into the cod fishery after the winter crab fisheries close. Pot vessels also land cod during the summer when the longline fleet is closed down because they reached that trimester's halibut bycatch cap. Later in the year, when the cod roll-over amounts are being fished, most of the catch is being taken by the longline fleet. Therefore, excluding cod harvests that were rolled-over from the jig and trawl fisheries would benefit the pot fleet.

Roll-over amounts of cod can be estimated by subtracting the annual catch information in Table 3.5 from the information in Table 1.1. The results of that calculation are presented in Table 3.11b:

Table 3.11b: Estimates of roll-over harvests by sector, 1996-98.

YEAR	Freezer Longline	Longline CV	Pot C/P	Pot CV	Total
1996	5,951	2	199	789	6,942
1997	7,740	0	25	78	7,843
1998	6,814	0	17	53	6,884
Total	20,506	3	241	919	21,669

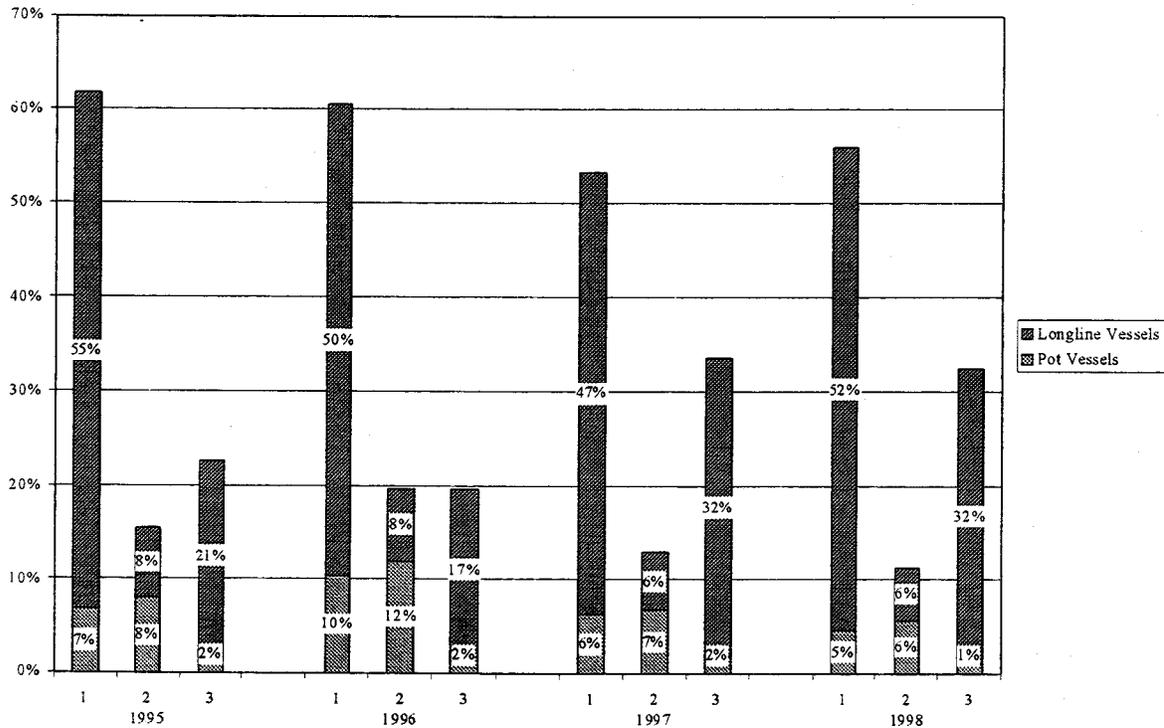
3.2.4 Apportion 10 percent of TAC and no halibut PSC to the second trimester

The Council also requested that if the fixed gear allocation cannot be in place for the year 2000, that during the final groundfish specification process in December, 10 percent of the fixed gear Pacific cod allocation be apportioned to the second trimester. No halibut would be apportioned to second trimester (currently 40 mt of halibut are apportioned to the second trimester). These apportionments would continue each year until the fixed gear split was in place. This would effectively make the second trimester a pot cod only fishery. Longline vessels would not be able to participate because no halibut bycatch would be available. Pot vessels are exempt from halibut bycatch accounting, so they would be allowed to fish. Few other fishing opportunities exist for pot vessels during that time of the year, so they would likely be well situated to take advantage of this apportionment. Figures 3.2 through 3.5 show the pot fleet has fished during this time of the year in the past.

From 1995 to 1998, catch during the second trimester has ranged between 12% and 20% of the total catch for the year, inclusive of roll-overs (see Figure 3.1). The longline share of total catch during the second trimester has fluctuated slightly from between 6% to 8% of total catch, while the pot vessels' share has been more variable from 6% to 12%. On average, Pacific cod harvested during the second trimester has accounted for 8% and 47% of the yearly catch for longline and pot vessels respectively, underscoring the participation patterns reflected in Figures 3.2 through 3.5.

The 1999 TAC apportionments as outlined in Table 3.12 allocate roughly 10% to the second trimester. To project the revenue impacts of this proposal based on the 1999 TAC we assume that pot catcher processors and pot catcher vessels harvest this entire amount in the same proportion that they harvested their respective shares of the 1998 second trimester catch. We also assume that each of the longline and pot sectors will harvest the same proportion of first and third trimester catch as they did in 1998. The first wholesale prices listed in Table 3.8 are then applied to these catch rates, yielding a first wholesale gross revenue. Under this scenario the combined pot sector accrues 18% of total first wholesale revenues, a substantial increase over the 12% maximum this sector would realize under the considered alternatives (option 1).

Figure 3.1: Percentage of Sectoral Catch by Trimester



3.3 Inseason Management Issues

Groundfish TACs, bycatch PSC limits are managed inseason by the NMFS Alaska Regional Office. Fisheries are closed when the fishery nears its TAC, or when seasonal apportionments of PSC are taken. So there are dozens of openings and closures to monitor. Within the fixed gear sector, halibut PSC is split out into the Pacific cod fishery and all others (such as turbot and rockfish). The PSC is seasonally apportioned within the Pacific cod fishery to allow for harvest of the seasonal apportionment of TAC (Table 3.12). For 1999, the initial TAC apportionments for the trimesters were 60,000 mt, 8,500 mt, and 15,000 mt.

A further allocation of Pacific cod TAC among fixed gear sectors may require monitoring of up to three additional seasonal apportionments. If the pot fleet does not request a seasonal apportionment, only one additional TAC monitoring will be required. If seasonal apportionment is

Table 3.12 Pre-season apportionments of Pacific cod and halibut PSC mortality for Bering Sea and Aleutian Islands groundfish fixed gear fisheries, 1999.

Fisheries	Halibut mortality (mt)	P. Cod TAC (mt)
Pacific cod (longline)		
Jan 1 - April 30	495	60,000
May 1 - Sept 14	0	8,500
Sept 15 - Dec 31	315	15,000
Other longline fisheries		
May 1 - Sept 14	45	
Sept 15 - Dec 31	45	
Groundfish pot fisheries exempt		
Total	900 mt	

requested, this would require additional monitoring. Because pot gear has been exempt from PSC limits, no additional inseason actions would be required for PSC closures.

Pacific cod bycatch in fixed gear target fisheries will be deducted from the fixed gear Pacific cod apportionment. Under this program the bycatch of cod will not be further subdivided among the pot and longline sectors. Information on Pacific cod bycatch in the fixed gear groundfish fisheries can be obtained from NMFS AKR Blend data files. Table 3.13 reports the fixed gear bycatch of Pacific cod in groundfish target fisheries (this excludes the catch of Pacific cod in the directed cod fishery). The directed sablefish fishery accounted for the majority of the bycatch in 1995 and 1996. After 1996, the largest amounts of bycatch were taken in the Greenland turbot fishery.

Two major sources of Pacific cod bycatch (catch for bait) are not reflected in Table 3.13. First, bycatch of Pacific cod in the halibut IFQ fishery is not included. Management measures currently in place do not adequately collect bycatch information from the halibut fishery to make accurate projections of total Pacific cod removals. Therefore, it is not possible at this time to estimate the Pacific cod mortality in that fishery. The second source of cod bycatch is in the crab fisheries. Estimates were made in Section 1.4.6 that indicate about 5,000 metric tons of Pacific cod may have been harvested for bait in the 1996 and 1997 crab fisheries and not reported. Given that the crab fisheries will be much smaller in 2000 when compared to 1996 or 1997, it is likely that the bait removals will also decrease. However, a substantial reduction would still allow room for unreported bait removals that are larger than the bycatch levels reported in Table 3.13.

Deducting bycatch removals of Pacific cod off the top of the fixed gear allocation, may alter the allocations among sectors. For example, if the BSAI fixed gear allocation were 90,000 mt. of Pacific cod and 1,000 mt. were taken off the top for bycatch needs, then the remaining 89,000 mt. would be allocated according to the Council's formula 80 percent to freezer longline vessels, 0.3 percent to longline catcher vessels, 18.3 percent to pot vessels, and 1.4 percent to pot and longline catcher vessels less than 60' LOA. If the set aside for bycatch was harvested equally by the longline and pot sectors (freezer longline vessels (300 mt.), longline catcher vessels (200 mt.), and pot vessels (500 mt.)) the overall relative harvest levels would be 79.4 percent by freezer longline vessels, 0.5 percent by longline catcher vessels, 1.4 percent by catcher vessels less than 60' LOA, and 18.7 percent by pot vessels. This example should not be interpreted as a projection of how bycatch removals will be divided among sectors. Those projections cannot be made until better estimates of all removals are available. It simply was meant to provide a numerical example of how subtracting bycatch off the top of the fixed gear allocation can alter the overall split among gear types in that sector.

If the 1,000 mt. of bycatch is taken in the same proportions as a weighted average of the years 1996-99 (see Table 3.13), then the overall harvests by sector would be 79.9 percent by freezer longline vessels, 0.6 percent by longline catcher vessels, 1.4 percent by pot and longline catcher vessels less than 60' LOA, and 18.1 percent by pot vessels. Since the longline catcher vessels have a larger percentage of the bycatch historically reported, relative to the directed fishery allocation, their percentage of the overall harvest increases. The freezer longline and pot vessel's percentage of the overall catch decreases under this scenario. Again, these percentages are meant to provide a numerical example, and is not a projection of future bycatch by sector.

Table 3.13. Pacific cod bycatch in fixed gear groundfish target fisheries

Year	Longline			Pot		
	Freezer LL	Catcher Ves.	Total	Catcher Proc.	Catcher Ves.	Total
1995	195	1,283	1,478	-	1	1
1996	181	59	240	12	1	13
1997	105	52	157	-	-	-
1998	167	66	233	-	0	0
1999*	95	66	162	1	-	1
Total	744	1,526	2,270	12	2	15

Source: NMFS AKR Blend data sets 1995-99.

* Includes data only through September 11, 1999

Fig 3.2: Weekly Catch of Fixed Gear Pcod (1995)

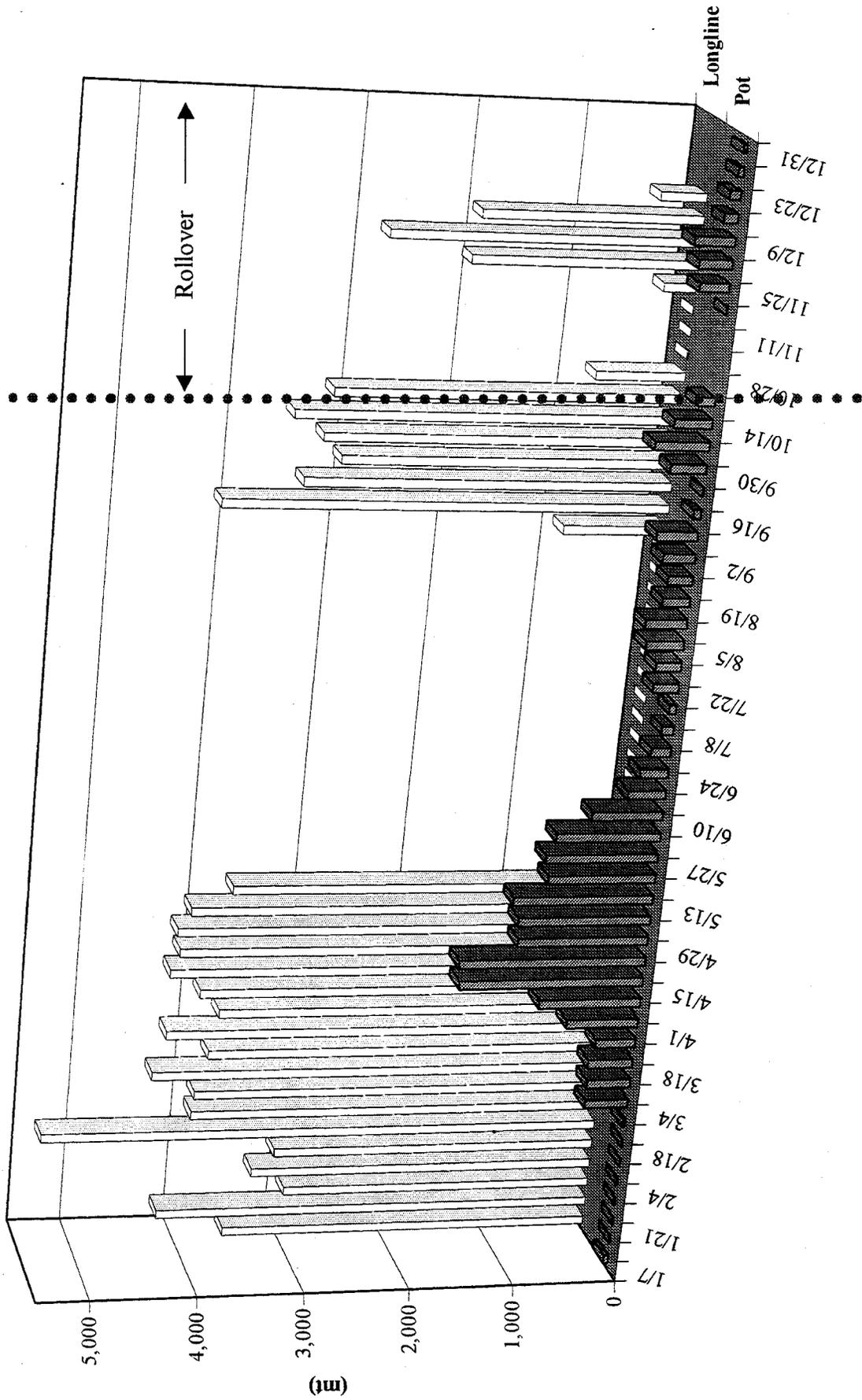


Fig 3.3: Weekly Catch of Fixed Gear Pcod (1996)

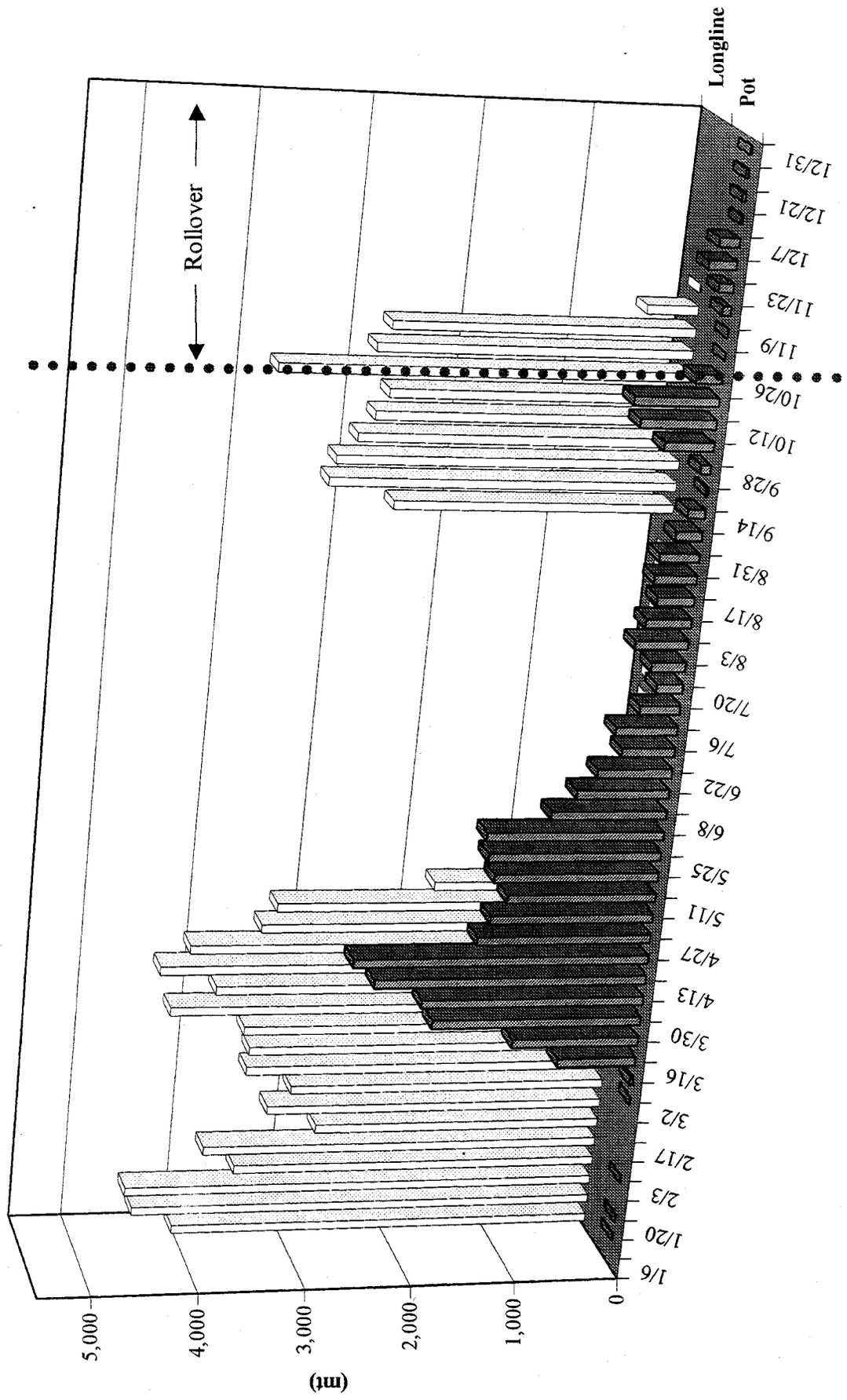


Fig 3.4: Weekly Catch of Fixed Gear Pcod (1997)

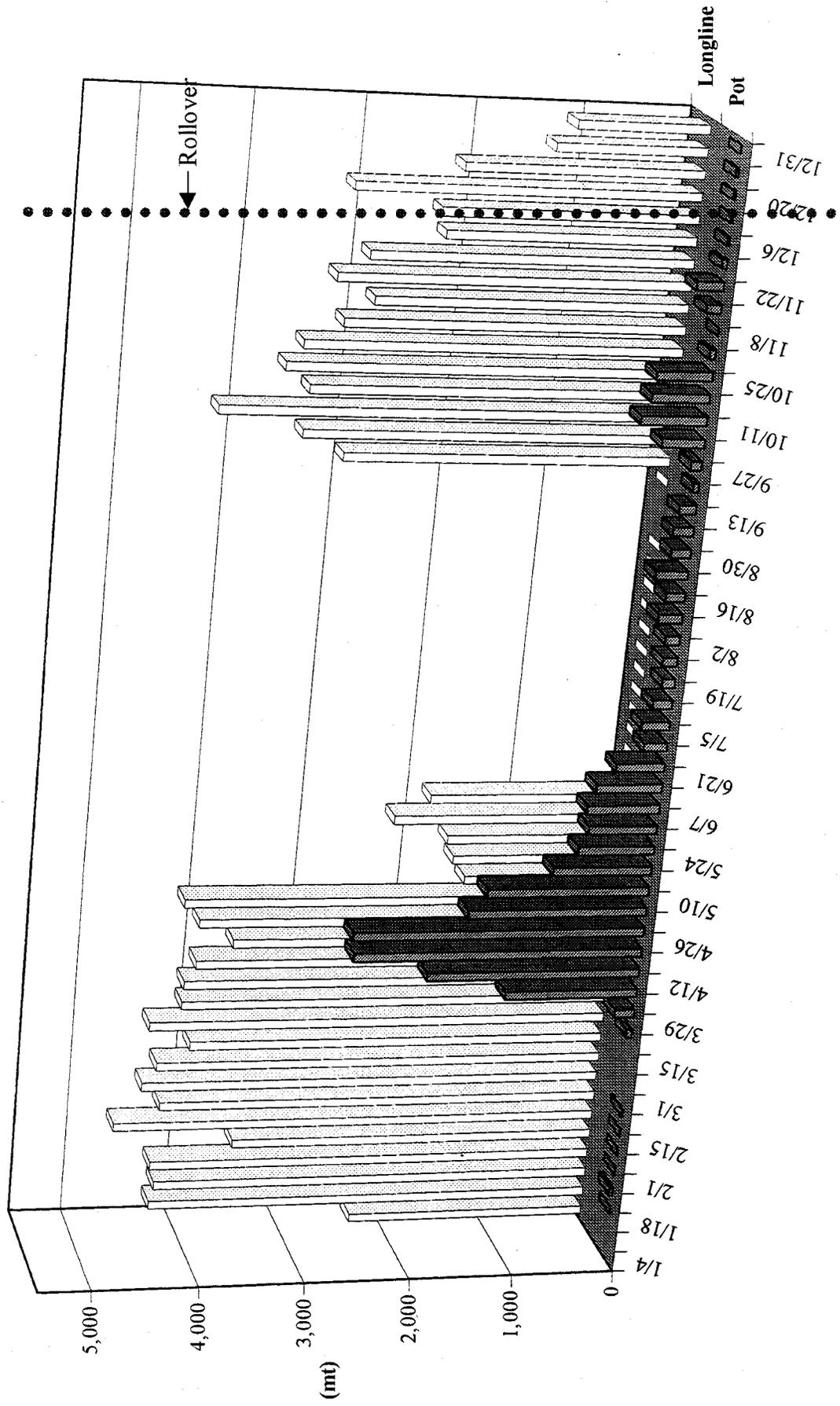
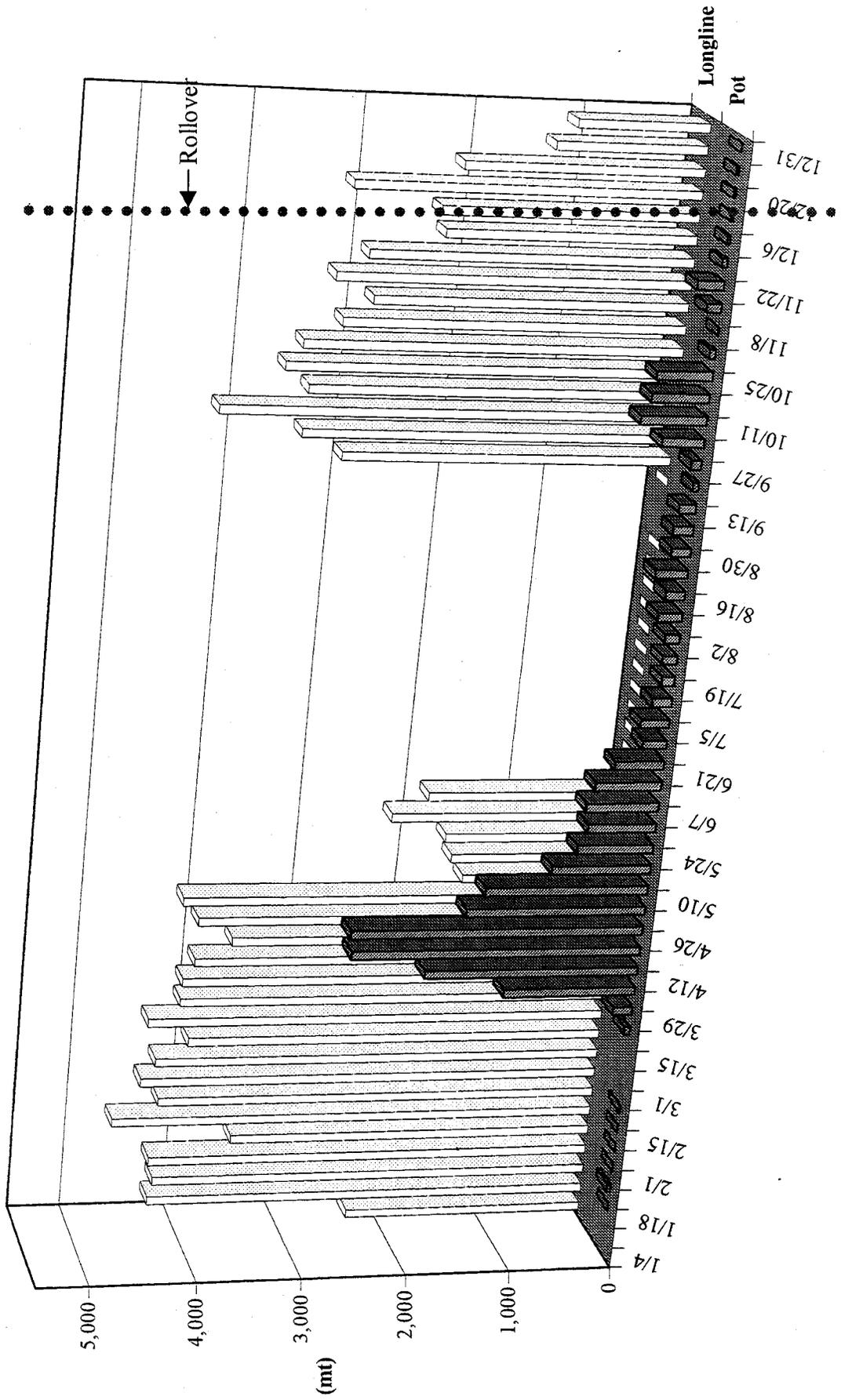


Fig 3.4: Weekly Catch of Fixed Gear Pcod (1997)



4.0 COUNCIL'S PREFERRED ALTERNATIVE

At the Council's October 1999 meeting, a preferred alternative for allocating Pacific cod among the fixed gear sector was selected. The Council chose this allocation formula based on information provided in the EA/RIR/IRFA that was released for public review in August. Information provided in that document was supplemented by several hours of public testimony at both the October and June Council meetings, input from the Advisory Panel, and each Council member's personal knowledge of the fishery.

4.1 Alternatives Selected by the Council

The Council selected the following allocation percentages, after bycatch of Pacific cod in other directed fixed gear fisheries is taken off the top of the fixed gear cod allocation in the BSAI:

- 80.0 percent freezer longliners;
- 0.3 percent catcher longliners;
- 1.4 percent pot or longline vessels under 60', and;
- 18.3 percent pot vessels.

These percentages fall within the range of the alternatives considered by the Council. Therefore, although these specific allocation percentages were not analyzed in the August ER/RIR/IRFA, the Council felt that they were presented sufficient information to judge the relevant impacts of selecting their preferred allocation percentages.

The Council stated its intent that harvests by pot and/or longline catcher vessels less than 60' LOA would only accrue against the 1.4% allocation after the pot or longline catcher vessels harvested their 18.3% and 0.3% set asides, respectively. Managing the allocations in this manner will ensure that the smaller catcher vessels will have cod available even after the larger catcher vessels in their sector have taken their allocation. It is possible that if the pot fishery lasted longer than the catcher longline fishery, the small catcher longline vessels would begin (and possibly finish) harvesting the 1.4 percent allocation before pot vessels under 60' had an opportunity to harvest any of the 1.4 percent set aside for smaller vessels.

Because a sector of the BSAI Pacific cod fishery may not be able to harvest their entire allocation in a year due to halibut bycatch constraints or, in the case of the jig fishery, insufficient effort in the fishery, the Council also provided direction on how "roll-overs" should be treated. Roll-overs from the jig or trawl sectors will be apportioned among the freezer longline and pot sectors according to the actual harvest of roll-overs from 1996-98. Projections based on information presented in Tables 1.1 and 3.5 indicate that 94.7 percent of the cod would be allocated to the freezer longline fleet and the remaining 5.3 percent would go to the pot fleet. In addition, any unharvested portion of the catcher vessel longline and the under 60' pot and longline vessel quota that is projected to remain unused shall be rolled over to the freezer longliner fleet in September.

The Council voted to sunset this amendment package on December 31, 2003. Continuing the allocations of Pacific cod among the fixed gear sectors (or selecting new allocation percentages) in the BSAI after that date will require Council and Secretarial approval of a new amendment.

In addition, the Council requested NMFS to implement the above amendments by emergency rule as early in 2000 as possible. Without an emergency rule, it is unlikely that this program would have substantial impacts on the 2000 fishery.

4.2 Impacts of the Council's Preferred Alternatives

This analysis will focus on the gross revenue impacts of the fixed gear allocation. While it is recognized that an analysis of net benefits to the Nation is the appropriate method of determining economic impacts, data are currently unavailable to conduct a formal analysis of that type. Instead estimates of gross revenue will be calculated and that information will be supplemented with a qualitative discussion of net benefits to the Nation. This approach will not determine whether the Nation is better off under one allocation alternative or another. However, it will provide information on whether this action is considered significant under E.O. 12866, and provide background information necessary to develop the initial IRFA.

Section 4.1 described the Council's preferred alternatives, including the allocation percentages for all fixed gear sectors. Pot catcher vessels and catcher/processors were allocated an aggregate total of 18.3 percent of the Pacific cod apportioned to the fixed gear sector. Determining the amount that was harvested by pot catcher vessels and pot catcher/processors can be estimated using historical data presented in Tables 1.1 and 3.5. During the 1996-98 time period the pot catcher vessels harvested 74.3 percent of the Pacific cod taken with pot gear and pot catcher vessels harvested the remaining 25.7 percent. Using those data may provide a rough estimate of what the distribution of catch within the pot sector will be in the future. Sub-dividing the pot catch is important because ex-vessel revenue will be calculated for catcher vessels and first wholesale revenue for catcher/processors. That projection assumes that the structure of the fishery will remain constant. The assumption may or may not be valid, especially in light of the changes that have occurred in the opilio crab fisheries. During the time period under consideration the opilio fishery has gone from a low of about 75 million pounds in 1996 to a high of almost 250 million pounds in 1998. The GHL for the 2000 opilio fishery will be less than 30 million pounds. If one portion of the pot sectors cannot survive on the reduced crab harvest levels in future years those relative percentages will likely change. However, if the same relative level of effort by pot catcher vessels and pot catcher/processors moves into the cod fishery after the opilio GHL is harvested, it could still be reasonably assumed that the relative harvest percentages within the pot sector will remain stable.

Changes revenue changes between the baseline and Council's preferred alternative (Table 4.1) are primarily due to two factors. The first being that pot vessels had less catch in 1998 relative to the other years considered by the Council. This is likely due to relatively low cod prices in 1998 and a large opilio GHL. The second factor is the Council's desire to provide fishing opportunities for small catcher vessels. Catcher vessels less than 60' LOA were allocated more cod than they traditionally harvested. Catcher vessels are also projected to generate the lowest first wholesale revenues per metric ton of round cod. Again, it must be stated that the first wholesale revenue estimates for fish delivered by catcher vessels includes trawl caught cod. Including those fish is thought to reduce the projected first wholesale revenue, but we are unable to estimate the level of the reduction. So the reductions in first wholesale revenue between the baseline and the Council's preferred alternative may be overstated.

Table 4.1: Gross revenue estimates for the Council's preferred alternative versus the baseline (1998 fishery)

Alternatives	Longline Vessels		Pot Vessels		Total
	Freezer LL	Catcher Vessels	Catcher/Processors	Catcher Vessels	
Ex-vessel (\$ Millions)					
Baseline	n/a	\$0.01	n/a	\$2.97	\$2.98
Pref. Alt.	n/a	\$0.35	n/a	\$5.04	\$5.39
1st Wholesale (\$ Millions)					
Baseline	\$73.89	\$0.01	\$3.41	\$6.86	\$84.18
Pref. Alt.	\$66.66	\$0.76	\$4.40	\$10.98	\$82.81

Ex-vessel Revenue Assumptions: Ex-vessel price of \$0.192 per pound for pot vessels and \$0.193 per pound for catcher vessels. 1999 TACs will continue into the future and the 1.4 percent allocation to catcher vessels < 60' LOA will be equally harvested by pot and longline vessels. Within the 18.3 percent pot allocation, 75 percent is harvested by catcher vessels and 25 percent by catcher/processors.

First Wholesale Revenue Assumptions: 1999 TACs continue into the future. Freezer longliners generate \$1,010/round metric ton of Pacific cod, Pot catcher/processors \$1,166/round metric ton, and fish delivered by catcher vessels \$923/round metric ton. Within the 18.3 percent pot allocation, 75 percent is harvested by catcher vessels and 25 percent by catcher/processors.

Quota allocated to the fixed gear vessels less than 60' LOA, that NMFS projects will remain unharvested at the end of the year, will be made available to the freezer longline fleet in September. Making projections on the amount of cod that will remain unharvested by the less than 60' LOA catcher vessels is difficult. Several factors will come into play when determining how much cod will remain unharvested. These factors include when the catcher vessels harvest the 0.3 percent allocated to longline vessels and the 18.3 percent to pot boats, the number of vessels that choose to participate, weather, and CPUEs. Each of these factors is expected to impact the small catcher vessels ability to harvest their allocation, especially later in the year.

Pacific cod that are not harvested by vessels fishing the BSAI trawl and jig allocations are made available to the fixed gear sector each fall. In future years cod that are "rolled over" from the trawl and jig sectors of the fleet will be allocated 94.7 percent to freezer longline vessels and 5.3 percent to pot vessels, according to initial projections. Those are the relative percentages of cod that were harvested by those fixed gear sectors from 1996-98.

As stated in section 3.3 of this document, it is not possible to determine the amount of Pacific cod that should be taken off the top of the fixed gear sector's allocation for bycatch using available data. However, initial discussions with in-season management staff at the NMFS AKR indicate that approximately 1,000 metric tons of cod will likely be set aside for bycatch. Section 3.3 provides two scenarios which attempt to describe the impacts that bycatch will have on the percentage of cod harvested by each industry sector. Given the relatively modest bycatch projections, the relative impacts of taking bycatch of cod in fixed gear fisheries "off the top" is expected to cause only modest changes between actual harvest percentages and the allocation percentages selected by the Council for the directed fisheries.

5.0 CONSISTENCY WITH OTHER APPLICABLE LAWS

5.1 Consistency with National Standards

Below are the 10 National Standards as contained in the Magnuson-Stevens Act (Act), and a brief discussion of the consistency of the proposed alternatives with those National Standards, where applicable.

National Standard 1 - Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery

Pacific cod fisheries will be managed as they currently are, regardless of the specific allocations between sectors, to achieve the TAC without overfishing. Pacific cod stocks in the BS/AI are not currently in danger of overfishing and are considered stable. Overall yield in terms of pollock catch will be unaffected by the allocations. In terms of achieving 'optimum yield' from the fishery, the Act defines 'optimum', with respect to yield from the fishery, as the amount of fish which:

- (A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems;
- (B) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and,
- (C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.

Overall benefits to the Nation may be affected by these trade-offs, though our ability to quantify those effects is quite limited. While distributional impacts across fishing industry sectors are certainly implied by the alternatives, overall net benefits to the Nation would not be expected to change to an identifiable degree between the Council's preferred alternative and other alternatives that were under consideration.

National Standard 2 - Conservation and management measures shall be based upon the best scientific information available.

Information in this analysis represents the most current, comprehensive set of information available to the Council, recognizing that some information (such as operational costs) is unavailable. The Council's preferred alternative was selected based on information that appears to be consistent with this standard.

National Standard 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.

The Council's preferred alternative appears to be consistent with this standard - The BSAI Pacific cod stock will continue to be managed as a single stock, although separate quotas for each sector will be established and monitored in-season by NMFS.

National Standard 4 - Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. 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 a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

Allocation percentages being considered are based on industry sectors. Nothing in the alternatives considers residency as a criteria for the Council's decision. Residents of various states, including Alaska and the Pacific

Northwest, participate in each of the major sectors affected by these allocations. Within each sector, no further allocations are made to individual fishermen, nor are discriminations made among fishermen based on residency or any other criteria. Allocations are made based on industry sectors, and do not result in 'the acquisition' of any particular share of the privilege to any individual entity.

National Standard 5 - Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, except that no such measure shall have economic allocation as its sole purpose.

The wording of this standard was changed in the recent Magnuson-Stevens Act authorization, to 'consider' rather than 'promote' efficiency. Efficiency in the context of this change refers to economic efficiency, and the reason for the change, essentially, is to de-emphasize to some degree the importance of economics relative to other considerations (Senate Report of the Committee on Commerce, Science, and Transportation on S. 39, the Sustainable Fisheries Act, 1996). The analysis presents information relative to these perspectives, but does not point to a preferred alternative in terms of this standard. National Standard 5 recognizes the importance of various other issues in addition to economic efficiency.

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

Establishing explicit allocations between the pot and longline sectors will likely reduce the flexibility of fishermen to respond to variations among groundfish and crab stocks. For example, pot fishermen who traditionally rely on crab fisheries for the majority of their income, but switch to cod fishing in response to higher cod prices (or lower crab stocks for example), would still be able to do so, but their overall harvest would now be constrained by adoption of a quota split. Conversely, in the event of lower cod quotas, adoption of a quota split would serve to protect the relatively static freezer longline vessels from increased participation by pot vessels. The freezer longliners have traditionally been the primary harvesters of cod among the fixed gear fleet (75%-85% of the fixed gear quota over the past several years).

National Standard 7 - Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The Council's preferred alternative appears to be consistent with this standard.

National Standard 8 - Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

Many of the coastal communities in Alaska and the Pacific Northwest participate in the crab and groundfish fisheries in one way or another, whether it be processing, support businesses, or as the harbor/home port to fishermen and processing workers. Major groundfish and crab ports in Alaska that process catch from the Bering Sea include Dutch Harbor, St. Paul, Akutan, Sand Point, King Cove, and Kodiak. Additionally, the Seattle, Washington area is home port to many catcher and catcher-processor vessels operating in these fisheries. Summary information on 126 of these coastal communities is provided in the "Faces of the Fisheries" (NPFMC 1994). In terms of potential impacts resulting from the proposed fixed gear cod quota split, the analysts reviewed data on (1) harvest levels by vessels in each sector; (2) price and revenues resulting from that harvest; (3) where those harvests are delivered for processing or for first wholesale (in the case of catcher/processors), and (4) the homeport of vessels engaged in the Pacific cod fisheries. Some of this information was detailed in

Chapter 3 and is summarized below, using 1998 (1997 for catcher vessels) as the most recent year of complete data, and linking it with delivery and homeport date. Jig gear is not addressed as it already is allocated 2% of the Pacific cod TAC and would not be changed under this amendment. Much of the information cannot be presented in its detailed form due to confidentiality restrictions, but is summarized qualitatively. The information presented here does not attempt to trace the full economic impact of these revenues through the communities involved, nor does this analysis attempt to predict changes in such economic activity from the proposed alternatives; rather, it is provided as a broad indicator of the relative importance of the Pacific cod fishery to vessels from these communities in the recent past. The vessels described below, particularly in the case of the catcher vessels, represent only a portion of the total number which may be qualified under the LLP; however, these are the vessels which actually participated in these fisheries in 1997 or 1998.

Freezer Longline Fleet - Community Linkages

Revenue data for this sector was derived from information submitted on Commercial Operator Annual Reports (COAR reports), which reflect first wholesale value of cod and other groundfish and crab species, and has been linked to the vessel owners homeport. This report is not required and is not filed by all freezer longline operations in each year; for 1998 14 of the 36 freezer longliners submitted this report. Based on that information a first wholesale price of 94 cents per pound was derived, and that amount applied to all freezer longliner landings which were then linked to homeport information. The intent is to provide a snapshot of the revenues which might be associated with various coastal communities. The same approach was employed for the other sectors described below.

The majority of the freezer longliner sector is based in the Seattle area (29 of the 36 participating in 1998), though some of these vessels are homeported in Alaska (Kodiak and Petersburg, for example). Based on the landings and first wholesale information, the 1998 first wholesale value of Pacific cod products by vessels based in the Seattle area was over \$75 million, with most of that coming from the H&G product form. To judge the importance of cod relative to other species, data from the 1998 COAR reports was examined. Based on just those reporting in the COAR data (14 of those vessels) the total value from Pacific cod was \$33 million, while total value of all species to these vessels was \$48 million; therefore it can be judged that the majority of income to those vessels (about 66%) is indeed from the Pacific cod fishery.

Freezer longline vessels based in Alaska saw 1998 first wholesale value from Pacific cod on the order of \$12 million - these cannot be broken out by specific community due to confidentiality restrictions. As with the rest of this fleet, H&G product is the primary revenue source.

Longline Catcher Vessel Fleet - Community Linkages

There is very little involvement in this fishery by longline catcher vessels (less than 1% of the fixed gear total), and therefore no discernable impact from the alternatives under consideration. One alternative does allow for a set aside (up to 2% of the fixed gear total or up to 2% of the total TAC) for longline catcher vessels to allow for growth by this sector of the fleet. It is likely that any future involvement by that fleet would result in benefits to Alaskan coastal communities, through deliveries to coastal plants and through income to the participants which could benefit their community of residence. Data show that 19 vessels participated in the directed longline Pacific cod fishery in 1997, though these same 19 vessels also fished several other fisheries and gear types. Total exvessel value of all fisheries for these vessels was \$5.3 million, with Pacific cod caught by longline gear accounting for less than \$300,000, or about 6% of the total. All but three of these vessels were based in Alaska.

Pot Catcher/processor Fleet - Community Linkages

There are but five pot catcher/processors showing up in the data for 1998, with four of those based in Seattle and one in Kodiak. Total first wholesale value attributed to these vessels, from Pacific cod product, was \$2.9 million in 1998, while those reporting on the COAR data totaled \$1.9 million, with the total of all species for these same vessels totaling \$8.5 million (again from the COAR data). This indicates that Pacific cod represents less of the overall income to this sector (20 to 25%) than the freezer longliner sector. Crab is apparently the species of primary importance to this sector.

Pot Catcher Vessel Fleet - Community Linkages

This sector is much more numerous and more widely dispersed geographically than any of the other sectors involved in the Pacific cod fishery. They also exhibit a wider variety of fisheries and gear types, in addition to fishing for cod with pot gear. The 1997 data show 87 catcher vessels which targeted Pacific cod with pot gear, with 29 of those from Alaska and 58 from Washington or other states. Total revenues attributable to Pacific cod caught with pot gear, for all 87 vessels was \$6.4 million, while total revenues for these same vessels in all fisheries (all species and gear types) totaled \$60 million, so Pacific cod represented about 10% of their total revenues. Crab fisheries accounted for the majority of the revenues for these vessels (\$51 million), while pollock trawling accounted for another \$1.2 million.

In terms of community of origin, the 29 vessels from Alaska had Pacific cod revenues of \$2.1 million, while the other 58 vessels had cod revenues of \$4.3 million. Those 58 vessels are widely distributed throughout the Pacific Northwest, while the Alaska-based vessels were primarily from Kodiak, King Cove, Anchorage, and Dutch Harbor. The vast majority of revenues for this sector (from Pacific cod and other species) was from vessels >50' in length.

Processors Taking Catcher Vessel Deliveries

Other than from trawl vessels, deliveries of BSAI cod to shorebased processors comes almost exclusively from pot boats. In 1998 less than 20 mt was delivered by longline catcher vessels, while just over 9,000 mt was delivered by pot catcher vessels. The vast majority of those deliveries were to shore plants in Dutch Harbor and Akutan, with some deliveries to King Cove. These deliveries of Pacific cod contribute to the economies of the shore plants and the communities in which they are located, though these amounts are unlikely to be significant in the context of the other groundfish, pollock, and crab processing activities that occur in these same plants and communities. With the exception of the King Cove plant, they all have small purchases of Pacific cod relative to other groundfish, particularly pollock. To the extent they do purchase cod, the majority of that comes from trawl deliveries (about 28,000 mt in 1998). For the King Cove plant, Pacific cod does constitute the majority of their groundfish purchases (over half), with nearly half of that amount coming from pot vessels.

A split of the quota as proposed would constrain the amount of cod going to these plants, assuming that pot vessel harvest and deliveries would increase under the baseline (no split). However, these same plants are likely to be limited to their historic levels of cod processing anyway, via the sideboard provisions of the American Fisheries Act (AFA).

National Standard 9 -Conservation and management measures shall, to the extent practicable, (A) minimize bycatch, and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

Chapter 1 presented information on historical bycatch patterns in the Pacific cod fixed gear target fisheries. In summary, bycatch rates in the Pacific cod fisheries are low overall. Some differences among sectors are evident, with the longline sector having higher halibut bycatch, while the pot sector has higher crab bycatch. Because

the Council's preferred alternative would establish a quota split similar to what has occurred in the recent past, it would not be expected to have any significant bycatch implications.

National Standard 10 - Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The Council's alternatives appears to be consistent with this standard. None of the changes in the fixed gear allocation percentages would change safety requirements for fishing vessels.

5.2 Section 303(a)(9) - Fisheries Impact Statement (Spillover Impacts)

This section of the Magnuson-Stevens Act requires that any management measure submitted by the Council take into account potential impacts on the participants in the fisheries, as well as participants in adjacent fisheries. Potential impacts to other fisheries could result from a change in the Pacific cod fixed gear apportionments, as vessels which may be constrained by that allocation may move into other fisheries to attempt to make up lost revenues. Pot vessels which are qualified in the crab fisheries, and would be constrained by a cod quota split, could exert additional effort in the crab fisheries, or, they may exert additional effort in Gulf of Alaska state water cod fisheries which are not limited entry, and which are limited to pot and jig gear.

5.3 Initial Regulatory Flexibility Analysis (IRFA)

The Regulatory Flexibility Act (RFA) first enacted in 1980 was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a federal regulation. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Among other things, the new law amended the RFA to allow judicial review of an agency's compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant economic impact on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the Small Business Administration (SBA) to file *amicus* briefs in court proceedings involving an agency's violation of the RFA.

In determining the scope, or 'universe', of the entities to be considered in making a significance determination, NMFS generally includes only those entities, both large and small, that can reasonably be expected to be directly or indirectly affected by the proposed action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this criterion.

Currently, insufficient quantitative economic information exists on the fishery under review to determine the economic significance of this action. In the absence of such quantitative social and economic data, a qualitative-based Initial Regulatory Flexibility Analysis is conducted below to comply with the RFA.

5.3.1 Requirement to Prepare an IRFA

If a proposed rule is expected to have a significant economic impact on a substantial number of small entities, an initial regulatory flexibility analysis must be prepared. The central focus of the IRFA should be on the economic impacts of a regulation on small entities and on the alternatives that might minimize the impacts and still accomplish the statutory objectives. The level of detail and sophistication of the analysis should reflect the significance of the impact on small entities. Under 5 U.S.C., Section 603(b) of the RFA, each IRFA is required to address:

- * A description of the reasons why action by the agency is being considered;
- * A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- * A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- * A description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- * An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;
- * A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the Magnuson-Stevens Act and any other applicable statutes and that would minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:
 1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
 2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
 3. The use of performance rather than design standards;
 4. An exemption from coverage of the rule, or any part thereof, for such small entities.

5.3.2 Definition of a Small Entity

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a 'small business' as having the same meaning as 'small business concern' which is defined under Section 3 of the Small Business Act. 'Small business' or 'small business concern' includes any firm that is independently owned and operated and not dominate in its field of operation. The SBA has further defined a "small business concern" as one "organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the form is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture."

The SBA has established size criteria for all major industry sectors in the US including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned

and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of \$3 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the \$3 million criterion for fish harvesting operations. Finally a wholesale business servicing the fishing industry is a small businesses if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

The SBA has established "principles of affiliation" to determine whether a business concern is "independently owned and operated." In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern's size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50% or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50% of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors or general partners controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint venturers if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

Small organizations. The RFA defines "small organizations" as any nonprofit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions. The RFA defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of less than 50,000.

5.3.3 Reason for Considering the proposed action

Members of the fixed gear sector have expressed concerns that structural changes in other fisheries, fluctuations in relative fish prices, and fluctuations in TACs/GHLs might disrupt the current fixed gear Pacific cod fishery.

Freezing the current catch distributions in regulation was considered as a reasonable first step to help mitigate against future potential instability among participants in these fisheries.

5.3.4 Objectives of, and legal basis for, the proposed action

The legal basis for this action is that allocation of Pacific cod TAC is allowed under the Magnuson-Stevens Fishery Conservation and Management Act.

5.3.5 Number and description of affected small entities

For purposes of the IRFA, all Pacific cod longline and pot catcher vessels can be considered small businesses, with annual receipts of less than \$3 million. Under proposed Amendment 60 to the BSAI Groundfish FMP, a total of about 330 catcher vessels would receive licenses to participate in the Bering Sea Pacific cod fixed gear fishery (note that only about 250 vessels participated at any time from 1995-98). The pot fleet, in most cases earns most of their revenues in the crab fisheries, but supplements that income with revenues from cod. Eighty-five of the 88 pot vessels appear to have had revenues of less than \$3 million in 1997. The vessels that would be considered large entities were either affiliated under owners of multiple vessels or were catcher/processors. However, little is known about the ownership structure of the vessels in the fleet. So, it is possible that this IRFA overestimates the number of small entities.

An unknown number of the 98 catcher/processor vessels endorsed for the Pacific cod fishery could be considered small entities (note that only 53 catcher/processors participated at any time from 1995-98). However based on 1998 data, it appears that about 16 of the 36 freezer longline vessels participating in the Pacific cod fishery had annual receipts of less than \$3 million. This constitutes over one-third of the vessels in that sector.

Shorebased plants and floating processors operating within Alaskan waters process most of the Pacific cod harvested by pot and longline catcher vessels. Five of these processors will likely be considered small entities with less than 500 employees. In total they processed less than 150 mt of BSAI Pacific cod in 1998. The other five processors would be considered large entities, and they processed the vast majority of the shoreside landings in 1998 (about 9,000 mt).

Two communities are home to the primary shorebased processors of BSAI Pacific cod. Those communities are Dutch Harbor and Akutan. Other communities also are home to shorebased processors that process limited amount of BSAI Pacific cod. These communities are King Cove, Egegik, and Kenai.

Vessels are home ported or owned by persons living throughout Alaska, the Pacific Northwest, and other states in the US. Each of the Alaska communities would be considered small entities, as would some of the communities in other states. A discussion of the relative importance of the cod fisheries to these communities was included in chapter 4 under the National Standard 8 heading.

5.3.6 Relevant Federal rules that may duplicate, overlap, or conflict with proposed action

This analysis did not uncover any existing Federal rules that duplicate, overlap, or conflict with any of the actions proposed in the Alternatives.

5.3.7 Measures taken to reduce impacts on small entities

As with many allocation based management measures, the alternatives propose a percentage allocation of the TAC among competing groups of vessels - in this case vessels in each group are primarily small entities representing a tradeoff in terms of impacts; i.e., some small entities could be negatively impacted, and other

positively impacted. The Council's preferred alternative will allocate more cod to catcher vessels delivering to shore based processors than they have historically harvested. That allocation will tend to benefit small entities. The freezer longline fleet, with the highest proportion of large entities, will receive a smaller allocation to balance the increase given to small catcher vessels.

Nothing in the proposed amendment would result in any changes in reporting or recordkeeping requirements, or any obvious disproportionate regulatory impacts to small entities relative to large. From one perspective, setting a percentage allocation will keep one sector from increasing its share relative to what it could do under the status quo. From the information in the analysis, and from public testimony, it appears likely that the pot sector is more likely to increase its relative share in the absence of a quota split. From another perspective, adoption of the Council's preferred alternative would serve to increase the current share of the smallest entities.

A future action being considered by the Council may have mitigating effects to some degree. One of the points raised in opposition to a split is that there is considerable latent capacity in the pot fleet (many pot vessels are qualified under the LLP but to date have not participated to a great degree in the cod fisheries), and freezing that sectors' share of the cod quota will disadvantage those pot vessels which do participate significantly in the cod fishery. They will have potential competition for a relatively small quota from a relatively large number of qualified vessels. There are also longline vessels which represent potential latent capacity and could impact that sector in the same way, though the degree of that potential is relatively less for that sector. In any case, the Council is developing a follow-up amendment which would create species and gear LLP endorsements for the cod fisheries, based on some minimum level of landings or years of participation. The intent of that amendment is to eliminate the latent capacity described above, and create a more stable operating environment for the remaining vessels in each of the fixed gear sectors.

5.3.8 Conclusion

Most persons operating in the fishery impacted by the proposed action are small entities given their expected annual gross revenues less than \$3 million. The ownership characteristics of vessels operating in the fishery have not been analyzed to determine if they are independently owned and operated or affiliated with a larger parent company. Furthermore, because NMFS cannot quantify the exact number of small entities that may be indirectly affected by this action, or quantify the magnitude of those effects, NMFS cannot make a definitive finding of non-significance under the RFA. However, because the proposed action(s) would result in 'freezing' a percentage distribution very close to the baseline, impacts would be expected to be minimal relative to the No Action alternative. Again, this assumes that the distribution of harvest would not change significantly under the No Action alternative. Estimates of such a potential change in the absence of an allocation cannot be made, though indications are that the pot sector would increase its relative share of the harvest, especially given the current opilio GHL. In that case, a number of small entities could be negatively impacted, though the magnitude of that impact (and whether it would be 'substantial') cannot be determined.

It is possible that potential revenues could be decreased by more than 5% for that sector, but that depends on the level of catch which might have been achieved in the absence of an allocation. For example, if the current share for pot vessels is 17%, and an allocation of 20% is made, they have 3 percentage points (or about an 18% increase in harvest) over their current share, even though such an allocation limits them relative to what they might have achieved. Impacts of this action on potential revenues cannot be isolated from other factors including price fluctuation, amount of effort exerted by latent permits, and stock fluctuation of alternative fisheries such as crab. Additional detail will be provided in the Final Regulatory Flexibility Act analysis by NMFS, after the Council makes a final decision on this amendment package. However, no substantial changes in the structure of the fishery are expected to occur as a result of the options under consideration.

5.4 Qualitative Benefit Cost Analysis

Cost data for the proposed action fishery's harvesting and processing sectors are not currently available. For this reason, we cannot complete a quantitative cost/benefit examination of the preferred alternative, nor derive comparative net benefit conclusions about the several competing alternatives and sub-options. However, because this action will not eliminate the fishery or even reduce the annual Pacific cod TACs, we can conclude that the net benefits to the US economy would not decrease by \$100 million annually once costs were included in the calculation. Therefore, based on this one criterion, none of the alternatives constitute a 'significant' action under E.O. 12866, recognizing that there may be distributional economic impacts among the various sectors of the industries affected by this proposed action, also recognizing that, in general, distributional results will be substantially similar to the current situation.

5.5 Conclusion

None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866.

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