UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

DEC 18 1998

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE: Amendment 51 to the Fishery Management Plan for Groundfish of the Gulf of Alaska and Amendment 51 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands

LOCATION: Federal Waters of the Gulf of Alaska

SUMMARY: Amendments 51 and 51 continue the catcher vessel operational area in the Bering Sea but exclude catcher vessels catching pollock for the offshore sector, allocate 100 percent of pollock in the Gulf of Alaska to the inshore component, allocate Gulf of Alaska Pacific cod as follows, 90 percent to the inshore component and 10 percent to the offshore component, and extend the allocations in the Gulf of Alaska for the period, January 1, 1999, through December 31, 2001.

RESPONSIBLE OFFICIAL:
Steven Pennoyer
Administrator
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National Marine Fisheries Service
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The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact, including the environmental assessment, is enclosed for your information. Also, please send one copy of your comment to me in Room 5805, PSP, U.S. Department of Commerce, Washington, D.C. 20230.

Sincerely,

Susan Fruchter

Susan Fruchter, Director
Director of the Office of Policy
and Strategic Planning

Enclosure

Final Environmental Assessment
Regulatory Impact Review
Initial Regulatory Flexibility Analysis

Amendments 51/51
(Inshore/Offshore 3)

Prepared by
Staff

North Pacific Fishery Management Council
National Marine Fisheries Service
Alaska Fishery Science Center

December 9, 1998

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List of Acronyms

Acronym	Definition
AAC	Alaska Administrative Code
ADF&G	Alaska Department of Fish & Game
AKR	NMFS Alaska Region
AP	Advisory Panel
APEC	Asia-Pacific Economic Cooperation
AYK	Angoon-Yukon-Kuskokwim
BANR	Blair-Atkinson News Report
BOD	Biochemical Oxygen Demand
BS/AI	Bering Sea/Aleutian Islands
CDQ	Community Development Quota
CMS	Centimeters
CP	Catcher Processor
CPUE	Catch Per Unit Effort
CRP	Comprehensive Rational Program
CV	Catcher Vessel
CVOA	Catcher Vessel Operating Area
DAH	Domestic Annual Harvest
DAP	Domestic Annual Processing
DCRA	Alaska Department of Community and Regional Affairs
DO	Dissolved Oxygen
DOR	Alaska Department of Revenue
EA	Environmental Assessment
EEZ	Exclusive Econmic Zone
EIMWT	Echo-Integration Midwater Trawl
EIS	Environmental Impact Statement
EIT	Echo-Integration Trawl
EO	Executive Order
ESA	Endangered Species Act
EU	European Union
FAO	Food and Agricultural Organization
FMP	Fishery Management Plan
FOB	Free on Board
FONSI	Finding of No Significant Impact
FR	Federal Register
FRFA	Final Regulatory Flexibility Analysis
FWS	US Fish and Wildlife Service
GHL	Guideline Harvest Level
GOA	Gulf of Alaska
IFQ	Individual Fishing Quota
I/O1	Inshore/Offshore 1
I/O2	Inshore/Offshore 2
I/O3	Inshore/Offshore 3
I/O4	Inshore/Offshore 4
IAI	Impact Assessment, Inc.
INPFC	International North Pacific Fisheries Commission
IR/IU	Improved Retention/ Improved Utilization
IQF	Individually Quick Frozen
IRFA	Initial Regulatory Flexibility Analysis
JV	Joint Venture
JVP	Joint Venture Processing
LLP	License Limitation Program
LOA	Length Overall
MMT	Million Metric Tons
MS	Mothership
MT or t	Metric Ton
NEPA	National Environmental Policy Act of 1996
NM	Nautical Miles
NMFS	National Marine Fisheries Service
NOAA GC	National Oceanic and Atmospheric Administration General Counsel
NPFMC	North Pacific Fishery Management Council
OFL	Over Fishing Level
PRR	Product Recovery Rate
PSC	Prohibited Species Bycatch
RFA	Regulatory Flexibility Analysis
SAFE	Stock Assessment Fishery Evaluation
SEIS	Supplemental Environmental Impact Statement
SIA	Social Impact Analysis
SSC	Scientific and Statistical Committee
TAC	Total Allowable Catch
TALFF	Total Allowable Level of Foreign Fishing
TMDL	Total Maximum Daily Load
WGOA	Western Gulf of Alaska
WPR	NMFS Weekly Production Reports

EXECUTIVE SUMMARY

Elements of the Council's Preferred Alternative

The North Pacific Fishery Management Council (Council) selected their preferred alternatives for the Gulf of Alaska (GOA) and the Bering Sea and Aleutian Islands (BS/AI) at the June Council meeting in Dutch Harbor. The current allocation in the GOA was rolled over for three more years. This means that 100% of the GOA pollock and 90% of the GOA Pacific cod will be allocated to the inshore sector. The offshore sector is allocated the remaining 10% of the GOA Pacific cod total allowable catch (TAC). This allocation will be in effect through December 31, 2001. If further action is not taken by the Council, the inshore/offshore allocation will expire before the 2002 fishing season.

The Council's preferred alternative in the BS/AI allocates 39% of the pollock TAC to the inshore sector and 61% to the offshore sector. The current allocation allocates 35% inshore and 65% offshore, so the preferred alternative shifts 4% of the BS/AI pollock TAC inshore. In addition to changing the basic allocation percentages, the Council also created a set-aside for catcher vessels <125' length over all (LOA) which may only be delivered to the inshore sector. The set-aside will consist of 2.5% of the combined BS/AI TAC (after CDQs are deducted), and will be harvested prior to the B-season, starting on or about August 25. The inshore B-season quota will be adjusted to account for any overage or underage resulting from that year's set-aside fishery. A change was also made to the catcher vessel operational area (CVOA). Under the Council's preferred alternative, all vessels in the offshore sector must operate outside the CVOA during the B-season. Currently, catcher processors are restricted from operating inside the CVOA during the B-season, while motherships are allowed to operate inside. The BS/AI allocation, like the allocation in the GOA, is scheduled to sunset after three years (December 31, 2001).

This section was provided to describe the elements of the Council's preferred alternatives. Impacts of these alternatives are presented in the appropriate chapters of this document.

Chapter 1

This Chapter of the document describes the management background and contains a summary of historical inshore/offshore issues, including previous Problem Statements and the results from the I/O1 and I/O2 analyses. The current Problem Statement and list of alternatives being considered are also contained in this chapter. Alternatives for the GOA are limited to (1) No Action - allow the allocations to expire, or (2) extend the existing allocations which are 100% of pollock and 90% of Pacific cod allocated to vessels delivering inshore. The time frame for the GOA extensions could be one to three years, or until replaced by other measures related to the comprehensive rationalization program (CRP).

BS/AI alternatives include (1) No Action - allow allocations to expire; (2) rollover of the existing allocations; (3) a range of possible reallocation alternatives among sectors; and, (4) a new alternative (added in April 1998) which makes direct allocations to smaller catcher vessels, without delivery requirements, combined with partial 'guarantees' for processor sector deliveries. Additional alternatives are being considered relative to the Catcher Vessel Operational Area (CVOA), relative to suballocations to vessel categories within the major sectors, and relative to a separate allocation for a "true" mothership category.

Chapter 2

This Chapter is devoted entirely to the GOA allocation alternatives and is essentially the only place in the document that the GOA alternatives are addressed. Background information on the GOA pollock and Pacific cod fisheries is provided, though the analysis is primarily qualitative in nature, reflecting the scope of alternatives (expiration or continuation of the existing allocations) and relatively straightforward decision facing the Council with regard to the GOA. This chapter assesses the GOA alternatives in a threshold manner; i.e., whether it can be shown that one alternative is superior to the other, in the context of the Council's Problem Statement, including the primary issues of industry stability and management considerations.

In terms of industry stability, the analysis illustrates the relatively small quotas of both Pacific cod and pollock in the GOA (compared to the BS/AI), the ability for these quotas to be harvested and processed by the resident GOA fishing fleet and GOA based processors, and the importance of that fishing and harvesting activity to the fishermen, processors, and communities within which they reside. Allowing the allocations to expire would potentially allow significant amounts of catcher/processor vessel capacity into the GOA fisheries, resulting in potentially dramatic re-apportionment of the harvest and processing activities for both pollock and Pacific cod. With these allocations in place for six years now, the harvest and processing industries have adapted to a relatively stable business planning environment. Alternative 2, extending and maintaining the current allocations, is necessary to maintain this balance in the GOA and is the only alternative which is consistent with the Council's Problem Statement for the GOA. Existing within-sector preemption issues (primarily with regard to western/central GOA pollock and Pacific cod harvest by catcher vessels) are being addressed by separate Council initiatives, including development of additional management alternatives by a Council appointed Committee of industry representatives.

Pollock fisheries in the GOA are apportioned on a quarterly (now trimester) basis, primarily to spread the fishery out temporally to address marine mammal concerns. The small quotas are difficult for NMFS to manage on an in-season basis and frequent quota overruns have occurred within these seasonal apportionments. Allowing additional, high-power fishing capacity in these fisheries would exacerbate management difficulties and defeat the recent progress made by the agency in managing the GOA pollock fisheries. Continuation of the current allocations appears to offer far greater benefits (relative to Alternative 1 - allowing the allocations to expire) in terms of management considerations and marine mammal considerations.

After reviewing the information in this section of the document, the Council selected the option that rolls over the current GOA allocations for three more years. This option was felt to provide the industry more stability than allowing the current allocation to expire.

Chapter 3

This Chapter, along with information in Appendix 1, contains the baseline information for the BS/AI pollock fisheries. Primarily this is 1996 information, the most recent year for which we have 'complete' data. Major findings include the following:

- Current TAC levels for BS/AI pollock (1.1 mmt) are expected through at least the year 2000 and are therefore assumed to be at that level for the purposes of this analysis. We have also assumed that 7.5% of the 1.1 mmt TAC will be allocated to CDQ fisheries.

- Season lengths have declined for both sectors under the existing allocations. During the A-season the offshore sector has markedly lower season lengths compared to the inshore sector, while B-season lengths are very similar for both sectors. From 1992 to 1997 the overall season length (A and B seasons combined) has declined from 159 days to 75 days for the inshore sector, and from 103 days to 56 days for the offshore sector, a relatively similar decline for both sectors.

- In terms of catch and production over time, the inshore sector's share of the total increased from 26% to 34% under the existing allocations, while their actual tonnage has remained virtually unchanged. The "true" mothership share has increased over time from 9% to around 11.5% (in 1997), while the actual tonnage was a slight decrease. The offshore sector share declined from about 67% in 1991 to about 56% in 1997, while the actual tonnage declined significantly, by about 35%. The Tables E.1 and E.2 below summarizes the catch and relative shares over time, including a further breakdown of the offshore sector for the "true" motherships and for that portion of the offshore sector which is from catcher vessel deliveries.

Table E.1 Harvest of Pollock in Pollock Target Fisheries (Includes CDQ)

Industry Sector	1991	1994	1996	1997
C/Ps Own Catch	1,005,803	733,018	582,208	556,272
C/V Deliveries to C/Ps	22,436	35,031	63,386	44,612
C/P Total	1,028,239	768,049	645,594	600,884
"True" Motherships	144,138	113,077	121,959	123,571
Inshore (Shoreplants)	375,570	375,602	324,846	296,421
Inshore (Motherships&C/Ps)	32,372	48,519	70,696	58,370
Inshore Total	407,942	424,121	395,542	354,791
Grand Total	1,580,319	1,305,247	1,163,095	1,079,246

Table E.2 Harvest of Pollock in Pollock Target Fisheries (Includes CDQ)

Industry Sector	1991	1994	1996	1997
Inshore (Shorebased plants)				
% of Inshore	92.06%	88.56%	82.13%	83.55%
% of Total	23.77%	28.78%	27.93%	27.47%
Inshore (Motherships&C/P)				
% of Inshore	7.94%	11.44%	17.87%	16.45%
% of Total	2.05%	3.72%	6.08%	5.41%
Inshore Total	25.81%	32.49%	34.01%	32.87%
"True" Motherships				
% Offshore	12.29%	12.83%	15.89%	17.06%
% Total	9.12%	8.66%	10.49%	11.45%
Offshore C/Ps (All Processing)				
% Offshore	87.71%	87.17%	84.11%	82.94%
% Total	65.07%	58.84%	55.51%	55.68%
C/V Deliveries to Offshore C/Ps				
% of CP	2.18%	4.56%	9.82%	7.42%
% of Offshore	1.91%	3.98%	8.26%	6.16%
% of total	1.42%	2.68%	5.45%	4.13%
Offshore Total (C/Ps & True MS)	74.19%	67.51%	65.99%	67.13%

- Regarding the distribution of catch among catcher vessels, relative share for small catcher vessels (<125') overall has declined over time, from about 65% in 1991 to about 42% in 1996 - the number of catcher vessels in this 'small' category has increased from 71 in 1991 to 89 in 1996. Vessels from 125'-155' have increased in numbers over time (from 6 in 1991 to 20 in 1996) and catch share (from 14% in 1991 to 37% in 1996). Numbers (7 in 1991, 10 in 1994, 9 in 1996) and catch share (less than 20%)for the largest category of catcher vessels (>155') have remained fairly constant over this same period.

- For both inshore and offshore sectors, approximately 96% of the total pollock catch is taken in pollock target fisheries. In terms of pelagic vs bottom trawl mode (in target pollock fisheries), the inshore sector takes about 97% in pelagic mode, and the offshore sector takes about 91% in pelagic mode.

- NMFS published product recovery rates (PRRs) are currently utilized as part of the blend data in estimating overall catch for the offshore sector. PRRs were used for catch estimation for the inshore sector prior to 1992 (scale weights are now used). Catch estimation procedures are therefore different for the two sectors, but represent the best available information and are what is used to manage TAC attainment in the fisheries.

- Overall utilization rates, across all product forms, are calculated to indicate the amount of product derived from raw fish input. Utilization rates have changed over time, with improvement in both sectors, though the inshore sector utilization rates have improved more dramatically, from 23% in 1991 to 33% in 1996, while the offshore overall rate has gone from about 17% in 1991 to near 21% in 1996.

- Discard rates of pollock in pollock target fisheries are very low for all sectors - approximately 2.5% for offshore operations and around 1% for inshore and "true" mothership operations (1996 data). Future economic discards of pollock are assumed to be zero due to provisions of the IR/IU program. Continued regulatory discarding may occur, but is not quantifiable without further experience under the IR/IU program, but is expected to be minimal overall.

- Prices used in the analysis are as follows:

  The ex-vessel price for pollock delivered to inshore processors is $0.085/lb, and was derived from the 1996 COAR data. The offshore price used in this analysis is $0.0744/lb, and is set equal to 87.5% of the inshore price.

  First wholesale prices for both the inshore and offshore sectors were derived from 1996 COAR data, except for the offshore mince price. Only one offshore processor reported a mince price in the 1996 COAR, and confidentiality standards do not allow that price to be reported. In that one case, data supplied by the At-sea Processors Association was used in the analysis.

- Because the offshore sector was not well represented in the COAR data, the At-sea Processor's Association provided data on 14 of their vessels to verify the offshore component of the COAR report. The results of that comparison showed that prices were almost identical in both the COAR and APA data. The COAR prices are reported in Table E.3.

Table E.3 First Wholesale Prices Reported by Alaska Processors

	Fillets&Blocks Skinless-Boneless &DeepSkin	Fillets&Blocks Skinless-Boneless	Fillets&Blocks DeepSkin	Roe	Surimi	Meal	Minced[1]
Inshore	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb
1991	1.38			3.79	1.26	0.26	
1994		0.71	1.11	3.65	0.91	0.22	
1996		0.96	1.24	4.52	0.82	0.30	0.52
Offshore							
1991	1.38			4.66	1.58	0.25	
1994		0.71	1.11	5.79	0.94	0.22	
1996		0.96	1.24	6.03	0.86	0.29	0.42[1]

Source: 1991, 1994, and 1996 COAR data.

Note: To protect the confidentiality of processors, fillet prices are based on combined inshore and offshore data.

Minced prices for 1991 and 1994 were not estimated.

[1] / The 1996 Offshore Minced price was provided by the At-sea Processors Association (APA) as only one At-sea company reported minced prices to ADF&G in the COAR. If APA and ADF&G data were combined the 1996 Offshore minced price would be $0.45.

- Product mix is assumed throughout the analysis to remain proportional to the 1996 information. In summary, this is shown below, for major product forms, by sector:

Table E.4 Pollock Products Processed During 1996 (mt)

Inshore/Offshore Class	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Catcher Processor Total	57,938	7,851	6,035	25,214	12,312	344	7,346
Inshore Total[1]	71,349	2,626	9,229	7,442	27,864	8,514	4,417
"True" Mothership Total	21,992	-	-	-	5,016	353	1,075
Grand Total	151,279	10,478	15,263	32,657	45,192	9,211	12,838

[1] / The Shoreside total includes CDQ production. The other sectors do not include CDQ in this summary table.

- Regarding foreign ownership of pollock harvesting and processing operations, the inshore processing sector and the "true" mothership processing sectors exhibit a significant degree of non-U.S. ownership (primarily Japanese). Four of the six principle shorebased processors were affiliated with Japanese parent companies. The two other plants operating inshore were owned by the same US company. The two inshore motherships were both US owned. One of the three "true" motherships was US owned. The offshore catcher/processor fleet exhibits significant degrees of non-U.S. ownership (primarily Norwegian) though that also varies across companies and vessels. Overall, 20 catcher processors appear to have some foreign ownership, while the remaining 17 are fully US owned. The catcher vessel fleet is a mixed bag with 14 catcher vessels delivering inshore having some foreign ownership, and eight catcher vessels delivering to offshore processors having some foreign ownership.

- Employment information is contained in Appendix I, Tab 6 - an attempt was made to provide comparable information for both inshore and offshore sectors regarding total employment and relative degree of Alaskan employment. The information is not specific to pollock fishing/processing activities, though the information provided for the at-sea sector is only from member companies of the At-sea Processor's Association (APA), which are primarily pollock-intensive operations. While care should be taken in making direct comparisons of this information, it does illustrate an overall low level of Alaskan employment by both sectors - around 14% Alaskan residents for the inshore sector (overall) and around 8% for the offshore sector (APA companies).

- Overall bycatch of PSC species (by rate and by total volume) is quite low in the pollock fisheries, with the exception of salmon and herring, for all sectors involved. The 1996 fishery information illustrates the trade-offs associated with PSC bycatch when comparing the sectors. The catcher processor fleet, in general, had higher bycatch of halibut, herring, and crab species, while the inshore and "true" mothership sectors showed higher bycatch of chinook salmon. Looking at 'other' salmon specifically, the "true" mothership sector, takes 'other' salmon (primarily chum) at a higher rate than any other processing sector. While these trade-offs are reflected across the alternatives being considered, none of the alternatives is expected to significantly change the overall bycatch (by rate or volume) across PSC species.

- Regarding vessels which participated in BS/AI pollock target fisheries anytime between 1992 and 1996, and which also participated (checked in or out) in Russian water fisheries, the information shows that 22 such vessels fished in Russia in 1992, only one did so in 1993 and one again in 1994, three in 1995, and five in 1996. All of these vessels were catcher/processors when they fished the BS/AI pollock fisheries.

- Regarding state and local fish tax payments, both the inshore and offshore sectors pay such taxes. Some 'leakage' occurs where deliveries are landed outside Alaska, or transhipped overseas, and the tax is not applied. Primarily this leakage has occurred with the offshore catch landings tax ("true" motherships included in this sector), and has run at about 16 to 18% of the offshore total catch (1996 and 1995 respectively).

Chapter 4

This Chapter contains the projections for the major allocation alternatives, including the expected amounts of each product (assuming proportions realized in the 1996 fisheries) under each primary allocations alternative and the gross revenue changes associated with each primary alternative (recognizing that the Council may choose any percentage within the ranges specifically analyzed).

Table E.5 reports the relationship between a 50,875 mt change in each sector's allocation (5% of the 1,017,500 mt CDQ-adjusted TAC) and the change in total gross revenue (both ex-vessel and first wholesale) and the products produced within the sector. All of the information reported in Table E.5 represents the change from the status quo allocation. Because the calculations are linear, the effects of other allocation amounts may be calculated easily using the information in the table. For example, an allocation that would grant a sector 7.5% more of the TAC would increase their revenues and products by 1.5 times those listed in Table E.5.

Table E.5 Changes resulting from a 5% shift in the BS/AI Pollock TAC within each industry sector

	Inshore	"True" Mothership	Catcher Processor
% Change Within the Sector[1]	14.3 %	50.0 %	9.1 %
Raw Fish (mt)	50,875	50,875	50,875
Cat. Ves. Gross Rev. (ex-ves, $ millions)[2]	$ 9.5	$ 8.3	$ 0.8
Gross Revenue (1st Wholesale, $ millions)	$ 30.1	$ 26.8	$ 27.1
Surimi (mt)	9,179	9,910	5,149
Minced (mt)	338	-	698
Fillet/Block and IQF (mt)	1,187	-	536
Deep Skin Fillet (mt)	957	-	2,241
Meal (mt)	3,585	2,260	1,094
Oil (mt)	1,095	159	31
Roe (mt)	568	484	653

1/ The percentage change within a sector is calculated as (((status quo tons + 50,875)/(status quo tons))- 1)*100. So, it represents the percentage increase that sector will receive.

2/ Only the catch delivered by catcher vessels is included for catcher processors.

Note: A 5% TAC decrease to a sector will result in numbers of equal magnitude, but with a negative sign

Also included are more qualitative assessments of various sub-options being considered. These include: (1) potential separation of "true" motherships with their own allocation; (2) sub-allocation of the inshore quota to small (<125') catcher vessels; (3) sub-allocation of the offshore quota to catcher vessels delivering offshore; and, (4) options for the duration of the allocation (sunset alternatives).

In 1996, deliveries to the three "true" motherships accounted for about 10% of the BS/AI pollock catch. The Council is considering allocating 5-15% of the BS/AI TAC to this sector. There is still some question regarding who is classified as a "true" mothership. Under the strictest interpretation only about six vessels could be classified as "true" motherships, and this raises limited entry questions.

An allocation of 40-65% of the inshore quota is being considered for catcher vessels less than 125'. This roughly covers the range that subsector has taken over time (it has decreased to about 40% currently). This suboption could not be implemented in 1999. NMFS current catch accounting system will need to be modified before this allocation could be monitored. This does not mean the Council cannot consider this option, but actual implementation would be delayed beyond the January 1, 1999 start of I/O3.

A set aside of 9-15% of the offshore quota is also being considered by the Council. In 1996, catcher vessels delivered about 10% of the pollock catcher processors processed (down to 7.4% in 1997). So, the low range of the allocation represents the catcher vessels largest historical percentage of pollock processed by offshore catcher processors. This allocation could be monitored in 1999 as long as there were no catcher vessel length restrictions associated with this allocation.

The Council may choose to keep I/O3 in effect until replaced by CRP. However, there is still a question of what is meant by CRP. The Council is also considering two potentially shorter allocations. A sunset date one year after implementation of I/O3 would require the Council to immediately begin analysis of I/O4. One additional year would likely not provide enough time to collect the necessary data and do a formal cost/benefit analysis. It would also create an unstable planning environment for the fleet. The three year sunset would likely resolve most of the problems associated with a one year allocation.

A new option was added to the Inshore/offshore suite of alternatives call the "Harvester's Choice". This allocation would create a set-aside for catcher vessels less than 125' LOA (a second option would include catcher vessels 155' LOA or shorter in the set-aside). The set-aside would be created using 40-65% of the inshore quota, 9-15% of the offshore (catcher processor) quota, and 100% of the "true" mothership quota. Once the quota is placed in the set-aside, the catcher vessels would be allowed to deliver their catch (from the set-aside) to any processing sector. This will result in less pollock being guaranteed to each processing sector. However, depending on their success in purchasing pollock from the set-aside, they may be able to process more BS/AI than they would have received under the initial allocation.

Including catcher vessels from 125' through 155' in the set-aside will likely reduce the benefits of this option for catcher vessels less than 125' LOA. Catcher vessels less than 125' LOA have had their share of the inshore quota reduced from 65% in 1991 to 42% in 1996. All of that reduction was the result of increased harvest in the 125' through 155' catcher vessel class. Catcher vessels greater than 155' harvested 19% of the inshore quota in 1991 and 1996.

According to NMFS the "Harvester's Choice" option could not be implemented in 1999. However, the Council may select this option with the understanding that NMFS would implement the set-aside when their in-season catch accounting system was changed to track catch at the harvest vessel level.

After considering all of their options the Council selected a preferred alternative for the BS/AI which will move an additional 4% of the TAC inshore, changing the allocation split to 39% inshore and 61% offshore. In addition to changing the allocation percentages, the Council also voted to restrict the entire offshore sector from operating inside the CVOA during the pollock B-season. They also created a set-aside of 2.5% of the total BS/AI TAC (after CDQs are deducted) to be fished only by catcher vessels less than 125' LOA delivering to inshore processors. The set-aside fishery will take place on or about August 25. Any overages or underage resulting from the set-aside fishery will be subtracted/added to the inshore open access B-season fishery. The Council's new program is scheduled to remain in place only for the 1999, 2000, and 2001 fishing years and then sunset. A new Council action will be required to keep an inshore/offshore type allocation in place after 2001.

Table E.6 provides a summary of the projected changes under the Council's preferred alternative. Projections are based on a TAC of 1,017,500 mt, after CDQs are deducted from the quota. Processing in the inshore sector is assumed to increase by 40,700 mt, while processing in the offshore sector is expected to decline by the same amount.

Given constant product mixes and prices, exvessel revenue is expected to increase by $5.1 million and first wholesale revenue is expected to increase by $2.4 million. Only catcher vessel revenues are included in the exvessel calculation. Because less fish is harvested by catcher processors under the Council's preferred alternative, increases in exvessel revenues are expected. Greater catcher vessel harvests may also make the exvessel revenue increase seem larger than expected. The change in first wholesale revenues represents less than 0.5% of the total, and if the uncertainty around the estimate was considered, the change may not be significantly different than zero.

Changes in product mix are also included in this Table. They show that surimi, fillet, and meal production is expected to increase, while deep skin fillet, mince, and roe production decreases.

Table E.6 Changes resulting from a 4% BS/AI pollock TAC increase to the inshore sector

	Inshore	Offshore	Total
% Change Within the Sector	11.4 %	(6.2 %)	-
Raw Fish (mt)	40,700	(40,700)	-
Catcher Vessel Gr. Rev. (ex-vessel)1	$ 7.6	($ 2.5)	$ 5.1
Gross Revenue (1st Wholesale)	$ 24.1	($ 21.7)	$ 2.4
Surimi (mt)	7,343	(4,595)	2,748
Minced (mt)	270	(488)	(218)
Fillet/Block and IQF (mt)	950	(375)	574
Deep Skin Fillet (mt)	766	(1,569)	(803)
Meal (mt)	2,868	(992)	1,876
Oil (mt)	876	(37)	839
Roe (mt)	455	(505)	(51)

1/Only the catch delivered by catcher vessels is included for catcher processors

2/The sector's allocation was calculated using the following formula:
Allocation = (allocation percentage * 1,100,000mt * 0.925)

3/The status quo was assumed that catcher processors process 55%, "true" motherships 10%, and Inshore 35%

4/Use caution when comparing gross revenues across sectors, because they are dependent upon utilization rates and wholesale prices which were derived differently.

Chapter 5

This Chapter is devoted entirely to the CVOA options and includes historical fishing patterns relative to the CVOA and projections of CVOA fishing patterns under the alternatives. Major findings include:

- Pollock tend to be larger and have less size variation inside the CVOA.

- CPUE tends to be higher outside the CVOA.

- Increased pollock allocations to the offshore sector leads to less pollock catch in the CVOA relative to the status quo;

- During the A-season, excluding the offshore sectors (CVOA alternative 1), and offshore and "true" mothership sectors (CVOA alternative 2) from the CVOA yields *reductions* in A-season CVOA pollock catches. Total CVOA catch is also reduced in every case except when only catcher processors are excluded under Alternative 3(D). In all the other options, the projections indicate that catch inside the CVOA is reduced 15-57%;

- During the A-season, no combination of allocation alternative or CVOA alternative leads to *increases* in A-season CVOA pollock catch greater than 6%. Therefore, even under the no CVOA option catch is projected to increase only slightly during the A-season;

- Predicting B-season removals from the CVOA under the No CVOA alternative is highly speculative regardless of the allocation alternative, and depend considerably on how the offshore fleet is distributed.

- In the B-season and for CVOA alternatives 1, 2, and status quo, *reductions* in CVOA pollock catches are predicted for those sector allocation alternatives that *increase* the offshore sector's allocation (except for the combination of sector alternative 3(C) and CVOA alternative 2);

Alternatives which require sectors to operate outside the CVOA during the A-season appear to have greater impacts during years when the ice edge is further south. In 1991 and 1994 the ice edge was about 200 nautical miles further south that during 1996. Those years almost all of the catcher processor's and catcher vessel's catch came from inside the CVOA. In 1996 the catch distribution was much closer to a 50/50 spilt inside and outside the CVOA. Forcing vessels to fish closer to the ice edge may also cause safety concerns.

The Council's preferred alternative allocates more pollock to the inshore sector, but then reduces the removals of pollock which may be taken from the CVOA by allowing only the inshore sector to operate inside the CVOA during the B-season. The Council opted to restrict "true" motherships from operating in the CVOA to create a more equitable offshore fishery. "True" motherships had increased their share of the offshore quota over time, so this was viewed as a way to help balance the offshore sector. The issue of marine mammals in general, and Stellar sea lions in particular, was considered a larger problem that should be dealt with outside of the inshore/offshore allocation. A paper will be prepared by NMFS over the summer and fall, in conjunction with the Stellar sea lion recovery team, to look at the needs of Stellar sea lions in a comprehensive fashion.

Chapter 6

This is the Environmental Assessment (EA) and is primarily focused on marine mammal issues as they relate to the CVOA. Also included is a discussion of EPA considerations as they relate to the issue of air and water quality and processing discharges. Just prior to the April 1998 meeting, the NMFS issued guidance to the Council regarding pollock removals from the CVOA, which overlaps with critical habitat area for Steller sea lions. The gist of the NMFS guidance was that, whatever alternatives and options were selected by the Council, those should not result in a *proportional* increase in pollock removals from the CVOA. This draft of the analysis provides additional discussion regarding the definition of proportional (what is the baseline from which we would measure the relative change), and examines the possible combinations of alternatives and suboptions which would comply with this guidance. For example, basic allocation alternatives which might increase proportional CVOA removals can be offset by options which specifically limit harvests from the CVOA by sector and/or season. Additional general information on Steller sea lions, such as life history and feeding habits, is also included in Chapter 6.

The Council's preferred alternative will not result in a proportional increase in pollock removals from the CVOA. Increasing the inshore allocation was more than offset by restricting the entire offshore sector from operating inside the CVOA during the pollock B-season.

Chapter 7

This Chapter contains a summary of economic implications of the alternatives, including E.O. 12866 considerations, and addresses other issues raised by the Council.

- Net benefit impacts are not quantifiable given the lack of cost data and other information. Gross revenue projections indicate very little change in overall gross revenues from the fisheries, under any of the alternatives. Impacts are expected to be primarily distributional in nature, with impacts to industry sectors being proportional to the allocation changes considered. With such small changes in gross revenues overall, net impacts to the Nation from any of the alternatives will not likely be significant under the provisions of E.O. 12866, which specify a $100 (net) million annual effect on the economy as the trigger for a 'significant' action.

- Utilization rates, as previously summarized, have changed over time, with the inshore sector exhibiting a much higher overall utilization rate (and improvement over time) than the offshore sector. During I/O1, underlying (assumed) PRRs were a significant and contentious factor in the analyses, and were factored into the analyses to arrive at overall net impact projections. The I/O2 analyses did not attempt to quantify net benefits, but did examine several primary parameters of the fisheries, including overall utilization rates (not to be confused with assumed PRRs). Based largely on improved utilization rates by the inshore sector from 1991 to 1994, the analysis for I/O2 projected that the original net loss estimates associated with the allocations were likely overstated.

- For the current analysis (I/O3), overall utilization rates are factored into the projections for product and gross revenues for each of the alternatives. The higher utilization rates for the inshore sector equate to a higher gross revenue per ton of raw fish for that sector, when compared to the offshore sector, and therefore results in slightly higher overall gross revenues from the fishery for alternatives which allocate more pollock inshore. However, these projections do not take into account relative production costs between the sectors. Higher utilization rates alone do not necessarily equate to 'highest value' from the fisheries. NOAA GC advice on this issue is that, while the Magnuson-Stevens Act does not dictate management measures based on achievement of higher product utilization rates, the Council may well consider this as a criterion in its decision process.

- Regarding excessive shares/capital concentration issues, there is little in the way of analysis directly focused on this issue. Relative share of the harvest and processing of pollock, by individual firms or vessels, cannot be published, though information of this nature is available in industry publications, has been referenced in public testimony before the Council, or is generally known. NOAA GC advice is that, because the inshore/offshore alternatives do not allocate fishing privileges to individual fishermen (or entities), and the alternatives do not directly result in acquisition of shares, National Standard 4 does not apply in the context of addressing a particular company's share of pollock harvest/processing (though Standard 4 does apply generally). Additional discussion of excessive share issues as they relate to the National Standards is contained in Chapter 7.

- Regarding progress toward overall Comprehensive Rationalization Planning (CRP), the place of I/O3 depends on the ultimate CRP goal - if it is some type of IFQ program then the allocations will likely serve to establish the 'playing field' for those allocations, at least among sectors, regardless of the specific percentages chosen. With an IFQ program at least 4 to 5 years away, due to the Congressional moratorium, continuation of the allocations would appear to constitute a critical 'holding place' for the fisheries. If an IFQ program is not the eventual goal, then the allocations are perhaps even more critical to defining the fishery. Regardless of the ultimate CRP solution, it would appear that continuation of the allocations (without prejudice to the percentages), is critical to orderly prosecution of the fisheries and a stable management environment.

- Regarding potential implications of the American Fisheries Act (currently proposed in Congress), enactment of this Act would result in a significant potential reduction in offshore sector capacity. As many as 15 vessels could be immediately impacted, with those vessels accounting for 32% of the total offshore catch in 1996 (21% of the overall pollock total in 1996).

Chapter 8

Chapter 8 contains discussions of consistency with other applicable laws, including: Magnuson Act, National Standards, and the Regulatory Flexibility Act. These assessments focus on the Council's preferred alternative.

- The Council's preferred alternative appears to be consistent with the National Standards, based on the information available. For example, community stability and sustained participation (National Standard 8) is dependent, in many cases, on continued participation by all major industry sectors, both offshore and inshore. The Council's preferred alternative changed the basic allocation percentages, but should allow continued participation by all sectors.

- Section 303(a)(9) of the Act requires consideration of potential impacts to participants in the fisheries, and to other (adjacent) fisheries. Chapters 4 and 5, and other sections of this document address impacts to participants in the pollock fisheries. Chapter 8 contains information regarding potential impacts to other fisheries ('spillover effects'). While this information does not allow for conclusive statements regarding the likelihood or magnitude of such spillover effects, it is intended to assist the Council and other reviewers by providing background information relative to this issue.

  Included in that Chapter is the following: (1) information on the operational capacity and capability of vessels/processors operating in the pollock fisheries; (2) patterns of entry and exit in the pollock fisheries over time; (3) profiles of vessel/processor activity in alternative fisheries over time; (4) detailed information on the 1997 fishing activities by vessels/processors involved in pollock fisheries; (5) value estimates for other species (intended to provide insights on 'replacement' potential of other species for lost pollock opportunities); and, (6) discussion of the potential for spillover and possible mitigating measures. The analysis recognizes the potential for lost pollock opportunities to be replaced, to some extent, by alternative fisheries such as yellowfin sole and Atka mackerel, which are primary targets of the H&G factory trawl fleet. Mitigating measures could include additional stand-down provisions to reduce the potential incursion into these fisheries by 'pollock' vessels. Stand-down measures could probably be implemented, if desired, in time for the 1999 fisheries. Species endorsements in the Council's LLP are another measure that could potentially address this issue, though that proposal has previously been discussed and rejected by the Council.

- Section 303(b)(6) requires certain specific analysis when considering limited entry programs. The creation of a "true" mothership category, limited only to those operations which "have processed, but never caught" pollock in the BS/AI, would have created a limited entry program (the three existing "true" motherships and four others would appear to be the only eligible operations). However the Council's preferred alternative does not separate the offshore sector into catcher processor and "true" mothership categories. So, the additional analysis that would have been needed to fulfill requirements under 303(b)6 are not a necessary.

- The Regulatory Flexibility Act (RFA) requires analysis of impacts on small entities, and determination of whether management actions would 'significantly impact a substantial number of small entities'. Significance can be triggered by a reduction in revenues of more than 5%; a substantial number is defined as more than 20% of the affected universe of small entities. A discussion of the proposed GOA action relative to the IRFA is contained under section 2.4.3, and it concludes that no significant impacts are expected. However, because the action for the GOA and the BSAI will be contained in a single rulemaking, the IRFA findings must be considered in a collective fashion. It appears that 63 BS/AI pollock catcher vessels, 6 CDQ groups, and 60 government jurisdictions would be considered small entities for RFA purposes, based on existing interpretations of the Regulatory Flexibility Act. Of the 63 catcher vessels that are considered small entities (out of 119 total), 38 vessels are < 125' LOA and deliver inshore at least part of the year. These vessels would be able to participate in the small catcher vessel set-aside and should benefit under the Council's preferred alternative. Twenty-one offshore catcher vessels may also find markets and be able to deliver inshore during the set-aside fishery, but these vessels may need to leave that fishery before it closes in order to be outside of the CVOA at the start of the B-season. The impacts on small organizations and small government jurisdictions are discussed in appendices II and III. Overall it appears that the proposed action with respect to the BSAI may result in significant impacts as defined under the RFA. Therefore, the combined actions with respect to the GOA and the BSAI may result in significant impacts based on this IRFA. NMFS will complete the FRFA (final analysis) after the public comment period on the proposed rule and IRFA.

1.0 INTRODUCTION AND MANAGEMENT BACKGROUND

Inshore/offshore (I/O) allocations of the pollock TAC were originally established under Amendments 18/23 to the Bering Sea/Aleutian Island and Gulf of Alaska Fishery Management Plans, respectively.[1] The allocations were continued by the Council in Amendments 38/40 to the respective FMPs. Both the original amendments and the continuation contained "sunset" provisions, requiring the Council to reexamine the allocations, or see them expire. The current I/O management program will sunset December 31, 1998, without further Council action.

In June 1997 the Council requested information, in the form of pollock industry profiles, which enabled them to examine the evolution of, and current status of, the BS/AI pollock fisheries from 1991 through 1996. These profiles are included as Appendix I to this document. Based on its examination of those profiles, and other input received through public comment and Council discussion, the Council, at its September 1997 meeting, adopted a Problem Statement (with an associated set of alternatives) to examine the inshore/offshore pollock allocation, within "current" biological, economic, social, and regulatory contexts. This proposal is referred to as *Inshore/offshore Three* (I/O3).

The Council proposed that an analysis be undertaken to examine I/O3 alternatives which include continuation of the existing sector-share allocations and, in the case of the BS/AI management area, a series of changes in allocation shares and sector definitions, as well as possible changes in 'reserved-area' boundaries and access (i.e., management of the CVOA). In response, the Council staff has initiated development of an EA/RIR/RFA, to assist the Council in its deliberations and to permit the Council to take action on I/O3, prior to its scheduled sunset, if deemed appropriate.

1.1 Purpose and Need for Action

As noted above, in September 1997 the Council developed the following Problem Statement relative to the inshore/offshore pollock allocation issue:

<u>GOA Problem Statement</u>:

Allowing the current Gulf of Alaska Inshore/offshore allocative regime to expire December 31, 1998, would allow the same preemption of resident fleets by factory trawlers in the pollock and Pacific cod fisheries which occurred in 1989. It was this dramatic preemption which triggered the original proposal for an inshore/offshore allocation. In 1989, there was still pollock available in the Bering Sea when the preemption occurred when vessels moved into the Gulf to take advantage of fish with high roe content.

A rollover of the current Gulf of Alaska inshore/offshore program which allocates 100% of the pollock and 90% of the Pacific cod to inshore operations is a proactive action to prevent the reoccurrence of the original problem.

<u>BS/AI Problem Statement</u>:

The current inshore/offshore allocation expires at the end of 1998. The Council thus faces an inevitable allocation decision regarding the best use of the pollock resource. Many of the issues that originally prompted the Council to adopt an inshore/offshore allocation (e.g., concerns for preemption, coastal community dependency, and stability), resurface with the specter of expiration of the current allocation.

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[1] In the GOA, the Pacific cod TAC was also apportioned between 'inshore' and 'offshore' sectors under the I/O amendment.

The current allocation was made on the basis of several critical assumptions including utilization rates, foreign ownership, the balance between social gains and assumed economic losses to the nation, and the nature of progress on the Council's Comprehensive Rationalization Program (CRP) initiative. Many of these assumptions have not been revisited since approval of the original amendment. It is not clear that these assumptions hold or that the Council and the nation are well-served by continuing to manage the pollock fishery without a reexamination of allocation options. The Magnuson-Stevens Act presents the Council with a new source of guidance to evaluate national benefits. In the context of Council deliberations over Inshore/offshore 3, this includes enhanced statutory emphasis on increased utilization, reduction of waste, and fishing communities.

There have also been substantial changes in the structure and characteristics of the affected industry sectors including number of operations, comparative utilization rates, and outmigration and concentration of capital. These changes are associated with several issues, including: optimization of food production resulting from wide differences in pollock utilization; shares of pollock harvesting and processing; discards of usable pollock protein, reliance on pollock by fishing communities; and decreases in the total allowable catch of pollock. In addition, changes in fishing patterns could lead to local depletion of pollock stocks or other behavioral impacts to stocks which may negatively impact Steller sea lions and other ecosystem components dependent upon stock availability during critical seasons.

Therefore, the problem facing the Council is to identify what allocation would best serve to ensure compliance with the new Act and address the issues identified above.

1.2 Alternatives Being Considered

Alternative 1: No action.

Alternative 2: Rollover existing inshore/offshore program, including:
GOA pollock (100% inshore) and Pacific cod (90% inshore) allocations
BS/AI pollock (35% inshore, 65% offshore) allocation
suboption a: 1-year rollover
suboption b: 3-year rollover

Alternative 3: Allocation range **(BS/AI only)** of following percentages:

Option:	A	B	C	D
Inshore sector	25	30	40	45
"True" Motherships	05	10	10	15
Offshore sector	70	60	50	40

Staff intends to look at these ranges as four separate allocation alternatives. However, it is the Council's intent that these be considered as bounds for the allocation, and that the Council may select any allocation that falls within the bounds of the study, including the existing 65/35. Therefore, the Council may select as its preferred alternative any allocation that issues the Inshore sector 25-45%, "True" Motherships 5-15%, and the Offshore sector 40-70% of the BS/AI pollock quota. The Council wants to emphasize to the public that this wide range of allocations is for analysis and does not necessarily signal that the Council will choose such a wide divergence from status quo when the final decision is made next June.

Option: Establish a reserve set aside for catcher vessels less than 125 feet. The range considered for this set aside is 40-65% of the inshore and "true" mothership sector quotas. This range is based on the percentage of harvest that these smaller catcher vessels accounted for between 1991 and 1996.

Allocations would be analyzed such that the "true" motherships (which could operate in the BS/AI only) would be looked at as a sub-component of either the inshore or offshore component or as a separate component.

Option: Nine to 15% of the offshore quota shall be reserved for catcher vessels delivering to catcher processors. This is in addition to the allocation that catcher vessels may receive under the "true" motherships and inshore sectors.

Alternative 4: "Harvester's Choice" for Catcher Vessels Less Than 125' LOA.

Establish a set-aside for catcher vessels less than 125' LOA. The set-aside would be based upon a combination of:

- 40 to 60% of the inshore quota, plus
- 9-15% of the offshore (catcher processor) quota, plus
- 100% of the "true" mothership sector quota.

This alternative would use the main allocation percentages and small vessel set-aside sub-options, considered under Alternative 3, to determine the amount of pollock allocated to small catcher vessels (<125' LOA). Once their allocation percentage is determined, each of the small catcher vessels would be allowed to develop markets and deliver their pollock to the inshore, "true" mothership, or catcher processor sectors. Larger catcher vessels would only be allowed to sell their allocation to the inshore sector. Catcher processors would still be allowed to harvest some or all of the catcher processor quota depending on the option selected.

Under the Status Quo allocation percentages, this options reduces the pollock guaranteed to all of the processing sectors. However, any processing sector could increase the amount of pollock they process if they are relatively more successful in developing contracts with small catcher vessels.

Alternative 5: "Harvester's Choice" for Catcher Vessels 155' LOA and Shorter.

This alternative is the same as Alternative 4 except that the set-aside also includes catcher vessels from 125' through 155' LOA.

The definitions provided by staff for the Inshore, Offshore, Catcher Vessel, and "True" Mothership sectors will be used in this analysis. These same definitions were used in the sector profiles developed for the Council, and presented at the September meeting. Those breakdowns include:

Alternative 6: The Council's Preferred Alternative.

Thirty-nine percent of the BS/AI pollock would be allocated inshore and 61% offshore, after CDQs are deducted from the BS/AI TAC. No separate allocation to "true" motherships was included in this alternative. Instead, the "true" motherships will remain within the offshore sector.

In addition to the basic allocation split, the Council created a set-aside for BS/AI catcher vessels less than 125' LOA delivering to processors in the inshore sector. These small catcher vessels were allocated 2.5% of the combined BS/AI pollock TAC (adjusted for the 7.5% CDQ). Harvest of the set-aside will take place before the Bering Sea pollock B-season (there is no Aleutian Island B-season), starting on or about August 25. Any overages or underages resulting from the set-aside fishery will be subtracted from/added to the inshore BS open access B-season quota.

The rules and regulations pertaining to the CVOA will remain the same as under I/O2, except that during the B-season, harvesting operations allowed inside the CVOA will be restricted to catcher vessels delivering to the inshore sector. Under the current regulations, catcher vessels delivering to any sector are allowed to operate inside the CVOA during both the A and B-seasons. The new regulations will restrict catcher vessels delivering to offshore processors (including "true" motherships) from operating inside the CVOA during the pollock B-season. Catcher processors will continue to be restricted from harvesting pollock inside the CVOA during the B-season.

A three year sunset date is also included in the Council's preferred alternative. Therefore, I/O3 will remain in effect only for the 1999, 2000, and 2001 pollock fishing seasons, if the Secretary implements this program.

Catcher Vessels:
- < 125' Length Overall (LOA)
- 125' through 155' LOA
- > 155' LOA

Inshore Processors:
- Surimi Capability
- No Surimi Capability

Catcher Processors:
- Surimi Capability
- No Surimi Capability

"True" Motherships:
A vessel that has processed, but never caught, pollock in a "pollock target" fishery in the BS/AI EEZ.

Also included as options under Alternative 2 and Alternative 3:

1. Catcher vessel operational area (CVOA) Issues:
   a. Keep the CVOA as currently defined.
   b. Restrict catcher/processors from operation in the CVOA during both the A & B season with an examination of allowing "true" motherships to operate in the CVOA exclusively as well as excluding them from CVOA.
   c. Restrict larger catcher vessels (>155' or >125') fishing in CVOA (added in April 1998)
   d. Repeal the CVOA.

2. Sunset Issues:
   a. No sunset date, but intended to serve as an interim measure until the Comprehensive Rationalization Program has been completed.
   b. 3-year sunset.

3. The analysis identifies and examines potential conservation impacts on fish stocks, marine mammals and other marine resources that may result from status quo, or any changes in the structure of the fishery as well as other recommendations made by the SSC in their June 1997 meeting.

1.3 Summary of Previous Analyses

The purpose of this section is to provide the reviewer with additional background on the evolution of the inshore/offshore pollock allocations. Drawn from previous analyses, the following section summarizes the context and results of the analyses for the original inshore/offshore program (Amendments 18/23) and the second iteration (Amendments 38/40).

<u>Original SEIS from March 1992</u>

The original SEIS prepared by Council staff focused on input/output modeling which projected distributional changes in employment and income at the community/regional level. This analysis indicated that losses in employment and income for the Pacific Northwest induced by the inshore/offshore allocations analyzed would be more than offset by gains in direct income to Alaska regional economies. The magnitude of this effect depends on the specific allocation alternative chosen, but holds true across all alternatives to some degree. The Preferred Alternative of the Council was a three-year phase-in of allocation percentages (35/65, 40/60, and 45/55 inshore/offshore). Combining offshore and inshore regional impacts yielded a net gain in direct income of around $9 million in the first year of the program, based on the projections in that analysis.

<u>Cost-Benefit Study from April 1992</u>

As part of the Secretarial review process, NMFS economists conducted a cost-benefit oriented analysis which focused on overall net benefits (or losses) to the nation which would result from the inshore/offshore analysis. The basic methodology of that analysis was to measure producer surplus for each sector and then to predict the relative changes in that producer surplus for each sector—inshore and offshore. This involved estimation, for each sector, of relative harvest percentages, product mixes, recovery rates, and prices for fish. From this estimate, total revenues are projected, then subtracted from total estimated costs of production to arrive at net revenues (or producer surplus) for each sector, for both the "allocation case" and "no-allocation case." The net revenue difference between the two cases is the estimate of overall changes in net revenues to the nation of the allocation.

That analysis projected a net loss to the nation of $181 million over the three-year life of the allocation. Gains to the inshore sector were outweighed by losses to the offshore sector by that amount. Assumptions and parameters used in this analysis were the subject of intense disagreement and debate, and the analysis was largely silent on the issues of distributional and community impacts. The analysis was part of the basis of Secretarial review, and subsequent disapproval of the BS/AI pollock allocation (the GOA allocations were approved as well as the CDQ program for the BS/AI).

<u>Supplemental Analysis from September 1992</u>

Following Secretarial disapproval, a final Supplemental Analysis was jointly prepared by NMFS economists and Council staff. This analysis combined a cost-benefit assessment with an income/distributional analysis. The analysis also contained a detailed examination of the CVOA. Alternatives examined included the three-year phase-in as described above and a more straightforward 30/70 split over the entire three years. The Council finally approved, and forwarded to the Secretary, an allocation of 35/65, 37.5/62.5, 37.5/62.5. The final analysis projected the following major findings for the Preferred Alternative:

- Cost-benefit analyses projected an overall loss to the nation of $33.6 to $37.6 million over the three years of the allocation, depending on which set of parameters was used in the models. Sensitivity analysis indicated that, with certain parameters in the model, these projected losses could be reduced substantially, or could result in a net gain to the nation of $11 million. Essentially, the projections of net benefits/(losses) covered a range of possibility, from positive to negative depending on parameters and assumptions used, with the expected value in the negative.

- Distributional income analyses, using the same parameters assumed in the cost/benefit study, also projected an overall net loss, in terms of direct income at the U.S. level, with offshore losses outweighing gains to the inshore sectors. The estimated loss was $20 - 28 million over the three-year allocation (Preferred Alternative), though a potential overall gain of $11 million could be projected using model parameters based on public testimony to the Council.

- The Social Impact Assessment (SIA) which accompanied this analysis concluded that benefits to Alaskan coastal communities from the proposed allocation would be immediate and direct, while corresponding losses to Pacific Northwest communities would be less direct and less immediate. Overall, the study concluded that a given level of benefits accruing to Alaskan coastal communities was proportionally more significant when compared to regions like the Pacific Northwest where alternative industries and employment existed. The SIA noted that continuation of status quo (no inshore/offshore allocation) would have immediate and direct negative consequences for economic development and social stability in Alaskan coastal communities who rely heavily on fish harvesting and processing.

<u>Inshore/offshore 2 - Amendments 38/40</u>

The analysis of the proposed reauthorization of Amendment 18/23 did not attempt to respade the previous cost-benefit or distributional analyses; rather, it examined the current state of the fisheries (through 1994) and identified any significant changes which had occurred which would affect the overall findings of the previous analyses. Any directional changes, and their likely magnitudes, from the original analyses were identified in this iteration. Projections were made regarding the likely distributions of fishing and processing activities under both current alternatives—expiration of the allocation or reauthorization. Using the 1993 and 1994 fisheries as a base case for comparison, impacts of these projections were offered.

That analysis also examined additional issues which had been identified by the Council in the proposed reauthorization. In addition to potential preemption, these included stability within the industry, future trade-offs for affected industry sectors, and the potential impacts on the Council's overall CRP development. The pollock CDQ program was examined from the perspective of the current status of each of the six CDQ organizations' development, relative to the overall goals and objectives of the CDQ program created by the Council. In terms of projected impacts during the 1995, three-year reauthorization, the following is excerpted from the Executive Summary of that analysis:

<u>*BS/AI Pollock Fisheries*</u>

- *Price trends were similar to GOA with surimi and fillets decreasing significantly and roe maintaining high levels. Both sectors have increased surimi production relative to other product forms, while fillet and roe production as a percentage of overall production has remained fairly constant, with the exception of roe production for the offshore sector which has dropped as a percentage of overall production.*

- *Lower prices have decreased gross revenues for both sectors; gross revenues per mt of catch have also dropped for both sectors, though differentially. The inshore sector revenue per mt decreased 11.3% from 1991 to 1994 while the offshore sector revenue per mt decreased 32.6% over the same period. This is due primarily to higher overall utilization rates by inshore (were production per mt of raw fish) which affects the price reduction.*

- *Compared to the projected impacts of inshore/offshore as modeled in the original analyses, these changes indicate that projected impacts (net losses to the nation) were likely overstated, and that actual net losses are likely much less. The current analysis indicates that the range of expected economic impacts of the allocation would be shifted more toward a neutral point.*

The conclusions noted above must be tempered by the limitations of the information available to the analysis. The most notable caveat is the lack of new information regarding costs of harvest and production for both sectors. The best cost information available was that used in the original study which was based on an "OMB Survey" conducted in the fall of 1990. Efforts to update cost information since that time have not been successful. Therefore, the analysis assumes that costs per ton of harvest and production remained constant for all producers in both sectors, and attempts to work around this shortcoming by focusing on utilization rates, changes in product mix, and apparent changes in weekly catch and production. Additionally, information regarding product prices for 1994 has not yet been compiled, and therefore, 1993 prices were applied to 1994 production totals.

Projections with Expiration of Amendment 18/23

Chapter 5 projects probable implications of Alternative 1, the Expiration of the Inshore/offshore Amendments. The chapter focuses on projection of the harvest splits and potential economic impacts which might occur in the BS/AI pollock fishery without the inshore/offshore allocation. It goes on to a more qualitative discussion of possible outcomes in the GOA pollock and Pacific cod fisheries.

BS/AI Pollock Fishery Under Alternative 1

Seasonal averages and maximum catches were used to estimate harvest splits under Alternative 1. These two different methodologies projected inshore harvests of 29.15% and 25.46%, respectively. It appeared that using the seasonal averages predicted the 1991 harvest split more accurately than did the seasonal maximums. Using the projected harvest splits along with total product to total catch ratios (the "Utilization Rate"), product mixes and prices assumed for the 1994 fisheries, we estimated gross revenues. The results showed a probable decline in overall gross revenues accruing to the BS/AI pollock fisheries under Alternative 1 from $515 million estimated for the 1994 fishery to $511 million using the seasonal averages or $509 million using the season maximums, a very small change relative to the overall magnitude of the fishery. Further, the projected harvest splits using the seasonal average approach indicated that the overall shift in harvest to the inshore sector from the offshore sector, which was predicted to occur under the inshore/offshore allocation in the Supplemental Analysis, were likely overstated. This implies that the estimated net losses to the Nation, resulting from Amendment 18 in the Supplemental Analysis, were also overstated.

The analysis also concluded that Alternative 1 would likely have negative impacts on the stability of coastal communities, and upon the industry itself, particularly during the crucial period in which the Council attempts to rationalize the fisheries with comprehensive solutions.

Overall, it was concluded that Alternative 1 is less likely to provide significant gains in net benefits to the Nation than might have been supposed in the Supplemental Analysis. It is also likely that, given the inherent uncertainty of the information and the models used, the cost/benefit implications of the inshore/offshore allocation approach neutrality, and therefore the cost/benefit implications of the lack of an allocation also approach neutrality. These conclusions are based on several key assumptions:

1. *Discard and utilization rates remain at the same relative levels during 1996-1998 as in 1994.*
2. *1993 prices used to estimate 1994 gross revenue will be applicable for the years 1996-1998.*
3. *Product mix in each of the years from 1996-1998 will be identical to those found in 1994.*

4. Relative weekly catch and production between sectors will remain as it was in 1994.
5. Relative harvests and product costs between sectors remain the same as in the supplemental analysis.
6. Biomass levels, TACs, and therefore CPUEs, remain at 1994 levels.

These are fairly strong assumptions and thus give rise to the fairly weak conclusion of the neutral impact on the cost/benefit implications of the allocation. Given a neutral allocation, in terms of efficiency, conclusions regarding stability and impacts on communities become all the more relevant.

GOA Pollock Fishery Under Alternative 1

Estimates of impacts of Alternative 1 on the GOA pollock fishery were qualitative. In general, it was concluded that under the Alternative offshore catcher-processors would likely enter the GOA pollock fisheries in the second and third quarter apportions, causing shorter seasons and destabilizing the current participants, noting that these conclusions are based on assumptions similar to those listed above.

GOA Pacific Cod Fishery Under Alternative 1

Estimates of impacts of Alternative 1 on the GOA Pacific cod fishery were also somewhat qualitative. In general it was concluded that freezer longliners would benefit significantly under the Alternative. It appears that they would be able to enter the GOA Pacific cod fishery until the TAC was reached, and then continue on into the BS/AI to fish under the guaranteed fixed gear TAC. It is also possible that some offshore catcher-processors would participate in the GOA Pacific cod fisheries. Both of these conclusions would lead to shorter seasons and would likely be destabilizing for the current participants.

Projections with Reauthorization of Amendment 18/23

Chapter 6 contains the projections of impacts of Alternative 2 - reauthorization of Amendment 18/23 for an additional three years. Projections of harvest/processing activity are straightforward for this alterative - it would be 35/65 for the BS/AI pollock, GOA pollock would be 100% inshore, and GOA Pacific cod would be 90% inshore. Patterns of harvesting and processing are expected to be relatively unchanged from the base case; i.e., the 1993 and 1994 fisheries. GOA pollock stocks are relatively small, decreasing, and quarterly allocated. Alternative 2 would facilitate inseason management of the pollock stocks and avoid quota overruns by limiting the harvest of pollock to smaller, lower capacity shore based trawlers. If the Council chooses Alternative 2, other considerations include the CVOA and the definition of 'inshore' relative to freezer/longliners. Major findings from the analysis are presented below:

CVOA Considerations

- *Shore based vessels are more dependent on the CVOA (and any nearer shore fisheries) than the offshore sector.*
- *Pollock are harvested disproportional to their areal distribution; harvest rates of pollock are concentrated in the CVOA in the 'A' season, and harvest rates are much higher inside the CVOA than outside in the 'B' season.*
- *Allowing offshore sector vessels inside the CVOA in the 'B' season will likely exacerbate the disproportionate harvest rates relative to pollock distribution.*

- *Variation from year to year is exhibited relative to average size of pollock inside and outside the CVOA, with average size rates being similar; percentage of fish > 30 cm (commercially viable size) is higher inside the CVOA than outside.*

- *Overall, CPUEs of exploitable fish have been similar overall both inside and outside the CVOA, so exclusion from the CVOA should pose no significant impediments to offshore sector fishing operations. Operating costs, however, could be higher outside the CVOA.*

- *Increased harvest rates in the CVOA could adversely affect marine mammal critical habitat areas in the CVOA if the restrictions are relaxed.*

- *Bycatch rates of salmon and herring are higher inside the CVOA during the 'B' season time period. Additional effort could result in higher overall bycatch of these species.*

<u>Cost-Benefit Implications</u>

A reauthorization of Amendment 18/23 would be expected to result in the same general cost-benefit impacts as projected in the original Supplementary Analysis from 1992, as adjusted by findings from this current analysis. A substantive, comprehensive, quantitative reassessment has not been conducted in this analysis primarily because of the lack of new cost information which is a key element of a cost/benefit analysis, but changes in other primary model parameters have been identified which may directionally affect the original findings. In Chapter 4, it was concluded that the expected net losses to the nation were likely overstated in the original analysis, and that changes in the actual fisheries relative to assumptions used in that analysis would tend to move the expected impacts more towards neutral, given the data available to the analysis and the assumptions used.

<u>Distributional Impacts</u>

The methodologies for projecting distributional changes in employment and income, at a community/regional level, are directly dependent on the revenues generated from the fisheries for each sector. The original analysis (Supplemental analysis from September 1992) predicted net losses in direct income of $20-28 million, depending on model parameters used, and could project a gain of $11 million using selected model parameters. In that analysis benefits to inshore sectors were more than outweighed by losses to the offshore sector. Based on information presented in Chapter 4, fish prices and product mixes have changed to the point that overall revenues from the fisheries for both sectors are significantly reduced, relative to the projections made in the original analysis. The bottom line effect of this is to dampen the magnitude of any distributional effects overall; i.e., drive them towards the zero, or neutral point, keeping in mind that distributional effects are a function of both income from fisheries and employment from fisheries. Previous projections indicated a substantial loss of employment for the Pacific Northwest communities, and a gain for Alaska based communities. There is no information contained in this analysis to indicate that those employment projections were inaccurate.

The reductions in direct income from the fisheries for both sectors tend to reduce the aggregate income effects when compared to the original analyses, though we still expect gains to the inshore sector and losses to the offshore sector overall, when combined with employment effects. It is important to reiterate, however, that even though the trend is more towards a more neutral impact in aggregate, some distributional impacts will certainly still be expected, and any level of impacts to Alaska coastal economies is far more significant than a similar level of impacts to Pacific Northwest economies. This is a consistent finding in both the distributional analyses previously conducted and the Social Impact Assessment previously conducted. Therefore, although net negative impacts in direct income may still be expected, these impacts are reduced *from projections in the original analysis. These impacts for 1996-1998, under the three-year extension, would be similar to the impacts actually occurring in 1993-1995.*

Stability Implications

Compared to the base case (the 1993 and 1994 fisheries), continuation of the inshore/offshore allocations as they now exist would result in the least change, relative to that base case. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The existing allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations for an additional three years would maintain the relationships between these sectors as they have developed over the past three years. The stability which has been established between these various industry sectors may not guarantee survival of entities within these sectors, but may be crucial to the successful fruition of the CRP program over the next three years. A stable environment in the fisheries has been cited by the Council as critical to successful CRP development. Indeed, the disruption of existing distributions of harvesting and processing of pollock and Pacific cod, and the business relationships based on those distributions, could have serious and adverse implications for successful CRP development.

Allowing the inshore/offshore allocations to expire would result in a projected "reallocation" of about 6% of the overall pollock quota in the BS/AI; i.e., the split between inshore and offshore processing is estimated to be about 29/71, closer to pre-inshore/offshore splits (26.5/73.5), as opposed to the current 35/65. Because of this projected change, the reauthorization of Amendment 18/23 holds implications for future tradeoffs between industry sectors. Under the reauthorization, the offshore sector would be giving up about 6% of pollock harvests/processing which it would enjoy if the allocations were allowed to expire. Conversely, the inshore sector enjoys about a 6% "gain" under the reauthorization relative to expiration of the allocations. From the offshore sector's perspective, this 6% relative loss represents a tradeoff between increased revenues and some amount of upheaval in the industry which may result if the allocations are allowed to expire. Continuation of the allocations may provide the stable operating environment necessary for eventual implementation of CRP programs such as IFQs, something the offshore sector generally has been striving towards.

Community Impacts

Although the distributional, income based analyses previously conducted (and described above) are based on economic activity at the community/regional level, an additional, more qualitative examination of community impacts is provided in this analysis. A review of the previous SIA from 1992, which focused on the communities of St. Paul, Dutch Harbor, Sand Point/King Cove, Kodiak, Newport, and Bellingham/Seattle, indicates that the smaller Alaska communities, which are fundamentally dependent on the groundfish fisheries, exhibit the most variability and vulnerability to socially disruptive forces. Inshore allocations were determined to provide the greatest benefit to Alaskan coastal communities and afford them the greatest opportunities for development and growth, while the only community negatively affected would be Ballard/Seattle. The absence of an allocation would very likely impact coastal Alaskan communities negatively, both economically and socially.

Immediate and direct positive impacts would be expected by Alaskan communities with the allocation, partially offset by negative impacts to Pacific Northwest employment and income, though the latter would be more easily absorbed by the more diverse economies of that region. Since 1992, additional infrastructures have developed in Alaskan coastal communities, partially in response to the guaranteed allocations from Amendment 18/23. Given the current status of the fisheries, and these communities which rely on fishing and *processing, allowing the inshore/offshore allocations to expire, in the absence of alternative management remedies, would likely result in at least the same level of impacts as previously projected. Impacts at this time could be exacerbated beyond those previously predicted due to the additional infrastructures and the ability of these communities to utilize the current allocations.*

Preferred Alternative

Chapter 10 discusses the preferred alternative, and provides updated information on prices and products. The Council approved the reauthorization of the Inshore/offshore Allocations of Pollock in the BS/AI and of pollock and Pacific cod in the GOA. They also approved the continuation of the Pollock CDQ program for Western Alaska. If approved by the Secretary of Commerce, these amendments will be enacted as Amendment 40 to the GOA Groundfish FMP and Amendment 38 to the BS/AI Groundfish FMP, and will be in effect for three years through 1998. Amendment 40 to the GOA FMP will allocate 100% of the pollock and 90% of the Pacific cod to the inshore sector. Under Amendment 38 in the BS/AI, 7½% of the pollock TAC will be allocated to the Pollock CDQ Program, with the remaining pollock TAC divided between inshore and offshore harvesters; 35% to the inshore sector and 65% to the offshore sector. The CVOA is defined for the pollock "B-Season," within which only catcher vessels may operate. The Council also made some minor changes to the Catcher Vessel Operational Area (CVOA), and asked that any other regulations that deal with the inshore and offshore sectors also be reauthorized, including an extension of the delay of the start of the A-season for the offshore sector.

In reaching their decision to reauthorize inshore/offshore, the Council relied on the information contained in the original EA/RIR dated May 4, 1995, as well as information provided by the public in comments and testimony at the Council meeting. The Council also relied on a presentation from its Staff and from the SSC and the Advisory Panel. Staff indicated that updated information regarding 1994 product prices and 1993 production information had become available, and that a preliminary examination of that information did not result in any changes in the conclusion drawn in the EA/RIR. The Council concurred with those findings overall and concluded that reauthorizing the inshore/offshore allocations for an additional three-year period would promote stability in the industry, while allowing the Council adequate time to further develop its Comprehensive Rationalization Plan.

1.4 Elements of the Current Inshore/Offshore Regulations

1.4.1 Amendment 40 to the GOA Groundfish FMP

Changes to the FMP:

Permit Requirements

All U.S. vessels fishing in the Gulf of Alaska and all U.S. processors receiving fish from the Gulf of Alaska must have current permits issued annually by the Secretary of Commerce.

Inshore/offshore allocations of pollock and Pacific cod

The allowed harvests of Gulf of Alaska pollock and Pacific cod will be allocated between the inshore and offshore components of industry in specific shares in order to lessen or resolve resource use conflicts and preemption of one segment of the groundfish industry by another, to promote stability between and within industry sectors and affected communities, and to enhance conservation and management of groundfish and other fish resources.

Definitions

Inshore is defined to consist of three components of the industry:

1. All shoreside processors as defined in Federal regulations.
2. All catcher/processors which meet length requirements defined in Federal regulations and which have declared themselves to be "Inshore".
3. All motherships or floating processors which have declared themselves to be "Inshore."

Offshore is defined to consist of two components of the industry:

1. All catcher/processors not included in the inshore processing category, or which have declared themselves to be "Offshore."
2. All motherships and floating processing vessels not included in the inshore processing category, or which have declared themselves to be "Offshore."

Declarations and operating restrictions

Annually before operations commence, each mothership, floating processing vessel and catcher/processor vessel must declare on its Federal Permit application whether it will operate in the inshore or offshore component of industry. This declaration must be the same for both the BS/AI and the GOA if applications for both are made. All shoreside processors will be in the inshore component. Once declared, a vessel cannot switch to the other component, and will be subject to restrictions on processing amounts or locations for pollock and Pacific cod for the rest of the fishing year. Harvesting vessels can choose to deliver their catch to either or both components.

Catcher Processors which have declared themselves to be inshore have the following restrictions:

1. The vessel must be less than 125' LOA.
2. The vessel may not catch or process more than 126 mt (round weight) of pollock or GOA Pacific cod in combination in a given week of operations.

Motherships and floating processors which have declared themselves to be inshore have the following restriction:

1. Processing from a directed pollock fishery or a directed GOA Pacific cod fishery must occur in a single location within the waters of the State of Alaska.

Allocations

One hundred percent of the allowed harvest of pollock is allocated to inshore catcher/processors or to harvesting vessels which deliver their catch to the inshore component, with the exception that offshore catcher/processors, and vessels delivering to the offshore component, will be able to take pollock incidentally as bycatch in other directed fisheries. All pollock caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

Ninety percent of the allowed harvest of Pacific cod is allocated to inshore catcher/processors or to harvesting vessels which deliver to the inshore component and to inshore catcher processors; the remaining 10% is allocated to offshore catcher/processors and harvesting vessels which deliver to the offshore component. All Pacific cod caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

These allocations shall be made by subarea and period as provided in Federal regulations implementing this FMP.

Reapportionment of unused allocations

If during the course of the fishing year it becomes apparent that a component will not process the entire amount of the allocation, the amount which will not be processed shall be released to the other component for that year. This shall have no impact upon the allocation formula.

Duration

Inshore/offshore allocations of pollock and Pacific cod shall cease to be a part of this FMP either (1) at midnight on December 31, 1998; or (2) earlier if replaced with another management regime approved by the Secretary.

1.4.2 Amendment 38 to the BS/AI Groundfish FMP

Permit Requirements

All U.S. vessels fishing in the Bering Sea or Aleutian Islands sub-management areas and all U.S. processors receiving fish from the Bering Sea or Aleutian Islands sub-management areas must have current permits issued annually by the Secretary of Commerce.

Inshore/offshore allocations of pollock

The allowed harvest of Bering Sea and Aleutians pollock will be allocated between the inshore and offshore components of industry in specific shares in order to lessen or resolve resource use conflicts and preemption of one segment of the groundfish industry by another, to promote stability between and within industry sectors and affected communities, and to enhance conservation and management of groundfish and other fish resources.

Definitions

Inshore is defined to consist of three components of the industry:

1. All shoreside processors as defined in Federal regulations.
2. All catcher/processors which meet length requirements defined in Federal regulations and which have declared themselves to be "Inshore."
3. All motherships or floating processors which have declared themselves to be "Inshore."

Offshore is defined to consist of two components of the industry:

1. All catcher/processors not included in the inshore processing category, or which have declared themselves to be "Offshore."
2. All motherships and floating processing vessels not included in the inshore processing category, or which have declared themselves to be "Offshore."

Declarations and operating restrictions

Annually before operations commence, each mothership, floating processing vessel and catcher/processor vessel must declare on its Federal Permit application whether it will operate in the inshore or offshore component of industry. This declaration must be the same for both the BS/AI and the GOA if applications for both are made. All shoreside processors will be in the inshore component. Once declared, a vessel cannot switch to the other component, and will be subject to restrictions on processing amounts or locations for pollock for the rest of the fishing year. Harvesting vessels can choose to deliver their catch to either or both components.

Catcher processors which have declared themselves to be inshore have the following restrictions:

1. The vessel must be less than 125' LOA.
2. The vessel may not catch or process more than 126 mt (round weight) of pollock or GOA Pacific cod in combination in a given week of operations.

Motherships and floating processors which have declared themselves to be inshore have the following restriction:

1. Processing from a directed pollock fishery or a directed GOA Pacific cod fishery must occur in a single location within the waters of the State of Alaska.

Allocations

The allowed harvest of BS/AI pollock shall be allocated as follows: Thirty-five percent (35%) of the pollock in each subarea, for each season, will be allocated to the inshore component beginning in 1996 and continuing through 1998. By the same action, the offshore fleet will be allocated 65% of the pollock resource beginning in 1996 and continuing through 1998 in each subarea and in each season. The percentage allocations are made by subarea and period as provided in Federal regulations implementing this FMP. All pollock caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

Reapportionment of unused allocations

If, during the course of the fishing year, it becomes apparent that a component will not process the entire amount of the allocation, the amount which will not be processed shall be released to the other component for that year. This shall have no impact upon the allocation formula.

Western Alaska Community Quota

For a Western Alaska Community Quota, 50% of the BS/AI pollock reserve as prescribed in the FMP will be held annually. This held reserve shall be released to communities on the Bering Sea Coast which submit a plan, approved by the Governor of Alaska, for the wise and appropriate use of the released reserve.

The Western Alaska Community Quota program will be structured such that the Governor of Alaska is authorized to recommend to the Secretary that a Bering Sea Rim community be designated as an eligible fishing community to receive a portion of the reserve. To be eligible a community must meet the specified criteria and have developed a fisheries development plan approved by the Governor of Alaska. The Governor shall develop such recommendations in consultation with the Council. The Governor shall forward any such recommendations to the Secretary, following consultation with the Council. Upon receipt of such recommendations, the Secretary may designate a community as an eligible fishing community and, under the plan, may release appropriate portions of the reserve.

Bering Sea Catcher Vessel Operational Area

For directed pollock harvesting and processing activities, a catcher vessel operational area (CVOA) shall be defined as inside 167°30' through 163° West longitude, and 56° North latitude south to the Aleutian Islands. The CVOA shall be in effect commencing on the date that the second allowance of pollock is available for directed fishing until the inshore allocation is taken, or the end of the fishing year. Only catcher vessels and catcher/processors fishing under the Western Alaska Community Quota Program, may participate in a directed pollock fishery in this area during this period.

Duration

Inshore/offshore allocations of pollock, the CVOA, and the Western Alaska Community Quota program shall cease to be a part of this FMP either (1) at midnight on December 31, 1998; or (2) earlier if replaced with another management regime approved by the Secretary.

1.4.3 Changes to the CVOA

The changes to the CVOA were made by the Council in June 1995. Specifically, the Council moved the Western border of the CVOA from 168° W. longitude to 167°30' W. longitude, and allowed the offshore sector to operate in the CVOA during the B season once the inshore quota is taken.

The information in Chapter 2 of the EA/RIR, as well as the figures in Appendices I and II, and comment made by then American Factory Trawlers Association (now the At-Sea Processors Association) at the June 1995 Council meeting, provided sufficient evidence to the Council that the shift in the Western border of the CVOA would not significantly impact the catcher vessels operating in the CVOA during the B season, nor would there be a significant impact on marine mammals. The offshore sector would benefit by having the option to fish in additional areas of the Bering Sea, without negatively impacting overall bycatch of salmon and other prohibited species, and without negatively impacting the inshore sector operations.

1.5 Current Analysis and Organization of the Document

As discussed in Section 1.1, the Council considered a wide range of alternatives relative to the inshore/offshore pollock allocations. The pollock CDQ program has been separated and is proceeding on its own course as a separate plan amendment. For the Gulf of Alaska there were only two alternatives considered: expiration of the allocations or continuation of the existing allocations. Therefore, the Gulf of Alaska issue is treated in a separate chapter, and is largely a qualitative, 'threshold' analysis. The analysis for the BS/AI alternatives is much more detailed and attempts to provide the Council and industry with a detailed profile of the evolution and current status of the BS/AI pollock fisheries, its importance to each industry sector involved, and the linkages to coastal communities and fishermen. Part of the analysis addresses the alternatives quantitatively, but primarily in the projection of gross revenues derived from the fishery.

A significant part of the analysis is devoted to illuminating the various issues raised during Council discussions and which are contained in the Council's Problem Statement. Examples of the parameters and issues of concern to the Council, which are addressed in the document, include: pollock TAC, catch estimates by sector, catch location, product recovery rates, overall utilization rates of raw fish, discards, pollock product mix, markets, fish prices, level of foreign ownership, employment (wages and residency), PSC bycatch, protected species implications, CVOA issues, impacts to other fisheries, fish taxes and revenue streams, capital concentration and market share, environmental impacts, social and community impacts, and, CDQ program impacts. Some of these issues are addressed to a greater extent than others in the analysis, but all have been raised as issues surrounding the inshore/offshore allocation decision.

Chapter 2 of the document is devoted specifically to the Gulf of Alaska inshore/offshore program. There were only two alternatives under consideration for the GOA I/O3 amendment. These were, the *'No Action'* alternative (i.e., the allocations expire), or a 'rollover' of the existing allocations (i.e., 100% of pollock and 90% of Pacific cod allocated inshore). As with the *'No Action'* alternative described for the BS/AI, little or no empirical data exist with which to make quantitative estimates of impacts, should the allocations be allowed to expire. Probable implications for sectoral performance, community stability, regulatory stability, and effects on future management are characterized in qualitative terms.

In the case of the GOA, the only alternative to "expiration" under the sunset provision of I/O2, was continuation of the *status quo* allocation (i.e., base case). This analysis does not include a detailed, quantitative examination of the GOA status quo. Rather, it addresses the likely implications within the context of 'with or without' the existing pollock and Pacific cod allocations, based upon a 'threshold' analyses. This approach allows us to suggest the 'probable' type, direction, magnitude, and distribution of impacts, in a general sense. If these can be shown to most probably exceed any expected 'benefit' relative to *No Action*, then the Council should be in a position to judge the relative desirability of the two competing alternatives. This is similar to the approach taken in the 1995 analysis for the GOA, and appears consistent with the Council's Problem Statement for the GOA. This approach is not meant to minimize the importance of the allocations to the GOA pollock and cod fisheries, but is a reflection of the relatively simple decision facing the Council with regard to the GOA allocations.

Chapter 3 addresses the issues surrounding the BS/AI allocation decision and is a critical centerpiece of the analysis. This chapter contains the description of the numerous parameters surrounding the analysis, and constitutes the 'baseline' status of the BS/AI pollock fisheries. Based primarily on 1996 information, this chapter contains the baseline against which the alternatives are measured. Included in this chapter are product mix and gross revenue projections associated with the status quo allocations. Additional detail on the baseline information is contained in Appendix I to the document.

Chapter 4 examines the major allocation alternatives between inshore, offshore, and "true" mothership operations. In this chapter baseline information on product mix, prices, and utilization rates are extrapolated across the various alternatives to illustrate the changes in product on the market, and gross revenues (both by sector and overall), resulting from the alternatives. This chapter also addresses the specific sub-options that were considered, including: percentage set-asides for small catcher vessels (<125') within the inshore sector allocation; percentage set-asides within the offshore sector for catcher vessels which deliver offshore; whether to include "true" mothership within the inshore or offshore sector, or to have a separate allocation to that category; and, the duration of the allocation chosen (one, two, or three years, or indefinite). Chapter 4 also examines the alternative that would allocate the BS/AI pollock quota to harvesting vessels and give small catcher vessels the opportunity to deliver their allocation to any processing sector. Also discussed in this chapter are NMFS management and catch accounting considerations which may be applicable to the allocation decision, particularly to some of the sub-options that were considered.

Chapter 5 is devoted to treatment of the catcher vessel operational area (CVOA) issue. This includes a baseline description of CVOA fishing activities as well as projections of CVOA activities under the various alternatives. These alternatives include repeal of the CVOA as well as further restrictions on fishing in the CVOA for the offshore sector.

Chapter 6 contains an Environmental Assessment (EA). Marine mammal (steller sea lion) implications of CVOA fishing activity are addressed there, as well as other environmental issues which have been raised.

Chapter 7 is a summary of the expected impacts of the Council's preferred alternative, from the perspective of Regulatory Impact Review (RIR) and Executive Order 12866 considerations. Distributional impacts, as well as a discussion of net benefit *considerations*, is contained in this chapter. Other issues relative to the inshore/offshore decision are also addressed in this chapter.

Chapter 8 addresses the consistency of the Council's preferred alternative with other applicable laws including: the Magnuson-Stevens Act, National Standards and the Regulatory Flexibility Act.

In addition to Appendix I which has baseline fishery profiles, there are two other appendices which are critical to rounding out the overall analysis, and warrant further explanation. Community and social impacts have been a concern of the Council relative to this issue, and the new Magnuson-Stevens Act places additional emphasis on consideration of dependent communities, relative to any actions taken by a Council. Immediately following the September 1997 Council meeting we contracted with Impact Assessment, Inc. (IAI) to conduct an analysis of potential social and community impacts, based on the alternatives formulated by the Council. The primary focus of that research is two-fold: (1) updating the relevant community and sector profiles compiled under previous initiatives, with an emphasis on describing the linkages between the industry sectors involved and the communities involved in the pollock fisheries, and (2) assessing potential impacts to those sectors, and their participants, from the allocation alternatives under consideration.

In December 1997 we supplemented that contract with additional funds, primarily due to concerns that the overall analyses as planned would be deficient in terms of describing the specific sector/community linkages, particularly employment-related linkages, and particularly for the Puget Sound (Seattle) region. Because these sector linkages are less obvious in the Puget Sound economy than in Alaska communities, a majority of the *supplemental* resources were devoted to assessing these linkages in the Puget Sound area. This is not intended to detract in any way from the original research focus, or to detract from the information being developed for Alaska communities; rather, it is a reflection of the extra effort anticipated to develop a comparable 'picture' for the Puget Sound area, with the expectation that the research by IAI will address all sector linkages to the Seattle area (i.e., catcher vessels, at-sea processors, motherships, and shore-based processors). It is also expected that the IAI work will shed additional light on the employment issue, particularly for the catcher vessel sector where we have little quantitative information.

<u>Appendix II</u> is the report from IAI regarding community impacts.

In September 1997, as well as in other discussions, the issue of impacts to the CDQ program was raised. At the September meeting we received a preliminary report from the State of Alaska Department of Community and Regional Affairs (DCRA) which attempted to summarize the linkages between the CDQ organizations and the pollock industry sectors. Given the business relationships involved, and planned development projects related to pollock and other CDQ species, the goal is to define these relationships and assess whether and to what extent a change in the inshore/offshore pollock allocations might impact the CDQ program and the member communities.

Following the September meeting we requested assistance on this issue from the State of Alaska, specifically from DCRA (as well as on the separate amendment to extend the pollock CDQ program at 7.5%, beyond 1998). An initial survey was sent to the CDQ groups by DCRA to begin this process. Since that time we have devoted Council funding to the State of Alaska to help cover the personnel and subcontracting costs associated with this task. The State of Alaska subsequently contracted with McDowell Group to assist in a revised survey process and subsequent analyses. Information gathered in this process was also relevant to the separate amendment to extend the pollock CDQ program.

<u>Appendix III</u> is the report from the State of Alaska regarding potential CDQ program impacts.

1.6 Use of Industry Submitted Data

As the I/O3 analytical process developed, staff were queried regarding the availability of data on a variety of issues, and whether industry submitted information could be used to supplement the analyses. While we recognize that much of the information which could be provided would be useful to both the analysts and the Council decision-making process, we are sensitive to using such data in our analyses, particularly where it would create an asymmetry between sector information. In December 1997 the SSC also discussed this issue and stated in their minutes:

- *"The issue of voluntary industry data submissions presents a challenge to the analysts. While the SSC welcomes and encourages industry cooperation, methods and standards for appropriate integration of such data into the analysis are not yet clearly established and will require further consideration by the staff and SSC."*

After several discussions of this issue, which included members of various industry sectors involved, staff suggested to the Council (in February 1998) to employ the following basic policy: If information could be provided which would help fill existing holes in the analysis, and result in symmetry in the information across sectors, we would accept that information subject to some type of internal review, and perhaps independent 'audit'. We would also clearly state in the analysis where the information came from, as well as any caveats or concerns we have with the use of that information.

At the February 1998 Council meeting, the Council formally approved an audit process for such information, including appointment of a Committee to help develop the agreed-upon-procedures for independent review, by an accounting firm approved by the Council, of the data submitted (Committee report is available separately). In summary, that process resulted in the submittal of two sets of information by the At-Sea Processors Association (APA): employment data by residency and first wholesale price data for offshore products.

The employment information is contained in Appendix 1 - Tab 6 along with similar information for the inshore processing plants, and is also summarized in Chapter 3 as relevant baseline information, but is not used in any further projections. The price data is summarized in Chapter 3, as relevant baseline information, and is further used in the gross revenue projections contained in Chapter 4.

2.0 GULF OF ALASKA INSHORE/OFFSHORE ALLOCATIONS

2. 1 Introduction and Management Background

The North Pacific Council originally approved an inshore/offshore allocation in June 1991, in response to growing preemption problems between U.S. industry sectors harvesting and processing groundfish in the EEZ off Alaska. Dominated by foreign fleets through the early 1980s, the domestic fisheries had expanded by the late 1980s, and by 1988 the fisheries were effectively domesticated. As one fishery after another became fully U.S. utilized, the Council was increasingly faced with highly controversial, allocative decisions concerning domestic users. In 1989, following a short season on Bering Sea/Aleutian Islands (BS/AI) pollock, several factory trawlers (catcher/processors) moved into the Gulf of Alaska (GOA), quickly taking a substantial portion of the pollock quota which a shore based catching and processing industry was planning to utilize later that year (Figure 2.1). This became the catalyst for Amendment 18/23, also referred to as Inshore/offshore 1 or I/O1.

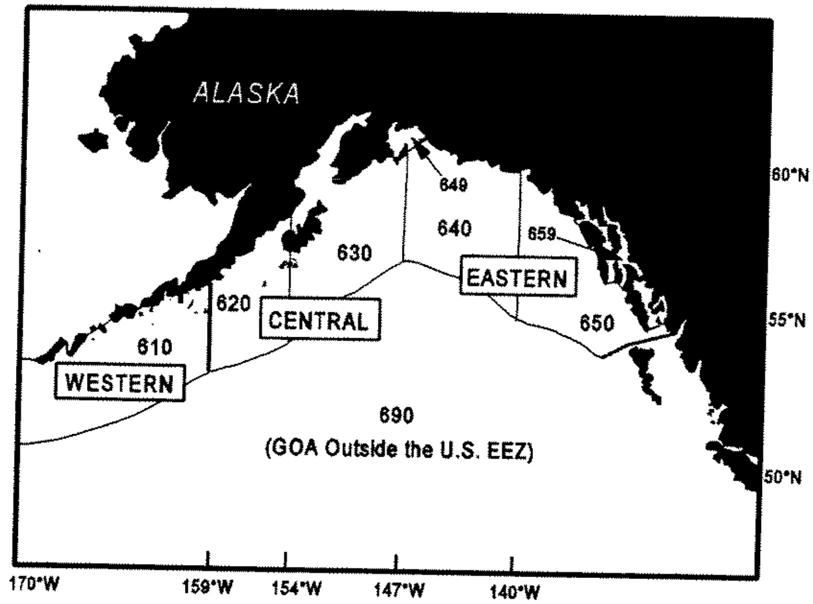

Figure 2.1 Regulatory and statistical areas in the Gulf of Alaska

Current and potential future preemption of resources by one industry sector over another became a focal issue for the Council, particularly with regard to pollock and Pacific cod in the GOA, and pollock in the BS/AI. Though not necessarily a problem at that time in the BS/AI, it was apparent that the capacity of the offshore catcher/processor fleet posed a real preemption threat to the inshore processing industry, which relied heavily on the pollock resource. Through a series of meetings in 1989 and 1990 the Council and industry developed analyses of various alternative solutions to the preemption problem. This was occurring at the same time as the Council was developing a moratorium on further entry into the fisheries off Alaska. The inshore/offshore allocation issue became an integral part of the overall effort towards addressing overcapitalization in the fisheries. In April 1990, the Council developed the following problem statement as the context for addressing the inshore/offshore processing allocations.

<u>PROBLEM STATEMENT (I/O1)</u>

> The finite availability of fishery resources, combined with current and projected levels of harvesting and processing capacity and the differing capabilities of the inshore and offshore components of the industry, has generated concern for the future ecological, social and economic health of the resource and the industry. These concerns include, but are not limited to, localized depletion of stocks or other behavioral impacts to stocks, shortened seasons, increased waste, harvests which exceed the TAC, and possible pre-emption of one industry component by another with the attendant social and economic disruption.

Domestic harvesting and processing capacity currently exceeds available fish for all species in the Gulf of Alaska and most species in the Bering Sea. The seafood industry is composed of different geographic, social, and economic components which have differing needs and capabilities, including but not limited to the inshore and offshore components of the industry.

The Council defines the problem as a resource allocation problem where one industry sector faces the risk of preemption by another. The analysis will evaluate each of the alternatives as to their ability to solve the problem within the context of harvesting/processing capacity exceeding available resources.

The Council will address these problems through the adoption of appropriate management measures to advance the conservation needs of the fishery resources in the North Pacific and to further the economic and social goals of the Act.

2.1.1 Summary of I/O1 Findings

Prior to, and following, the drafting of the I/O1 problem statement, the Council spent considerable time developing and refining alternatives, with the help of industry and a Fishery Planning Committee (FPC) appointed by the Council. This sequence of events is summarized here. By the end of 1989, the Council, with the help of the FPC, had established a list of alternatives to address the budding problem which included: traditional management tools, specific allocations of the quotas between industry sectors (with and without operational areas for each), quota allocations based on vessel size, and limited entry alternatives including an immediate moratorium. Also included were provisions for CDQ considerations within each of the primary alternatives. By late 1990, the Council had identified a direct quota allocation as the most viable alternative to the problem as identified in the problem statement shown above. Various potential percentage splits became the focus of further discussion and development, with the focus now centered on pollock and Pacific cod in the GOA and pollock in the BS/AI.

The analysis of the various alternatives was completed in early 1991 and a decision was made by the Council in June 1991. The Council's preferred alternative for the GOA was 100% of pollock reserved for vessels delivering to inshore plants and 90% of Pacific cod reserved for vessels delivering to inshore plants. These allocations were scheduled to expire at the end of 1995.

The Council began development of a Comprehensive Rationalization Program (CRP) in November 1992. By early 1994, the Council also recognized that a license limitation program would not address the issue of inshore/offshore, and directed staff to begin an evaluation of continuing the program beyond the 1995 sunset date. Specifically, the Council continued the existing allocations for an additional three years to allow for further development of the overall CRP initiative. In doing so, the Council continued the mandate established for itself back in 1992, when they recognized that a more permanent solution to overcapacity and preemption was needed. If the inshore/offshore allocations were allowed to lapse, the management void could indeed create the preemption problems envisioned when the amendments were originally approved and implemented. In December 1994, the Council developed the following problem statement for I/O2.

<u>PROBLEM STATEMENT (I/O2)</u>

The problem to be addressed is the need to maintain stability while the Comprehensive Rationalization Program (CRP) process goes forward. The Council believes that timely development and consideration of a continuing inshore/offshore and pollock CDQ allocation may preserve stability in the groundfish industry, while clearing the way for continuing development of a CRP management system. The industry is in a different state than existed in

1990 as a consequence of many factors outside the scope of the Council process, as well as the inshore/offshore allocation. The Council intends that staff analyze the effects of rapidly reauthorizing an interim inshore/offshore allocation relative to maintaining stability in the industry during the CRP development process, as well as the consequences of not continuing the present allocation. These alternatives are appropriate as they address the problem of maintaining stability. Therefore, the focus of analysis to be done over the next few months should assist the Council to:

1. Identify which alternative is least likely to cause further disruption and instability, and thus increase the opportunity for the Council to accomplish its longer-term goal of CRP management.
2. Identify the future trade-offs involved for all impacted sectors presented by the two alternatives.

As the Council was deciding on reauthorizing the inshore/offshore allocations in 1995 (Inshore/offshore 2), it also embarked on an initiative to develop more comprehensive, long-term management programs to address the overcapitalization and allocations problems facing the industry, not only with regard to inshore/offshore, but to the overall groundfish and crab fisheries off Alaska. This Comprehensive Rationalization Plan (CRP) examined a myriad of alternative approaches, but focused on some type of limited entry or Individual Fishing Quota (IFQ) program as the solution.

Eventually, focus evolved to a license limitation program and the Council approved a vessel license limitation program (LLP) in June 1995. Since LLP was predicted to take two to three years to implement, the Council extended the existing inshore/offshore allocations for an additional three years to maintain stability between industry sectors and to facilitate further development of more comprehensive management regimes. No new regulations or program changes would be necessary for (continued) implementation of the program under this schedule. In June 1995, the Council approved Amendments 38/40 to reauthorize a rollover of the pollock and Pacific cod allocations through 1998. This was approved by the SOC in 1995. At that time, the Council indicated that its next major step would be consideration of an individual quota system for BS/AI pollock; however, a Congressional moratorium postponed approval of any IFQ program until after October 6, 2001. The LLP is expected to be implemented by year 2000.

2.1.2 Summary of I/O2 Findings

Chapter 4 of the EA/RIR for I/O2 described the status of the fisheries under the inshore/offshore allocations from 1992-94 and focused on economic indices related to the harvesting and processing of BS/AI and GOA pollock and Pacific cod. A description of fish prices used in the analysis, and status and trends of these prices was provided. Prices for major pollock products, other than roe, declined significantly from 1991 and 1992 levels to 1994 levels for both sectors. A detailed examination of the GOA Pacific cod and pollock fisheries was provided to describe actual activities which occurred during 1992-94. The results of this examination were compared to results as projected in the analyses of I/O1. Major findings from the 1995 analysis are summarized below:

I/O2 Alternative 1. No action. Allow the pollock and Pacific cod allocations in the GOA to expire on January 1, 1996.

Pollock Fishery Estimates of impacts of Alternative 1, the no action alternative, to allow the allocation of GOA pollock to expire, were qualitative. In general, it was concluded that under Alternative 1, offshore catcher/processors would likely enter the GOA pollock fisheries in the second and third quarters, causing shorter seasons and destabilizing current participants:

- Total offshore sector harvest of pollock was about 1% in 1993 and 1994; the processing locations for GOA pollock have shifted significantly to Kodiak and Sand Point/King Cove locations (from Dutch Harbor) from a combined 65% in 1991 to 85% in 1994.

- Processed product form has shifted substantially over the period 1991-1994; more emphasis was placed on surimi in 1992, then shifted back to fillets and roe by 1994. Roe prices have risen and remained at high levels through 1994, while both fillet and surimi prices have dropped dramatically, with a relatively higher price decrease in surimi.

- Total product utilization by the inshore sector is higher than offshore sector utilization (21-22% of total weight for the inshore sector, over all years vs. 16% for the offshore sector in 1991).

- By 1994, roe comprised nearly 18% of total gross revenues for the inshore sector, with fillets accounting for 49% and surimi for just over 29%.

- Gross revenue per mt has fallen from 1991 to 1994 for the inshore sector, but not by much considering product price reductions. Changes in product mix combined with differential prices for each product have contributed to relative 'maintenance' of revenues per ton.

- Lower revenues per ton in the offshore sector (based only on 1991 data) may indicate that total revenues generated from the pollock fisheries would have been lower without the implementation of the Amendment.

Pacific Cod Fishery Estimates of impacts of Alternative 1, the no action alternative, to allow the allocation of GOA Pacific cod to expire, were also qualitative. In general, it was concluded that freezer longliners would benefit significantly under Alternative 1. It appears that they would be able to enter the GOA Pacific cod fishery until the TAC was reached, and then continue on into the BS/AI to fish under the guaranteed fixed gear TAC. It is also possible that some offshore catcher-processors (trawlers) would participate in the GOA Pacific cod fisheries. Both of these conclusions would lead to shorter seasons and would likely be destabilizing for the current participants. Other primary findings were:

- Despite the 10% allocation of Pacific cod, the offshore sector took only 3% of the TAC in 1993 and 1994.

- About 10% of the overall GOA quota in 1993 and 1994 was taken by longline catcher/processors designated to the inshore category.

- Production for the inshore sector has shifted to higher priced fillets, while falling prices overall and reduced harvest levels have kept revenues per ton constrained.

- Revenues per ton decreased relatively more for the offshore sector, though some of this may be attributable to mandatory discarding under the rules of the allocations.

I/O2 Alternative 2. Reauthorize the pollock and Pacific cod allocations in the GOA through 1998.

Chapter 6 in the EA/RIR for I/O2 contains projections through 1998 of impacts of Alternative 2. Projections of harvest/processing activity are straightforward for this alternative. Pollock landings were 100% inshore and Pacific cod landings were 90% inshore, except for overages. Patterns of harvesting and processing are expected to be relatively unchanged from the 1993 and 1994 fisheries. In 1995, GOA pollock stocks were relatively small, decreasing, and quarterly allocated. The rollover facilitated in-season management of the pollock stocks and attempted to avoid quota overruns by limiting the harvest of pollock to smaller, lower capacity shore based trawlers. Major findings from the analysis are presented below.

Stability Implications

Compared to the 1993 and 1994 fisheries, continuation of the inshore/offshore allocations would have resulted in the least change. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations through 1998 would maintain the relationships between these sectors as they have developed since 1993. The stability which has been established between these various industry sectors may not guarantee survival of entities within these sectors, but may be crucial to the successful implementation of the CRP program. A stable environment in the fisheries has been cited by the Council as critical to successful CRP development. Indeed, the disruption of existing distributions of harvesting and processing of pollock and Pacific cod, and the business relationships based on those distributions, could have serious and adverse implications for successful CRP development.

Community Impacts

Although the distributional, income-based analyses conducted for I/O1 are based on economic activity at the community/regional level, an additional, more qualitative examination of community impacts was provided in the analysis for I/O2. A review of the previous Social Impact Assessment from 1992, which focused on the communities of St. Paul, Dutch Harbor, Sand Point/King Cove, Kodiak, Newport, and Bellingham/Seattle, indicated that smaller Alaska communities, which are fundamentally dependent on the groundfish fisheries, exhibited the most variability and vulnerability to socially disruptive forces. Inshore allocations were determined to provide the greatest benefit to Alaskan coastal communities and afford them the greatest opportunities for development and growth, while the only community negatively affected would be Ballard/Seattle. The absence of an allocation (Alternative 1) would very likely impact coastal Alaskan communities negatively, both economically and socially.

Immediate and direct positive impacts would be expected by Alaskan communities with the allocation (Alternative 2), partially offset by negative impacts to Pacific Northwest employment and income, though the latter would be more easily absorbed by the more diverse economies of that region. Since 1992, additional infrastructures have developed in Alaskan coastal communities, partially in response to the guaranteed allocations under I/O1. Given the current status of the fisheries, and the communities which rely on fishing and processing, allowing the inshore/offshore allocations to expire, in the absence of alternative management remedies, would likely result in at least the same level of impacts as previously projected. Impacts at this time could be exacerbated beyond those previously predicted due to the additional infrastructures and the ability of these communities to utilize the current allocations.

2.1.3 Current Management Issues in GOA Fisheries

The Council has identified preemption of GOA fisheries by BS/AI-based vessels as a problem. The issue of sector preemption in the pollock and Pacific cod fisheries was first addressed by the Council in 1991. Amendments 18/23 addressed concerns about preemption by offshore vessels (factory trawlers) in the GOA, however, it did not address the issue of preemption of inshore vessels based in the BS/AI crossing over to fish in GOA waters.

The following section describes some of the preemption issues by BS/AI-based inshore vessels identified in GOA pollock and Pacific cod fisheries. While it pertains more directly to preemption of GOA fisheries by both BS/AI catcher and catcher/processors, the preemption issue for the inshore/offshore allocation is not geographically-based, but sector-based. It illustrates the ability of BS/AI catcher and factory trawl fleet to take the quota, and can be viewed as an example of the trawl fleet's capacity to take a majority of the GOA quota in the absence of an inshore/offshore allocation. While the inshore/offshore allocations do not address 'within sector' preemption issues, those issues are summarized here as background to illustrate the importance of resolving the basic inshore/offshore sector allocations to provide a stable playing field, which will allow the Council to successfully address other preemption management issues in the GOA.

2.1.3.1 Pollock Fisheries in the Western GOA

Table 2.1 Total catch of pollock from Area 610 by location of processor in metric tons.

Year	*BS/AI*[1]	*GOA*[2]	*Other*[3]	*Total*
1992	9,660	3,580	5,926	19,165
1993	11,743	9,125	335	21,204
1994	7,254	9,753	259	17,266
1995	15,008	14,200	1,170	30,378
1996	1,089	21,721	567	23,376
1997	11,184	14,690	762	26,636

[1]Includes shore-based processors in Dutch Harbor and Akutan and the Inshore floating processors (Northern Victor and Arctic Enterprise)
[2]Includes GOA shore-based processors
[3]Includes factory trawlers, factory longliners, and "true" motherships.

The pollock fishery in Area 610 has been one of the most difficult fisheries for NMFS to manage in recent years due to small TACs relative to potential effort and the constant potential that numerous large catcher vessels based in the BS/AI may crossover to the GOA to participate in this fishery. The disposition of pollock catch from Area 610 from 1992 to 1997 is displayed in Table 2.1, which illustrates the unpredictability of effort in this fishery. In 1992, the fishery was dominated by catcher vessels delivering to Bering Sea-based shore plants (Dutch Harbor and Akutan), and several at-sea factory trawlers and "true" motherships. The "true" mothership and catcher processor effort would have occurred before the Inshore/offshore allocations went into place in the fall of 1992. Vessels delivering to GOA-based shore plants accounted for less than 20% of the total catch from Area 610. In 1993, catcher vessels delivering to Bering Sea-based shore plants and Inshore floating processors accounted for about half of the Area 610 pollock harvest. In 1994 and 1995, the catch of pollock from Area 610 was distributed relatively evenly between catcher vessels delivering to Bering sea-based inshore plants and catcher vessels delivering to GOA-based shore plants. At-sea processors (catcher/processors and floating processors) are prohibited from GOA waters. During 1994 and 1995, participation by Bering Sea-based vessels occurred only during the June, July and October quarterly pollock openings in Area 610 during which time the Bering Sea pollock fisheries were closed. The ability of the CP fleet to add to this influx of effort, under no inshore/offshore allocation, would have magnified the impact.

2.1.3.2 Inshore Pacific Cod Fisheries in the Western GOA

The inshore Pacific cod fishery in Area 610 has a similar history of participation by BS/AI and GOA vessels. The total inshore catch of Pacific cod from Area 610 by location of processor is displayed in Table 2.2.

Table 2.2 Total inshore sector catch of Pacific cod from Area 610 by location of processor in metric tons.

Year	BS/AI[1]	GOA[2]	At-sea[3]	Total
1992	1,091	16,229	1,318	18,638
1993	63	10,293	5,539	15,895
1994	161	10,789	3,777	14,728
1995	2,357	10,289	5,501	18,146
1996	155	13,769	3,939	17,862
1997	1,256	17,593	4,081	22,930

[1]Includes shore-based processors in Dutch Harbor and Akutan
[2]Includes shore-based processors in Sand Point, King Cove, and Kodiak
[3]Includes inshore catcher/processors and inshore floating processors.

While shifts of effort in this fishery are not as dramatic as with the pollock fishery in Area 610, effort is also sometimes difficult to predict in this fishery.

The 1997 fishery is a case in point. In March 1997, after announcing the closure of the inshore Pacific cod fishery in Area 610 effective March 3, 1997, NMFS re-opened the fishery on March 10 for a 24 hour "mop-up" fishery to harvest a small amount of remaining TAC on the assumption that effort in the fishery would continue at the level experienced during January and February up to the March 3 closure.

Until March 3, 1997, catcher vessels based in the Bering Sea had not participated in the Pacific cod fishery in Area 610 to any great extent and were not expected to participate in the 24-hour "mop-up" fishery. However, a substantial number of Bering Sea-based catcher vessels entered the GOA on March 10, 1997, and harvested over 1,200 mt of Pacific cod during that 24 hour opening. As a consequence of this unanticipated effort, the 21,803 mt Pacific cod TAC for Area 610 was exceeded by 1,288 mt or 6% of the total. If a registration program had been in effect for this fishery in 1997, it would have provided NMFS with the information necessary to prevent such a substantial overharvest of the TAC. An overharvest of the Pacific cod TAC in the GOA has the potential to significantly affect State-managed Pacific cod fisheries in State waters as well as IFQ fisheries that normally retain incidental catch of Pacific cod. The ability of the CP fleet to add to this influx of effort, under no inshore/offshore allocation, would have magnified the impact.

2.1.3.3 Offshore Pacific Cod Fishery in the GOA

The offshore Pacific cod fishery in the GOA has also proven problematic for NMFS due to a small TAC relative to the potential effort (10% of TAC is allocated to the offshore fleet). In 1996, a number of factory trawlers checked into the central GOA indicating flatfish as their target species. It was not until NMFS began to receive weekly production reports that it became apparent that most of these vessels had high catches of and were in part targeting on Pacific cod. By the time NMFS realized that numerous catcher/processors were targeting on Pacific cod and was able to close the fishery, the 1996 TAC of 4,290 mt for the offshore sector in the central GOA was exceeded by 1,061 mt or 25% of the total.

2.1.4 Current GOA Problem Statement

Inshore/offshore allocations of pollock and Pacific cod Total Allowable Catches (TACs) in the GOA were originally established under Amendments 18/23 (I/O1) to the BS/AI and GOA FMPs, respectively, in 1992. The allocations were "rolled over" by the Council in Amendments 38/40 (I/O2) in 1995. Both the original amendments and the rollover amendments contained "sunset" provisions, requiring the Council to reexamine the allocations, or see them expire. The current I/O management program will sunset on December 31, 1998, without Council action by June 1998.

At its September 1997 meeting, the Council adopted a problem statement and an associated set of management alternatives to examine the inshore/offshore allocations, within current biological, economic, social, and regulatory contexts. An overriding concern of the Council is to ensure industry stability, both between and within sectors, which had been created during the six years of the program. This issue is also of primary importance in this third iteration of the inshore/offshore allocations after six years of implementation and will be of primary interest in the analyses of a continuation of that program. The Council limited its GOA analysis to two alternatives: the no action alternative (Alternative 1) and a rollover of current allocations with no sunset provision (Alternative 2). It approved the following problem statement for the GOA pollock and Pacific cod fisheries for this analysis:

PROBLEM STATEMENT (I/O3)

Allowing the current Gulf of Alaska Inshore/offshore allocative regime to expire December 31, 1998, would allow the same preemption of resident fleets by factory trawlers in the pollock and Pacific cod fisheries which occurred in 1989. It was this dramatic preemption which triggered the original proposal for an inshore/offshore allocation. In 1989, there was still pollock available in the Bering Sea when the preemption occurred when vessels moved into the Gulf to take advantage of fish with high roe content.

A rollover of the current Gulf of Alaska inshore/offshore program which allocates 100% of the pollock and 90% of the Pacific cod to shore-based operations is a proactive action to prevent the reoccurrence of the original problem.

2.1.5 Purpose and Need for Action

As stated above in the GOA problem statement, the Council has identified stability in GOA fishing communities as a critical factor in its decision to allocate 100% of pollock and 90% of Pacific cod to the inshore sector and that a return to the possibility of preemption by factory trawlers of resident fleets in the pollock and Pacific cod fisheries in the GOA is not acceptable. Continuation of the inshore/offshore allocations will maintain the status quo in these fisheries.

Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations would maintain the relationships between these sectors as they have developed since 1993. If the inshore/offshore allocations were allowed to lapse, the management void could indeed create the preemption problems envisioned when the amendments were originally approved and implemented.

The discussion in Section 2.1.3, Current Management Issues in GOA Fisheries, described recent Council action to address preemption of these small, resident GOA fisheries. The Council also recently formed an industry committee to review additional management measures and the Council is on record that it will make additional management decisions to maintain the stability of those small, resident fisheries and communities on which those fisheries are based. The ability of the Council to address 'within sector' preemption issues in the GOA is dependent upon resolution of the larger preemption issue being addressed by inshore/offshore allocations.

Alternatives Considered

The Council limited the alternatives in this analysis to two: the no action alternative and the 'rollover' alternative. The Council further indicated its preference to a simple rollover of the GOA allocations, perhaps with no sunset date.

Alternative 1. No action.

Under Alternative 1, the current inshore/offshore allocation for pollock and Pacific cod in the Gulf of Alaska would expire at the end of 1998.

Alternative 2. Rollover GOA pollock (100% inshore) and Pacific cod (90% inshore) allocations.

Alternative 2 would reauthorize the current inshore/offshore processing allocations for pollock and Pacific cod in the GOA. Amendment 23 to the GOA FMP established that 100% of pollock would be reserved for vessels delivering to inshore plants and 90% of Pacific cod would be reserved for vessels delivering to inshore plants through 1995. Amendment 40 reauthorized these allocations through 1998. This current alternative would reauthorize these allocations in the GOA, with or without a sunset date.

2.2 Description of the Fisheries

2.2.1 Biology and Status of Pacific Cod Stocks

Pacific cod (*Gadus macrocephalus*) is a widespread demersal species found along the continental shelf of the Gulf of Alaska from inshore waters to the upper slope. In the Gulf of Alaska, Pacific cod are most abundant in the western area, where large schools may be encountered at varying depths depending upon the season of the year. Adult Pacific cod are commonly found at depths of 50-200 m. During the winter and spring, Pacific cod appear to concentrate in the canyons that cut across the shelf and along the shelf edge and upper slope between depths of 100-200 m where they overwinter and spawn. In the summer, they shift to shallower depths, usually less than 100 m. NMFS bottom trawl surveys of the Gulf conducted in 1990, 1993, and 1996 have found that about half of the biomass is located at depths of 100 m or less, with about a third between 100-200 m depth. Distribution and relative abundance of Pacific cod are shown in Figure 2.2.

Information on the life history of Pacific cod is limited, but it is known that Pacific cod are a fast-growing, short-lived species. Age determination for Pacific cod is difficult; the approximate maximum age is 10-13 years. Estimates of the instantaneous rate of natural mortality range from 0.22-0.45. The natural mortality rate estimate is 0.37.

Pacific cod migrate to deeper waters in autumn, spawn in winter and return to shallow waters in spring. Spawning in the Gulf has been observed from February-July, with most spawning occurring in March at depths of 150-200 m. Spawners have been observed mostly along the outer continental shelf off Kodiak Island but also in Shelikof Strait and off Prince William Sound. Female Pacific cod begin to attain maturity at about 50 cm in length and 50% reach maturity at 55-62 cm (4-6 years). Estimated fecundity of females 55-62 cm in length ranges from 860,000-1,300,000 eggs. Pacific cod deposit demersal eggs which hatch within 10-20 days, releasing pelagic larvae.

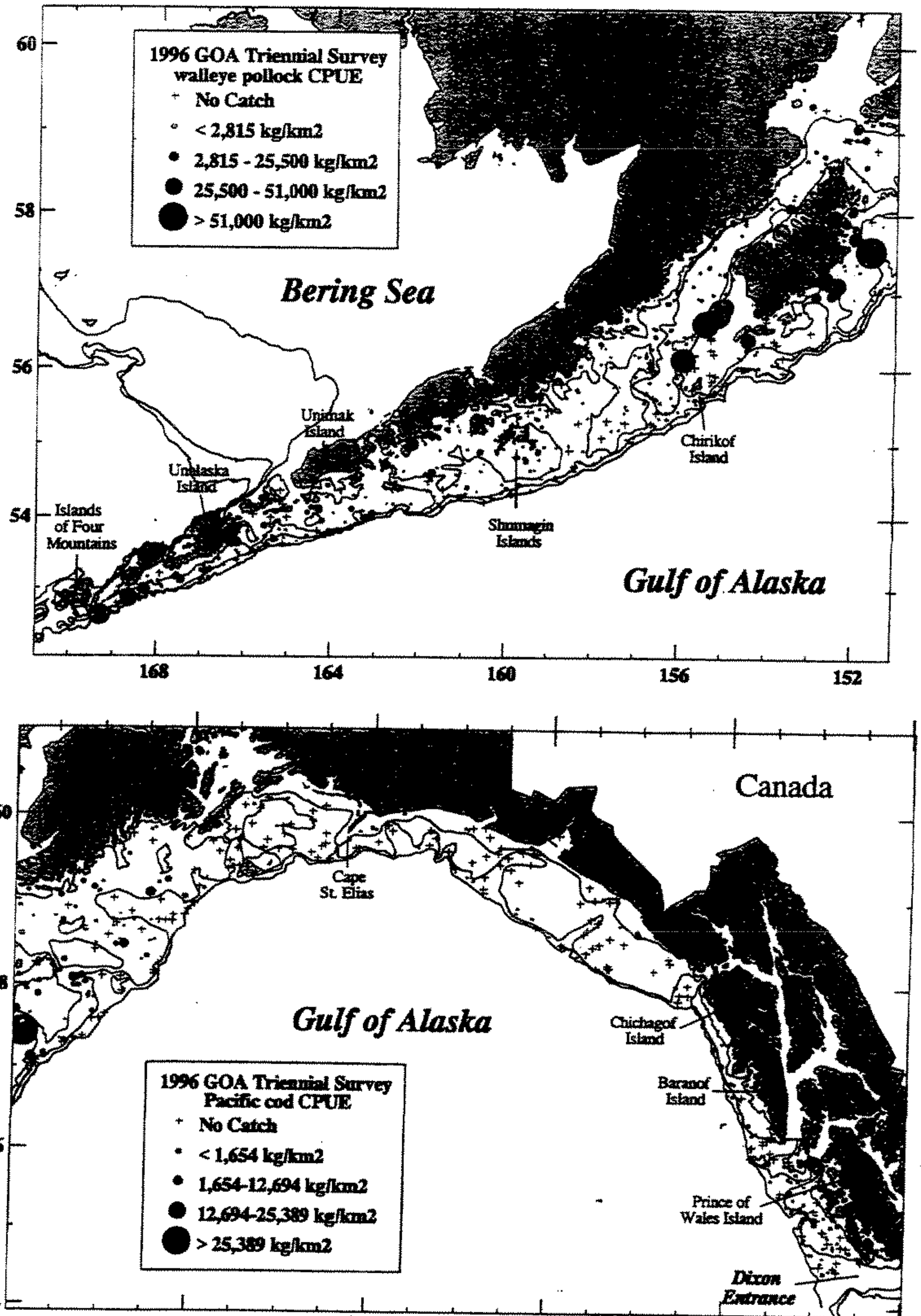

Figure 2.2 Distribution and relative abundance of walleye pollock from the Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between mean CPUE and two standard deviations above mean CPUE, between two and four standard deviations above mean CPUE, and greater than four standard deviations above mean CPUE. Each symbol is proportional to the sample CPUE.

Pacific cod are benthopelagivores. Pacific cod feed on a wide variety of prey in the Gulf, including shrimp, crabs, flatfish, pollock, fishery discards, amphipods, euphausiids, and capelin (Yang 1993). Pacific cod become increasingly piscivorous with increasing size (Yang 1993). Pacific cod larger than 60 cm in length consumed mostly fish, particularly 1-3 year old pollock. Pacific cod are also known to feed on red king crab, particularly during their molting period in spring. Juveniles feed on benthic amphipods and worms. Small adults feed primarily on benthic crabs, shrimps, and fishes. Pacific cod are preyed upon by Pacific halibut, fur seals, and some cetaceans.

There is some evidence to suggest that there are subpopulations of Pacific cod. Grant et al. (1987) reported that Gulf, Bering Sea, and Aleutian Islands Pacific cod stocks may be genetically indistinguishable. Tagging studies show that Pacific cod move between the Bering Sea and the Gulf (Shimada and Kimura 1994). A study of meristic characters suggested that northern and western Bering Sea Pacific cod may represent a stock distinct from that in the eastern Gulf of Alaska, but was limited by sample sizes.

The biomass increased in the 1996 bottom trawl survey (525,643 mt) compared with 1990 (379,494 mt) and 1993 (405,431 mt). The depth and area distributions of Pacific cod were similar for the 1990, 1993, and 1996 surveys. Most Gulf Pacific cod are located in the Western/Central area (which includes the Kodiak, Chirikof and Shumagin subareas from 147°-170°W longitude). The surveys found significant concentrations in Marmot and Shelikof Gullies near Kodiak Island, Shumagin Gully east of the Shumagin Island, on Davidson Bank south of Unimak Island, and on the shelf south of the Fox Islands (Umnak and Unalaska Islands).

The 1997 stock assessment (Thompson et al. 1997) reported that the GOA Pacific cod exploitable (age 3+) biomass increased from 552,000 mt in 1978 to a peak of 983,000 mt in 1988, and declined to about 650,000 mt in 1997. This was due to two above average-sized year-classes in 1977 and 1979, and a long series of average year-classes from 1978-1990 (except 1988). Age 3 fish are used as the index age for assessing year class strength. A reclassification of year class strength in the 1997 assessment results in 1989 as the last above average year class, with the last four year classes all below average. The trend may be reversing from indications from the 1996 bottom trawl survey, where the length frequency distribution suggests that the 1995 year class (observed at age 1) may be exceptionally large. However, it should be stressed that this finding is extremely preliminary.

Depending on the fishing mortality rate utilized in the near future and assuming average year-class recruitment sizes, exploitable biomass is projected to decline from 785,000 mt in 1998 to between 587,000 mt ($F_{0.1}$=0.52) and 685,000 mt ($F_{40\%}$=0.34) by the year 2002, with annual catches ranging from a low of 109,000 mt ($F_{40\%}$=0.34) to a high of 127,000 mt ($F_{0.1}$=0.57) in the year 2002. The ABC in 1998 was set at 77,300 mt (TAC was reduced 17% by the State water Pacific cod GHL). Note that these estimates have increased from those reported in I/O1 and I/O2 due to an increase in the biomass. A risk-averse strategy for harvest strategies was employed in the assessment and accepted by the Council, so that the ABCs and TACs were conservatively determined.

Table 2.3 Allocation (in percent) of the Gulf Pacific cod TAC by NPFMC.

	Regulatory Area		
Year(s)	Western	Central	Eastern
1977-85	28	56	16
1986	40	44	16
1987	27	56	17
1988-89	19	73	8
1990	33	66	1
1991	33	62	5
1992	37	61	2
1993-94	33	62	5
1995	29	66	5
1996	29	66	5
1997	35	63	2

Departing from the initial allocation scheme devised in 1977, the geographic distribution of TAC for 1986 was changed in order to permit all of the total allowable level of foreign fishing to be taken from the NPFMC Western Regulatory Area. With the cessation of foreign fishing in 1987, allocation of DAH by regulatory area was restored to near pre-1986 levels. Allocations have been adjusted to reflect the results of the 1987, 1990, 1993, and 1996 Gulf of Alaska triennial groundfish surveys in subsequent years. The 1990 allocation accommodated developing fisheries around Kodiak Island and in the western Gulf of Alaska. Additionally, the 1992 allocation was increased in the Western area and decreased in the Central and Eastern Areas and the 1993 allocation returned to that of 1991, and remained constant in 1994. The history of allocations (in percent) by NPFMC Regulatory Area within the Gulf is listed in Table 2.3. The history of ABCs, TACs, and foreign and domestic allocations is listed in Table 2.4.

Table 2.4 Final allocations and catches (t) of Pacific cod in the Gulf of Alaska, by fishery category, 1978-97. Estimated domestic discards are excluded.

	Allocation[1]					Catch[2]			
Year	ABC	TAC	TALFF	DAP	JVP	Reserve	Foreign	Jt. Venture	Domestic	Total
1978	--	40,600	25,100	15,500	--	0	11,370	7	813	12,190
1979	--	34,800	29,300	4,000	--	1,500	13,173	711	1,020	14,904
1980	--	60,000	53,442	4,058	2,500	0	34,245	466	634	35,345
1981	--	70,000	63,634	5,167	1,199	0	34,969	58	1,104	36,131
1982	--	60,000	51,688	6,902	1,410	0	26,937	193	2,335	29,465
1983	--	60,000	50,936	5,312	3,752	0	29,777	2,426	4,337	36,540
1984	--	60,000	32,518	9,320	18,162	0	15,896	4,649	3,353	23,898
1985	--	60,000	10,200	30,360	7,640	11,800	9,086	2,266	3,076	14,428
1986	--	75,000	15,520	35,000	9,480	15,000	15,211	1,357	8,444	25,012
1987	125,000	50,000	0	48,000	2,000	0	0	1,978	30,961	32,939
1988	99,000	80,000	0	68,950	11,050	0	0	1,661	32,141	33,802
1989	71,200	71,200	0	71,200	0	0	0	0	43,293	43,293
1990	90,000	90,000	0	90,000	0	0	0	0	72,517	72,517
1991	77,900	77,900	0	77,900	0	0	0	0	76,977	76,977
1992	63,500	63,500	0	63,500	0	0	0	0	80,100	80,100
1993	56,700	56,700	0	56,700	0	0	0	0	56,487	56,487
1994	50,400	50,400	0	50,400	0	0	0	0	45,603	45,603
1995	69,200	69,200	0	69,200	0	0	0	0	69,060	69,060
1996	65,000	65,000	0	65,000	0	0	0	0	68,280	68,280
1997	81,500	69,115	0	69,115	0	0	0	0	68,825	68,825

1/ "Fishing year" 1981 was extended to 14 months in order that subsequent fishing years would coincide with calendar years.
2/ Sources: Foreign and joint venture catches – personal communications with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine
Fisheries Service, NOAA, 7600 Sand Point Way NE, Bin C15700, Bldg 4, Seattle, WA 98115; U.S. Landings 1978-80 -- Rigby (1984), landings subsequently adjusted for
estimated discards; U.S. Landings 1981-1989 -- Pacific Fishery Information Network (PacFIN), Pacific State Marine Fisheries Commission, 45 SE 82nd Drive, Suite 100,
Gladstone, OR 97028 (landings subsequently adjusted for estimated discards); U.S. catches, 1990-93 (observer/industry reported catches, blend estimates) -- U.S. Fisheries
Observer Program; U.S. Catches 1994-97 (blend estimate) -- NMFS Alaska Regional Office.
3/ "Fishing year" 1981 was extended to 14 months in order that subsequent fishing years would coincide with calendar years.

The Pacific cod stock is exploited by a multiple-gear fishery, including trawls, longlines, and pots. The fishery opens to fixed gear on January 1, and to trawl gear on January 20. As shown below, trawlers account for the majority of Gulf Pacific cod landings. Catches by pot gear have increased in recent years, facilitated in part by the comparatively low halibut bycatch rates associated with such gear. The Pacific cod trawl fleet, which has caught between 67-90% of the GOA from 1987-93 (Thompson and Zenger 1994), fishes throughout the western and central Gulf of Alaska, frequenting the gullies where the bottom trawl surveys found concentrations of Pacific cod. Most of the observed Pacific cod pot locations during 1990-93 have been near Kodiak Island; the percentage of the GOA Pacific cod harvest caught using pots has increased from 1-5% in 1987-89 to almost 20% in 1994 (Thompson and Zenger 1994). The longline fleet has fished throughout the western/central GOA and has caught between 8-28% of the GOA Pacific cod catch since 1987.

Historically, the majority of Pacific cod landings came from the INPFC Shumagin and Chirikof Areas (Table 2.5). Foreign trawl catches of Pacific cod were usually incidental to directed fisheries for other species. In 1987 and 1988 the vast majority of landings was taken by trawls in the Kodiak area, reflecting the absence of foreign fishing effort in the western Gulf and an increase in domestic effort near the principal landing port of Kodiak. Pacific cod catches from the Western Gulf increased from 33% to 47% of total Gulf Pacific cod landings between 1989 and 1992.

Table 2.5 Landings[1] (mt) of Pacific cod in the Gulf of Alaska by International North Pacific Fisheries Commission (INPFC) statistical area, including the Shelikof subdivision of the Chirikof and Kodiak areas, 1978-1996.

	Statistical Area						
Year	Shumagin	Chirikof	Kodiak	Shelikof	Yakutat	Southeast	Total
1978	5,591	4,707	1,488	--	202	174	12,162
1979	3,982	6,541	3,829	--	371	147	14,870
1980	8,705	18,627	5,871	--	2,004	116	35,323
1981	11,579	19,115	3,036	--	2,249	109	36,088
1982	7,343	14,361	5,543	--	2,108	25	29,380
1983	9,178	15,675	9,567	--	1,963	18	36,401
1984	11,748	5,844	6,149	--	1	34	23,766
1985	8,426	3,224	2,564	--	<1	92	14,306
1986	12,751	4,092	7,362	--	222	185	24,612
1987	2,473	2,378	26,162	--	30	389	31,432
1988	5,562	2,451	20,922	3,329	39	254	32,557
1989	13,830	3,072	22,130	2,423	18	203	41,676
1990	29,309	8,248	28,503	2,685	29	294	69,068
1991	31,704	13,755	25,094	3,486	88	188	74,315
1992	36,080	14,613	24,526	--	899	214	76,332
1993	17,270	8,215	23,655	--	1212	249	50,602
1994	14,665	9,310	18,751	--	1,546	91	44,563
1995	21,322	10,943	32,334	--	810	104	65,513
1996	18,957	16,946	24,580	--	198	60	60,741

1/ Sources: Foreign and joint venture catches -- personal communication with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE., Bin C15700, Building 4, Seattle, WA 98115-0070; U.S. landings, 1978-80 -- Rigby (1984); U.S. landings, 1981-89 -- Pacific Fishery Information Network (PacFIN), Pacific States Marine Fisheries Commission, 45 SE. 82nd Dr., Suite 100, Gladstone, OR 97027-2522; U.S. landings, 1990-93 -- personal communication with Michael Guttormsen, U.S. Fisheries Observer Program; U.S. landings, 1994-96 -- NMFS Alaska Regional Office.

Gulf-wide, landings have almost always been less than the TAC, with the two exceptions occurring in 1992 and 1996 (Table 2.4). Individual regulatory area TAC overages have occurred somewhat more frequently. Slight overages occurred in the Western area in 1989, 1991, 1992, 1995, and 1996; in the Central area in 1987, and in the Eastern area in 1988 and 1992 (Table 2.6).

Table 2.6 Pacific cod landings (mt) and percent of area-specific allocation landed (% AL), by North Pacific Fishery Management Council (NPFMC) Gulf of Alaska regulatory area, 1978-97.

	NPFMC Regulatory Area							
	Western		Central		Eastern		Gulf of Alaska	
Year	Landings	% AL	Landings	% AL	Landings	% AL	Landings	% AL
1978	5,591	49	6,195	27	376	6	12,162	30
1979	3,982	41	10,370	53	518	9	14,870	43
1980	8,705	52	24,498	73	2,120	24	35,323	59
1981	11,579	59	22,151	56	2,358	21	36,088	52
1982	7,343	44	19,904	59	2,133	22	29,380	49
1983	9,178	55	25,242	75	1,981	21	36,401	61
1984	11,748	70	11,993	36	35	<1	23,776	40
1985	8,426	50	5,788	17	92	1	14,306	24
1986	12,751	42	11,454	35	407	3	24,612	33
1987	2,473	18	28,540	102	419	5	31,432	63
1988	5,562	29	26,702	44	293	146	32,557	41
1989	13,830	102	27,625	53	221	4	41,676	58
1990	29,309	98	39,436	66	323	36	69,068	77
1991	31,704	123	42,335	88	276	7	74,315	95
1992	36,080	154	39,139	100	1,113	111	76,332	120
1993	17,270	92	31,870	91	1,462	52	50,602	89
1994	14,665	88	28,061	90	1,637	65	44,363	88
1995	21,322	106	43,277	95	914	26	65,513	95
1996	18,957	101	41,526	97	258	8	60,741	93
1997	24,070	99	43,657	100	1,103	92	68,825	100

1/ Sources: Foreign and joint venture catches -- personal communication with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE., Bin C15700, Building 4, Seattle, WA 98115-0070; U.S. landings, 1978-80 -- Rigby (1984); U.S. landings, 1981-89 -- Pacific Fishery Information Network (PacFIN), Pacific States Marine Fisheries Commission, 45 SE. 82nd Dr., Suite 100, Gladstone, OR 97027-2522; U.S. landings, 1990-1993 -- personal communication with Michael Guttormsen, U.S. Fisheries Observer Program; U.S. landings, 1994-97 -- NMFS Alaska Regional Office.

2/ The NPFMC Western Regulatory Area is the International North Pacific Fisheries Commission (INPFC) Shumagin Statistical Area, the NPFMC Central area combines the INPFC Chirikof and Kodiak areas, and the NPFMC Eastern area encompasses the INPFC Yakutat and Southeastern INPFC areas.

Beginning in 1997, the State of Alaska instituted an inshore Pacific cod fishery for pot, mechanical jig gear, or hand troll gear (hand jig) only in the GOA (Figure 2.3). This fishery does not limit participation to Federal moratorium permit holders. The Alaska Board of Fisheries set the Western and Central area Guideline Harvest Levels (GHL) at 15% of the respective Federal ABC, and the Eastern area GHL at 25% of the EGA ABC. The Central area GHL is further allocated to Cook Inlet (15%), Kodiak (50%), and Chignik (35%). A vessel may register to fish in only one registration area in a calendar year (exclusive registration). The season opens 7 days after the closure of the Federal fishery. Jig and pot gear apportionments occur in some subareas. The pot fishery may start harvesting any unharvested jig quota in Cook Inlet and Kodiak on September 1 and in Prince William Sound on October 1. The Alaska Peninsula (EGA) and Chignik subarea fisheries have a maximum 58-foot vessel size limit. The Council reduces the GOA area TACs by the GHL amounts to conservatively manage the Pacific cod stock. NMFS and ADF&G manage these fisheries cooperatively and exchange survey and in-season data for Pacific cod. Landings for the 1997 State water fishery are reported in Figure 2.4.

Table 2.7 Gulf-wide Pacific cod landings (mt), 1978-97.

Year	Trawls	Longline	Pots
1978	4,547	6,800	0
1979	3,629	9,545	0
1980	6,464	27,780	0
1981	10,484	25,472	0
1982	6,679	22,667	0
1983	9,512	26,756	0
1984	8,805	14,844	0
1985	4,876	9,411	2
1986	6,850	17,619	141
1987	22,486	8,261	642
1988	27,145	3,933	1,422
1989	37,637	3,662	376
1990	59,188	5,919	5,661
1991	58,091	7,630	10,464
1992	54,305	15,467	9,984
1993	37,806	8,962	9,707
1994	31,446	6,778	9,160
1995	41,877	11,054	16,050
1996	45,991	10,196	12,040
1997	48,414	11,002	9,056

A description of the 1993-95 fishery in State and Federal waters is provided by Jackson and Urban (1996). Smaller vessels predominate in some Western/Central GOA areas, notably near the Shumagin Islands. Pot fishing was more prevalent near Kodiak Island, especially with smaller vessels. More than half of Western/Central area harvests for 1993-96 were taken by smaller pot vessels (Table 2.7). Longline vessels accounted for 11% of the total 1993-95 harvest in the Western/Central area, with smaller vessels predominating near Kodiak and the outer Kenai Peninsula. Trawls accounted for about 66% of the Gulf-wide 1993-95 harvest, and 30% in state waters. Small trawlers predominate in this fishery, particularly near the Shumagins. Jig gear landed very little; nearly all vessels were <61 ft.

2.2.2 Biology and Status of Pollock Stocks

Walleye pollock (*Theragra chalcogramma*) is a semidemersal schooling fish that is widely distributed throughout the North Pacific in temperate and subarctic waters. They are found throughout the water column from shallow to deep water, frequently forming large schools at depths of 100-400 m along the outer continental shelf and slope. In the Gulf, major exploitable concentrations are found primarily in the Central and Western regulatory areas (147° - 170°W longitude).

Several subpopulations of pollock may exist but the evidence is inconclusive. There are two groups in the Bering Sea which can be distinguished by different growth rates, and perhaps five discrete spawning groups which exist from the Aleutians to Puget Sound, Washington. Pollock from this region are managed as a single stock that is separate from the Bering Sea and Aleutian Island pollock stocks (Alton and Megrey 1986).

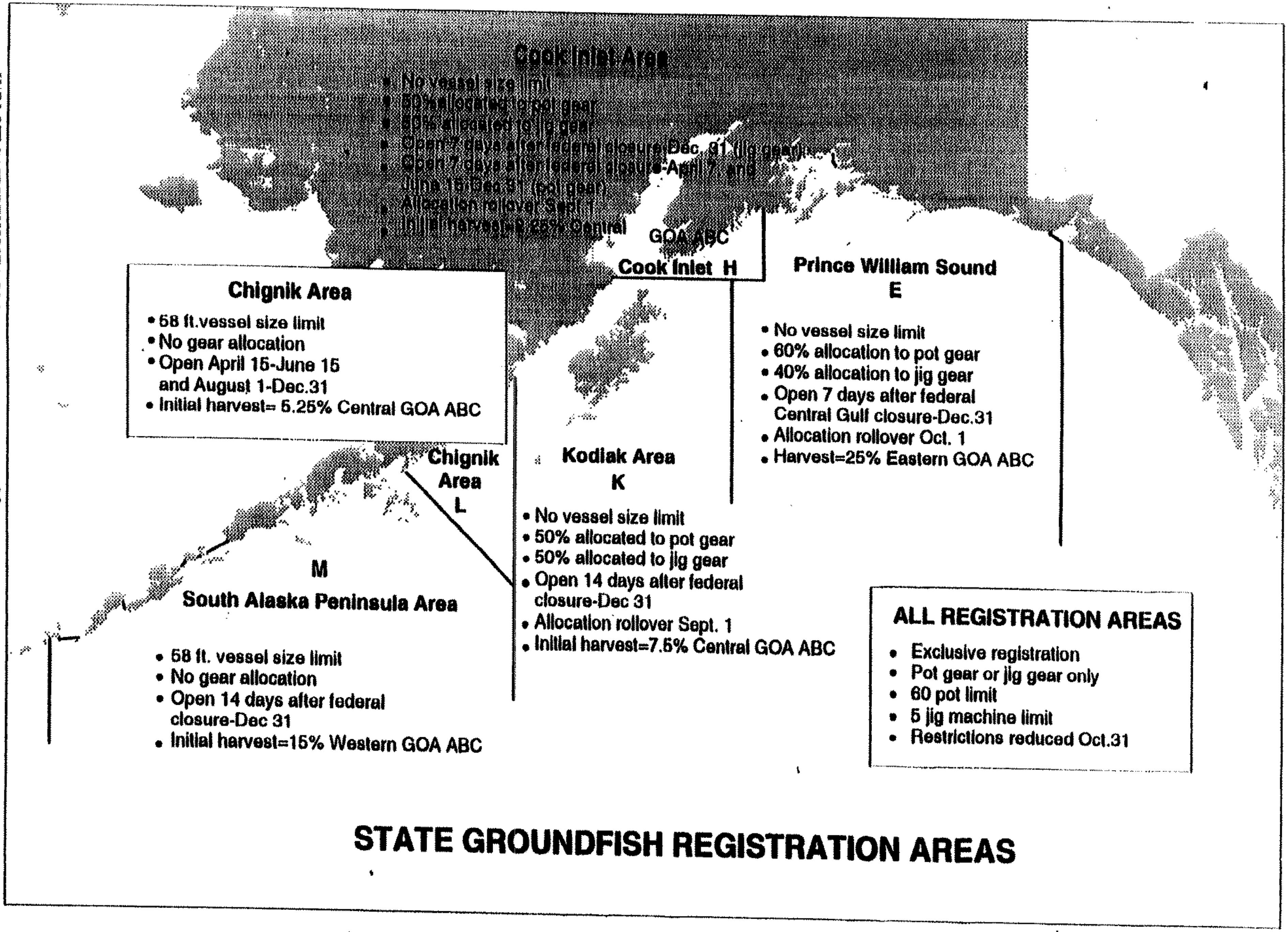

Figure 2.3 Elements of State Water Pacific Cod Management Plans

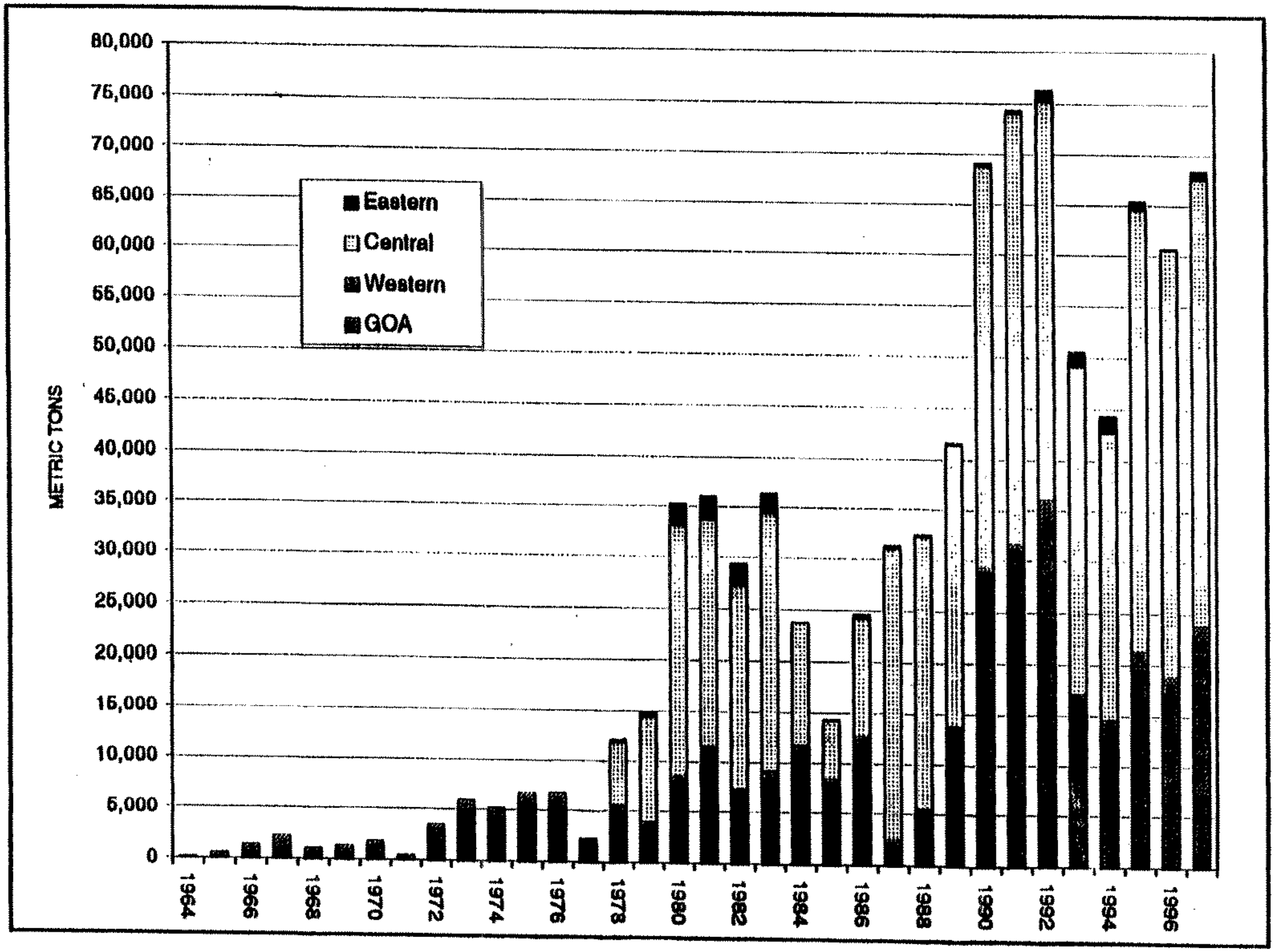

Figure 2.4 Pacific Cod landings in the GOA 1964-1997. Source: NPFMC SAFE report, Nov. 1997

Major spawning concentrations of pollock in the Gulf of Alaska have been observed in Shelikof Strait and the Shumagin Islands. Eggs have been found at depths of 0-1,000 m. Spawning is seasonal and occurs during the late winter/early spring period. The species is a mass spawner that forms large mid-water concentrations during the spawning season. The greatest spawning biomass has been observed in Shelikof Strait, with spawning also occurring off the east coast of Kodiak Island and off Prince William Sound. Both male and female pollock begin to attain sexual maturity at about 25 cm fork length and 50% are mature by 30-34 cm (3-4 years of age). Estimated fecundity of females 30-34 cm of length is about 100,000 eggs.

Young-of-the-year occur in the upper 40 m and older juveniles are found in depths of 10-400 m in the water column. Adult are usually found at 50-300 m, but occasionally to 975 m. Seasonal movements between inshore/offshore habitats have been observed, with adult fish moving in the spring from deep water to shallower depths where they remain throughout the summer. In the fall they return to deep water. In addition to seasonal movements, there may be vertical movements in the water column associated with time of day and feeding patterns.

Walleye pollock are opportunistic feeders, feeding on free-swimming pelagic animals. Juveniles feed on copepods, euphausiids, amphipods, and isopods. Small adults feed primarily on euphausiids while large adults may concentrate on juvenile pollock. Walleye pollock are preyed upon by pinnipeds, cetaceans, diving birds, and larger fishes. They are also cannibalistic.

Growth of pollock is rapid until about 4 years of age. Maximum size is about 91 cm, and maximum ages are 13 years for males and 17 years for females. The maximum age observed was 22 years. Estimates of the instantaneous rate of natural mortality range from 0.30-0.65. Natural mortality was assumed to be 0.3 for all ages.

The Gulf-wide pollock biomass estimate in 1997 was 707,434 mt. The time series used for the stock assessment is based only on the regions west of Cape St. Elias. The 1996 point estimate of pollock biomass in this region was 653,905 mt, a 14% drop from 1993. The long term trend in biomass in regions west of Cape St. Elias has been flat.

The regional distribution of pollock biomass shifted between each of the five bottom trawl surveys. In 1996, the largest concentration of pollock biomass was in the Chirikof area (39%), followed by the Kodiak (30%) and Shumagin areas (22%). Large concentrations of pollock were observed in the Western Gulf, Shumagin Islands, and in regions surrounding Kodiak Island (Hollowed et al. 1996). Relative to 1993, pollock biomass estimates in the Eastern Gulf (Yakutat and Southeast combined) increased 45%. Most of this increase occurred in the Southeast area in the shallow 0-100m depth range. The first year bottom trawl samples were taken in shallow waters in the Southeast region in 1996. The biomass in the Yakutat region dropped from 35,413 to 19,587 mt between 1993 and 1996.

The 1996 catch-at-age data continue to show that the strong 1984 year class (age 12) was still present in Central area in the second and third trimesters. Strong 1988 and 1989 year classes were present in roughly equal proportions in the third trimester. The 1989 year class (age 7) dominated the first trimester data. Evidence of the incoming 1994 year class (age 2) was revealed in the first trimester data. Length frequency distributions from the 1996 bottom trawl survey in the Western and Central areas show a fairly large mode at about 24 cm, which is evidence of a strong 1994 year class. The 1994 year class represents the largest estimate of 1 and 2 year old fish in the history of the Shelikof Strait surveys. Another pronounced mode was observed at about 16 cm in the Eastern area and the Shumagin region, which is evidence of a potentially strong 1995 year class. An estimate of the number of age 2 fish (the 1994 year class) in the Western and Central areas (138 million fish) is much higher than the previous survey estimate of age 2 fish in 1993 (47.6 million fish). The 1997 year-class is predicted to be average.

Stock projections show the spawner biomass level in 1998 will be below $B_{40\%}$. Under all recruitment options, the spawner biomass is predicted to peak in 1999. Exploitable biomass of age 3+ fish is projected to drop from 1,156,000 mt in 1998 to between 449,506 mt and 842,960 mt, depending on recruitment.

The commercial fishery for walleye pollock in the Gulf of Alaska started as a foreign fishery in the early 1970s (Megrey 1988). Catches increased rapidly during the late 1970s and early 1980s (Table 2.8). Major spawning concentrations of pollock were discovered in Shelikof Strait in 1981 and roe fisheries developed. The biomass of spawning pollock was estimated at 2.7 million mt in 1981 based on revised EIT surveys of Shelikof Strait. The domestication of the pollock fishery occurred quickly in the Gulf with only a short period of joint venture operations in the mid-1980s. The fishery was fully domesticated by 1988. Historical fishing locations through 1992 are reported in Fritz (1993). The seasonal distribution of domestic trawl locations where pollock was the target is shown in Figure 2.2.

Table 2.8 Landed catch including discard pollock (1000 t) in the Western and Central regions of the Gulf of Alaska 1977-97.

Year	Western/ Central Catch	Western/ Central TAC	% AL[1]	Yakutat/ S.E. Catch	Yakutat/ S.E.TAC
1977	112.3	118.0*	95	-	-
1978	95.8	168.0*	57	3.5	-
1979	99.8	168.0*	59	5.4	-
1980	110.4	168.0*	66	4.6	-
1981	139.2	168.0*	83	8.6	-
1982	165.1	168.0*	98	3.6	-
1983	215.5	256.6*	84	T	-
1984	306.7	400	77	0.00	16.6
1985	284.8	305	93	0.00	16.6
1986	93.6	150	62	0.00	16.6
1987	69.5	104	67	-	4
1988	65.6	90	73	-	3
1989	78.2	72	109	-	0.2
1990	90.5	70	129	-	3.4
1991	107.5	100	108	-	3.4
1992	93.9	84	112	-	3.4
1993	107.4	111	97	0.7	3.4
1994	104	102	102	6.9	7.3
1995	69.9	62	113	3.4	3.6
1996	49.8	52.5	95	0.6	2.8
1997	84.0	74.4	113	5.9	5.6
Avg.	121	142	90	3.2	6

*: Gulf-wide TAC from 1977 - 1983.

Sources: Foreign and joint venture catches 1977-84--Berger et al. (1986); 1985-88--Pacific Fishery Information Network (PacFIN), Pacific Marine Fisheries Commission. Domestic catches 1978-80--Rigby (1984); 1981-90--PacFIN, 1991-97 NMFS Alaska Regional Office.

1/ The percentage of the Western and Central GOA TAC that was harvested.

Section 2.1.3 describes recent Council action to address the pollock and Pacific cod fisheries in the BS/AI and GOA, which have been "at risk" of exceeding their specified total allowable catch (TAC) or prohibited species catch (PSC) limits.

2.3 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 2.1 and 2.2, 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.

2.3.1 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.

A summary of the effects of the annual groundfish total allowable catch amounts on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are discussed in the final environmental assessment for the annual groundfish total allowable catch specifications.

2.3.2 Impacts on Endangered or Threatened Species

Background. The ESA provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by NMFS for most marine species, and the US Fish and Wildlife Service (FWS) for terrestrial and freshwater species.

The ESA procedure for identifying or listing imperiled species involves a two-tiered process, classifying species as either threatened or endangered, based on the biological health of a species. 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)]. The Secretary, acting through NMFS, is authorized to list marine mammal and fish species. The Secretary of Interior, acting through the FWS, is authorized to list all other organisms.

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. The primary benefit of critical habitat designation is that it informs Federal agencies that listed species are dependent upon these areas for their continued existence, and that consultation with NMFS on any Federal action that may affect these areas is required. Some species, primarily the cetaceans, listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA, have not received critical habitat designations.

Listed Species. The following species are currently listed as endangered or threatened under the ESA and occur in the GOA:

Endangered

Northern Right Whale	*Balaena glacialis*
Bowhead Whale[2]	*Balaena mysticetus*
Sei Whale	*Balaenoptera borealis*
Blue Whale	*Balaenoptera musculus*
Fin Whale	*Balaenoptera physalus*
Humpback Whale	*Megaptera novaeangliae*
Sperm Whale	*Physeter macrocephalus*
Snake River Sockeye Salmon	*Oncorhynchus nerka*
Short-tailed Albatross	*Diomedia albatrus*
Steller Sea Lion[3]	*Eumetopias jubatus*

Threatened

Snake River Fall Chinook Salmon	*Oncorhynchus tshawytscha*
Snake River Spring/Summer Chinook Salmon	*Oncorhynchus tshawytscha*
Steller Sea Lion[4]	*Eumetopias jubatus*
Spectacled Eider	*Somateria fishcheri*

Section 7 Consultations. Because both groundfish fisheries are federally regulated activities, any negative affects of the fisheries on listed species or critical habitat and any takings[5] 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 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.

Section 7 consultations have been done for all the above listed species, some individually and some as groups. Below are summaries of the consultations.

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

[2] species is present in Bering Sea area only.

[3] listed as endangered west of Cape Suckling.

[4] listed as threatened east of Cape Suckling.

[5] 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).

opinions. NMFS has no plan to reopen Section 7 consultations on the listed cetaceans for this action or for the 1998 TAC specification process. 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 maintains the threatened listing.

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 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 GOA fisheries effects on Steller sea lions was issued by NMFS March 2, 1998. The 1998 biological opinion concluded that the 1998 fishery is not likely to jeopardize the continued existence and recovery of Steller sea lions or to adversely modify critical habitat. The 1996 biological opinion 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.

Pacific Salmon. No species of Pacific salmon originating from freshwater habitat in Alaska are listed under the ESA. These listed species originate in freshwater habitat in the headwaters of the Columbia (Snake) River. During ocean migration to the Pacific marine waters a small (undetermined) portion of the stock go into the Gulf of Alaska as far east as the Aleutian Islands. In that habitat they are mixed with hundreds to thousands of other stocks originating from the Columbia River, British Columbia, Alaska, and Asia. The listed fish are not visually distinguishable from the other, unlisted, stocks. Mortal take of them in the chinook salmon bycatch portion of the fisheries is assumed based on sketchy abundance, timing, and migration pattern information.

NMFS designated critical habitat in 1992 (57 FR 57051) for the Snake River sockeye, Snake River spring/summer chinook, and Snake River fall chinook salmon. The designations did not include any marine waters, therefore, does not include any of the habitat where the groundfish fisheries are promulgated.

NMFS has issued two biological opinions and no-jeopardy determinations for listed Pacific salmon in the Alaska groundfish fisheries (NMFS 1994, NMFS 1995). Conservation measures were recommended to reduce salmon bycatch and improve the level of information about the salmon bycatch. The no jeopardy determination was based on the assumption that if total salmon bycatch is controlled, the impacts to listed salmon are also controlled. The incidental take statement appended to the second biological opinion allowed for take of one Snake River fall chinook and zero take of either Snake River spring/summer chinook or Snake River sockeye, per year. As explained above, it is not technically possible to know if any have been taken. Compliance with the biological opinion is stated in terms of limiting salmon bycatch per year to under 55,000 and 40,000 for chinook salmon, and 200 and 100 sockeye salmon in the GOA fisheries, respectively.

Short-tailed albatross. The entire world population in 1995 was estimated as 800 birds; 350 adults breed on two small islands near Japan (H. Hasegawa, per. com.). 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 longline fishery include two in 1995, one in October 1996, and none so far in 1997. Both 1995 birds were caught in the vicinity of Unimak Pass and were taken outside the observers' statistical samples.

Formal consultation on the effects of the groundfish fisheries on the short-tailed albatross under the jurisdiction of the FWS concluded that GOA groundfish fisheries would adversely affect the short-tailed albatross and would result in the incidental take of up to two birds per year, but would not jeopardize the continued existence of that species (FWS 1989). Subsequent consultations for changes to the fishery that might affect the short-tailed albatross also concluded no jeopardy (FWS 1995, FWS 1997). The US Fish and Wildlife Service does not intend to renew consultation for this action or the 1998 TAC specification process.

Spectacled Eider. These sea ducks 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). Although the species is noted as occurring in the GOA and management areas no evidence exists that they interact with these groundfish fisheries.

Conditions for Re-initiation 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 groundfish fisheries of the GOA in a way not previously considered in the above consultations. The proposed alternatives are administrative in nature and are designed to improve the in-season management of certain groundfish fisheries. None of the alternatives would affect TAC amounts, PSC limits, or takes of listed species. Therefore, none of the alternatives are expected to have a significant impact on endangered, threatened, or candidate species.

2.3.3 Impacts on Marine Mammals

Marine mammals not listed under the ESA that may be present in the GOA 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 [northern fur seals (*Callorhinus ursinus*), and Pacific harbor seals (*Phoca vitulina*)] and the sea otter (*Enhydra lutris*).

The proposed alternatives are administrative (or allocational) in nature and are designed to improve the in-season management of certain groundfish fisheries and maintain industry stability and coastal communities. None of the alternatives would affect TAC amounts, PSC limits, or takes of marine mammals. Therefore, none of the alternatives are expected to have a significant impact on marine mammals. Additional information on pollock removals from critical habitat areas are in the GOA is provided in Chapter 6.

2.3.4 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.

2.3.5 Conclusions or Finding of No Significant Impact

The action currently contemplated is a continuation of Amendment 23 and Amendment 40 in perpetuity. Potential impacts relative to NEPA are expected to be consistent with those previously predicted. Total removals of the pollock and Pacific cod resources are controlled by the setting of total allowable catches (TAC), and their monitoring has been enhanced recently to guard against overruns. Allocations between industry sectors will not change total removals from the stocks, and may provide an extra margin of safety against overruns by further partitioning the TACs.

Prohibited species catch (PSC) such as crab, herring, and halibut are controlled as necessary and appropriate by extensive management measures in the GOA, including closed areas, PSC quotas, bycatch disincentive programs, and authorizations to the NMFS Regional Director to limit bycatch and close areas.

None of the alternatives 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.

Gary C. Matlock
for Assistant Administrator for Fisheries, NOAA

12-15-98
Date

2.4 Regulatory Impact Review: Economic and Socioeconomic Impacts of the Alternatives

This section provides information about 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 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 Regulatory Impact Review (RIR) is designed to provide information to determine whether the proposed regulation is likely to be "economically significant." None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866.

2.4.1 Impacts of the Alternatives

2.4.1.1 Alternative 1: No Action

2.4.1.1.1 GOA pollock fishery

The Council has identified preemption of GOA fisheries by BS/AI-based vessels as a problem, and has taken numerous regulatory actions to avert preemption. One such action occurred in 1996, when the Council submitted a recommendation for a September 1 opening for the Central GOA pollock fishery and October 1 in the Western GOA for third trimester season opening dates. The Secretary, however, implemented a simultaneous September 1 opening for both GOA areas to coincide with the BS/AI 'B' season opening to prevent preemption of the Western area fishery by larger, more numerous BS/AI-based vessels. Scheduling simultaneous openings in various areas disperses effort, resulting in more manageable fisheries and more equitable distribution of opportunity. Additional actions include stand-down periods for vessels transiting between fisheries and a vessel registration program.

In the absence of an inshore/offshore allocation (Alternative 1), it appears unlikely that a significant amount of offshore effort would be directed at the GOA in the first trimester and third trimesters, given the relative magnitude of the GOA pollock fishery compared to the BS/AI pollock fishery and simultaneous openings. There is some likelihood that offshore vessels may enter the second trimester fishery, which opens June 1, triggering the preemption and stability problems identified in previous analyses, and which are identified in the Council's Problem Statement.

2.4.1.1.2 GOA Pacific cod fishery

Alternative 1 would benefit the offshore freezer longline and catcher/processor fleets at the expense of the current inshore participants in the Pacific cod fishery. Given the longline allocation for Pacific cod in the BS/AI, offshore vessels would likely enter the GOA prior to fishing their larger guaranteed allocation in the BS/AI. If the Pacific cod TAC increases in the GOA as expected, it is estimated that this sector would be able to process the entire amount of that increase without giving up any catch in BS/AI (Analysis for Amendment 38).

2.4.1.1.3 General Conclusions

Sufficient data necessary to quantify projections of the Pacific cod fishery in the GOA under Alternative 1 are lacking. Qualitatively, however, allowing the freezer longliner and trawler/processor fleet access to GOA Pacific cod would not be beneficial to the current inshore sector. Given the longline allocation for Pacific cod in the BS/AI, these vessels would likely enter the GOA prior to fishing their larger guaranteed allocation in the BS/AI. If the Pacific cod TAC increases in the GOA as expected, it is possible that this sector of the fleet would be able to process the entire amount of that increase without giving up any catch in BS/AI. Participation by the trawler/processor fleet is less certain because of the timing of the seasons. Recall that the Gulf Pacific cod fisheries have typically ended around the end of March, about the same time the BS/AI A-season for pollock ends. However, any trawler/processor effort in the GOA Pacific cod fishery has the potential to dramatically decrease the season length in the GOA.

Overall it would appear that Alternative 1 would benefit the freezer longliner class and some catcher/processors at the possible expense of the rest of the current inshore fleet. An important caveat in all of these conclusions is the impact of the GOA pollock fishery on the GOA Pacific cod fishery. If pollock TACs are high, more effort will be expended in that fishery early in the year causing the Pacific cod season to be longer. If pollock TACs are low, then effort will shift to the Pacific cod fishery. This will be the case whether or not the inshore/offshore amendments are reauthorized.

The implications of Alternative 1 for both fisheries are reduced seasons, intensified races for fish, and lower utilization rates. All of these will lead to destabilizing effects for the GOA inshore sector, and the communities dependent on those processors. The absence of an allocation under Alternative 1 would very likely impact coastal Alaskan communities negatively, both economically and socially, as detailed in the analyses for Amendment 38/40, which extended the allocations through 1998.

2.4.1.2 Alternative 2: Rollover GOA pollock (100% inshore) and Pacific cod (90% inshore) allocations

2.4.1.2.1 Summary of Findings for I/O1 and 2

With its approval of I/O1 and I/O2, the Council reached consensus that a direct allocation of pollock and/or Pacific cod TACs in the GOA was the most appropriate means of offering a timely solution to the inshore/offshore preemption problem. Qualitative estimates suggest that the net national effects of Alternative 2 are positive under normative assumptions. Such benefits incorporate the economic effects noted above, as well as positive national impacts created by: (1) maintaining a balance in the social and economic opportunities associated with the pollock and Pacific cod fisheries; (2) helping insure that the fishery resources are available to provide private and community benefits to all parties; and (3) reducing the uncertainty and operational instability caused by the threat of preemption. It is intended that the pollock and Pacific cod allocations made for the GOA are in the best interest of resource management, dependent communities, and the nation at large.

The social impact analysis (SIA) in the original study of Amendment 23, and as augmented in the Supplemental Analysis, concluded there would be positive social gains from an inshore allocation of pollock, and that social benefits to inshore operations may arise from increased or stabilized incomes, employment, and related economic activity, and simply from reductions in the uncertainty, or threat of preemption that accompanies a set allocation. The GOA communities of Kodiak and Sand Point were addressed in the original SIA compiled in 1991. The SIA found that Kodiak was particularly dependent on the GOA fisheries, from both the harvesting and processing perspective. The study also indicated that Kodiak was "in the enviable position that it has both the harvesting and processing capacity to handle the full GOA pollock and Pacific cod allocations." This is likely still the case, even though GOA Pacific cod quotas are considerably higher currently than when this study was compiled (though a significant percent is now allocated to State water fisheries). The study also indicated that, although there are temporary workers hired from outside during the summer months, most of the processing plant employees in Kodiak are local residents. Though the lack of employment may be greater in other western Alaska communities, there is little alternative employment for many of these plant workers in Kodiak. Fish processing has accounted for 10 - 40% of the overall industrial payroll for Kodiak residents since 1980, with the majority of other residents engaged in fish harvesting or fisheries support activities.

Similar to Kodiak, the community of Sand Point has an economic base primarily dependent on fisheries, with the fishing industry accounting for 87% of the employment in 1987. Of the total employment, fish processing accounted for 35%. Sand Point is located within the Aleutians East Borough, which has generally benefitted from commercial fishing operations; for example, there were approximately $140 million worth of fish processed or sold within the borough boundaries in 1989. At least one plant in Sand Point has heavily invested in Pacific cod fish processing capability. Historically there was less emphasis on pollock processing in this area. However, over time they have become more dependent on the pollock resource from both the GOA and BS/AI.

2.4.1.2.2 Economic and Social Indices

Stability has been highlighted in the problem statement as a primary consideration for reauthorization of the inshore/offshore allocations (Alternative 2). The inshore/offshore allocation inherently provides the inshore and offshore sectors access to specified percentages of the pollock and Pacific cod resources. The set harvest percentage may add to the stability of the relationship between the inshore and offshore sectors. Similarly, the allocation may provide stability within the sectors.

Although the distributional, income-based analyses conducted for I/O1 are based on economic activity at the community/regional level, an additional, more qualitative examination of community impacts was provided in the analysis for I/O2. A review of the 1992 SIA, which focused on the communities of St. Paul, Dutch Harbor, Sand Point/King Cove, Kodiak, Newport, and Bellingham/Seattle, indicated that smaller Alaska communities, which are fundamentally dependent on the groundfish fisheries, exhibited the most variability and vulnerability to socially disruptive forces. Inshore allocations were determined to provide the greatest benefit to Alaskan coastal communities and afford them the greatest opportunities for development and growth, while the only community negatively affected would be Ballard/Seattle, and to a much less relative degree.

Immediate and direct positive impacts would be expected by Alaskan communities with the allocation (Alternative 2). Since 1992, additional infrastructures have developed in Alaskan coastal communities, partially in response to the guaranteed allocations under I/O1. Given the current status of the fisheries, and the communities which rely on fishing and processing, allowing the inshore/offshore allocations to expire, in the absence of alternative management remedies, would likely result in at least the same level of impacts as previously projected. Impacts at this time could be exacerbated beyond those previously predicted due to the additional infrastructures and the ability of these communities to utilize the current allocations.

2.4.1.2.3 Gulf of Alaska Pacific Cod - Current Status of Fisheries under the Allocation

Amendment 23 allocated 90% of the Pacific cod in the Gulf of Alaska to the inshore sector. The remaining 10% was allocated to the offshore sector. The 1996 GOA Pacific cod fishery opened to fixed gear on January 1 and trawl gear on January 20. TAC specifications totaled 18,500 mt for the Western area, 42,900 mt for the Central area, and 3,250 mt for the Eastern area. Inshore processors were allocated 90% of the TAC (16,650 mt, 38,610 mt, and 2,925 mt by area). Halibut bycatch rates were moderate for hook-and-line and trawl gear. Halibut PSC limits did not affect fishing time for these gear types, rather, closures were due to TAC attainment. The Western area closed to all gear types for the inshore sector on March 3; the offshore sector closed on March 9. In the Central area, the offshore sector closed on March 13; the inshore sector closed on March 18.

For 1997, TACs totaled 24,225 mt, 43,690 mt, and 1,200 mt for the Western, Central, and Eastern areas, respectively. The Western area inshore season closed March 3 and reopened for a one day fishery on March 10; the offshore season stayed on bycatch status for the year. The Central area inshore season closed March 11, and reopened on October 1; the offshore season opened on October 1. The Eastern area is on bycatch status every year on January 1. A summary of first season closures since 1993 is listed in Table 2.9.

Table 2.9 Federal Pacific cod closures in the GOA by area for 1993-1997.

	WESTERN		**CENTRAL**	
Inshore	**status**	**close**	**status**	**close**
93	B	9- Mar	B	24-Mar
94	B	8-Mar	B	16-Mar
			P	9-Apr
95	B	17-Mar	B	22-Mar
	P	30-Mar	B	11-Oct
			P	29-Nov
96	B	3 Mar	B	18-Mar
	P	5-May	P	5-May
97	B	3-Mar	B	11-Mar
Offshore				
93	B	1-Jan	B	1-Jan
94	B	1-Jan	B	1-Jan
95	B	7-Mar	B	13-Mar
	P	5-May		
96	B	9-Mar	B	13-Mar
	P	5-May	P	5-May
97	B	1-Jan	B	1-Jan

B = bycatch retainable
P = prohibited species, bycatch not retainable

Figure 2.5 depicts the number of days in each inshore Pacific cod season for 1991-97. The season length has been fairly stable for 1992-97, with an increase in 1995, for the inshore Western GOA target fishery. The season length has shown a declining trend for 1991-97, with a short spike in 1995, for the inshore Central GOA fishery. Season length and amount of quota taken in these fisheries is listed in Table 2.10.

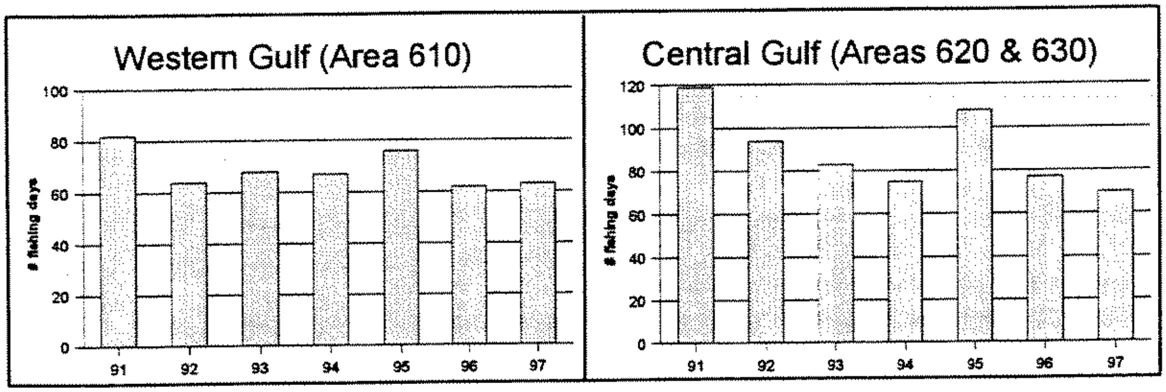

Figure 2.5 Season length (days) in the inshore Pacific cod fishery by GOA subarea.

Table 2.10. Season length in GOA Pacific cod fishery (inshore component only), 1991 - 1997.

Year	Area	Directed fishing Season (days)	Quota (mt)	Catch	Underage/ Overage
1991	W	82	30,000	29,212	-3%
	C	119	45,000	40,421	
	E	0	2,900	253	
1992	W	64	23,500	34,399	32%
	C	94	39,000	38,940	
	E	94	1,000	1,087	
1993	W	68	18,700	18,397	-2%
	C	83	38,200	35,972	
	E	0	2,800	1,650	
1994	W	67	16,630	15,214	-9%
	C	75	31,250	31,067	
	E	0	2,520	1,704	
1995	W	76	20,100	22,574	11%
	C	108	45,650	45,477	
	E	0	3,450	1,002	
1996	W	62	18,850	19,763	5%
	C	77	42,900	47,564	
	E	0	3,250	952	
1997	W	63	24,225	23,932	-1%
	C	70	43,690	43,677	
	E	0	1,200	865	

Note: 1997 does not include State water fishery.

Table 2.11 lists the Pacific cod catch and exvessel value for the GOA and BS/AI inshore and offshore sectors. BS/AI data are included to illustrate the scale of the GOA fisheries and the possibility of preemption of the GOA fisheries by the larger BS/AI fleet. Pacific cod catches (mt) are approximately at the five year (1992-96) average for the GOA offshore sector, and slightly above the average for the inshore sector. The Pacific cod catch in the GOA totaled 68 thousand mt (round weight) in 1996, with an exvessel value of $25.2 million. The offshore sector brought in landings of 13 thousand mt worth $4.9 million; the inshore sector landed 55 thousand mt worth $20.3 million.

Table 2.11 Pacific cod and pollock catch and exvessel value off Alaska by area, processor category and species, 1992-1996 (1,000 metric tons round weight, $ millions)

TOTAL CATCH	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	At-sea	Inshore	Total	At-sea	Inshore	Total	At-sea	Inshore	Total
Pacific cod									
1992	24	56	80	180	25	205	204	81	285
1993	9	48	57	128	40	168	137	87	224
1994	6	41	47	147	47	194	153	89	242
1995	14	55	69	188	57	245	202	112	314
1996	13	55	68	177	63	240	191	118	309
Pollock									
1992	9	84	93	1,040	399	1,439	1,049	483	1,532
1993	1	108	109	947	438	1,385	948	545	1,493
1994	2	105	107	950	438	1,388	952	544	1,496
1995	3	70	73	919	409	1,328	922	479	1,401
1996	3	49	52	843	379	1,222	846	428	1,274

TOTAL Exvessel	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	At-sea	Inshore	Total	At-sea	Inshore	Total	At-sea	Inshore	Total
Pacific cod									
1992	12.0	29.1	41.1	92.4	10.2	102.6	104.4	39.3	143.7
1993	3.9	16.5	20.4	55.2	12.3	67.5	59.0	28.8	87.8
1994	2.2	13.6	15.8	61.1	12.6	73.7	63.3	26.3	89.6
1995	5.9	24.6	30.5	73.8	18.6	92.4	79.8	43.1	122.9
1996	4.9	20.3	25.2	80.0	21.8	101.8	84.9	42.2	127.1
Pollock									
1992	1.7	21.3	23.0	248.2	105.0	353.2	249.8	126.3	376.1
1993	.1	16.9	17.0	123.3	60.8	184.1	123.4	77.7	201.1
1994	.1	16.5	16.6	138.0	68.1	206.1	138.1	84.6	222.7
1995	.5	15.7	16.2	181.1	84.9	266.0	181.6	100.5	282.1
1996	.2	10.2	10.4	152.1	71.3	223.4	152.3	81.5	233.8

Effort as measured by fishing vessel weeks by catcher vessels targeting Pacific cod in the BS/AI and GOA is listed in Table 2.12. Of 3,070 vessel weeks of Pacific cod fishing by catcher trawl vessels in the GOA during 1992-96, 54% of fishing effort was by vessels ≤60 ft; 45% was by vessels 60 - 124 ft, and 1% was by vessels >125 ft. Of 5,925 vessel weeks by hook-and-line (H&L) catcher vessels, 94% was by vessels ≤60 ft; 6% was by vessels 60 - 124 ft, and only 1 was by a vessel >125 ft. Fishing effort declined by half from 1992 to 1996, although the 1996 value was 16% below the five-year average in the small H&L catcher boat category. Pot boats totaled 4,056 fishing vessel weeks for the period; 67% was by vessels ≤60 ft; 32% was by vessels 60 - 124 ft, and <1% was by vessels >125 ft. In 1996, mid-size pot boat effort increased by 15%, and large boat effort doubled the five-year average. Pot effort in 1995, however, was nearly equal to 1992 fishing vessel weeks and may have been a result of speculation towards the minimum landing and participation requirements then in discussion for the License Limitation Program that was approved in June 1995. H&L effort also spiked in 1995.

Of the 84 fishing vessel weeks targeting Pacific cod by trawl catcher/processors (CP) in the GOA, none was by vessels <60 ft; 40% was by vessels 60 - 124 ft, 55% was by vessels ≤125 ft, and 5% was by vessels >230 ft (Table 2.13). Of the 461 vessel weeks expended by H&L catcher/processors, 5% was by vessels ≤60 ft; 81% was by vessels 60 - 124 ft, and 13% was by vessels >125 ft. The H&L Pacific cod effort dropped from 12 to 0 weeks in the small boat category, by 25% in the 60 - 124 ft category, and by half, to only six weeks, in the >125 ft category, compared with the five-year average. Only two weeks of CP pot fishing were reported during 1992 and 1995, in the 125 - 230 ft category.

Table 2.12 Catcher vessel (excluding catcher processors) weeks of fishing groundfish off Alaska by area, vessel length class (feet), gear, and target, 1992-1996.

	Gulf of Alaska Vessel length class			Bering Sea and Aleutian Vessel length class			All Alaska Vessel length class		
	<60	60-124	>124	<60	60-124	>124	<60	60-124	>124
H & L Pacific cod									
1992	1,891	112	1	119	35	-	2,010	146	1
1993	964	49	-	12	0	-	976	49	-
1994	712	44	-	245	8	-	958	52	-
1995	1,069	97	-	360	4	-	1,428	101	-
1996	935	51	-	268	7	0	1,202	58	0
Pot Pacific cod									
1992	713	347	10	3	167	31	716	514	40
1993	349	159	-	-	47	13	349	207	13
1994	403	156	1	13	122	24	416	278	25
1995	716	341	10	68	383	69	783	724	79
1996	538	298	15	22	479	77	561	777	92
Trawl Pacific cod									
1992	403	368	16	2	288	40	405	656	56
1993	327	275	0	7	362	30	334	638	30
1994	335	229	1	11	367	57	346	597	58
1995	246	268	7	-	368	37	246	636	44
1996	359	231	5	2	580	118	361	811	123
Trawl Pollock									
1992	62	414	26	8	1,245	385	70	1,658	411
1993	79	488	27	8	861	320	87	1,349	348
1994	100	416	48	-	781	340	100	1,197	388
1995	91	301	39	4	934	248	95	1,235	288
1996	96	204	21	13	853	358	109	1,058	379

Fishing effort in the BS/AI catcher vessel Pacific cod fishery during 1992-96 is provided for comparison (Table 2.12). Of the 2,269 fishing vessel weeks by trawl catcher vessels in this fishery,<1% of effort was by vessels ≤60 ft; 87% was by vessels 60 - 124 ft, and 12% was by vessels >125 ft. Of the 1,058 fishing weeks by H&L catcher vessels, 95% was by vessels ≤60 ft; 5% was by vessels 60 - 124 ft, and none by vessels >125 ft. Pot boats totaled 1,518 fishing vessel weeks for the period; 7% was by vessels ≤60 ft; 79% was by vessels 60 - 124 ft, and 14% was by vessels >125 ft. Catcher boat pot effort approximately doubled in the mid-size and large boat categories in 1996, compared with the five-year average.

Table 2.13 Catcher processor vessel weeks of fishing groundfish off Alaska by area, vessel length class (feet), gear, and target, 1992-1996.

	Gulf of Alaska Vessel length class			Bering Sea and Aleutian Vessel length class			All Alaska Vessel length class		
	<60	60-124	125-230	<60	60-124	125-230	<60	60-124	125-230
H & L Pacific cod									
1992	12	122	45	-	432	672	12	554	717
1993	5	68	2	-	251	382	5	318	384
1994	7	60	-	0	335	526	7	395	526
1995	0	69	9	2	289	574	2	358	582
1996	-	56	6	-	198	583	-	254	589
Pot Pacific cod									
1992	-	-	2	-	2	193	-	2	196
1993	-	-	-	-	1	9	-	1	9
1994	-	0	0	-	7	27	-	7	27
1995	0	0	2	1	62	55	1	62	57
1996	-	-	-	-	62	153	-	62	153
	60-124	125-230	>230	60-124	125-230	>230	60-124	125-230	>230
Trawl Pacific cod									
1992	20	15	1	16	123	18	36	138	18
1993	5	6	-	8	108	27	13	114	27
1994	2	6	1	11	46	16	13	52	17
1995	4	9	1	20	79	28	24	88	29
1996	3	10	1	17	84	12	20	94	13
Trawl Pollock									
1992	3	0	2	8	303	358	11	303	360
1993	-	0	-	9	234	315	9	235	315
1994	-	-	0	-	223	303	-	223	303
1995	-	2	0	1	176	290	1	179	291
1996	-	0	0	-	189	278	-	189	278

Of the 594 vessel weeks expended by trawl CPs in 1996, none was by vessels ≤60 ft; 3% was by vessels 60 - 124 ft, 48% by vessels 125-230 ft, and 49% by vessels >230 ft (Table 2.13). Fishing weeks declined by 10% in the >230 ft category during 1996, compared with the five-year average. Of the 4,244 vessel weeks expended by H&L CPS in the BS/AI, < 1% was by vessels≤60 ft; 36% by vessels 60 - 124 ft, and 65% by vessels >125 ft. H&L effort dropped by more than 34% in the mid-size category, compared with the five-year average. There were 572 vessel weeks of CP pot effort in the BS/AI from 1992 through 1996; <1% by vessels <60 ft, 23% by vessels 60-124 ft, and 76% by vessels >125 ft. Effort was approximately double the five-year average for the mid and large-size boat categories in 1996.

Effort as measured by vessels participating in the directed GOA Pacific cod fisheries by inshore/offshore sector is provided in Table 2.14. Of 125 trawlers in the 1996 fishery, 14% participated in the offshore fishery and 86% were inshore. Participation in 1996 was down by 11% for the offshore and 14% for the inshore sectors. Of 348 H&L vessels, 5% participated offshore and 95% inshore. Participation in 1996 was down by 20% for the offshore and 28% for the inshore sectors. There were 148 pot boats; all delivered inshore.

Vessel participation in the directed BS/AI Pacific cod fisheries is provided for comparison (Table 2.14). Of 162 trawlers in the 1996 target fishery, 40% participated in the offshore fishery and 60% inshore. Participation in 1996 was up by 24% for the offshore and 29% for the inshore sectors. Of 90 H&L vessels, 43% participated in the offshore fishery and 57% were inshore. Participation in 1996 was down by 19% for the offshore and up by 11% for the inshore sectors. There were 105 pot boats; 92 delivered inshore and 13 delivered offshore.

Table 2.14 Number of vessels that caught groundfish off Alaska by area, processor category, target, and gear, 1992-96

Gear/Target/ Year	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	At-sea	Inshore	Total	At-sea	Inshore	Total	At-sea	Inshore	Total
H & L Pacific cod									
1992	36	708	745	56	69	125	64	754	818
1993	17	442	459	53	9	62	54	449	503
1994	12	312	324	48	43	91	48	333	381
1995	20	506	526	44	57	101	46	550	596
1996	16	335	351	39	51	90	41	377	418
Pot Pacific cod									
1992	4	221	225	19	54	73	19	257	276
1993	0	102	102	3	17	20	3	114	117
1994	2	109	111	5	34	39	5	131	136
1995	4	187	191	11	116	127	11	258	269
1996	0	148	148	13	92	105	13	208	221
Trawl Pacific cod									
1992	27	140	167	49	66	115	56	174	230
1993	10	120	130	51	70	121	53	171	224
1994	7	114	121	39	70	109	40	167	207
1995	17	138	155	59	72	131	62	172	234
1996	18	107	125	65	97	162	67	180	247
Trawl Pollock									
1992	12	118	130	86	94	180	88	146	234
1993	1	99	100	94	82	176	94	139	233
1994	2	115	117	79	76	155	79	131	210
1995	10	129	139	99	84	183	99	139	238
1996	6	96	102	81	92	173	81	137	218

Table 2.15 shows the harvest rate by gear for 1995 and 1996 at the middle and end of the first fishing quarter. The fishery is fast-paced, with harvests rates generally peaking as the end of the fishing period is approached for trawl, hook-and-line and pot gear. This is also evident in the overages in some of these fisheries as described above.

Table 2.15 Pace of GOA Pacific cod fishery as depicted by a snapshot of weekly landing rates.

		Trawl			H&L			Pots			Fishery
Area/Year	As of	mt	weeks	mt/week	mt	weeks	mt/week	mt	weeks	mt/week	closed
Western											
1996	3-Feb	1,864	2	932	1,417	5	283	1,305	5	261	3-Mar
	2-Mar	10,274	6	1,712	3,815	9	424	1,611	9	179	3-Mar
1995	4-Feb	872	2	436	7,365	5	1,473	1,442	5	288	17-Mar
	11-Mar	5,218	7	745	5,015	10	502	1,873	10	187	17-Mar
	4-Apr	10,763	8	1,345	5,377	11	488	2,164	11	197	17-Mar
Central											
1996	3-Feb	439	2	220	1,197	5	239	3,867	5	773	18-Mar
	2-Mar	3,727	6	621	2,453	9	273	6,618	9	735	18-Mar
	16-Mar	14,515	8	1,814	4,953	11	450	9,152	11	832	18-Mar
1995	4-Feb	623	2	312	1,249	5	250	4,047	5	809	22-Mar
	11-Mar	11,494	7	1,642	3,932	10	393	9,293	10	929	22-Mar
	16-Mar	17,749	8	2,219	4,415	11	401	12,086	11	1,099	22-Mar

Production of Pacific cod into fishery products is listed in Table 2.16. The Pacific cod target fishery accounted for near 87% of the GOA Pacific cod TAC in 1996 (Table 2.17a). Approximately 0.5% of Pacific cod taken in the target fishery were discarded. Nearly 77% of retained catch were processed by Kodiak and Peninsula processors. The inshore sector accounted for 95% of harvests (Table 2.17b), while the offshore sector accounted for 5% (Table 2.17c). These percentages are dictated by the inshore/offshore allocations

Pacific cod is generally processed into two major product forms: 1) headed and gutted; and 2) fillets. Table 2.18 depicts the production of various product forms from the GOA by sector and processing location for 1996. More than 68% of GOA Pacific cod is processed by Kodiak and Peninsula shore plants. Across all processors, most of the Pacific cod is processed into fillets (block and individual quick frozen) (36%) or in the round (29%). Lesser amounts are split and salted, minced, frozen whole, and sold as bait. There also appears to have been some attempts to produce surimi from Pacific cod. Ancillary products from Pacific cod are also produced, mainly roe, millet, cheeks, tongues bellies, heads, meal, oil and bones. Monthly wholesale prices of Pacific cod and minced Pacific cod are reported in Table 2.19.

Table 2.16. Production of groundfish products in the fisheries off Alaska by species, product and area, 1992-96, (1,000 metric tons product weight).

	Bering Sea and Aleutians					Gulf of Alaska				
	1992	1993	1994	1995	1996	1992	1993	1994	1995	1996
Pacific cod										
Whole fish	1.4	2.5	1.9	1.8	2.9	5.9	7.7	3.3	1.9	5.3
H&G	57.4	32.7	48.8	55.1	54.0	10.9	4.6	3.0	5.8	3.7
Salted/split	-	-	-	7.1	10.3	-	-	-	.5	.5
Fillets	7.9	6.9	5.6	9.0	10.4	7.0	5.6	6.6	10.2	8.8
Other products	5.5	5.2	5.3	10.2	10.5	6.3	2.7	3.0	7.1	6.6
Pollock										
Whole fish	2.4	4.0	1.5	2.7	3.2	1.3	.2	.1	.0	.0
H&G	3.1	1.2	.9	.9	.7	.8	.1	.1	.0	.0
Roe	17.2	11.4	10.7	15.3	13.9	.3	.4	1.1	.6	.6
Fillets	35.7	56.5	45.1	51.6	55.1	6.6	11.5	9.7	8.1	5.1
Surimi	154.9	144.3	172.9	170.7	156.1	7.9	6.0	9.1	7.4	4.8
Minced fish	13.8	13.2	9.8	9.3	13.7	1.0	3.2	1.1	.5	.5
Fish meal	58.8	52.8	51.4	49.7	45.7	1.1	1.1	.7	1.3	1.1
Other products	8.2	11.0	11.9	14.5	13.4	.1	.4	.3	.7	.2

Table 2.17a Total Catch (mt) of Gulf of Alaska Pacific Cod in the 1996 Pacific Cod Target Fishery.

All Sectors	Processor Location	Harvest Area: Western Gulf	Central Gulf	Eastern Gulf	Grand Total
Total Catch	Bering Sea and Aleutian Islands	140	320	-	460
	Catcher Processor	4,273	1,575	1	5,848
	Kodiak & Peninsula	13,375	29,836	-	43,211
	Catcher Vessels Delivering At-sea	19	1,663	-	1,682
	Central Gulf of Alaska	-	5,255	106	5,361
	Southeastern Gulf of Alaska	-	-	63	63
Total Catch		17,807	38,650	170	56,626
1996 P. cod TAC		42,900	3,250	18,850	65,000
Discarded Catch	Bering Sea and Aleutian Islands	-	-	-	0
	Catcher Processor	96	34	0	130
	Kodiak & Peninsula	7	151	-	157
	Catcher Vessels Delivering At-sea	-	11	-	11
	Central Gulf of Alaska	-	2	-	2
	Southeastern Gulf of Alaska	-	-	0	0
Total Discards		103	198	0	301
Retained Catch	Bering Sea and Aleutian Islands	140	320	-	460
	Catcher Processor	4,176	1,541	1	5,718
	Kodiak & Peninsula	13,369	29,685	-	43,054
	CV Deliveries to CPs and MSs	19	1,652	-	1,671
	Central Gulf of Alaska	-	5,253	106	5,359
	Southeastern Gulf of Alaska	-	-	63	63
Total Retained		17,704	38,451	170	56,325

Note: None of the Bering Sea and Aleutian Islands True Motherships took deliveries of Gulf Pacific cod.
Source: 1996 National Marine Fisheries Service Blend Data

Table 2.17b Inshore Sectors Catch (mt) of Gulf of Alaska Pacific Cod in the 1996 Pacific Cod Target Fishery.

Inshore	Processor Location	Harvest Area: Western Gulf	Central Gulf	Eastern Gulf	Grand Total
Total Catch	Bering Sea and Aleutian Islands	140	320	-	460
	Catcher Processor	3,717	739	1	4,457
	Kodiak & Peninsula	13,375	29,836	-	43,211
	Catcher Vessels Delivering At-sea	17	-	-	17
	Central Gulf of Alaska	-	5,255	106	5,361
	Southeastern Gulf of Alaska	-	-	63	63
Total Catch		17,249	36,150	170	53,569
Discarded Catch	Bering Sea and Aleutian Islands	-	-	-	-
	Catcher Processor	39	25	0	64
	Kodiak & Peninsula	7	151	-	157
	Catcher Vessels Delivering At-sea	-	-	-	-
	Central Gulf of Alaska	-	2	-	2
	Southeastern Gulf of Alaska	-	-	0	0
Total Discards		46	178	0	224
Retained Catch	Bering Sea and Aleutian Islands	140	320	-	460
	Catcher Processor	3,678	714	1	4,393
	Kodiak & Peninsula	13,369	29,685	-	43,054
	Catcher Vessels Delivering At-sea	17	-	-	17
	Central Gulf of Alaska	-	5,253	106	5,359
	Southeastern Gulf of Alaska	-	-	63	63
Total Retained		17,203	35,973	170	53,346

Note: None of the Bering Sea and Aleutian Islands True Motherships took deliveries of Gulf Pacific cod.
Source: 1996 National Marine Fisheries Service Blend Data

Table 2.17c Offshore Sectors Catch (mt) of Gulf of Alaska Pacific Cod in the 1996 Pacific Cod Target Fishery.

Offshore	Processor Location	Harvest Area			Grand Total
		Western Gulf	Central Gulf	Eastern Gulf	
Total Catch	Bering Sea and Aleutian Islands	-	-	-	-
	Catcher Processor	556	836	-	1,392
	Kodiak & Peninsula	-	-	-	-
	Catcher Vessels Delivering At-sea	2	1,663	-	1,665
	Central Gulf of Alaska	-	-	-	-
	Southeastern Gulf of Alaska	-	-	-	-
Total Catch		558	2,499	-	3,057
Discarded Catch	Bering Sea and Aleutian Islands	-	-	-	-
	Catcher Processor	57	9	-	66
	Kodiak & Peninsula	-	-	-	-
	Catcher Vessels Delivering At-sea	-	11	-	11
	Central Gulf of Alaska	-	-	-	-
	Southeastern Gulf of Alaska	-	-	-	-
Total Discards		57	21	-	78
Retained Catch	Bering Sea and Aleutian Islands	-	-	-	-
	Catcher Processor	499	827	-	1,326
	Kodiak & Peninsula	-	-	-	-
	Catcher Vessels Delivering At-sea	2	1,652	-	1,654
	Central Gulf of Alaska	-	-	-	-
	Southeastern Gulf of Alaska	-	-	-	-
Total Retained		501	2,479	-	2,980

Note: None of the Bering Sea and Aleutian Islands True Motherships took deliveries of Gulf Pacific cod.

Source: 1996 National Marine Fisheries Service Blend Data

Table 2.18 Products Produced from the 1996 Gulf of Alaska Pacific Cod Fishery.

Processor's Location		Surimi	Minced	Fillet/Block and IQF	H&G	Meal	Milt	Roe	Salted	Round or Bled	Other	Total	%
Bering Sea and Aleutian Islands Inshore		-	-	10	30	130	7	5	217	12	10	421	1.7
Kodiak & Peninusula Shoreplants		90	1,318	7,812	285	-	713	1,523	127	4,566	292	16,726	68.4
Central Gulf of Alaska Shoreplants		-	-	218	383	-	35	87	-	2,389	-	3,112	12.7
Southeastern Gulf of Alaska Shoreplants		-	-	41	12	-	5	10	-	81	12	161	0.7
Inshore Catcher Processors		-	-	-	2,276	-	7	1	-	3	0	2,287	9.3
Offshore Catcher Processors		-	153	738	485	-	6	149	185	-	39	1,755	7.2
Total	mt	90	1,471	8,819	3,471	130	773	1,775	529	7,051	353	24,462	
	%	0.3	6	36	14.2	0.5	3.2	7.3	2.1	28.8	1.4		

Table 2.19. Monthly wholesale prices of selected frozen fish blocks and fillets, F.O.B. East Coast, 1994-1996, in cents/lb.

	Blocks			
			Alaska Pollock	
Month	Cod	Minced Cod	Imported	Domestic
1994				
Jan	172.5	45.0	66.5	85.0
Feb	172.5	45.0	66.5	81.0
Mar	172.0	45.0	66.5	81.0
Apr	170.0	TFQ	67.5	80.0
May	170.0	44.0	67.5	80.0
Jun	172.5	44.0	67.5	80.0
Jul	172.5	44.0	67.5	80.0
Aug	175.0	44.0	67.5	79.0
Sep	177.5	44.0	66.5	79.0
Oct	177.5	44.0	66.5	81.0
Nov	182.5	43.5	66.5	82.5
Dec	187.5	43.5	67.5	86.5
1995				
Jan	187.5	43.5	67.5	86.5
Feb	187.5	43.5	69.0	87.5
Mar	190.0	43.5	69.0	88.5
Apr	192.5	43.5	71.5	88.5
May	192.5	43.5	71.5	92.5
Jun	190.0	44.0	71.5	93.0
Jul	190.0	44.0	73.5	95.5
Aug	190.0	44.0	76.0	101.0
Sep	187.5	47.5	79.0	107.5
Oct	187.5	47.5	79.0	107.5
Nov	187.5	47.5	79.0	107.5
Dec	187.5	52.0	79.0	81.5
1996				
Jan	172.5	52.0	81.5	107.0
Feb	162.5	55.0	81.0	92.5
Mar	162.5	56.0	81.0	87.5
Apr	162.5	56.0	78.0	85.0
May	162.5	56.0	78.0	85.0
Jun	162.5	56.0	78.0	85.0
Jul	162.5	56.0	78.0	85.0
Aug	162.5	56.0	76.0	87.5
Sep	152.5	56.0	76.0	87.5
Oct	152.5	56.0	76.5	87.5
Nov	152.5	56.0	76.5	92.5
Dec	157.5	56.0	76.5	92.5

2.4.1.2.4 Gulf of Alaska Pollock - Current Status of the Fisheries under the Allocations

The inshore/offshore Amendment allocated 100% of GOA pollock to the inshore sector. To a large degree, the inshore/offshore dispute came about because of an influx of catcher-processor activity in the GOA in the spring of 1989. That year, domestic catcher-processors fished heavily for roe bearing pollock and the fishery closed much earlier than expected. In 1988, shore based processors in the Gulf were able to process most of the pollock TAC because the foreign and J.V. processors had been relegated to the BS/AI. The few domestic catcher-processors had also chosen to concentrate their efforts in the BS/AI where the TAC and biomass were higher. This led to the eventual ban on roe stripping and to seasonal allocations of the pollock TACs. In 1991, the Council and NMFS enacted quarterly apportionments for GOA pollock harvests along with a delay in the opening of the second apportionment, the latter of which was to prevent the influx of effort from BS/AI to GOA pollock fisheries by coinciding with the BS/AI 'B' season opening. In 1996, the third and fourth seasonal apportionments were combined so that trimester allocations now occur for January (25%) , June (25%), and September (50%) openings. In 1998, the Council adjusted the allocation percentages to 25/35/40 for the Western and Central areas because of concerns for Steller sea lions.

The season length for the inshore pollock fishery in each Gulf subarea for 1991-97 has fluctuated widely, but an overall trend is for a shortened fishing season even as TACs have been increased (Figure 2.6). In the Western Gulf (Area 610), the directed season lasted approximately 90 days in 1991, fell to approximately 54 days in 1992, rebounded to 88 days in 1993, and averaged 18 days for 1994-97. The Central Gulf (Area 620 and 630) directed pollock fishery has also shrunk, from approximately 90 days in 1991 to a low of 16 in 1995 for Area 620; the 1997 season lasted about 45 days. In Area 630, the season length has ranged from 90 days in 1993 to slightly less than 10 days in 1996; the 1997 season lasted 34 days.

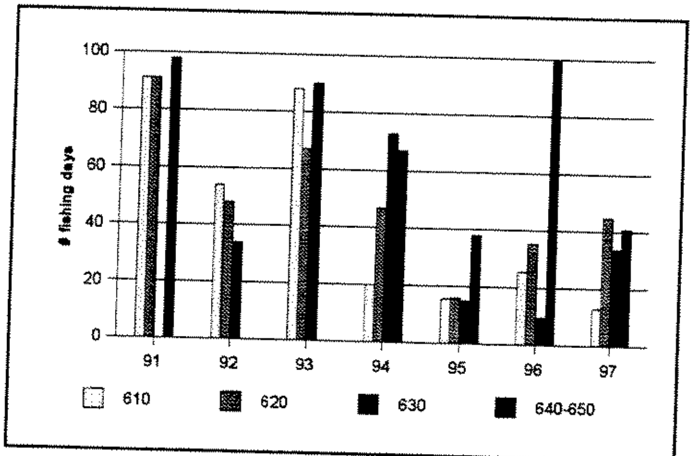

Figure 2.6 Season length (days) in the inshore pollock fishery by GOA subarea.

Table 2.11 lists the pollock catch and exvessel value for the GOA and BS/AI and inshore/offshore sector. Pollock catches (mt) are approximately at 60% of the five year (1992-96) average for the GOA offshore sector, and slightly below the average for the inshore sector. The commercial pollock catch in the GOA totaled 51 thousand mt (round weight) in 1996, with an exvessel value of $10.4 million. For 1996, offshore pollock catches totaled 3 thousand mt worth $0.2 million, while the inshore catches totaled 49 thousand mt worth $10.2 million.

Effort as measured by fishing vessel weeks by catcher vessels targeting Pacific cod in the BS/AI and GOA is listed in Table 2.12. Of 2,412 weeks of pollock fishing by catcher trawl vessels in the GOA during 1992-96, 18% of fishing effort was by vessels ≤60 ft; 76% was by vessels 60 - 124 ft, and 6% was by vessels >125 ft. Pollock was the target fishery for CPs in the GOA for only 7 weeks during this five-year period (Table 2.13).

Of the 6,358 fishing weeks targeting Pacific cod by trawl catcher vessels in the BS/AI, <1% was by vessels <60 ft; 74% was by vessels 60 - 124 ft, and 25% was by vessels ≤125 ft (Table 2.12). Of the 2,687 fishing weeks targeting pollock by BS/AI trawl CPs, <1% was by vessels 60 -124 ft; 42% was by vessels 125 - 230 ft, and 57% was by vessels >230 ft (Table 2.13). Effort declined by 10% in the >230 ft category in 1996, compared with the five-year average.

Effort as measured by vessels participating in the directed GOA pollock fisheries by inshore/offshore sector is provided in Table 2.14. Of 101 trawlers in the 1996 fishery, 95% participated in the inshore fishery and 5% were offshore. Participation in 1996 was down by 14% for the offshore and equal to the five-year average for the inshore sector.

Production of pollock into fishery products is listed in Table 2.16. Pollock is generally processed into surimi, fish meal, fillets, and roe. The pollock target fishery accounted for near 85% of the GOA pollock TAC in 1996 (Table 2.20). Less than 3% of pollock taken in the target fishery was discarded. Nearly all of the retained catch were processed by GOA processors.

Table 2.21 depicts the production of various product forms from the GOA by sector and processing location for 1996. More than 90% of GOA pollock were processed by GOA shore plants. Monthly wholesale prices of Pacific cod and minced Pacific cod are reported in Table 2.19.

A careful examination of the figure reveals some broadening of seasons from 1991 to 1994. The most pronounced spike occurs in the fourth quarter of 1991, when nearly 20,000 tons were harvested in a single week. In later years, the fourth quarter allocation (the third mode) was harvested in periods lasting two weeks. Looking at the second and third quarters as a single mode reveals that in 1991 harvests grew steadily in the second quarter and then jumped as the third quarter apportionment was released. In 1992, 1993, and 1994, there are two distinguishable modes corresponding to each apportionment, with the second apportionment generally lasting longer than the third, which in each year has been harvested in two weeks. Harvests of the first quarter apportionment also show a mini bi-modal distribution. This occurs as areas are shut down generally progressing from west to east. Also evident is the delay of the trawl opening to January 20 which began in 1992.

Table 2.20 depicts the total amount of pollock discarded, the amount retained, and the total catch for the inshore sector for 1996. Less than 3% of pollock in the target fishery was discarded in 1996. Of the retained catch, 97% were processed by Gulf shore plants.

Pollock is generally processed into two major product forms: 1) fillets; and 2) surimi. Table 2.21 depicts the production of various product forms from the GOA by processing location for 1996. More than 91% of GOA Pacific cod are processed by Gulf shore plants. Across all processors, most of the Pacific cod is processed into fillets (block and individual quick frozen) (41%) and surimi (40%). Lesser amounts are mince, deep skin fillets, meal, oil, and roe products.

2.4.1.2.5 Projected Outcomes Under Alternative 2: Reauthorization

2.4.1.2.5.1 Harvest and Processing

Under Alternative 2, allocation percentages would be the same as they have been for the past six years for the GOA: 100% of the pollock and 90% of the Pacific cod would be allocated inshore. Continuation of the allocations, combined with the vessel moratorium and license limitation program, will result in approximately the same patterns of harvesting and processing as have occurred in the past three years, except as modified by other restrictions such as PSC related closures or mandatory retention standards. Further, it is likely that the same harvesting and processing vessels would be participating in these activities. Additional action recommended by the Council has placed further restrictions on the movement of vessels from the BS/AI to the GOA in these fisheries (simultaneous season openings, vessel registration, and stand-down requirements).

Though the relative proportions of harvesting and processing by sector would not be expected to change, resource conditions for the two GOA fisheries are significantly different than they have been in the past two to three years. GOA pollock are increasing in abundance, with current 1998 ABC (130,000 mt) and TAC (124,730 mt) set at the highest level since 1986. This is the reverse situation from when the Council was deliberating I/O2, when pollock abundance and TACs were declining. GOA Pacific cod are also increasing in abundance since I/O2. The ABC was set at 77,900 mt, with TAC reduced by a State water fishery to 66,060 mt. State and Federal harvests will match the 1991 ABC, the highest in the last ten years.

Table 2.20 Total Catch (mt) of Gulf of Alaska Pollock in the Pollock Target Fisheries.

	Catch Area			
Processor's Location	Western Gulf	Central Gulf	Eastern Gulf	Total
Gulf of Alaska	21,720	22,754	781	45,255
Bering Sea and Aleutian Islands	1,089	-	-	1,089
CVs Delivering At-sea & CPs	340	83	-	423
Total	23,149	22,837	781	46,767
1996 Pollock TAC	2,810	26,520	25,480	54,810

Discarded Catch (mt) of Gulf of Alaska Pollock in the Pollock Target Fisheries

	Catch Area			
Processor's Location	Western Gulf	Central Gulf	Eastern Gulf	Total
Gulf of Alaska	86	1,101	6	1,193
Bering Sea and Aleutian Islands	-	-	-	-
CVs Delivering At-sea & CPs	8	-	-	8
Total	94	1,101	6	1,201

Source: 1996 National Marine Fisheries Service Blend Data.

Retained Catch (mt) of Gulf of Alaska Pollock in the Pollock Target Fisheries

	Catch Area			
Processor's Location	Western Gulf	Central Gulf	Eastern Gulf	Total
Gulf of Alaska	21,634	21,653	775	44,062
Bering Sea and Aleutian Islands	1,089	-	-	1,089
CVs Delivering At-sea & CPs	332	83	-	415
Total	23,055	21,736	775	45,566

Source: 1996 National Marine Fisheries Service Blend Data.

Table 2.21 Products Produced (mt) from the 1996 Gulf of Alaska Pollock Target Fishery

Processor's Location		Surimi	Minced	Fillet/Block and IFQ	Deep Skin Fillet	Meal	Oil	Roe	Total	%
Gulf of Alaska Shorebased		3,997	464	4,945	28	1,033	101	520	11,087	91.3
Gulf of Alaska At-sea		-	-	30	14	-	-	-	44	0.4
Bering Sea and Aleutian Islands Inshore		807	3	6	8	54	74	55	1,007	8.3
Total	mt	4,804	467	4,980	51	1,087	174	575	12,139	
	%	39.6	3.8	41	0.4	9	1.4	4.7		

One consideration relative to GOA pollock is the impact to the pollock stocks themselves, and the ability of fisheries managers to effectively monitor catch rates and prevent quota overruns. The pollock quotas are divided into three trimester allocations, in 25/35/40% allocations for both the Western and Central Gulf areas. Alternative 2 would limit the harvest of this resource to smaller, shore based vessels with much lower catching capacities than, for example, larger factory trawl vessels. The ability to effectively monitor pollock catch, and prevent quota overruns, would be maintained and enhanced under adoption of this Alternative 2.

Viability of inshore processing plants in the GOA is heavily dependent on groundfish resources, particularly pollock and Pacific cod. A continuation of the I/O2 allocations under Alternative 2 would facilitate continued viability of these plants. Additional processing opportunities have occurred with extended fishing periods under higher seasonal allocations as a result of increased TACs. The trend for Pacific cod and pollock in the GOA appears to be steady or slightly increasing for the next few years at least.

2.4.1.2.5.2 Stability Implications

The Council's problem statement for this analysis emphasizes the issue of stability in the fishing industry and between affected industry sectors. Partly due to the inshore/offshore allocations in place through 1998, the industry is in a different state than existed in 1991. Further, the vessel moratorium and license limitation are steps in the Council process of moving toward comprehensive rationalization. While the Council is under a moratorium for approving future IFQ programs until October 2001, the Council has continued to express an interest in developing IFQ programs for at least the pollock fisheries, and possibly for all North Pacific groundfish.

In the interim, a stable environment in the fisheries has been cited by the Council as critical to successful CRP development. Indeed, the disruption of existing distributions of harvesting and processing of pollock and Pacific cod, and the business relationships based on those distributions, could have serious and adverse implications for successful CRP development.

It is intuitively obvious that, compared to Alternative 1, continuation of the inshore/offshore allocations as they now exist would result in the least change to the status quo. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The existing allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations would maintain the relationships between these sectors as they have developed since 1991. The stability which has been established between these various industry sectors may not guarantee survival of entities within these sectors, but may be crucial to the successful fruition of the CRP program, and possible future IFQ program. Even without further management programs, the GOA pollock and Pacific cod fisheries will benefit from the stability provided by these allocations.

One other aspect of stability which may hinge indirectly on the inshore/offshore allocations is the prices of pollock products. As was seen in the EA/RIR for I/O2, prices for pollock products, particularly fillets and surimi, increased dramatically in 1991 and 1992, prior to the approval and implementation of the allocations. Once the allocations were implemented, these prices fell back to around previous levels, a dramatic decrease from the prices experienced in 1991 and 1992. To the extent that these price fluctuations were caused by uncertainty associated with the potential processing allocations, a continuation of the allocations would more likely smooth out these fluctuations relative to allowing the allocations to expire.

2.4.1.2.5.3 In-Season Management

In addition to unquantifiable effects on small fishing communities, reauthorization of the inshore/offshore allowances under Alternative 2 would benefit in-season management of small, hard-to-manage quotas. Overages of quarterly and trimester releases of TACs have frequently occurred in the GOA pollock and Pacific cod fisheries (Table 2.22). While many seasonal allowance overages have been reduced or eliminated by the end of the year tally, some year-end TAC overages persist. These in-season overages have approached 200% in 1995 (WGOA offshore pollock) and 140% in 1997 (WGOA pollock).

Table 2.22 In-season allocation and TAC overages (%) in the GOA pollock and Pacific cod fisheries, 1995-98. (I = inshore; O = offshore)

	1998	1997			1996			1995		
As of:	21-Mar	1-Mar	16-Aug	31-Dec	16-Mar	10-Aug	31-Dec	11-Mar	12-Aug	31-Dec
Pollock										
Western	87	148	92	141	130	73	95	133	98	102
Central	99	121	100	105	112	72	96	118	104	85
Eastern	94	153	106	102	188	99	98	100	100	158
Pacific cod										
Western I	121	94	106	105	103	105	105	67	101	103
Western O	4	31	38	39	112	99	101	91	197	197
Central I	106	55	95	103	74	106	109	60	89	101
Central O	1	0	6	20	68	123	125	48	85	90
Eastern I	47	34	73	100	4	30	32	19	36	32
Eastern O	0	22	5	1	0	1	1	0	1	3

Seasonal allowances were designed to allow for business planning by the fishing industry, as well as to temporally and spatially separate the fleet from marine mammal grounds. This has been particularly critical for the pollock fleet and Steller sea lion, which are endangered in the Western and Central GOA. Sixteen rookeries and approximately 50 haulouts of the endangered western population of Steller sea lion are located within these two regulatory areas.

The 1998 Biological Opinion on the effects of the 1998 TAC specifications and Steller sea lions reports that GOA fisheries could adversely impact the foraging success of Steller sea lions by: (1) depleting fish resources in a local geographic area due to aggregation of fishing effort; (2) fishing pressure could alter the age structure of fish stocks targeted by and fishing, shifting the biomass to a younger age class; and (3) fishing could alter the actual and relative abundance of fish stocks in the ecosystem and increase the dominance of less desirable fish species as food for the Steller sea lions.

Recent actions recommended by the Council and instituted by NMFS to minimize these seasonal allowance overruns have been described in Section 2.1.3. Despite these efforts, seasonal allowance overages have continued into 1998 for Western and Central GOA inshore Pacific cod. These allowances would face even greater threat to overages and shorter seasons should the inshore/offshore allowances be allowed to expire. Increased effort by offshore -based catcher and catch/processor vessels would decrease the ability of in-season management to monitor and accurately predict appropriate closure dates to avoid exceeding seasonal allowances, resulting in possibly deleterious effects on Steller sea lions.

2.4.2 Consistency with the Current Problem Statement

The Council's problem statement for the proposed reauthorization of Amendment 40 emphasizes the issue of stability in the fishing industry and between affected industry sectors. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The existing allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations would maintain the relationships between these sectors as they have developed over the past six years and maintain the stability of Gulf harvest and processing operations, and the communities which depend on those operations.

Projections are not quantitatively performed for the GOA fisheries, but the impacts to the GOA pollock and Pacific cod fisheries would be expected to be relatively greater than those in the BS/AI, if the allocations are allowed to expire. The much smaller quotas in the GOA have the inherent ability to be more dramatically affected without the protection provided by Amendment 40. The current allocations provide some level of stability for the harvesting and processing sectors in both areas. Current operating and business relationships which rely on that stability would likely be compromised if the allocations were allowed to expire. Continuation of the allocations (Alternative 2) may provide the stable operating environment necessary for eventual implementation of further CRP management programs or other measures.

2.4.3 Impacts on Small Entities (Regulatory Flexibility Act)

The Regulatory Flexibility Act requires an examination of the impacts of proposed actions on small businesses, small organizations, and small jurisdictions to determine whether a substantial number of these small entities will be significantly impacted by the proposed management measures. When a Council determines that the proposal will have a significant impact on a substantial number of small entities, it must prepare an initial regulatory flexibility analysis (IRFA) to be provided to the Small Business Administration and the public for review and comment.

In general, fishing vessels and many processing operations are considered (under NMFS guidelines) to be small businesses. The action under Alternative 2 would impact the entire GOA commercial fishing fleet. In 1996, the most recent year for which vessel participation data is available, 1,508 vessels participated in the groundfish fisheries of the GOA; 1,254 longline vessels, 148 pot vessels, and 202 trawl vessels. The commercial pollock catch in the GOA totaled 51 thousand mt (round weight) in 1996, with an exvessel value of $10.3 million. The Pacific cod catch in the GOA totaled 68 thousand mt (round weight) in 1996, with an exvessel value of $25.2 million. Catch and value by sector are listed in Table 2.23

Table 2.23 Catch (in 000's) and exvessel value of 1996 GOA pollock and Pacific cod fishery by sector.

	At-sea		Inshore		Total	
	mt	$M	mt	$M	mt	$M
Pollock	3	.2	49	10.2	51	10.3
Pacific cod	13	4.9	55	20.3	68	25.2

Alternative 2 will positively impact a majority of small entities. Most of the businesses involved in the support service industry (e.g., equipment, supplies, fuel, groceries, entertainment, transportation) are considered to be small businesses (basically, a small business is any business with an annual gross revenue of not more than $2 million; 13 CFR part 121). Alternative 2 could benefit small harvesting and processing operations associated with the one component and, conversely, negatively impact small operations associated with the other component. The magnitudes of the impacts are related to the sizes of the allocations and the size of the operations. The support industry benefits directly from the economic activity in both the inshore and offshore sector. Probably, the loss in revenue associated with one component will be offset by gains obtained from the other. Given other fishing activities of C/Ps (in the BS/AI), their continued exclusion from the GOA fisheries is not expected to significantly (negatively) impact their operations. Since positive impacts are not deemed to have a "significant" impact on small entities, the Council's actionwith respect to the GOA is not expected to have significant impacts relative to the RFA. However, because there will be a single rulemaking for the GOA and BSAI combined, and because the proposed action may have significant impacts relative to operators in the BSAI (see Section 8.4 of this document), the overall effect is a finding of significance relative to the combined IRFA.

The reporting, record keeping, and other compliance requirements are specified in the regulations implementing Amendment 40 of the GOA FMP in 50 CFR Part 679.5, Subpart A. In summary, for the inshore/offshore issue, the owners of processing vessels must declare on their applications for Federal permits whether they are part of the inshore component or offshore component.

2.5 The Council's Preferred Alternative for the GOA

The Council selected the option which rolls over the current inshore/offshore allocation in the GOA. As discussed earlier, this option should provide the most stabile operating environment for harvesters and processors in the GOA. It will allow the pollock and Pacific cod fisheries to be prosecuted as they have for the past six years, with 100% of the pollock and 90% of the Pacific cod allocated to the inshore sector. The allocation is for three calendar years (1999, 2000, and 2001). If the Council does not take further action, the I/O3 allocation will expire on December 31, 2001, and there will be no allocation between the inshore and offshore sectors after that date.

2.6 Acknowledgments

Portions of Section 2 were adapted from:

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3.0 BASE CASE - CURRENT STATUS OF THE BS/AI FISHERIES

This chapter summarizes the current status of the BS/AI pollock fisheries, primarily based on the 1996 fisheries, the last year for which there are complete data. This information was presented initially in September 1997, for 1991, 1994, and 1996 - that detail is contained in Appendix I. That information was reviewed again by the Council in February 1998 and additional detail has been added where necessary based on Council direction at that meeting. Consistent with the SSC direction in September and December 1997, the analysts have attempted to illuminate the various issues which have been raised and provide an accurate characterization of the fisheries. Information in this chapter will be used as the baseline against which to compare the alternatives that were under consideration.

3.1 Pollock Biomass and TAC Projections

Throughout the now more than 31-year history of pollock fishing in the eastern Bering Sea the catch has been reasonably steady, averaging 1.1 million metric tons (mmt), and has ranged from a minimum of 0.2 mmt in 1964 to a maximum of 1.9 mmt in 1972. Since the advent of the U.S. EEZ in 1977, the average eastern Bering Sea pollock catch has been 1.2 mmt and has ranged from 0.9 mmt in 1987 to 1.6 mmt in 1991. The stability of the eastern Bering Sea pollock stock is remarkable, in light of trends in most Asian pollock stocks and North Atlantic gadoid stocks which have collapsed or strongly fluctuated in catch and abundance.

Pollock catches have been near, or in excess of, 1 mmt since 1970, while stock biomass has ranged from 4-5 mmt to 12-14 mmt. The Stock Assessment and Fishery Evaluation (SAFE) document for the 1996 fishing year concluded that, "It appears that eastern Bering Sea pollock catches in the range of recent years are sustainable and well within the productive capacity of the stock and stock fluctuations observed over the history of the fishery."

When the base year 1996 BS/AI SAFE document was prepared the biomass of eastern Bering Sea pollock exceeded six million tons. Historically, eastern Bering Sea pollock ABC has been set at the $F_{0.1}$ level of fishing, derived from the yield per recruit model with knife-edge recruitment at age 3. For 1996, pollock ABC was set equal to TAC for the Eastern Bering Sea and Aleutians. These were, respectively, 1.19 mmt, and 35,600 mt.

For 1998, the BS/AI Groundfish Plan Team reported to the Council in December 1997 on the condition and potential of the Eastern Bering Sea pollock resource for the 1998 fishing year (BS/AI Groundfish SAFE document, 1998). Based on the Plan Team and SSC recommendations, the Council recommended the following pollock catch specifications for 1998 (mt) in Table 3.1:

Table 3.1 Pollock catch specification for 1998 (mt).

AREA	BIOMASS	OFL	ABC	TAC
EBS	**5,820,000**	**2,080,000**	**1,110,000**	**1,110,000**
A-season				**45%**
B-season				**55%**
Aleutians	**106,000**	**31,700**	**23,800**	**23,800**
Bogoslof	**280,000**	**8,750**	**8,410**	**1,000**

Scientists at the Alaska Fisheries Science Center monitor the status of pollock stocks and project probable resource abundance. These extrapolations are based upon a cohort analysis model, tuned to resource surveys, performed periodically by the Center's RACE Division. The latest BS/AI projections are in Table 3.2:

Table 3.2 Projections of BS/AI Biomass and Catch, 1997-2004.

Year	Spawners (million)	Total Biomass (mmt)	Catch (mmt)	R	F	Exploit.	Total Number (million)
1997	**7.671**	**6.408**	**1.129**	**0.67**	**0.24**	**0.18**	**9.150**
1998	**8.246**	**6.016**	**1.150**	**5.05**	**0.30**	**0.19**	**10.564**
1999	**7.200**	**6.575**	**1.046**	**7.48**	**0.30**	**0.16**	**13.824**
2000	**8.725**	**7.492**	**1.109**	**7.97**	**0.30**	**0.15**	**16.463**
2001	**9.916**	**8.224**	**1.255**	**7.80**	**0.30**	**0.15**	**17.863**
2002	**10.708**	**8.820**	**1.392**	**8.08**	**0.30**	**0.16**	**18.918**
2003	**11.089**	**9.099**	**1.485**	**7.63**	**0.30**	**0.16**	**19.066**
2004	**11.075**	**9.094**	**1.521**	**7.13**	**0.30**	**0.17**	**18.623**

Source: Status of Stocks Document, AFSC, December 1997.

These projections have implications for the analysis. For 1999-2000, the TAC level is very near (though slightly below) current levels, and through 2001 the average TAC level is almost exactly at the current level (1.136 mmt per year). This simplifies the analysis in that there is no need to project impacts across any range of TAC levels, or into the future where TAC levels are expected to increase back to levels experienced in the early 1990s. If we were making formal net benefit projections, we would likely feel more compelled to make such long-term projections to capture the summary impact of the allocation alternatives being considered.

Gross revenue and other impact projections will be based on a 'snapshot' approach; i.e., the expected impacts relative to the status quo allocations for year one of an alternative allocation. Such impacts could be assumed to be additive over the life of the allocation chosen, though that is likely an over- simplification due to uncertainty over fish prices, product mix, markets, and a variety of other variables in the fisheries.

3.2 Pollock Seasons

The progression of season length for the BS/AI pollock fisheries is illustrated in figures 3.1 - 3.6 and tables 3.3 - 3.5. They show the length of season (number of days) for each sector, for both A and B pollock seasons and for the combined seasons from 1991 through 1997. The offshore A-season typically is shorter than the inshore A-season, despite having a larger allocation, and the ratio has remained fairly constant over the past few years. The B-seasons do not exhibit the same disparity between sectors, except for 1997 when the offshore season was 70% as long as the inshore B-season. Undoubtedly these differences are due to a variety of factors, including the higher catching power of the offshore catcher/processors and a more spread out delivery pattern for the inshore plants, as well as differences in processing patterns for the two sectors. Changes in the allocations between sectors will likely change season lengths - less allocation to a sector resulting in reduced season length.

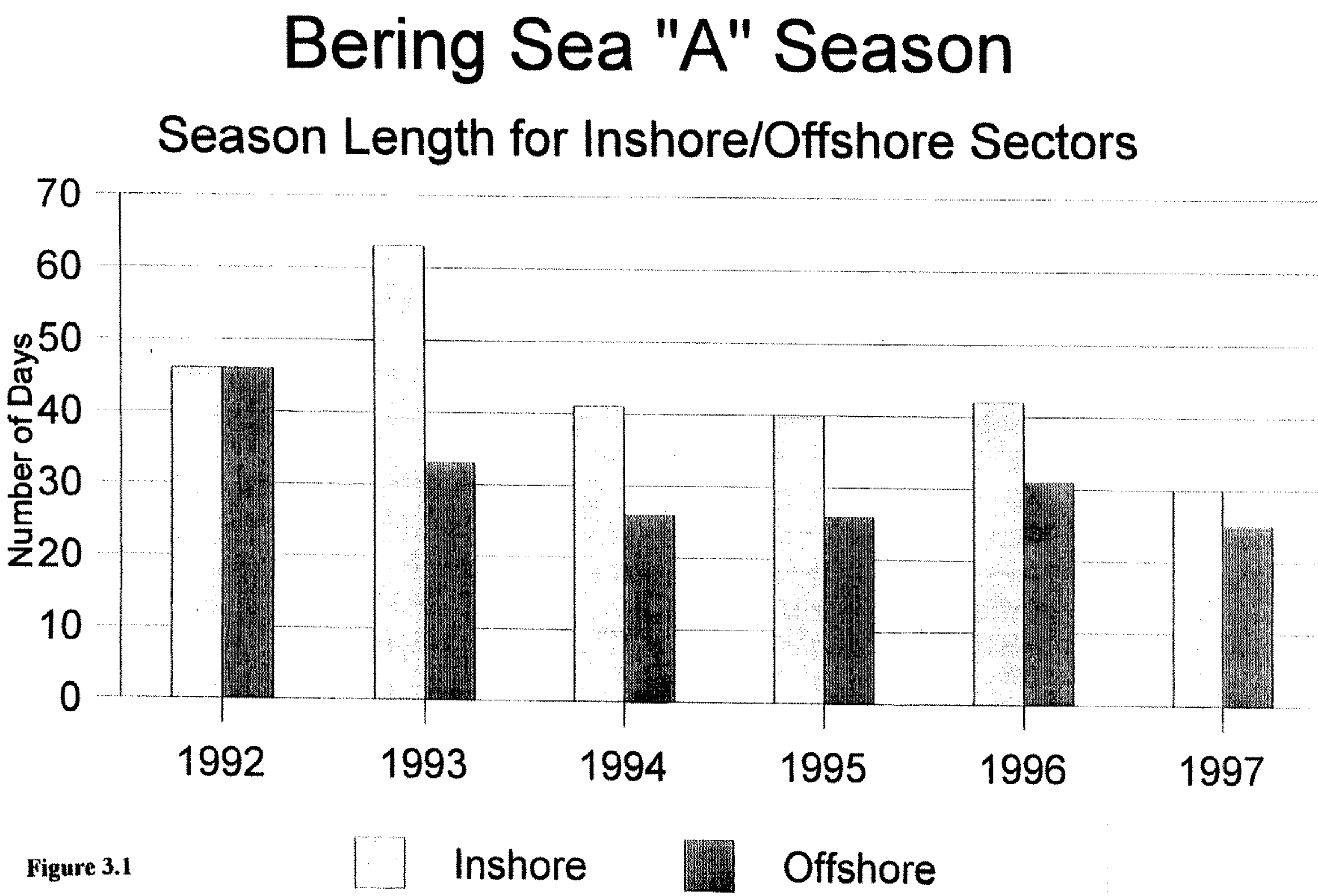
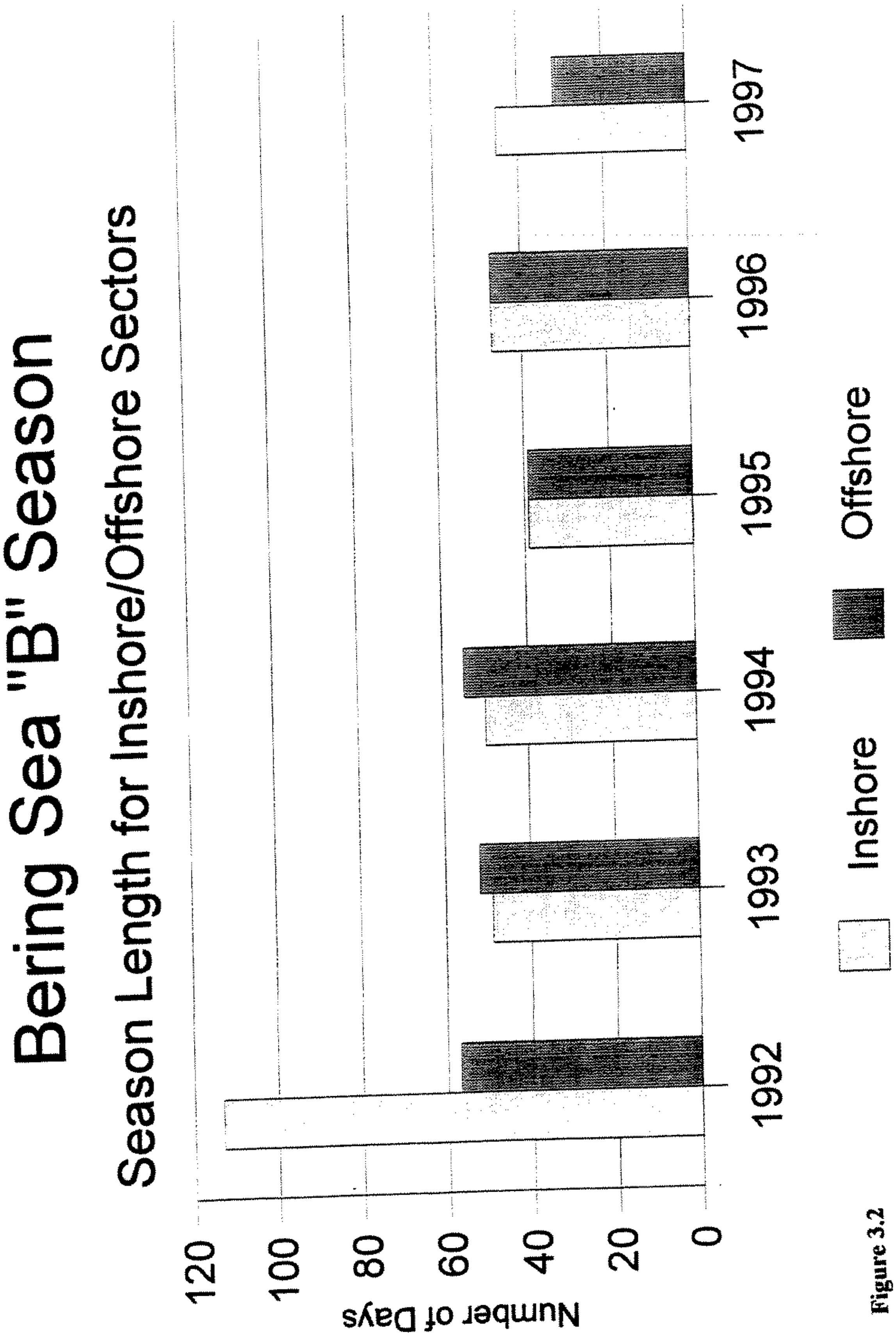

Bering Sea "A" Season
Season Length for Inshore/Offshore Sectors
Number of Days
70
60
50
40
30
20
10
0
1992
1993
1994
1995
1996
1997
Inshore
Offshore

Figure 3.1



Bering Sea "B" Season
Season Length for Inshore/Offshore Sectors
Number of Days
120
100
80
60
40
20
0
1992
1993
1994
1995
1996
1997
Inshore
Offshore

Figure 3.2

Bering Sea A & B Season Combined

Season Length for Combined Inshore/Offshore Sectors

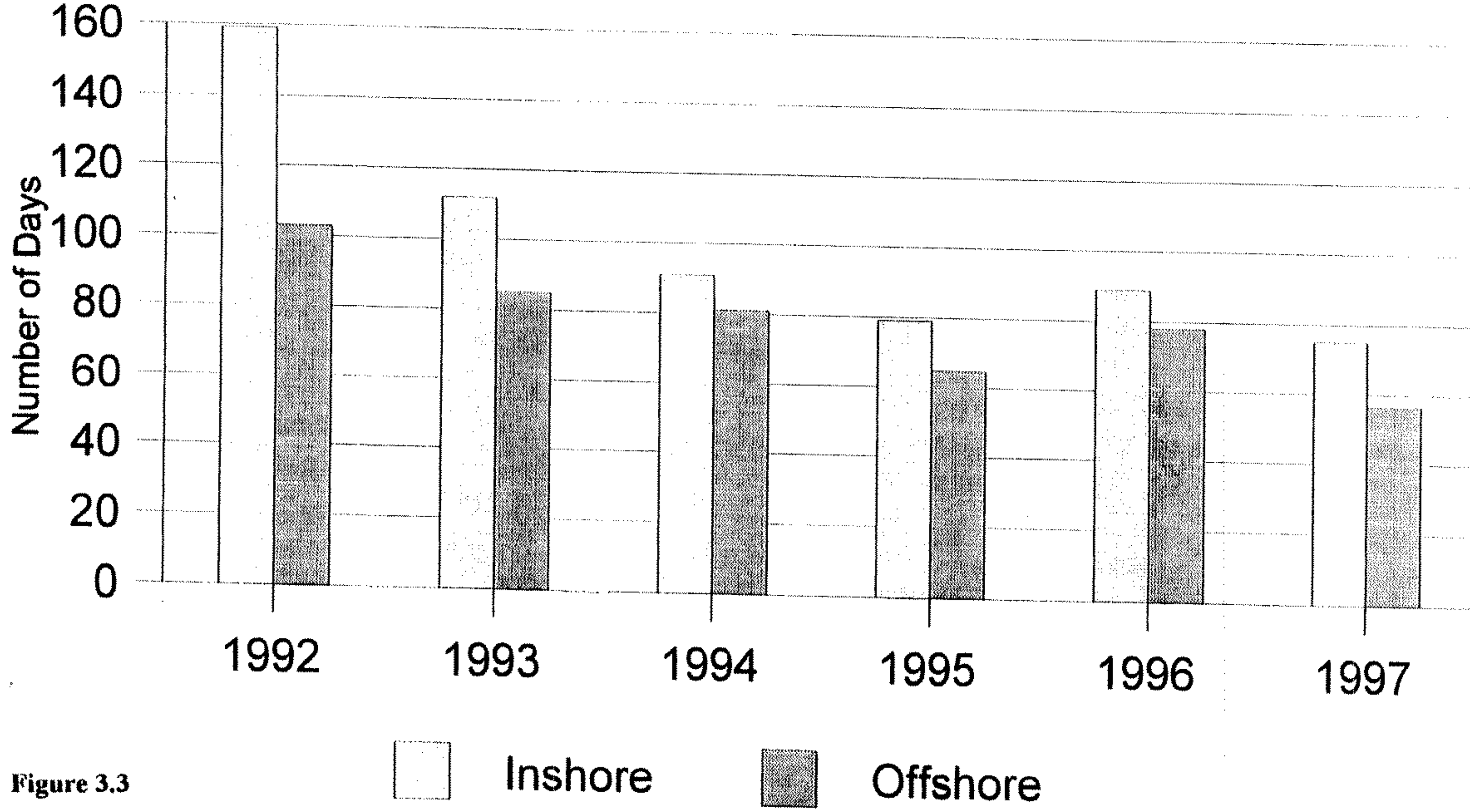
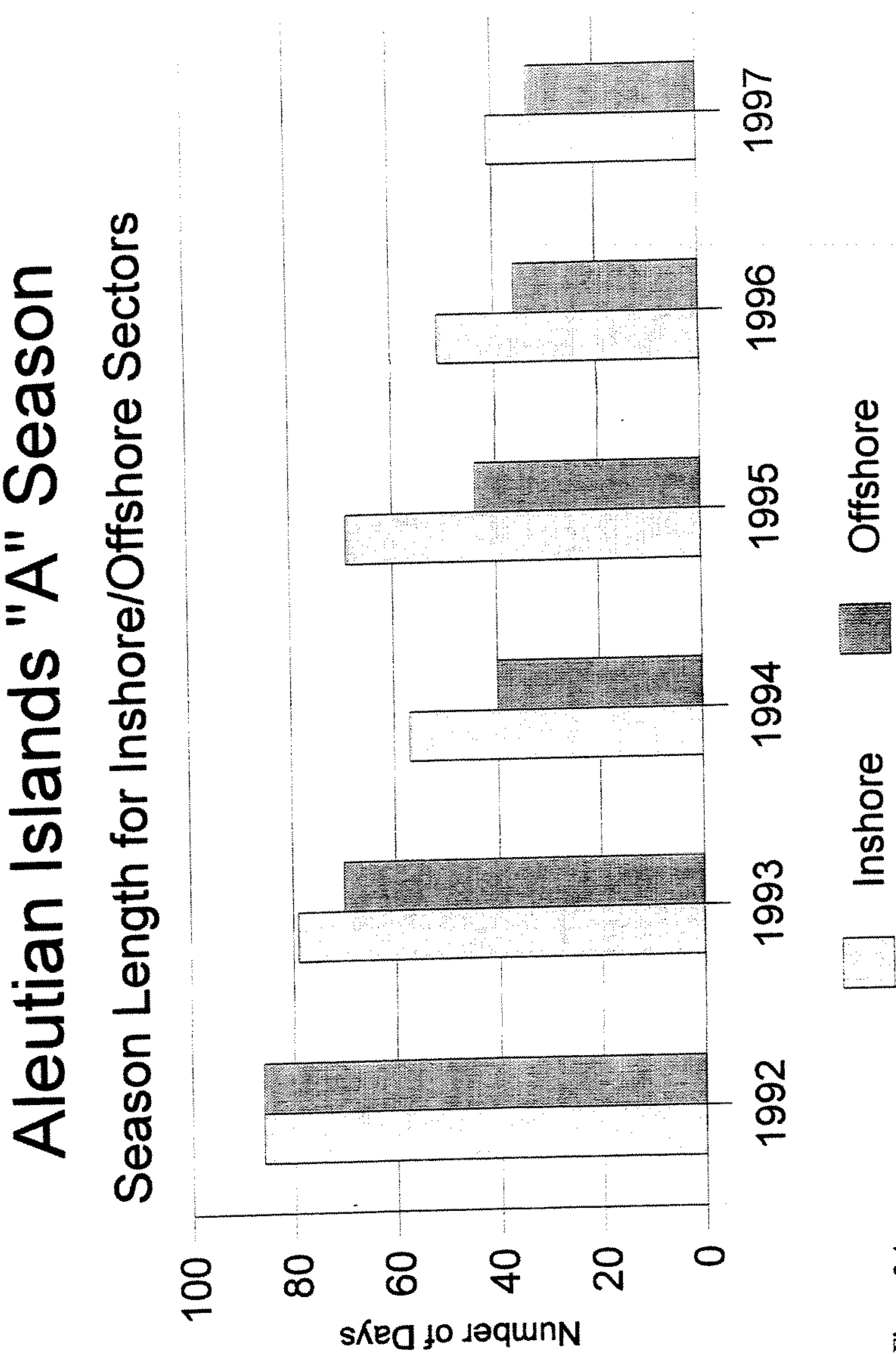
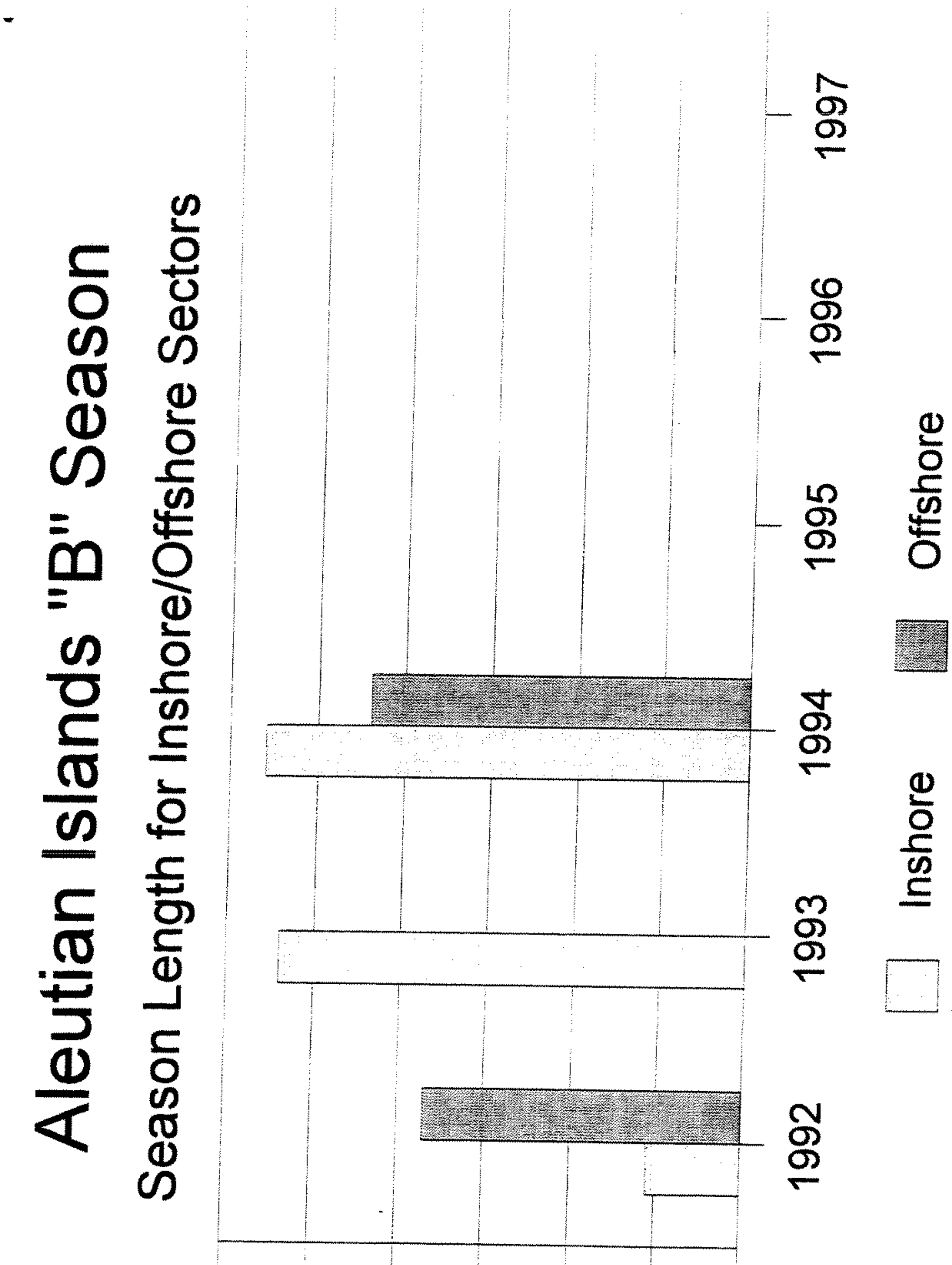


Figure 3.3



Aleutian Islands "A" Season
Season Length for Inshore/Offshore Sectors
Number of Days
100
80
60
40
20
0
1992
1993
1994
1995
1996
1997
Inshore
Offshore

Figure 3.4



Aleutian Islands "B" Season
Season Length for Inshore/Offshore Sectors
Number of Days
0
10
20
30
40
50
60
1992
1993
1994
1995
1996
1997
Inshore
Offshore

Figure 3.5

Aleutian Islands A & B Seasons Combined

Season Length Combined for Inshore/Offshore Sectors

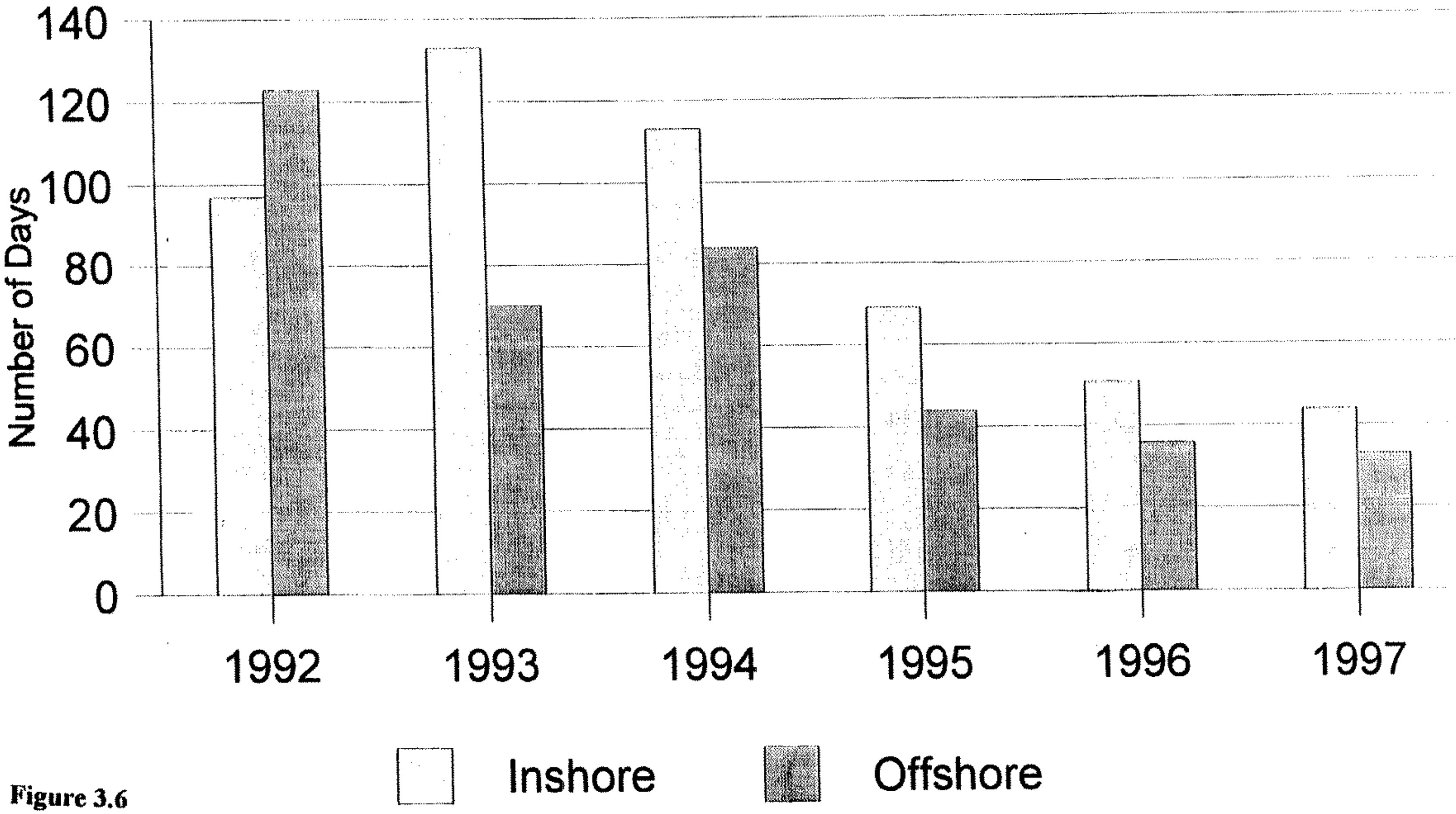


Figure 3.6

NOTE: In 1993, there was no B season for the offshore sector.
For 1995, 1996, 1997 there was no B season for either the inshore or offshore sectors.

Table 3.3 Length of Bering Sea "A" season for the inshore and offshore sectors, 1992 - 1997.						
	1992	**1993**	**1994**	**1995**	**1996**	**1997**
Inshore	46	63	41	40	42	30
Offshore	46	33	29	26	31	25
Difference (days)	0	(30)	(12)	(14)	(11)	(5)
Relative Difference (%)	0%	52%	71%	65%	42%	83%

Table 3.4 Length of Bering Sea "B" season for the inshore and offshore sectors, 1992 - 1997.						
	1992	**1993**	**1994**	**1995**	**1996**	**1997**
Inshore	113	49	50	39	47	45
Offshore	57	52	55	39	47	31.5
Difference (days)	(56)	3	5	0	0	(13.5)
Relative Difference (%)	50%	106%	110%	100%	100%	70%

Table 3.5 Length of combined Bering Sea "A" and "B" seasons for the inshore and offshore sectors, 1992 - 1997.						
	1992	**1993**	**1994**	**1995**	**1996**	**1997**
Inshore	159	112	91	79	89	75
Offshore	103	71	69	62	78	56.5
Difference (days)	(56)	(41)	(22)	(17)	(11)	(18.5)
Relative Difference (%)	65%	63%	76%	78%	88%	72%

Notes:
* Relative difference means how long the offshore sector fished compared to the inshore sector.
**1992 A-season not split between inshore and offshore sectors.

3.3 Catch and Production Estimates

The most recent year for which 'complete' catch and production data are available is 1996. If 1996 data are incomplete/inadequate (e.g., prices), then they are supplemented with data from earlier years. In general, the sector profiles presented to the Council in September are expected to provide the necessary historical context to evaluate the base year case. To the extent that consistent/comparable data are not available, results derived and conclusions drawn will necessarily be subject to wide (although largely unmeasurable) confidence-intervals, and will be so noted in the analysis. Catch estimates employed in the I/O3 analysis derive from one of two primary data bases, either Alaska Department of Fish and Game's fish ticket files, or NMFS' blend catch data files.

ADF&G Fish Tickets: Alaska statutes require that a fish ticket be prepared and submitted to the State for each and every exvessel commercial landing of catch made within State waters. Fish tickets contain (among other entries) information on the species landed, the weight of the catch, gear-type employed, location of catch and landing, vessel identity and identity of purchaser, date of landing, and (in some cases) value information. Fish tickets are the official record of catch for those commercial operations to processors operating in state waters. Some offshore operators voluntarily submit fish ticket data to the State of Alaska, as well, but these data are incomplete and therefore will not be employed as catch estimates for this sector.

NMFS Blend Catch Data: In the case of NMFS blend files, catch estimates are compiled from two separate sources, using a strict decision algorithm: Total groundfish catch for all species combined is computed each week for each processor vessel from Weekly Production Reports (WPR) [submitted to NMFS by the operator] and from NMFS-certified observer reports. If either of these reports is missing for a given operation in a given week, the report which is present is selected as the catch record. If both reports are present, the blend compares the two numbers. If the WPR and observer total catch numbers are within 5% of one another, the WPR estimate is selected as the source. If, for pollock target fisheries[6], the WPR is more than 30% higher than the NMFS observer total catch estimate, the WPR is selected as the source. In all other cases, the observer catch estimate report is selected as the source. The blend program then returns to the source data (WPR or NMFS-observer) and copies the detailed record, including gear-type, area, and species. Blend records carry an identifier which indicates which source was used to compile the individual observation.

On the basis of these data sources (utilizing the 1996 base-year and including CDQ harvests), the estimated groundfish catch in BS/AI pollock-target fisheries, by principal I/O3 sector, is listed below in Table 3.6 below:

Processing Category	Pollock (mt)	Total Groundfish (mt)
Inshore (surimi)	**319,307**	**325,362**
Inshore (non-surimi)	**76,032**	**78,032**
"True" Mothership	**121,959**	**124,724**
Catcher/Processor (surimi)	**432,308**	**441,594**
Catcher/Processor (non-surimi)	**213,756**	**222,649**

The original Inshore/offshore Amendment to the BS/AI Groundfish FMP established an apportionment regime which allocated 65% of the pollock TAC to the offshore sector, with the remaining 35% set aside for the inshore sector. In the last full year of the fishery preceding I/O1 (i.e., 1991), the offshore sector actually accounted for more than 74% of the pollock harvest in these areas, with the inshore sector reporting catches of just under 26% of the total. The offshore catch was divided between catcher/processors (accounting for 65% of the total BS/AI

[6] Or more than 20% higher for all other targets.

target pollock harvest, or more than 87.5% of the offshore share) and "true" motherships (accounting for just over 9% of the total, or approximately 12.5% of the offshore target catch).

By 1996, I/O had apparently largely accomplished it's original objective, at least with respect to reapportioning the BS/AI pollock target catch (i.e., 35%/65% between the inshore and offshore segments of the industry). Catch records in 1996 indicate that the inshore catch represented 34% of the total target landings of pollock in these areas, while the offshore sector accounted for 66% of the total. Within the offshore sector, catcher/processors accounted for 55.5% of the total BS/AI target pollock catch, with the remaining 10.5% accruing to "true" mothership operations.

It is important to note that these respective percentage shares, by sector, were shares of significantly different total catch amounts. That is, the total reported target pollock catch in 1991 for the BS/AI management area was 1,541,660 mt. In 1996, this total was reportedly 1,163,660 mt, nearly a 25% decline in total target catch for all sectors combined. This means that, for example, while the inshore sector share of the total *increased* as a percentage from 26% to 34%, between 1991 and 1996, the actual tonnage was virtually *unchanged* (i.e., 395,400 mt in 1991; 395,600 mt in 1996). In the offshore sector, the "true" mothership share as a percent of total target catch *increased*, from just over 9.0% to 10.5%, but the sub-sector's actual pollock catch tonnage *declined* (i.e., 142,900 mt in 1991; 121,900 mt in 1996). And for the catcher/processor (offshore) sub-sector, the difference was most dramatic. While this segment of the industry recorded approximately a 9.5% reduction in its recorded share of the total BS/AI target pollock catch from 1991 to 1996, the sub-sector's actual pollock tonnage *declined* by more than 35.5% (i.e., 1,003,300 mt in 1991; 646,100 mt in 1996).

More detailed information on catch distribution is contained in Appendix 1 - for example, distribution of catch among different vessel sizes within each category, and how that has changed over time. In February 1997 the Council specifically requested further detail on catcher vessel harvest by delivery mode, vessel length, and catch levels. That is presented below in Figure 3.7

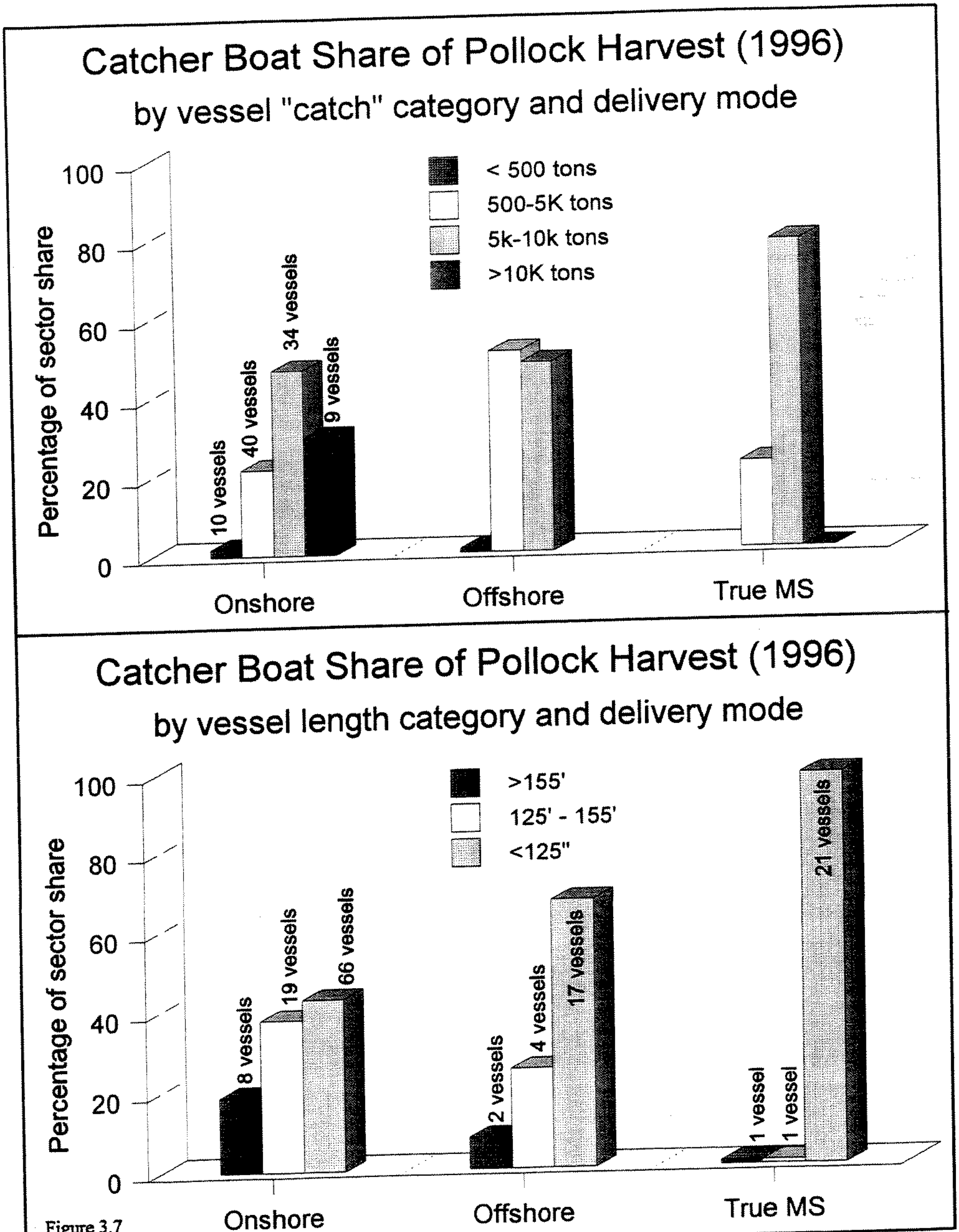

Catcher Boat Share of Pollock Harvest (1996)
by vessel "catch" category and delivery mode
Percentage of sector share
100
80
60
40
20
0
< 500 tons
500-5K tons
5k-10k tons
>10K tons
10 vessels
40 vessels
34 vessels
9 vessels
Onshore
Offshore
True MS
Catcher Boat Share of Pollock Harvest (1996)
by vessel length category and delivery mode
Percentage of sector share
100
80
60
40
20
0
>155'
125' - 155'
<125"
8 vessels
19 vessels
66 vessels
2 vessels
4 vessels
17 vessels
1 vessel
1 vessel
21 vessels
Onshore
Offshore
True MS

Figure 3.7

3.4 NMFS Management and Catch Accounting Considerations

The way in which NMFS manages and accounts for the specific I/O allocations of pollock may hold implications for some of the alternatives (and suboptions) being considered. These involve the assignment of quota based on target vs total catch, and the implications of some of the current sub-alternatives from the management perspective. These include the potential separation of "true" motherships to their own category, the set aside for catcher vessels delivering offshore, and the set aside for smaller size catcher vessels within the inshore delivery sector. These do not necessarily affect projected analytical outcomes, but may be useful to the Council's consideration of alternatives. Rather than detail those issues in this section, they are incorporated in the relevant section of the analysis, primarily in Chapter 4. Also included in these discussions are legal ramifications of some of the suboptions; for example, the creation of a "true" mothership category which excludes future entry by operations not currently included in this category. A discussion of how target (vs bycatch amounts) pollock is accounted for by NMFS is provided below.

3.4.1 Accounting for Target and Non-Target Bycatch of Pollock in the BS/AI

During the course of fishing for groundfish in the BS/AI, vessels in all target fisheries incidentally catch pollock, in addition to the vessels targeting on pollock with pelagic and bottom trawl gear. Vessels directly fishing for yellowfin sole and Pacific cod encounter the highest incidental catch of pollock; vessels directly fishing for rock sole, flathead sole, other flatfish, Atka mackerel, and rockfish have lesser bycatches of pollock.

Table 3.7 Pollock catches and bycatches in various fisheries in 1996 (all in mt).

Target Fishery	Inshore	Offshore	Total
Pelagic pollock	382,925	686,195	1,069,120
Bottom pollock	12,617	81,358	93,975
Yellowfin sole	1,875	20,380	22,254
Pacific cod	14,599	7,821	22,419
Rock sole	725	6,974	7,698
Flathead sole	432	3,651	4,083
Other Flatfish	424	915	1,339
Atka mackerel	0	508	508
Rockfish	0	303	303
Turbot	7	25	32
Arrowtooth	0	3	3
Sablefish	1	3	4
No retained target	28	572	600
TOTAL	413,631	808,709	1,222,339

In managing the inshore and offshore pollock TACs in the BS/AI and GOA, NMFS must monitor and account for pollock removals in all target fisheries, not just those for pollock. Consequently, all reported catch of pollock in the BS/AI and GOA, regardless of target fishery, is attributed to either the inshore or offshore component depending upon whether the processor is in the inshore or offshore component. In other words, all processors are tagged with an inshore or offshore component tag, regardless of whether or not they actually process pollock harvested in the directed fishery for pollock.

3.5 Product Recovery Rates (PRRs) and Utilization Rates

Groundfish Product Recovery Rates (PRRs) have been a source of contention within the BS/AI and GOA fisheries management context, (see, for example, the discussion of PRRs in the BS/AI and GOA Improved Retention/Improved Utilization (IR/IU) FMP amendments). PRRs are relevant to inshore/offshore in two ways: (1) to estimate overall catch, and (2) as intrinsic factors in the estimates of overall utilization rates. In the discussions below, the shortcomings of PRRs are noted clearly, based on previous experience in analyzing fishery management proposals.

PRRs as a basis for catch estimates

PRRs are used by NMFS in the 'blend system' to estimate overall catch in the groundfish fisheries. NMFS Alaska Regional Office publishes a list of Standard Product Recovery Rates, by product form, which are used in this study in combination with sector-specific TAC allocation alternatives to project expected product output, based upon historic product-mix patterns.

PRRs are surrounded by controversy and considerable uncertainty in their estimation. Changes to the assumed, standard PRRs would result in some changes to estimates of overall catch by sector. The most recent discussion of the use of PRRs was in the IR/IU analysis. In the final analysis of that amendment to the BS/AI groundfish plan, dated May 21, 1997, Section 4.2.3 discussed the use of PRRs in monitoring and compliance. It noted that PRRs can vary, not only between operations, but within any single operation, over the course of the season. Such factors as the size and condition of the fish, seasonality, efficiency/performance of processing equipment, and market demands (affecting product form/quality/mix), may all influence the actual realized recovery rates for any given operation. Any operation, at any time, may obtain an actual PRR which significantly differs from the published standard.

Nevertheless, NMFS has developed standardized PRRs for use in tracking aggregate fleet performance and overall catch. NMFS uses these standards also for performing calculations for directed fishing and other formulas. The standard PRRs are approximations of the average product recovery rate performance observable in the fleet over a given interval of time, e.g., a fishing year, or season opening.

The IR/IU approach is used in this analysis. It acknowledges that PRRs are variable and uncertain, but uses the same "Official NMFS Product Recovery Rates" as the basis for judging utilization (by way of overall catch) as discussed further below. It is beyond the scope of the current analysis to derive separate PRRs or question the harvest estimates provided by NMFS on the basis of PRRs. It should also be noted that PRRs may change significantly over the next few years as new product forms are developed in response to new requirements to retain and utilize all pollock and Pacific cod.

In the original inshore/offshore analysis PRRs were a major variable of contention. At that time overall catch estimates were derived primarily from application of PRRs to the production reports, for both sectors involved. It was also possible to input a variety of PRRs (as well as prices, costs, and other variables) into the Monte Carlo simulation models to obtain probability distributions of expected net benefits. The current analysis does not employ that modeling technique. Nor should PRRs be as contentious this time around, since underlying catch estimates are not nearly so dependent upon PRRs as they were in 1991. Further, to the extent that actual PRRs differ from the published standards, such differences would essentially be captured in the overall utilization rate comparisons.

Overall Utilization Rates

The second important aspect of PRRs is associated with the treatment of *relative* 'utilization' rates, per unit of raw pollock input. Specifically, in order to address the Council's request for relative sectoral-performance indices, pollock catch estimates are compared to reported product output quantities to derive a crude measure of utilization by sector. The resulting analytical output expresses the effective aggregate 'Utilization Rate' for each operational sector.[7]

In Table 3.8 listed below are the analytical base-year (1996), these relative utilization estimates, by sector-category:

Table 3.8 1996 Catch, Production and Utilization Rates.

Processing Category	Pollock Catch(mt)*	Product (mt)*	'Effective' Gross PRR
Inshore (surimi)	**319,307**	**110,928**	**34.74%**
Inshore (non-surimi)	**76,032**	**20,513**	**26.98%**
"True" Mothership	**121,959**	**30,391**	**24.90%**
Catcher/Processor (surimi)	**432,308**	**90,750**	**21.01%**
Catcher/Processor (non-surimi)	**213,756**	**42,349**	**19.81%**

*Includes CDQ catch and production, because production cannot be broken out for Inshore deliveries.

When we examine the overall utilization rate based only on selected products (excluding meal production basically), the effective rates fall for all sectors, though the reduction is slightly more for the inshore sector overall, due to a higher proportion of overall meal production. To illustrate the change in overall utilization over time, Table 3.9 below provides similar information for 1996, 1994, and 1991.

Table 3.9 Production and Total Catch of Target Pollock in the Bering Sea and Aleutian Islands in 1991, 1994, and 1996.

1996		Total Catch	Total Product	Limited Products*
Fillet Catcher Processor	Tons Product/Total Catch (PRR)	213,756	42,349 19.81%	42,349 19.81%
Surimi Catcher Processor	Tons Product/Total Catch (PRR)	432,308	90,750 21.01%	78,438 18.14%
"True" Mothership	Tons Product/Total Catch (PRR)	121,959	30,391 24.90%	25,375 20.81%
Inshore	Tons Product/Total Catch (PRR)	395,339	131,441 33.25%	103,577 26.20%
BS/AI Total	Tons Product/Total Catch (PRR)	1,163,362	294,931 25.35%	249,739 18.65%

[7] Weekly Production Reports (WPR) are the sole source of product data for these fisheries. Because WPRs are compiled and submitted by the operator, these data are effectively 'self-reported' (i.e., there is no independent source of verification).

Table 3.9 (continued) Production and Total Catch of Target Pollock in the Bering Sea and Aleutian Islands in 1991, 1994, and 1996.

1994		Total Catch	Total Product	Limited Products*
Fillet Catcher Processor	Tons Product/Total Catch (PRR)	233,005	44,011 18.89%	41,231 17.70%
Surimi Catcher Processor	Tons Product/Total Catch (PRR)	535,669	103,571 19.33%	88,150 16.46%
"True" Mothership	Tons Product/Total Catch (PRR)	113,077	24,864 21.99%	19,480 17.23%
Inshore	Tons Product/Total Catch (PRR)	423,912	128,547 30.32%	94,676 22.33%
BS/AI Total	Tons Product/Total Catch (PRR)	1,305,663	300,993 23.05%	243,537 18.65%

Table 3.9 (continued) Production and Total Catch of Target Pollock in the Bering Sea and Aleutian Islands in 1991, 1994, and 1996.

1991		Total Catch	Total Product	Limited Products*
Fillet Catcher Processor	Tons Product/Total Catch (PRR)	265,249	43,598 16.44%	35,032 13.21%
Surimi Catcher Processor	Tons Product/Total Catch (PRR)	738,069	129,846 17.59%	110,839 15.02%
"True" Mothership	Tons Product/Total Catch (PRR)	142,956	26,606 18.61%	19,899 13.92%
Inshore	Tons Product/Total Catch (PRR)	395,421	90,525 22.89%	57,982 14.66%
BS/AI Total	Tons Product/Total Catch (PRR)	1,541,695	300,355 19.48%	231,491 15.02%

*Limited Products include surimi, minced, fillet, oil, and roe products.

Concerns about interpreting comparative 'utilization' rates, among the several elements of the domestic pollock target fishing industry of the BS/AI, have been cited above in reference to basic PRRs. Utilization rates are not directly monitored and reported by independent observers. Therefore, the performance data which can be derived are subject to interpretation. While utilization is an important topic of concern within the Council's I/O3 debate, the ability of the analysts to address this topic in a rigorous empirical way is quite limited. It is assumed that the issue of overall utilization (how much total product is produced per ton of raw pollock input) raised in Council discussions, and highlighted in the Council's I/O3 Problem Statement, remains a principal concern of the Council. Therefore, the analysis in Chapter 4 incorporates overall utilization rates in the gross revenue projections.

Additional discussions regarding utilization rates are contained in Chapter 7.

3.6 Discards

Discards - The source of discard estimates employed in this analysis depends on how total catch is estimated for a particular vessel or processor. For catcher/processors and "true" mothership vessels with NMFS-certified observers onboard, the NMFS "blend" system is used to estimate total catch by species. In the case of at-sea processing operations without a NMFS-certified observer onboard, the agency uses the estimates of discards provided by the processor on the WPR. For unobserved catcher vessels delivering to shoreside processing plants, NMFS applies information about the weight and species composition of discards from observed catcher vessels operating in the same area, using the same gear-type, and participating in the same directed fishery.

For fish landed and then discarded from shoreside processing plants, NMFS uses information supplied by processors on WPRs about the weight and species composition of plant discards, regardless of whether the plant is observed or unobserved. It is difficult to assess the accuracy of either industry or observer estimates. In the case of at-sea operators, neither source provides direct measurement of discards, and once the discards are made, estimates cannot be verified. On-shore estimates, drawn from WPRs, are no better documented, since they depend solely on the data supplied by the operation, itself, and are filed with NMFS well after the discards have been sorted and disposed of, making physical verification impossible.

For the base-year, discard estimates by sector in pollock target fisheries in the BS/AI were reported as described in the following Table 3.10. These discard statistics may be misleading, however, as the Council considers the various I/O3 alternatives, because of the consequences of the Improved Retention/Improved Utilization Amendments (IR/IU) to the BS/AI and GOA Groundfish FMPs. Under those amendments, beginning January 1, 1998, all discards of pollock and Pacific cod will be prohibited, by any operation fishing groundfish, with any gear-type, in the EEZ off Alaska. ***Therefore, for purposes of this analysis, it assumed that pollock and Pacific cod discards in pollock target fisheries will be effectively 'zero'.***

All else being equal, discards of other groundfish species, not regulated under IR/IU, will be assumed to be as observed in the base-year (1996), unless otherwise indicated. This simplifying assumption may perhaps be unrealistic, since actions taken to eliminate pollock and Pacific cod discards could change the pattern of discards of other groundfish. Unfortunately, it may take the monitoring of several seasons of fishing activity under IR/IU to fully assess these changes. Alternative scenarios can be envisioned within which discards of other groundfish species both increase and decrease, as the fleets attempt to adjust to a new operational environment. Until empirical data become available, the 'true' effect on discards cannot be anticipated.

In addition to the potential impacts of IR/IU on discards under I/O3, several sub-options within the current inshore/offshore proposal have the capacity to alter discard patterns for some segments of the industry. For example, changes in access to specific sub-areas or fishing grounds (e.g., CVOA) may have significant implications for discard patterns for some sectors.

The AP requested information regarding the magnitude of continued regulatory discards in the pollock fisheries. Separation of economic and regulatory discards is difficult for a variety of reasons, and quantitative estimates of regulatory discards are unavailable. It will require more experience under the IR/IU program for such estimates to be made.

Table 3.10
Catch (Including CDQ) and Discards of Groundfish in the 1996 BS/AI Pollock Target Fishery

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
Non-surimi Catcher/Processors					
Pollock	**213,756**	**96.0%**	**5,268**	**42.7%**	**2.5%**
Pacific cod	4,076	1.8%	3,497	28.4%	85.8%
Turbot	6	<.1%	6	<.1%	100.0%
Rock sole	1,035	.5%	812	6.6%	78.5%
Yellowfin	1,205	.5%	906	7.3%	75.2%
Flathead	1,504	.7%	914	7.4%	60.8%
Arrowtooth	395	.2%	375	3.0%	94.8%
Flat other	184	.1%	115	.9%	62.7%
Rockfish	18	<.1%	16	.1%	84.7%
Atka mack	1	<.1%	1	<.1%	100.0%
Oth/unk	470	.2%	425	3.4%	90.3%
Groundfish total	222,649	100.0%	12,334	100.0%	5.5%
Non-surimi Inshore Processing					
Pollock	**76,254**	**97.7%**	**845**	**38.8%**	**1.1%**
Pacific cod	1,225	1.6%	841	38.6%	68.7%
Rock sole	64	.1%	61	2.8%	96.2%
Yellowfin	7	<.1%	4	.2%	59.3%
Flathead	67	.1%	58	2.7%	86.9%
Arrowtooth	98	.1%	97	4.5%	98.9%
Flat other	58	.1%	57	2.6%	99.0%
Rockfish	48	.1%	38	1.7%	77.7%
Atka mack	149	.2%	115	5.3%	77.6%
Oth/unk	63	.1%	63	2.9%	99.9%
Groundfish total	78,032	100.0%	2,180	100.0%	2.8%

'Non-surimi' designation denotes catch processed by processors which did not report making pollock surimi in the fishing year.

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
Surimi Catcher/Processors					
Pollock	**432,308**	**97.9%**	**11,553**	**60.8%**	**2.7%**
Pacific cod	4,384	1.0%	3,494	18.4%	79.7%
Turbot	31	<.1%	29	.2%	95.9%
Rock sole	790	.2%	590	3.1%	74.7%
Yellowfin	691	.2%	580	3.1%	83.9%
Flathead	885	.2%	757	4.0%	85.5%
Arrowtooth	651	.1%	594	3.1%	91.2%
Flat other	208	<.1%	75	.4%	36.2%
Rockfish	64	<.1%	52	.3%	80.3%
Atka mack	200	<.1%	200	1.1%	100.0%
Oth/unk	1,381	.3%	1,061	5.6%	76.8%
Groundfish total	441,594	100.0%	18,986	100.0%	4.3%

(Table 3.10 continued)

Surimi "True" Mothership Processing

Pollock	**121,959**	**97.8%**	**430**	**13.6%**	**.4%**
Pacific cod	1,991	1.6%	1,966	62.0%	98.7%
Turbot	1	<.1%	1	<.1%	100.0%
Rock sole	77	.1%	77	2.4%	100.0%
Yellowfin	5	<.1%	5	.2%	100.0%
Flathead	226	.2%	226	7.1%	100.0%
Arrowtooth	268	.2%	268	8.4%	100.0%
Flat other	67	.1%	67	2.1%	100.0%
Rockfish	40	<.1%	39	1.2%	99.3%
Oth/unk	91	.1%	91	2.9%	100.0%
Groundfish total	124,724	100.0%	3,171	100.0%	2.5%

Surimi Inshore Processing

Pollock	**319,307**	**98.1%**	**3,233**	**69.5%**	**1.0%**
Pacific cod	3,569	1.1%	267	5.7%	7.5%
Sablefish	3	<.1%	<1	<.1%	6.7%
Turbot	19	<.1%	7	.1%	36.0%
Rock sole	82	<.1%	36	.8%	44.5%
Yellowfin	11	<.1%	3	.1%	29.5%
Flathead	530	.2%	312	6.7%	59.0%
Arrowtooth	445	.1%	290	6.2%	65.2%
Flat other	497	.2%	146	3.1%	29.5%
Rockfish	196	.1%	59	1.3%	30.1%
Atka mack	34	<.1%	22	.5%	63.0%
Oth/unk	669	.2%	273	5.9%	40.7%
Groundfish total	325,362	100.0%	4,649	100.0%	1.4%

'Surimi' designation denotes catch processed by processors which reported making any amount of pollock surimi in the fishing year.

The elimination of pollock discards may imply marginal changes to overall utilization rates discussed in the previous section. The utilization rates for 1996 were calculated by dividing the total tons of pollock products by the total pollock catch. That means discarded pollock were included in the denominator of the utilization rate calculation. However, with the implementation of IR/IU in 1998, those pollock cannot legally be discarded. Creating products out of those previously discarded fish will increase the utilization rates for all sectors of the industry, assuming that the retained portion of the harvest would be processed the same before and after implementation of IR/IU. While we do know the utilization rates will increase, the amount they will increase by sector is not known. That will depend on the products produced from fish that would have been discarded prior to IR/IU.

It is possible to calculate the maximum utilization rate that would have been realized if the discarded pollock in 1996 had been processed into round pollock. Table 3.11 shows that such an assumption could have potentially increased the catcher processor's utilization rate by up to 3%, inshore 1%, and "true" motherships 0.5%. We do not expect that all the discarded pollock would have been processed into round product under IR/IU. However, if IR/IU were in place in 1996, we would expect the utilization rate to have been between the actual and the maximum. While the rates below may be illustrative of the IR/IU implications, they result in only slight changes and the analyses will employ the actual (1996) rates.

Table 3.11 Catch, Production, Discards, and Utilization Rates for 1996.

Sector	Catch (mt)*	Product (mt)*	Discards (mt)	Actual Utilization*	Maximum Utilization
Inshore (Surimi)	319,307	110,928	3,193	34.74%	35.74%
Inshore (Non-surimi)	76,032	20,513	839	26.98%	28.08%
"True" Mothership	121,959	30,371	488	24.90%	25.30%
Catcher Processor (Surimi)	432,308	90,750	11,672	21.01%	23.72%
Catcher Processor (Non-surimi)	213,756	42,349	5,344	19.81%	22.31%

*Includes CDQ catch and production, because CDQ production cannot be broken out from Inshore plants.

3.7 Exvessel and Wholesale Price Information

3.7.1 Inshore Exvessel Prices

Three sources of exvessel prices are reported in this section. Two are collected by the State of Alaska, the prices reported on fish tickets and in the Commercial Operator's Annual Reports (COAR). The third source is the negotiated prices from the Bering Sea Marketing Association. Each of these sources has its own strengths and weaknesses.

Commercial Operator's Annual Reports

The COAR are our best source for inshore exvessel prices in 1996. They provide exvessel price data that include post season adjustments. This is an important consideration in the pollock fishery, where historically, inshore processors have offered pollock harvesters a roe bonus based on the pollock's roe content. The weakness of the COAR is that they are submitted for the entire year. Therefore, separating out the differences in prices paid in the A and B season is not possible. The COAR also include payments made for CDQ pollock, so any difference in price paid in the CDQ and open access fisheries would not be captured.

Annual Reports From Inshore Pollock Processors

	Reported Tons	Reported Value	$/lb.
1991	289,363	$ 54,082,820	$ 0.085
1994	464,243	$ 79,215,082	$ 0.077
1996	386,026	$ 72,187,911	$ 0.085

Fishtickets

Exvessel prices are also reported on ADF&G fish tickets. The problem with using fish ticket data, and the reason they will not be used in this analysis, is that they do not seem to include all of the post season adjustments. The fact that these adjustments do not seem to be included is reflected in the table of fish ticket prices in Table 3.12. Processors often pay a higher price for pollock in the A-season, because of the valuable roe. However, the prices on fish tickets consistently report a lower A-season price when compared to the B-season. This is especially troublesome since the Bering Sea Marketing Association reported that a roe bonus was negotiated for the 1996 pollock season.

Table 3.12 Fishtickets from Inshore Processors

1991	Estimated Price	Low Price	High Price
A-season	$ 0.080	$ 0.076	$ 0.085
B-season	$ 0.086	$ 0.075	$ 0.098
Pollock Closed	$ 0.078	$ 0.071	$ 0.085
1994			
A-season	$ 0.072	$ 0.059	$ 0.086
B-season	$ 0.078	$ 0.066	$ 0.089
Pollock Closed	$ 0.048	$ 0.048	$ 0.049
1996			
A-season	$ 0.079	$ 0.062	$ 0.096
B-season	$ 0.082	$ 0.070	$ 0.093
Pollock Closed	$ 0.049	$ 0.043	$ 0.056

The low and high prices are the prices that are two standard deviations below and above the estimated price, respectively.

The fish ticket prices above were estimated by the staff of the Commercial Fisheries Entry Commission (CFEC). To arrive at these prices the following rules were applied to CFEC's Fishticket files.

1. Selection of data.

   All fish ticket data for pollock (ADF&G species codes '270') were selected from fish ticket files supplied by the Alaska Department of Fish and Game (ADF&G) for 1991, 1994 and 1996. This selection did not include data for CDQ pollock (ADF&G species code '970').

   The Federal Zone number of the harvest area was appended to the records by merging to a statistical area translation table received from the ADF&G (July 7, 1995). Records for the Bering Sea were selected if the Federal zone began with a '5', Federal zone 550 excepted (Donut Hole). The observed Federal zones were reviewed for each year.

2. Assignment of Data to Inshore/Catcher Processor/"True" Mothership Sectors:

   1994 and 1996 Data

   These years' fish ticket data were assigned to the inshore, catcher processor, or "true" mothership sectors by merging to yearly vessel files maintained by the NMFS. These particular NMFS files contained the official inshore/offshore designation for each processor. The NMFS data also contain a field that identifies whether at-sea processors harvested their own pollock or took deliveries from catcher vessels. The information from that field was used to determine the "true" motherships.

   Fish ticket data from offshore catcher/processor vessels were selected only if the ADF&G number of the harvesting vessel differed from the ADF&G number of the processing vessel. This eliminated any fish harvested by the catcher/processor itself.

1991 Data

There was no Inshore/offshore designation in 1991, since the I/O1 did not go into place until 1992.

3. Exvessel Price Estimation

Only fish ticket data with round weight deliveries were examined. These data were then edited to remove extraneous data entry errors before a weighted average fish ticket exvessel price was computed. This procedure was modified from existing CFEC programs which edit prices for a wide variety of species and product codes.

The editing procedure constructed a lower and upper boundary for acceptable fish ticket pricing information as follows:

A. Data Assignments to Fishing Period

Data were assigned to the 'A', 'B' or 'C' fishing period based upon the month of landing shown on the fish ticket as shown in Table 3.13. The 'A' and 'B' periods reflect targeted fisheries, and the 'C' season contains landings occurring at other times. A hyphen ('-') means that there were no data in this month.

Table 3.13: Assignment of Harvest to Season, by NMFS Designation, Month and Year

	All	Inshore		True MS		C/Ps	
Month	1991	1994	1996	1994	1996	1994	1996
January	A	A	A	A	A	-	-
February	A	A	A	A	A	-	A
March	A	A	A	C	A	-	A
April	C	C	C	-	-	-	C
May	C	C	C	-	-	-	C
June	B	C	C	-	C	-	C
July	B	C	C	-	-	-	-
August	B	B	C	B	-	-	-
September	B	B	B	B	B	B	B
October	C	B	B	-	B	-	B
November	-	C	C	-	C	C	-
December	C	C	-	-	-	-	-

B. Data were grouped by processor, period, gear, and delivery code.

C. Gross Outlier Test:

The first edit eliminated any data containing prices greater than $7.00 per pound or less than $ 0.011 per pound (1994 and 1996) or prices greater than $1.00 or less than $0.01 (1991). The eliminated tickets were placed in a separate file and reviewed. (See Test 1 in Table 3.14)

D. Simple Average # 1

The average price (unweighted) was computed for the remaining data in each group (Mprice1). (An unweighted average was used because legitimate prices with a small number of pounds are eliminated below if a weighted average is used in this step.)

E. Factor of Ten Test:

Each price observation was then tested against Mprice1. Only data whose prices were > (Mprice1/9.5) and < (Mprice1 * 10) were retained. This is basically a 'factor of ten' edit. For example, if the average price is $.08, then any record with a price of $ .80 or more is eliminated. Eliminated records were placed in a separate file and reviewed. (See Test 2 in Table 3.14.)

F. Simple Average # 2

A second average price (unweighted) and a standard deviation was computed for the remaining data in each group (Mprice2 and Sprice2). If the standard deviation was less than a penny ($ 0.01) then the standard deviation was made equal to a penny. This manipulation to the standard deviation is done because the ultimate goal is to create a low or high range; thus standard deviations less than a penny are not helpful here.

A low range of acceptable prices was computed as Mprice2 - (3 * Sprice2). If this resulted in a negative number for the low range, then the low range was recompute as (Mprice2/5).

Likewise, a high range of acceptable prices was computed as the Mprice2 + (3 * Sprice2). If this resulted in a high range which was greater than twice the average, the high range was recompute as the Mprice2 + (2 * Sprice2).

G. Low/High Test

Prices from individual records were then tested against the low and high ranges. Records with prices less than the low range or higher than the high range were placed in a separate file and reviewed. (See Test 3 in Table 3.14). In a few instances, this examination (and subsequent look at the paper fish tickets) resulted in a relaxation of the lower or higher boundary for a given processor and period.

H. Weighted Average Price

An average price, weighted by the pounds acceptably priced, and a standard deviation was computed for the tickets passing the low/high test. The lowest observed priced and the highest observed price were noted and output, as well as the standard deviation, low range, high range, number of records, amount of pounds successfully passing through the edit, the number of total pounds in the group, the percent of acceptably priced pounds.

I. Additional Information Appended

The summarized records were then merged to the ADF&G's Intent to Operate file, and the name, Federal tax identification number, and type of operation of the processor appended to the records.

Table 3.14 - Review of Fish Ticket Prices Eliminated from Final Weighted Average Price

TEST 1 Gross Outlier Test

YEAR	Total Pounds Harvested	Acceptably Priced Pounds	Pounds from Eliminated Prices	Percent Priced Pounds	Total Records	Priced Records	Eliminated Records	Percent Priced Records
1991	1,030,523,893	605,895,888	4,509,559	0.74	3,711	2,463	18	0.73
1994	984,222,002	922,450,895	2,563,547	0.28	5,888	4,392	38	0.87
1996	965,446,624	896,384,860	842,732	0.09	6,239	4,472	27	0.60

TEST 2 "Factor of Ten" test

YEAR	Total Pounds Harvested	Acceptably Priced Pounds	Pounds from Eliminated Prices	Percent Priced Pounds	Total Records	Priced Records	Eliminated Records	Percent Priced Records
1991	1,030,523,893	605,895,888	15,896	0.0	3,711	2,463	2	0.08
1994	984,222,002	922,450,895	929,783	0.1	5,888	4,392	7	0.16
1996	965,446,624	896,384,860	1,762,588	0.2	6,239	4,472	5	0.11

TEST 3 Failed low/high test

YEAR	Total Pounds Harvested	Acceptably Priced Pounds	Pounds from Eliminated Prices	Percent Priced Pounds	Total Records	Priced Records	Eliminated Records	Percent Priced Records
1991	1,030,523,893	605,895,888	95,765	0.02	3,711	2,463	6	0.24
1994	984,222,002	922,450,895	2,536,113	0.27	5,888	4,392	14	0.32
1996	965,446,624	896,384,860	1,175,750	0.13	6,239	4,472	24	0.54

The third data source for inshore exvessel prices comes from the Bering Sea Marketing Association. They provided negotiated prices for the 1996 fishing seasons. The base price during the A-season was reported as $0.08500. The processors that paid a roe bonus in the A-season used the following scale: $0.065 (<1% roe), $0.07 (1 to 2% roe), plus $0.015/lb. for each additional roe percent thereafter. The B-season price was set at $0.08375 per pound.

Bering Sea Marketing Association prices were not selected for use in this analysis because the prices received by fishermen after the roe bonus was paid cannot be determined. The roe content of the fish delivered to processors paying a roe bonus is required to make that calculation, and those data are not available.

3.7.2 Offshore Exvessel Prices

Exvessel prices for the offshore sector are unavailable for 1996. Both Fish tickets and COAR are filed on a voluntary basis by the offshore sector of the industry. During 1996, only two firms submitted price data to the State in either source. To release data under the confidentiality standards of the State, information must generally be aggregated over at least four firms. Because only two firms reported prices, that information cannot be released.

Because there is no official source of exvessel prices for the offshore sector, an alternative method to determine exvessel prices was developed. Discussions with participants in the offshore sector indicated they typically negotiate a agreement that is based on a percentage of the price paid to catcher vessels delivering shoreside.

Representatives of catcher vessels and processors, taking deliveries from catcher vessels in the offshore fishery, indicated that they generally negotiate a price that is 85-90% of the price paid to catcher vessels delivering shoreside. Using the shoreside price of $0.085/lb. in 1996, and using the midpoint of the negotiated range (87.5%), yields an offshore price of $0.0744/lb. This price will be used for the offshore sector.

3.7.3 Wholesale price

First wholesale prices collected under the Alaska Department of Fish and Game's COAR were used in this analysis. Processors operating either inshore or within Alaska's state waters are required by law to file these reports on an annual basis. The information submitted to the State is FOB Alaska. Therefore, no shipping charges should be included in the price reported to the State. Processors operating outside of Alaska's territorial waters were required to file these forms under a joint agreement between NMFS and ADF&G from 1991 through 1994. From 1995 through the present, some members of the offshore processing fleet have continued to submit the COAR to ADF&G on a voluntary basis. However by 1996 the amount of surimi reported to the State by the offshore sector had fallen to approximately 33% of the offshore total reported in the NMFS Weekly Processor's Report (Table 3.15).

Table 3.15 Reported Alaska Surimi Production in 1,000 Metric Tons

Year	ADF&G COAR		NMFS Weekly Production Reports		ADF&G / NMFS %	
	At-sea	Shorebased	At-sea	Shorebased	At-sea	Shorebased
1990	94	38	133	40	71%	95%
1991	87	45	89	51	98%	88%
1992	94	65	92	72	102%	90%
1993	70	71	75	75	93%	94%
1994	66	79	93	89	71%	89%
1995	35	84	87	91	40%	92%
1996	26	74	80	76	33%	97%

Because of the small sample size the analysts were concerned that the prices reported by the offshore sector might not accurately reflect the overall prices they were paid. The At-sea Processors Association (APA) was also concerned about the quality of the COAR data, and voluntarily supplied their first wholesale prices for 1996 (Table 3.16).

Table 3.16 First Wholesale Prices Reported[1] by the At-sea Processors Association

Product	$/mt	$/lb
Roe	$ 13,169	$ 5.97
Surimi	$ 1,907	$ 0.86
Deep-skin Fillet	$ 2,668	$ 1.21
Fillets	$ 2,220	$ 1.01
Mince	$ 931	$ 0.42
Fish Meal	$ 666	$ 0.30

[1]These prices are being audited by a Council selected CPA firm to verify the data's quality in accordance with the Council's guidelines.

The quantities of product and their values were reported by APA. Values reported were gross sales values (CIF). Therefore, shipping charges needed to be subtracted off the total gross value to determine the FOB Alaska price. The following CIF charges ($/lb) were used to arrive at an FOB Alaska price: $0.098 Japan, $0.088 Korea, $0.090 SE Asia, $0.073 Seattle, and $0.105 US East Coast. These rates were also supplied by APA.

Once the data were received by NMFS and the Council staff, it was determined that the APA data closely reflected the information reported in the COAR data (Table 3.17). Therefore, the COAR data were used for both the inshore and offshore sectors.

Table 3.17 First Wholesale Prices Reported by Alaska Processors

	Fillets&Blocks Skinless-Boneless &DeepSkin	Fillets&Blocks Skinless-Boneless	Fillets&Blocks DeepSkin	Roe	Surimi	Meal	Minced[1]
	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb
Inshore							
1991	1.38			3.79	1.26	0.26	
1994		0.71	1.11	3.65	0.91	0.22	
1996		0.96	1.24	4.52	0.82	0.30	0.52
Offshore							
1991	1.38			4.66	1.58	0.25	
1994		0.71	1.11	5.79	0.94	0.22	
1996		0.96	1.24	6.03	0.86	0.29	0.42

Source: 1991, 1994, and 1996 COAR data.

Note: To protect the confidentiality of processors, fillet prices are based on combined inshore and offshore data.

[1]Minced prices for 1991 and 1994 were not estimated. The 1996 Offshore Minced price was provided by the At-sea Processors Association (APA) as only one At-sea company reported minced prices to ADF&G. If APA and ADF&G data were combined the 1996 Offshore minced price would be $0.45.

Estimating COAR Prices

Annual price and production data by processing plant are being organized by product and sector. The average prices are then screened for outliers using StatPad by Skyline Technologies Inc.--a statistical program that adds statistical capabilities to Microsoft Excel. This software is used to compute summaries for each sector's average prices: count, average or mean, median, smallest, largest, quartiles, and standard deviation. Histograms are drawn to explore the data, showing the shape of the distribution, typical values, variability and outliers. Box Plot analysis is also used to explore the data. These plots show a 5-number summary (smallest, lower quartile, median, upper quartile, and largest) with outliers (noted by small black boxes) indicated. An annual weighted average price is computed where each company's price and production are multiplied to estimate total revenue. The total revenue and total production of each company are then aggregated into sector totals. Sector total revenue is divided by sector total production to produce the weighted average price. If outliers are indicated, then a second weighted average price is computed by eliminating the outlier companies from the computation.

The outliers are data points that lie outside of the following limits:

Upper quartile + 1.5(Upper quartile-Lower quartile)
Lower quartile - 1.5 (Upper quartile-Lower quartile)

"Outliers are extreme measurements that stand out from the rest of the sample and may be faulty--incorrectly recorded observations or members of a different population from the rest of the sample. At the least, they are very unusual measurements from the same population." (Statistics for Business and Economics (Sixth Edition), James T. McClave and P.George Benson, Prentice Hall, New Jersey, 1994, page 95).

3.8 Product Mix and Markets

The profiles presented last September contained product mix information over the past several years. The most recent, complete information we have in this regard is from the 1996 fisheries, shown in Table 3.18.

Table 3.18 Pollock Products Processed During 1996 (mt)

Inshore/offshore Class	Who Harvested the Pollock	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Fillet - CP	Caught own fish	-	6,567	3,971	15,832	-	-	1,574
	Catcher Vessels	-	1,271	933	2,290	-	-	167
Fillet - Catcher Processor Total		-	7,837	4,904	18,122	-	-	1,741
Surimi - CP	Caught own fish	50,755	14	1,104	6,426	10,940	344	5,157
	Catcher Vessels	7,183	-	26	666	1,372	-	448
Surimi - Catcher Processor Total		57,938	14	1,131	7,092	12,312	344	5,605
Catcher Processor Total		**57,938**	**7,851**	**6,035**	**25,214**	**12,312**	**344**	**7,346**
Shoreside Total[1]		**71,349**	**2,626**	**9,229**	**7,442**	**27,864**	**8,514**	**4,417**
"True" Mothership Total		**21,992**	**-**	**-**	**-**	**5,016**	**353**	**1,075**
Grand Total		**151,279**	**10,478**	**15,263**	**32,657**	**45,192**	**9,211**	**12,838**
Fillet - CP	CDQ	-	3,220	3,359	2,802	-	-	364
Surimi - CP	CDQ	4,203	10	158	1,081	356	0	506
"True" Mothership	CDQ	1,369	-	-	-	278	-	288
Shoreside	CDQ	n/a[2]	n/a	n/a	n/a	n/a	n/a	n/a

1/ The Northern Victor and Arctic Enterprise have been included in the Shoreside class and designation in years they participated.

2/ The n/a indicates the information cannot be broken out using National Marine Fisheries Service WPR data

Source: National Marine Fisheries Service AKR Weekly Production Reports for 1996

Changes in the amounts of product on the market which result from the various alternatives being considered are assumed proportional to the allocation percentages. Based on the proportion of products shown for each sector, it is possible to quantitatively project probable changes in supply, by product-form, resulting from alternative reapportionment percentages of the pollock TAC (and thus catch) among sectors as is done in Chapter 4, Analysis of the Alternatives. This is obviously an over-simplifying assumption due to the fact that there will likely be changes in prices and changes in market aspects resulting from changes in the sector allocations. Ideally an analysis would attempt to project such changes for an issue which holds potentially significant implications in terms of world-wide markets, and overall market control for pollock products. We have no ability to quantitatively make such projections, though some qualitative assessments can be offered.

Based upon suppositions about existing production capability in each sector, it may be possible to hypothesize product mix adjustments which might be made, in the short-run and intermediate-run. These hypothetical results will be constrained by our knowledge of existing capacities and capabilities within each sector. At present, this information is quite limited. In addition, issues associated with patterns of retention under IR/IU can be qualitatively addressed.

- The analysts believe that the market share, export vs. domestic supply, and retail level response to changes in supply, supplier, and product form can be addressed by employing a qualitative analysis, to supplement the foregoing. This would involve extrapolating from recent historical patterns. For example, a reapportionment of TAC among sectors would be expected to result in predictable changes in the market share, destination, and price structure for pollock outputs, based upon assumptions cited above. TAC-reapportionment may also have implications for substitute products and suppliers serving domestic (and for that matter, foreign) markets. These theoretical results may be extended, if appropriate, to trade considerations for the U.S., as a whole, e.g., balance-of-trade considerations;

Any such analysis would be limited to a qualitative, largely hypothetical, treatment of these topics. No empirical data exist with which to undertake a rigorous quantitative analysis of the issues cited. While the results of a hypothetical assessment could provide some useful insights into the likely implications of any proposed reapportionment of TAC, it would be vulnerable to criticism by those who may make alternative assumptions.

In summary, we will use the existing product mix information as the primary basis for projections. More qualitative discussions regarding possible changes will be included to supplement the basic projections.

3.8.1 Trends In Pollock Fillet, Roe, and Surimi Markets--1991, 1994, and 1996

Fillets: Comparison of production estimates for the years 1991, 1994 and 1996 (Table 3.19) show that the majority of fillet processors in the BS/AI pollock target fishery have shifted to producing 'deep-skin' fillet blocks, a higher valued fillet product that is mainly consumed in the U.S. fast-food market, where there a two major buyers. A comparison of U.S. export and production statistics show that almost of all of the U.S. production of deep-skin fillets is consumed domestically.

The U.S. domestic market is also supplied by fillet products from other countries. U.S. imports of pollock blocks and fillets, especially from China and Russia, have increased significantly and now match U.S. production in terms of quantity. Most of this production is believed to be 'twice-frozen' product.

Europe is the other major market for pollock fillets, and this market is growing, but U.S. exports of this product to Europe are now minimal. As in the U.S. market, Russian and Chinese pollock exports to Europe have increased significantly.

Prices for fillet product have varied greatly over time. Price differences have varied by as much as $0.24/lb in the export market, and $0.53/lb in the U.S. import market, between the years of 1991 and 1994.

Roe: A comparison of U.S. pollock roe production and U.S. export statistics indicates that almost all of the U.S. production is exported to Japan (Tables 3.20). In comparison to U.S. exports, U.S. imports of roe are minimal indicating that the domestic consumption is very small.

Japanese import statistics indicate that the Japanese pollock roe market has grown, primarily as a result of Russian production, from a 1991 level of 59,000 tons to a 1996 level of 83,000 tons. During 1991, the U.S. share of the Japanese market was 33%, but as a result of the Russian product, the U.S. share of this market fell to 18%.

U.S. export prices for pollock roe increased over the years 1991, 1994, and 1996. The U.S. export price in 1996 was 35% and 17% higher than the 1991 and 1994 average export prices, respectively.

Surimi: Most of the U.S. production of pollock surimi is exported to Japan where the United States is the major supplier to the Japanese market (Tables 3.21). Other significant markets for U.S. surimi products are Korea and the United States.

While Japanese production of surimi has declined, this reduction has been met with increased production of surimi by other countries, using species other than pollock, so that total world production has been relatively stable -- approximately 500,000 tons per year (Figure 3.8).

In terms of consumption, Japan is by far the greatest consumer of surimi. Over the period, Japanese consumption has been in the neighborhood of 400,000 tons annually (Figure 3.9). U.S. consumption of surimi has decreased slightly since the 1994 peak, where approximately 150 million pounds of surimi-based products were produced and sold in the United States -- 30 to 50% of which is comprised of surimi. Industry reports suggest that the Chinese market could expand from current levels of about 10,000 tons to 60,000 tons of surimi, annually.

China is currently expanding its imitation crab manufacturing capability for export and domestic markets, while trends in the Chinese economy will lead to increased demand for surimi and surimi-based products.

U.S. exports of pollock surimi to Europe have been stable, with increased growth in the European market being met primarily by South American production. At a recent trade show, one industry analyst reported that the European market for surimi was about 7,000 tons in 1996, over 10,000 tons in 1997, and will be over 15,000 mt in 1998.

Japanese market prices have varied greatly, but generally have declined between the years 1991, 1994, and 1996. The choice of these years masks the potential volatility of surimi prices as indicated by the 1991-1993 trend where surimi prices doubled and then declined by the same amount (Figure 3.10).

3.8.2 Destination Markets and Cost-Benefit Issues

As indicated above, almost all of the BS/AI pollock surimi and roe production is exported, while almost all of the fillet production is used for U.S. domestic consumption. These patterns have an implication for cost-benefit analysis because, as shown elsewhere, the at-sea sector produces a substantially greater amount (as well as proportion) of deep-skin fillets in comparison to the shoreside sector. Cost-benefit analysis, as employed in an RIR analytical context, measures the 'net benefits' of changed regulations to consumers and to producers. These differential product-mix patterns indicate that, all else equal, as more BS/AI pollock is processed inshore, resulting 'increases' in consumer benefits from the fishery will accrue (primarily) to foreign consumers. Reductions in at-sea production from the BS/AI pollock resource means less product available to the U.S. domestic consumer market. Therefore, in evaluating changes in *"net benefits to the Nation"*, which are based upon the welfare of U.S. citizens, potential losses from, in this example, less fillet production would have to taken into account, while resulting increases in welfare enjoyed by foreign consumers (e.g., as a result of lower prices and increased supplies of surimi) would not be.

Similarly, based on estimates of 'foreign versus domestic' ownership of the factors of production, changes in producer benefits should also be adjusted accordingly. That is, changes in producers surpluses which accrue to foreign entities do not count, while those accruing to U.S. entities do, in assessing the *"net benefit to the Nation"* attributable to a proposed action.

3.8.3 At-Sea, Shoreside, and Market Prices

Prices: One source of price data is the processor prices reported to NMFS and ADF&G which were discussed in Section 3 and presented in Table 3.22. (Except for minced prices, these prices are repeated in Table 3.17).

Processor prices have generally increased for roe products and decreased for surimi products -- with inshore processors receiving, on average, lower prices for these products. Because of confidentiality constraints, fillet prices for inshore and offshore have been combined into industry-wide averages. Generally, according to the NMFS and ADF&G processed products data for the years 1991, 1994, and 1996, average inshore fillet prices were higher than offshore prices. Current price information indicates that Japanese and U.S. surimi wholesale prices are starting to increase relative to fillet prices (Figures 3.10 &3.12). This may be the result of current Japanese inventory trends, where inventories are at their lowest level since 1988 (Figure 3.11).

Quality: Market prices are influenced by many factors, one of which is the quality of the product. With respect to fillets, meal, and minced products, market reports seldom discuss differences between offshore and inshore prices. For roe, these reports do demonstrate that there are differences between at-sea and shoreside prices, as indicated in the prices cited below. With respect to surimi, one argument for why at-sea prices should be higher than inshore prices is that at-sea processors produce a greater amount of top quality surimi.

Depending on the year and destination market, surimi processors produce various amounts of high and low quality surimi. A gross generalization concerning destination markets is that Korean and U.S. markets reflect the demand for low quality surimi as the surimi-based products that are produced from surimi are either imitation crab or a fried product -- where a high quality surimi is not needed. Because Japan produces more "sophisticated" products, where whiteness and gel strength are important factors, the Japanese market demands high quality surimi. However, there have been some changes to the Japanese demand for high quality surimi, especially as result of the high prices of the 1991- 1993 period. In reaction to these high prices, Japanese surimi buyers developed new recipes, wherein lower quality surimi is mixed with high quality surimi in order to keep costs down.

Prices for surimi by grade level are not collected by either the U.S. or Japanese governments. Available industry reports also do not systematically show prices, by grade, by at-sea and shoreside sector. Various industry reports (e.g., Bill Atkinson's News Reports, Seafood Trend Newsletter, and Seaworld's Fishery Information System Market Reports) were reviewed for price information and are summarized in Table 3.33. This information does report prices by grade, but their were few instances where at-sea and shoreside prices were reported in a way that would permit direct comparison (same month, market, grade level, etc.) Nor does this information show the amount of production associated with the reported prices.

3.8.4 Current Changes in the Industry and the Markets

Russian and Chinese influence on U.S., European, and Japanese pollock markets has grown significantly. Additional growth in foreign markets will depend upon the status of Russian pollock stocks, potential increased processing capacity, and government policies that may shift supplies away from export markets and toward internal domestic consumption.

Future APEC international trade negotiations may aid U.S. exports to Japan, Russia, and China through reduction in foreign tariff and non-tariff barriers. The discussion below is based on a review of recent industry publications.

Russia: Russian TAC's for pollock are declining. According to FAO sources, at the beginning of 1997, Russian quotas were cut by 300,000 mt (despite scientific recommendations of a 600,000 mt reduction). The 1998, Russian EEZ pollock TAC is reported to be 2.27 million tons, down from a reported TAC of 2.73 million tons; while the quota in the Sea of Okhotst has been reduced 30%. Average fish sizes are reported to be declining.

Korea: Recent Korean trade barrier reductions are affecting the international market place. During 1996, Korea lifted its import restrictions on Russian product and, thus, became a significant market for Russian pollock surimi and fillets. Also affecting the Korean market for surimi was the increase in EU import duties on Korean imitation crab products. During 1997, Korea lost its preferential treatment and now faces the same duties as U.S. imitation crab manufacturers.

World Demand: Compared to the 1991-1996 period, world demand for surimi is changing. At a recent trade show, one industry analyst reported that the European import market for surimi was about 7,000 tons in 1996, over 10,000 tons in 1997, and will be over 15,000 mt in 1998.

The same analyst also reported that the European market for surimi-based products is currently 100,000 mt, with growth in consumption expected to increase 10%, annually. As indicated previously, the Chinese market is growing and is expected to become the second most important market for surimi, after Japan.

U.S. Industry: In recent years, there have been both a reduction in, and an ownership consolidation of, the at-sea pollock target fleet. A similar pattern of consolidation is observed in the U.S. imitation crab processing sector. Several vessels were sold and moved to Russia, while several others have changed ownership, but remain in the U.S. zone. One major at-sea company has diversified into shore-based surimi processing plants and into U.S. imitation crab plants. This has resulted in the closure of several U.S. imitation crab plants. Another at-sea company has diversified into at-sea processing in South America and Russia. In addition, vertically integrated shore-based processors who make breaded fillets are expanding into fillet markets, either by increased production of Alaska pollock fillets or through the use of imported pollock fillets for their breading operations.

3.8.5 Exchange Rates

Companies base prices on, among other things, knowledge of consumer habits, their competitive position relative to other companies, and distribution channels. Consequently, prices for the same product can vary between markets. In addition, the product may be modified to suit the particular needs of each market. When there are fluctuations in currency-exchange rates, as recently seen with respect to, for example, the Japanese yen and Thai baht, companies revisit their pricing policies (Figure 3.14).

When, say, the U.S. dollar appreciates relative to the Japanese yen, U.S. products become less competitive in the Japanese market, since without price adjustment it takes more yen to purchase the same amount of product. This is an example of the impact of currency appreciation.

All else equal, appreciation of an exporter's currency increases the importer's cost of foreign exchange, which raises the commodity's price in the import market and decreases the quantity demanded. In the face of a rising U.S. dollar, relative to the Japanese yen, a U.S. based exporting firm can choose not to adjust the price of the product in dollars and suffer reduced sales and profit margins. Consider the following example. If surimi is being exported at $1.00 per pound with a unit profit level of $.20 and the exchange rate is 100 yen per $1.00, the price of surimi in yen is 100 yen per pound. If the dollar appreciates to 125 yen per dollar, and the firm continues to export surimi at $1.00 per pound, the import price becomes 125 yen. The firm can keep the price of the product in yen constant, in which case the result is less profit per unit sold.

In this example, a constant sales price of 100 yen, in the face of the new exchange rate of 125 yen per dollar, results in a sales price of U.S.$0.80/lb for surimi -- just covering the costs of production, but at this price there is no profit. Another option is for the company to implement a moderate price increase in yen which will result in lower sales volume, but also permits the firm to partially capture lost profits. Which course of action the firm will take is dependent on many economic factors, including, the elasticity of demand for the product, the relative market position of the firm (i.e., is it a 'price setter' or 'price taker'), inventory holdings, supplies of substitutes in the market, etc.

This latter point makes the picture, in reality, much more complex. Consider that, while the U.S. dollar has appreciated somewhat against the Japanese yen, the current dramatic depreciation of the Thai baht against both the yen and dollar makes predicting market behavior even more difficult. This is so because, as a result of this currency depreciation, Thai surimi has become much 'cheaper' than the U.S. product in the Japanese market. According to Bill Atkinson's News Report (2/19/98) -- "With the economic troubles in Thailand, surimi and imitation crab packers are aggressively trying to export their production to get foreign exchange."

Note that dramatic changes in the market price of surimi can, in turn, change product mix decisions for U.S. producers, as falling surimi prices make fillet production more attractive. However, many operations in the U.S. pollock-target fishery off Alaska are constrained with respect to capacity and capability and , therefore, may not be able to respond to changes in market signals, at least in the short-run. That is, for example, a facility which, at present, does not have the ability to produce a marketable fillet product, cannot simply (nor costlessly) shift product-mix to respond to an increased demand for fillets. In the longer run, this firm may make a business decision to 'invest' in capacity, so that it may participate in the changed market, but this will require time and impose capital and operating costs. In some instances, regulatory constraints may preclude such adjustments, altogether (e.g., NPFMC vessel moratorium limits).

Table 3.19 Imports and Exports of Pollock Fillets

			1991	1994	1996
U.S. Production		Tons			
	Fillet/Block/IQF		N/A	28,985	22,232
	Deep Skin		N/A	24,602	43,234
	Total		65,029	53,587	65,466
U.S. Exports	Fillets and Blocks				
	Germany	Tons	8,602	3,080	*
	Germany	1000$	$20,781	$5,328	*
	Germany	$/Ton	$2,416	$1,730	*
	Germany	$/lb	$1.10	$0.78	
	Canada	Tons	1,304	133	760
	Denmark	Tons	2,692	0	0
	U.K.	Tons	637	2	0
	Japan	Tons	387	1,053	3,563
	R.Korea	Tons	668	170	2,147
	Total	Tons	16,075	5,218	7,352
	Total	1000$	$42,601	$11,091	$16,069
	Total	$/Ton	$2,650	$2,126	$2,186
	Total	$/lb	$1.20	$0.96	$0.99

Blocks				
China	Tons	7,804	23,468	34,323
China	1000$	$17,844	$27,882	$51,640
China	$/Ton	$2,287	$1,188	$1,505
China	$/lb	$1.04	$0.54	$0.68
Russia	Tons	3,014	8,672	29,574
Russia	1000$	$7,434	$13,446	$55,604
Russia	$/Ton	$2,466	$1,551	$1,880
Russia	$/lb	$1.12	$0.70	$0.85
R.Korea	Tons	9,776	*	*
Poland	Tons	4,363	483	*
Thailand	Tons	3,569	*	*
Total	Tons	31,329	33,700	65,425
Total	1000$	$77,272	$44,134	$109,985
Total	$/Ton	$2,466	$1,310	$1,681
Total	$/lb	$1.12	$0.59	$0.76

U.S. Imports

		1991	1994	1996
Fillets				
China	Tons	1,584	9,302	18,954
China	1000$	$3,905	$13,009	$30,751
China	$/Ton	$2,465	$1,399	$1,622
China	$/lb	$1.12	$0.63	$0.74
Russia		0	1,256	*
R.Korea	Tons	1,785	*	*
Poland	Tons	544	0	0
Thailand	Tons	458	*	*
Total	Tons	13,829	19,937	24,298
Total	1000$	$42,471	$38,974	$46,273
Total	$/Ton	$3,071	$1,955	$1,904
Total	$/lb	$1.39	$0.89	$0.86

Alaska Pollock Fillets and Blocks

European Imports

USA	Tons	17,137	9,557	1,167
China	Tons	5,729	27,694	42,011
S.Korea	Tons	2,522	742	65
Russia	Tons	4,212	23,978	77,742
Poland	Tons	26,648	43,537	18,494
Other	Tons	563	658	852
Total	Tons	56,811	106,166	140,331

* less than 100 tons or less than $1 million

Totals include countries not listed

U.S. Imports include Atlantic pollock.

U.S. Exports and Imports are National Estimates (All Customs Districts)

Table 3.20 Imports and Exports of Pollock Roe

			1991	1994	1996
U.S. Production		Tons	21,326	11,622	14,419
U.S. Exports					
	Japan	Tons	15,055	7,975	11,687
	Japan	1000$	$129,396	$79,924	$140,050
	Japan	$/Ton	$8,595	$10,022	$11,983
	Japan	$/lb	$3.90	$4.55	$5.44
	Korea	Tons	2,947	937	864
	Other	Tons	967	94	732
	Total	Tons	18,969	9,006	13,283
	Total	1000$	$163,449	$89,817	$154,633
	Total	$/Ton	$8,617	$9,973	$11,641
	Total	$/lb	$3.91	$4.52	$5.28
U.S. Imports					
	Total	Tons	53	55	176
	Total	1000$	$600	$451	$2,251
	Total	$/Ton	$11,321	$8,200	$12,790
	Total	$/lb	$5.14	$3.72	$5.80

Japanese Imports		(pollock, hake, and cod roe frozen)		
Total	Tons	34,167	36,038	44,868
Total	1000$	$336,332	$408,437	$449,568
Total	$/Ton	$9,844	$11,334	$10,020
U.S.	Tons	19,844	11,831	15,653
U.S.	1000$	$200,336	$135,468	$181,953
U.S.	$/Ton	$10,096	$11,451	$11,624
Russia	Tons	9,083	21,875	25,576
Russia	1000$	$82,844	$250,694	$231,141
Russia	$/Ton	$9,121	$11,461	$9,038
China	Tons	253	295	289
China	1000$	$2,043	$2,441	$1,904
China	$/Ton	$8,075	$8,284	$6,577
R. Korea	Tons	3,811	1,305	1,628
R.Korea	1000$	$42,930	$14,399	$18,626
R.Korea	$/Ton	$11,265	$11,036	$11,440

Roe-2

Japanese	Supply	1991	1994	1996
	Beginning Inventory	10000	20000	28000
	Domestic Production	12120	8000	3700
	Donut Hole	2200	0	0
	Import	34900	37230	51520
	Total	59220	65230	83220
	Mentai Roe	2540	4870	15700

Source BANR Issue 681-12/18/96

Exports and Import totals may include countries not listed.
Japanese imports include Japanese joint-venture production and U.S. flag production in non-U.S. waters.

Table 3.21 Imports and Exports of Surimi

Surimi Overview

		1991	1994	1996
U.S. Production				
Pollock	Tons	131,772	178,238	156,851
Whiting*	Tons	21,000	33,000	30,000
Total	Tons	152,772	211,238	186,851
U.S. Exports				
France	Tons	N/A	1,328	2002.4
Italy	Tons	N/A	866	360.4
Spain	Tons	N/A	132	582.2
Malaysia	Tons	N/A	1,026	1174.9
Singapore	Tons	N/A	0	536.8
China	tons	N/A	12,909	840.9
R.Korea	Tons	N/A	12,909	14,734
Hong Kong	Tons	N/A	856	177
Taiwan	Tons	N/A	3,014	3,023
Japan	Tons	N/A	120,506	102,694
Total	Tons	N/A	142,499	128,471
France	1000$	N/A	2,475	3697.9
Italy	1000$	N/A	1,988	855.6
Spain	1000$	N/A	270	1350.7
Malaysia	1000$	N/A	2,044	2512
Singapore	1000$	N/A	0	1100.1
China	1000$	N/A	25,577	1060.9
R.Korea	1000$	N/A	25,577	28,335
Hong Kong	1000$	N/A	1,299	458
Taiwan	1000$	N/A	6,015	6,061
Japan	1000$	N/A	275,484	217,441
Total	1000$	N/A	318,842	268,095

						1994	1996
France	$/Ton	N/A	$1,864	$1,847	$/lb	$0.85	$0.84
Italy	$/Ton	N/A	$2,297	$2,374	$/lb	$1.04	$1.08
Spain	$/Ton	N/A	$2,044	$2,320	$/lb	$0.93	$1.05
Malaysia	$/Ton	N/A	$1,992	$2,138	$/lb	$0.90	$0.97
Singapore	$/Ton	N/A		$2,049	$/lb	$0.00	$0.93
China	$/Ton	N/A	$1,981	$1,262	$/lb	$0.90	$0.57
R.Korea	$/Ton	N/A	$1,981	$1,923	$/lb	$0.90	$0.87
Hong Kong	$/Ton	N/A	$1,517	$2,593	$/lb	$0.69	$1.18
Taiwan	$/Ton	N/A	$1,996	$2,005	$/lb	$0.91	$0.91
Japan	$/Ton	N/A	$2,286	$2,117	$/lb	$1.04	$0.96
Total	$/Ton	N/A	$2,238	$2,087	$/lb	$1.01	$0.95

U.S. Imports

		1991	1994	1996
Canada	Tons		2,189	400
Russia	Tons		0	12,707
Total	Tons		2,207	13,296

		1991	1994	1996
Canada	$1,000		$3,408	$482
Russia	$1,000		$0	$15,262
Total	$1,000		$3,433	$15,956

		1991	1994	1996		1994	1996
Canada	$/Ton		$1,557	$1,206	$/lb	$0.71	$0.55
Russia	$/Ton			$1,201	$/lb		$0.54
Total	$/Ton		$1,556	$1,200	$/lb	$0.71	$0.54

Japanese Imports

Cod, Pollock, & Hake		1991	1994	1996
R. Korea	Tons	1,787	677	211
China	Tons		2,886	339
USSR	Tons	12,368	17,306	15,765
USA	Tons	102,938	142,599	126,887
Total	Tons	118,971	163,714	143,978

		1991	1994	1996
R. Korea	$1,000	$8,174	$1,544	$459
China	$1,000	$0	$4,734	$611
USSR	$1,000	$41,793	$36,639	$35,407
USA	$1,000	$374,265	$335,926	$259,088
Total	$1,000	$428,512	$379,257	$297,099

		1991	1994	1996		1991	1994	1996
R. Korea	$/Ton	$4,574	$2,280	$2,175	$/lb	$2.07	$1.03	$0.99
China	$/Ton		$1,641	$1,804	$/lb	$0.00	$0.74	$0.82
USSR	$/Ton	$3,379	$2,117	$2,246	$/lb	$1.53	$0.96	$1.02
USA	$/Ton	$3,636	$2,356	$2,042	$/lb	$1.65	$1.07	$0.93
Total	$/Ton	$3,602	$2,317	$2,064	$/lb	$1.63	$1.05	$0.94

Itoyroi				
Thailand	Tons	29,128	19,779	21,582
Total	Tons	29,884	22,153	28,507

European Imports of Surimi

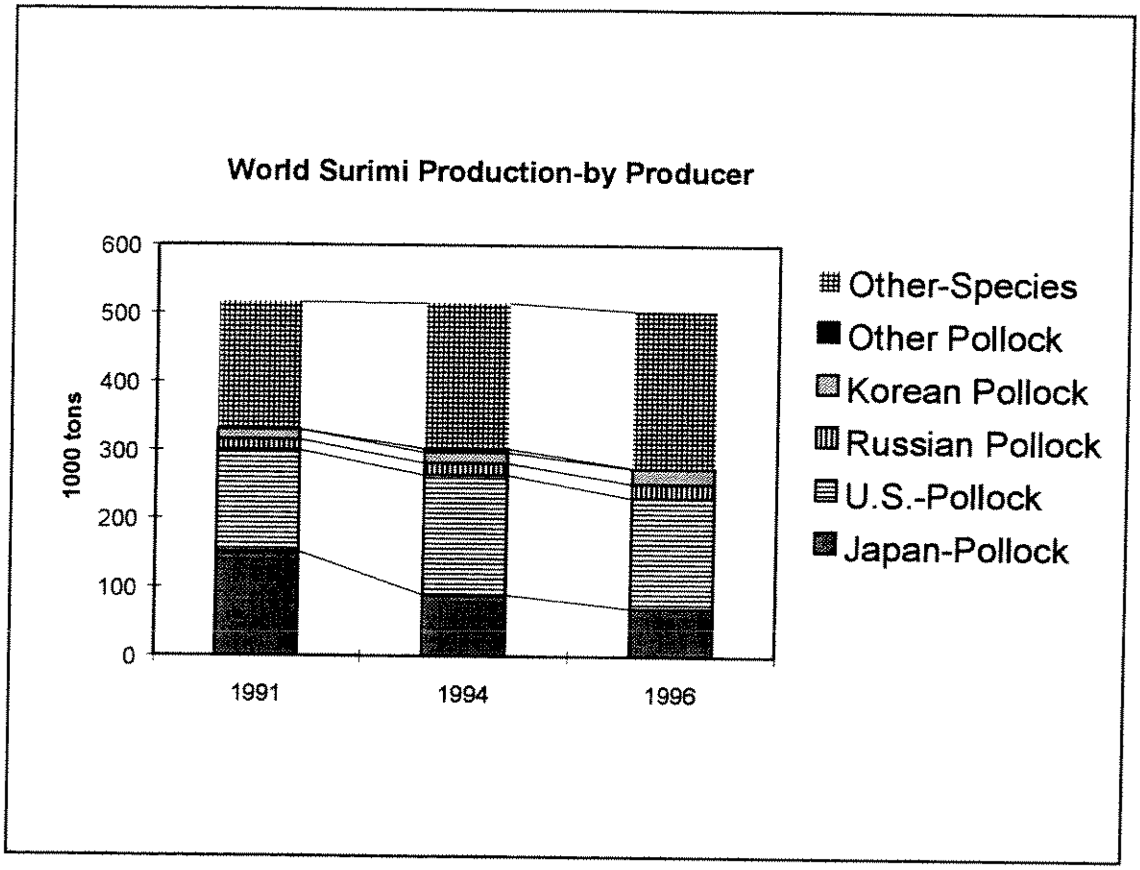
			1991	1994	1996
U.S.	Tons	N/A		3,957	3,493
Thailand	Tons	N/A		178	25
China	Tons	N/A		0	2
R.Korea	Tons	N/A		81	11
Russia	Tons	N/A		78	0
Argentina	Tons	N/A		16	797
Chile	Tons	N/A		48	1,240
Total	Tons	N/A		4,727	5,746

European Imports Provided by Bill Aberle of Alaska Center for International Business and Eric Fleury, U.S. Embassy to the European Union (Brussels)

Exports and Import totals may include countries not listed.
Japanese imports include Japanese joint-venture production and U.S. flag production in non-U.S. waters.

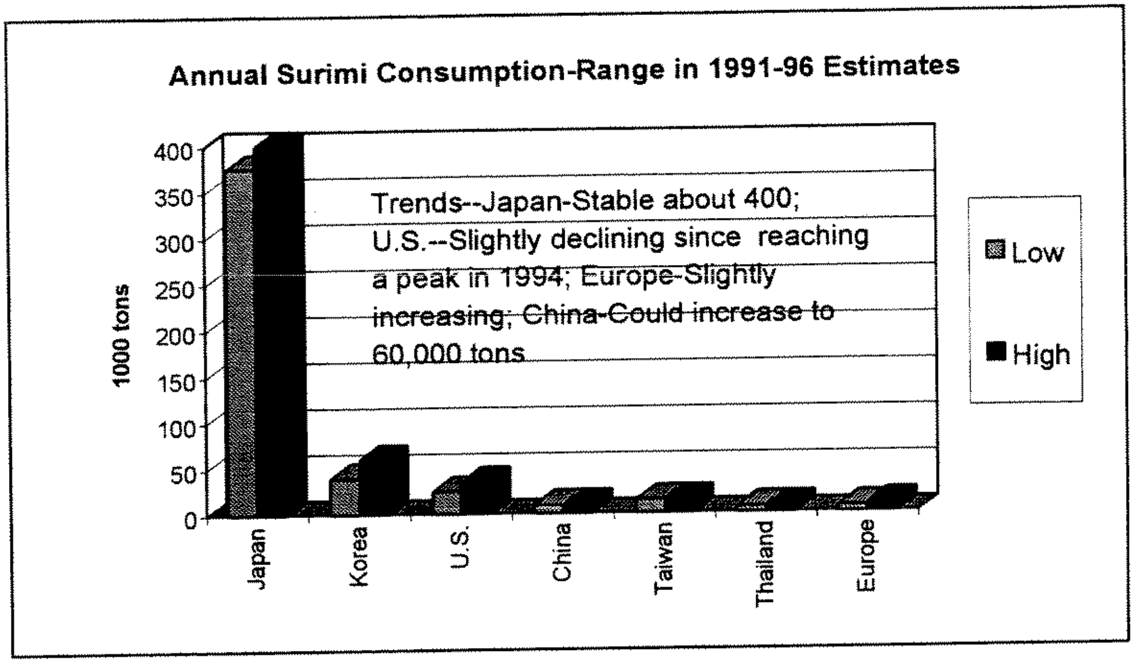
Figure 3.8

World Surimi Production and Consumption



Sources of Surimi Consumption and Production Estimates: BANR-various issues; "Pacific Whiting--Harvesting, Processing, and Quality Assurance-A Workshop: 1992 (Sylvia and Morrissey editors), INFOFISH.

Figure 3.9



Sources of Surimi Consumption and Production Estimates: BANR-various issues; "Pacific Whiting, Processing, and Quality Assurance-A Workshop: 1992 (Sylvia and Morrissey editors), INFOFISH.

Table 3.22

(15) Processor Prices--F.O.B. Alaska

Wholesale Prices Reported by Alaska Processors

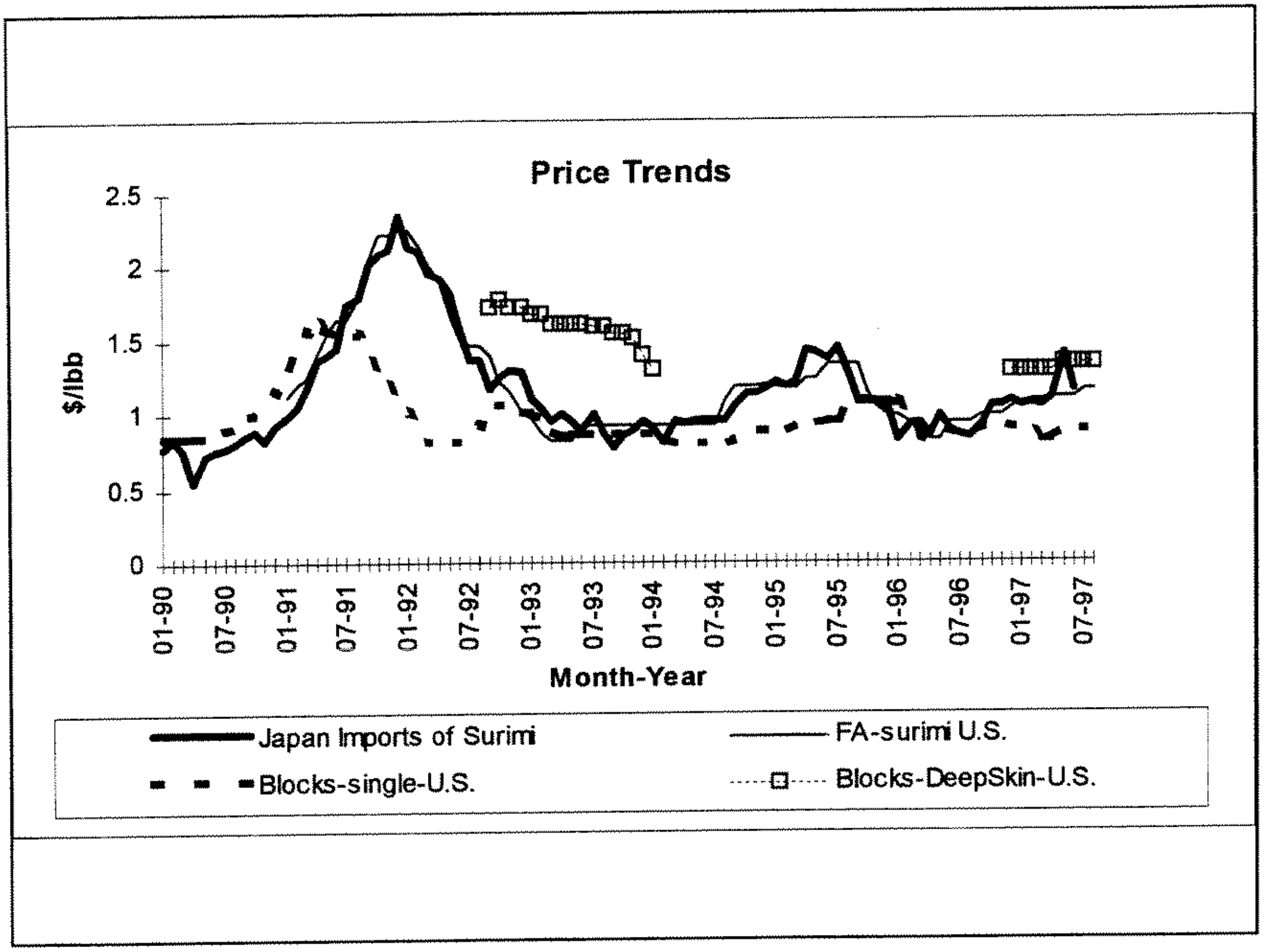
		Fillets&Blocks Skinless-Boneless &DeepSkin	Fillets&Blocks Skinless-Boneless	Fillets&Blocks DeepSkin	Roe	Surimi
Inshore		$/lb	$/lb	$/lb	$/lb	$/lb
	1991	$1.38			$3.79	$1.26
	1994		$0.71	$1.11	$3.65	$0.91
	1996		$0.96	$1.24	$4.52	$0.82
Offshore						
	1991	$1.38			$4.66	$1.58
	1994		$0.71	$1.11	$5.79	$0.94
	1996		$0.96	$1.24	$6.03	$0.86

Based on Production and Revenue/Price Data Reported to NMFS (1991, 1994) and ADF&G(1996) Annual Surveys of Processors

To protect the confidentiality of processors, fillet prices are based on combining inshore and offshore data.

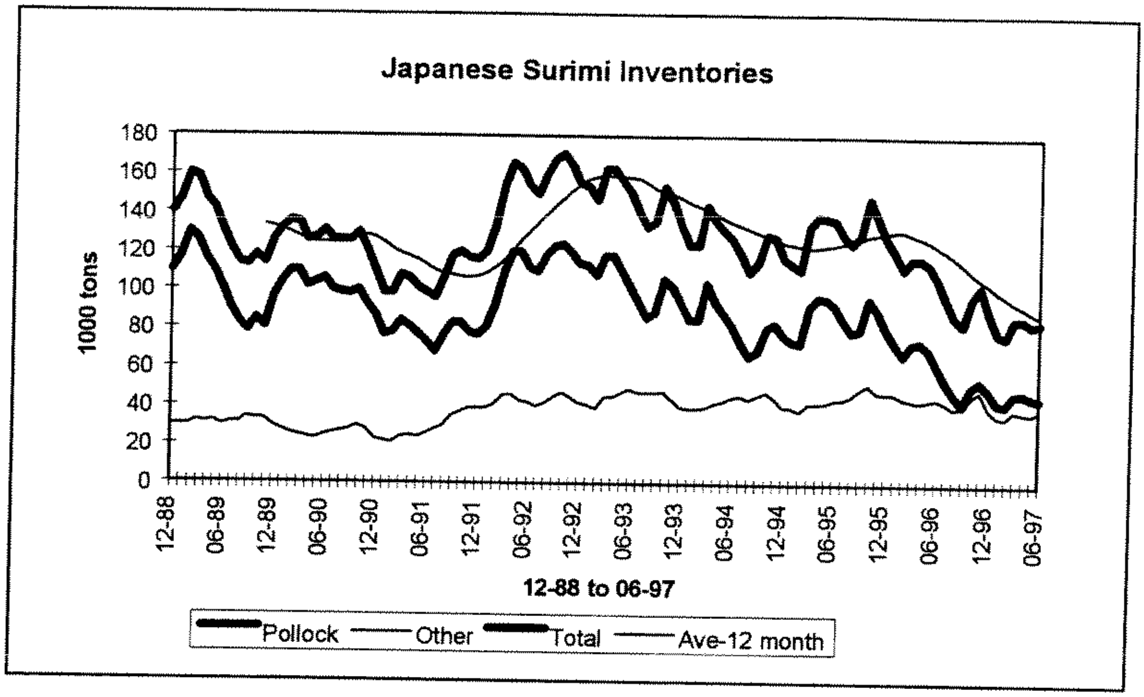
Figure 3.10

Wholesale Prices--C&F Japan or F.O.B--U.S. Market



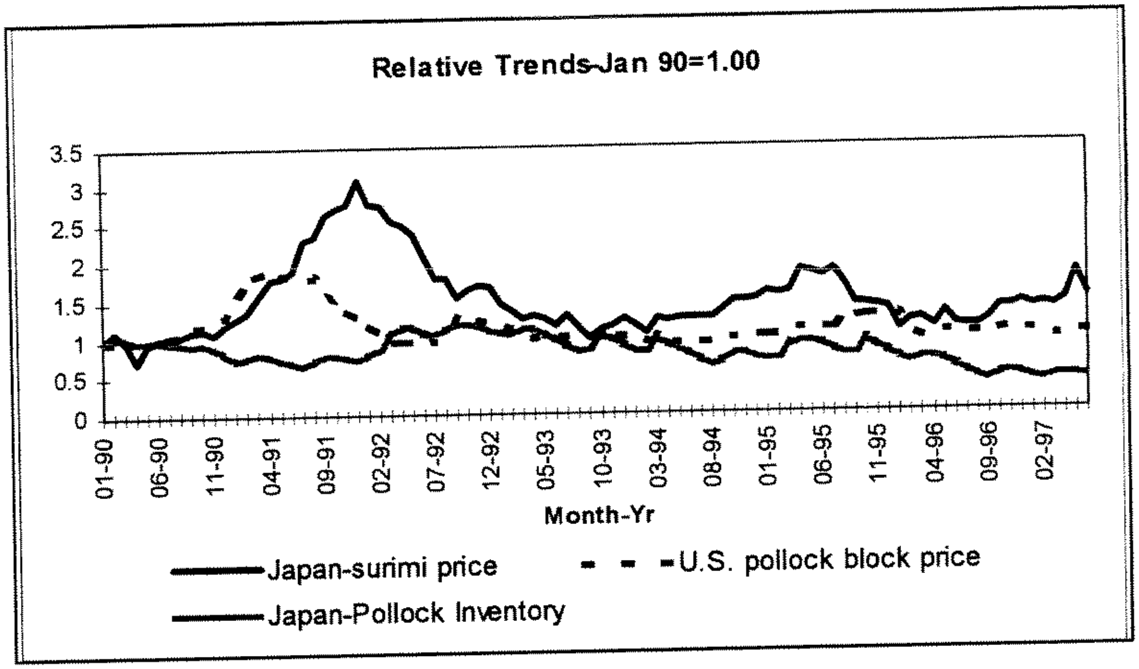
Source--Urner Barry; Japan Marine Products Importers Association

Figure 3.11



Sources of Inventory data include BANR (various issues) and U.S. Embassy of Japan.

Figure 3.12



Relative Trends-Jan 90=1.00
3.5
3
2.5
2
1.5
1
0.5
0
01-90
06-90
11-90
04-91
09-91
02-92
07-92
12-92
05-93
10-93
03-94
08-94
01-95
06-95
11-95
04-96
09-96
02-97
Month-Yr
Japan-surimi price
U.S. pollock block price
Japan-Pollock Inventory

Figure 3.13

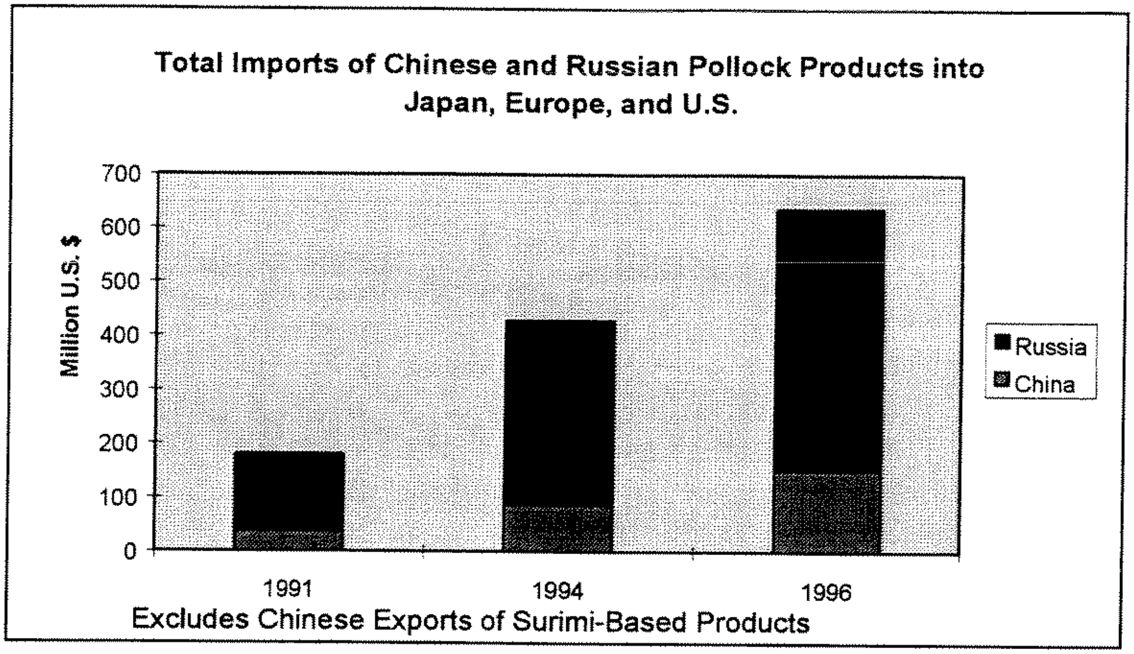

Total Imports of Chinese and Russian Pollock Products into Japan, Europe, and U.S.
700
600
500
400
300
200
100
0
Million U.S. $
1991
1994
1996
Russia
China
Excludes Chinese Exports of Surimi-Based Products

Figure 3.14

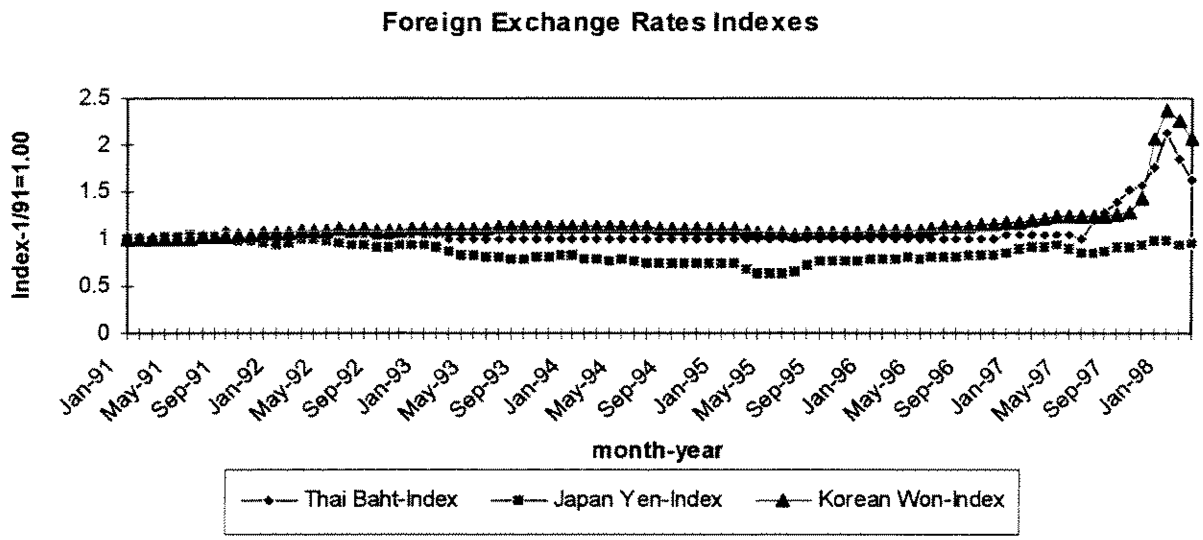

Foreign Exchange Rates Indexes
Index-1/91=1.00
2.5
2
1.5
1
0.5
0
Jan-91
May-91
Sep-91
Jan-92
May-92
Sep-92
Jan-93
May-93
Sep-93
Jan-94
May-94
Sep-94
Jan-95
May-95
Sep-95
Jan-96
May-96
Sep-96
Jan-97
May-97
Sep-97
Jan-98
month-year
Thai Baht-Index
Japan Yen-Index
Korean Won-Index

Table 3.23 Weekly Surimi Prices by Market and Grade.

Rpt Date	Source	Period	Price-Y/kg	Price-$/Kg	Price-$/lb	Level of Sale	Grade	Species	Producer	Type	Market
3/23/98	SW	98-A	300			CNF-Japan	FA	Pollock	At-Sea	O	Japan
12/16/97	SW	Nov-97	-35	-0.27			SA	Pollock	At-Sea	A	Japan
12/16/97	SW	Nov-97	-35	-0.27			SA	Blue Whiting		A	Japan
12/16/97	SW	Nov-97	-35	-0.27				Atka Mackerel		A	Japan
12/16/97	SW	Nov-97	-7.5	-0.06				Hake-WOC	At-Sea	A	Japan
12/16/97	SW	Nov-97	-7.5	-0.06				Hake-WOC	Shore	A	Japan
12/16/97	SW	Nov-97	-7.5	-0.06			KA	Horse Mackerel-Chile		A	Japan
12/16/97	SW	Nov-97	-55	-0.42				Pollock	Hokkaido	A	Japan
12/1/97	SW	Oct-97	350	2.73		end-user	SA	golden threadfin		A	Japan
12/1/97	SW	Oct-97	350	2.73		end-user	SA	golden threadfin		A	Japan
12/1/97	SW	Oct-97	300	2.34		end-user	No.2	Pollock	Hokkaido	A	Japan
11/20/97	SW	Oct-97			1.1	Seattle	A	Pollock		A	U.S.
11/20/97	SW	Oct-97			1	Seattle	KA	Pollock		A	U.S.
11/20/97	SW	Oct-97			0.97	Seattle	KB	Pollock		A	U.S.
10/27/97	SW	Jul-97		2.15		FOB-?		Hake-WOC		A	Korea
10/27/97	SW	Jul-96		1.64		FOB-?		Hake-WOC		A	Korea
10/27/97	SW	97-B	460			end-user	SA	Pollock		A	Japan
10/27/97	SW	97-B	440			end-user	FA	Pollock		A	Japan
10/27/97	SW	97-B	420			end-user	A	Pollock		A	Japan
10/27/97	SW	97-B	365			end-user	KA	Pollock		A	Japan
10/10/97	SW	Sep-97	450	3.69			SA	Pollock		A	Japan
10/10/97	SW	Sep-97	440	3.61			SA	Blue Whiting		A	Japan
10/10/97	SW	Sep-97	400	3.28			FA	Pollock	At-Sea	A	Japan
10/10/97	SW	Sep-97	390-400	3.20-3.28			FA	Pollock	Shore	A	Japan
10/10/97	SW	Sep-97	285	2.34				Pollock	Hokkaido	A	Japan
10/10/97	SW	Sep-97	245	2.01				Atka Mackerel		A	Japan
10/10/97	SW	Sep-97	225	1.84				Jurel		A	Japan
10/10/97	SW	Sep-97	320	2.62			AA	Melrusa		A	Japan
10/10/97	SW	Sep-97	295	2.42			A	Melrusa		A	Japan
10/10/97	SW	Oct-97	285	2.34				Pollock	Hokkaido	A	Japan
10/1/97	SW	97-B	348	2.85		CNF-Japan	FA	Pollock		A	Japan
10/1/97	SW	97-B	355	2.91		CNF-Japan	FA	Pollock	CDQ	A	Japan
10/1/97	SW	97-B	420	3.44		ex-warehouse Japan	FA	Pollock	CDQ	A	Japan
10/1/97	SW	Spring-97	325	2.66		end-user		Pollock	Hokkaido	A	Japan
10/1/97	SW	Sep-97	265	2.17		end-user		Pollock	Hokkaido	A	Japan

Table 3.23 - continued

Rpt Date	Source	Period	Price-Y/kg	Price-$/Kg	Price-$/lb	Level of Sale	Grade	Species	Producer	Type	Market
9/9/97	SW	Jul-97	317	2.6		CNF-Japan		Pollock		A	Japan
9/20/97	SW	Sep-97	325	2.66		ex-plant		Pollock	Hokkaido	A	Japan
8/27/97	SW	97-B	355	2.98			FA	Pollock	At-Sea	O	Japan
8/27/97	SW	97-A	328			CNF-Japan		Pollock		A	Japan
8/27/98	SW	97-B	370	3.11		CNF-Japan	FA	Pollock	CDQ	A	Japan
8/27/98	SW	97-B	385	3.24		CNF-Japan	SA	Pollock			Japan
8/11/97	SW	Aug-97	405	3.43			SA	Pollock	At-Sea	A	Japan
8/11/97	SW	Aug-97	315	2.69			KB	Pollock	At-Sea	A	Japan
8/11/97	SW	Aug-97	395	3.35			High	Pollock	Shore	A	Japan
8/11/97	SW	Aug-97	365	3.09			Low	Pollock	Shore	A	Japan
8/11/97	SW	Aug-97	395	3.35			SA	Argentine		A	Japan
8/11/97	SW	Aug-97	208	1.76			KA	Horse Mackerel-Chile		A	Japan
8/11/97	SW	Contract 97	315	2.67		CNF Japan	FA	Hake-WOC	Tysons-shore?	O	Japan
8/11/97	SW	Contract 97	300	2.54		CNF-Japan	A	Hake-WOC	Tysons-shore?	O	Japan
8/11/97	SW	Contract 97	270	2.29		CNF-Japan	KA	Hake-WOC	Tysons-shore?	O	Japan
8/11/97	SW	Import	300	2.5		CNF-Japan	ALL	Pollock	Imports from U.S. to Japan	A	Japan
8/11/97	SW	Import	286	2.4		CNF-Japan	All	Other Cod	Imports from U.S. to Japan		Japan
8/11/97	SW	Import	272	2.3		CNF Japan	All	Threadfin	Japanese Imports	A	Japan
8/19/97	SW		Jan-May 97	2.3		CNF-Korea		Pollock	U.S.	A	Korea
8/19/97	SW		Jan-May 96	2.04		CNF-Korea		Pollock	U.S.	A	Korea
8/19/97	SW		Jan-May 97	1.83		CNF-Korea		Hake-WOC	U.S.	A	Korea
8/19/97	SW		Jan-May 96	1.73		CNF-Korea		Hake-WOC	U.S.	A	Korea
8/19/97	SW	Aug-97	345	2.92		CNF Japan	FA	Hake-WOC	Trident	A	Japan
8/19/97	SW	Aug-97	325	2.75		CNF-Japan	A	Hake-WOC	Trident	A	Japan
8/19/97	SW	Aug-97	290	2.46		CNF-Japan	KA	Hake-WOC	Trident	A	Japan
8/19/97	SW	Aug-97	170	1.43				Blue Shark	Japan	A	Japan
8/19/97	SW	Aug-96	136					Blue Shark	Japan	A	Japan
7/22/97	SW	Jul-97	380	3.3		end-user	FA	Hake-WOC	At-Sea	A	Japan
7/22/97	SW	Jul-97	370	3.22		end-user	A	Hake-WOC	At-Sea	A	Japan
7/22/97	SW	Jul-97	340	2.94		end-user	KA	Hake-WOC	At-Sea	A	Japan
7/16/97	SW	Jul-97	320	2.78		dealers-Japan		Pollock		A	Japan
7/16/97	SW	Jul-97	247	1.94		dealers-Japan		Atka-Mackerel		A	Japan
7/16/97	SW	Jul-97	380	3.3		end-user		Hake-WOC		A-High	Japan
6/30/97	ST	Jun-97	305					Hake-WOC	At-Sea	A	Japan

Table 3.23 - continued

Rpt Date	Source	Period	Price-Y/kg	Price-$/Kg	Price-$/lb	Level of Sale	Grade	Species	Producer	Type	Market
1/13/97	ST	Jan-97?	353			FOB-Dutch Harbor	SA	Pollock		A	Japan
1/13/97	ST	Jan-97?	310			FOB-Dutch Harbor	FA	Pollock			Japan
3/19/97	BANR	96-B	310	1.15		CNF-Japan	SA	Pollock	American Seafoods?	A	Japan
3/19/97	BANR	96-B	290	1.08		CNF-Japan	FA	Pollock	American Seafoods?	A	Japan
3/19/97	BANR	96-B	270	1.01		CNF-Japan	A	Pollock	American Seafoods?	A	Japan
3/19/97	BANR	97-A	340	1.27		CNF-Japan	SA	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	320	1.19		CNF-Japan	FA	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	300	1.12		CNF-Japan	A	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	430	1.6		end-user	SA	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	400	1.49		end-user	FA	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	380	1.42		end-user	A	Pollock	American Seafoods?	P	Japan
5/14/97	BANR	Apr-97	450	1.64		wholesale-Japan	SA	Pollock	U.S.	O	Japan
5/14/97	BANR	Apr-97	430	1.56		wholesale-Japan	FA	Pollock	U.S.	O	Japan
5/14/97	BANR	Apr-97	350	1.27		wholesale-Japan	A&KA	Pollock	U.S.	O	Japan
6/25/97	BANR	Season-97	310	1.24		CNF-Japan		Hake-WOC	At-Sea	P	Japan
6/25/97	BANR	Season-96	210	0.8		CNF		Hake-WOC	At-Sea	P	Japan
7/2/97	BANR	Season-97	315	1.38		CNF	FA	Hake-WOC	Shore	P	Japan
7/2/97	BANR	Season-97	300	1.2		CNF-Japan	FA?	Hake-WOC	At-Sea	P	Japan
1/7/98	BANR	Apr-97	450	1.55		end-user				A	Japan
1/7/98	BANR	Apr-96	350	1.21		end-user				A	Japan
2/18/98	BANR	Feb-98	390	1.43		end-user	SA	threadfin bream		A	Japan
10/17/98	SD	Oct-97	360				SA	Pollock		A	Japan
10/17/98	SD	Oct-97		1.14			KA	Pollock		A	U.S.

SW = Seaworld=HTTP://www.sea-world.com
BANR = Bill Atkison News Reports-newsletter
ST=Seafood Trends-newsletter
SD=Sseafood Datasearch:+http://www.seafood.com
Type=is the type of price-A-Actual, O=Offer, P=Projected

3.9 Foreign Ownership

Among the information requested by the Council was a description of the ownership patterns in the pollock industry, including levels of foreign ownership and control of harvest and processing capacity. While some of the major foreign investments in the pollock fisheries are generally known, more specific information was requested by the Council. As we have described for the Council previously, the business and corporate ownership structures of various fishing and processing entities make it extremely difficult to provide definitive information in this regard. Nevertheless we have pursued this issue and have provided a summary of the information collected under Tab 8 of Appendix I. This information is based on who owns the vessels and plants. The analysts have not attempted to determine any arrangements, such as bare boat leases, where the nationality of the owner is different from the entity leasing the vessel. However, information presented by the public indicates that this may be occurring in the "true" mothership and possibly other sectors of the industry.

There appear to be three basic sources of information on foreign ownership. The first is the report produced by the Alaska State Legislative Research Agency in early 1994. Because these ownership structures appear to change frequently for a variety of the operators involved, we need to have more recent information than what is in the State report. A second source of information is the Lexis-Nexis computer data base which we have queried for foreign ownership data. Bits and pieces of information in that database come from many diverse sources that are difficult to verify independently. It is hard to meld those bits and pieces together into a credible depiction of the ownership of a particular company or vessel, and there is a high likelihood that we will get it wrong, inadvertently embarrass a company, and then have to make all sorts of public retractions. And this leads to the third source of information which is, of course, the companies and vessel owners themselves.

What we have done since the February 1998 meeting is to meld the State report and more recent Lexis-Nexis information together for each company. We then sent that information out to each company to allow them to comment and revise as necessary. A compilation of the results is contained in Appendix I.

There are 168 vessels or plants which participated in the 1996 pollock Bering Sea and Aleutian Islands fishery. Of the 168 vessels or plants there are 22 catcher-boats which operated in both inshore and offshore sectors (there are 119 different catcher-boats altogether). The count of the inshore plants (eight) does not include the International Seafoods of Kodiak inshore plant or one inshore catcher processor which harvested small amounts of pollock in 1996. In the inshore sector there are 99 vessels or plants, and in the offshore sector there are 89 vessels (one vessel has multi-country affiliation and is subtracted from 90).

In Table 3.24, three foreign countries, Japan, Norway, and South Korea have some degree of foreign-affiliation in plants, catcher vessels or processors:

Table 3.24

Country of Ownership	Inshore Plants (#)	Inshore Catcher-Vessels	Offshore Catcher-Processors	Offshore Catcher-Vessels	Offshore "True" Motherships
Japan	4	11 [4]	1 [3]	3 [4]	1
Norway	0	0	18	2	0
South Korea	0	3 [2]	3 [3]	3 [2]	1
Fully US	4 [1]	**77**	**16**	**42**[5]	**1**
Total	8	91	37	50	3

1/ Including two anchored processors in Dutch Harbor.
2/ Includes two vessels with inconclusive parent-company affiliation of South Korea.
3/ Has a vessel with multi-country affiliation.
4/ A vessel was Lost at Sea since 1996.
5/ Includes a vessel with inconclusive partial UK affiliation.

Inshore Sector Processing Plants: Parent-companies that are affiliated with Japan account for 4 of the 8 total plants of the inshore sector, or 50%. There aren't any plants in the inshore sector where the parent company is from Norway or South Korea. The remaining four plants, 50% of the inshore sector, are fully US owned.

Catcher-Boats Overall: There are 119 catcher-boats altogether: 91 in the inshore sector and 50 in the offshore sector. When added this makes 141 vessels, and subtracting 22 for those that operated in both sectors again equals 119 different catcher-vessels. Ownership of catcher-boats by parent companies of Japan account for 14 or about 12%. A little less than 2% of the catcher-boats have ownership by parent companies foreign-affiliated in Norway. There are two to six vessels where the parent company is from South Korea (four of these vessels are inconclusively of South Korea), or less than 5%. The remaining catcher-boats are fully US owned (which includes one vessel with some inconclusive UK affiliation).

Offshore Catcher Processors: Parent-companies that are affiliated with Japan account for one of the 37 catcher processors in the offshore sector, or about 2%. Norway-affiliation includes 18 vessels or about 49%. South Korea includes two to three vessels (because some vessels have ownership by parent companies of Japan as well as South Korea), or about 5%. There remains 16 catcher processors in the offshore sector which are fully US owned, or 46% of the total.

"True" Motherships: There are three "true" motherships operating in the offshore sector. One is fully-affiliated with Japan (33% of the total), one is 10% affiliated with South Korea and 90% US or about 3% of the total, and one is fully US. Ownership by US companies accounts for 63% of the total of "true" motherships.

3.10 Employment Information

We presented employment information in September which was incomplete, due primarily to our lack of employment information for the at-sea sector. Reporting requirements in Alaska are different than in Washington, for example, and we were able to give you employment information for the primary inshore plants involved in the pollock fishery, but not the at-sea sector. This included total employment, a breakdown by month (which may give some indications of pollock-specificity), and residency of those employees, as compiled by the Alaska Department of Labor. We received assistance from the Washington Department of Fisheries, including Council member Austin, to try and get symmetrical information for the offshore fleet; unfortunately there is no official, agency source for the data we need.

In February 1998 we received guidance from the Council on the use of industry submitted data to help us fill the employment gap in our analysis, including an independent audit process to check the veracity of that information. We have coordinated with the Alaska Department of Labor and representatives of the at-sea sector (At-sea Processors Association member companies only) who have provided us with social security numbers for all Alaskan employees of their Bering Sea operations, and their total employment numbers. These have been cross-checked against the Alaska Permanent Fund Dividend files to confirm the number and percentage of Alaskan resident employment. These are not necessarily specific to pollock employment, but as with the inshore plant information, cover all employment (we have no way to really differentiate by species, though the members of APA are primarily pollock specific operations). This information has been compiled and is now incorporated in the document under Tab 6 of Appendix I.

We should also mention that the analysis prepared by Impact Assessment, Inc. may provide another, less quantitative perspective on the overall employment issue (Appendix II). A major focus of their work is to identify the linkages, from a community and employment perspective, to each industry sector, and therefore be able to make some assessments regarding impacts of the alternatives.

3.11 PSC Bycatch Information

Bycatches of 'prohibited species' in the BS/AI pollock target fisheries have the potential to impose both direct and indirect costs. Rates and species composition vary significantly by area, time, gear-type, and sector. They also would be expected to vary, over time, with the relative abundance of the individual PSC species, e.g., an exceptionally strong AYK chum salmon return could produce unusually high rates of bycatch of "other salmon" in BS/AI pollock target trawl fisheries. Anticipating variability in rates is particularly difficult.

Utilizing NMFS catch and bycatch data (principally from 'blend' files), base-year PSC statistics for BS/AI pollock target fisheries were examined. The following tables summarize these PSC bycatch performance data, by processing mode and sub-sector for 1996 (data from the 1991 and 1994 fisheries were presented in September to illustrate the trends and variability over time - that information is included in Appendix I). The first table presents the total bycatch in 'metric tons' or *'numbers of animals'* taken by a sector in directed pollock fisheries for the entire year. The second table converts these estimates into *'PSC bycatch rates'*, expressed in terms of *'tons of PSC-bycatch'* per ton of groundfish catch, or *'numbers of PSC animals'* per ton of groundfish catch. **A discussion at the Advisory Panel in February suggested deleting the table showing absolute bycatch amounts, and instead focusing on the rates of bycatch. That table has not been deleted, due to the analysts' decision that the information illustrates the overall low levels (relative to other fisheries) of PSC bycatch in the pollock target fisheries, for both sectors involved.**

Comparisons between the tables 3.25 and 3.26 suggest that, in some instances, relatively large absolute PSC numbers (either tons or animals) may actually be associated with relatively small *'rates'* of bycatch, due to the absolute volumes of groundfish catch recorded by a given sector. Salmon and herring, for example, show significant amounts of bycatch in the pollock fisheries, but low overall rates of bycatch. Other PSC species have both low amounts and low rates overall. This further suggests that these two aspects of PSC-bycatch performance be assessed in combination in order to evaluate relative sector (and/or sub-sector) impacts.

Table 3.25 BS/AI Pollock Target Fishery Prohibited Species Bycatch, by Processing Mode

[Metric tons or number]

	Halibut mort.	Herring	Red king crab	Other k.crab	Bairdi	Other Tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
				Catcher/Processor				
Non-surimi								
1996	125.6	49.5	4.9	.0	20.1	20.5	6.1	4.2
Surimi								
1996	129.9	720.6	1.0	.1	62.0	24.5	14.4	35.3
				"True" Motherships				
1996	20.5	30.7	.0	.0	.1	.2	8.8	18.6
				Inshore				
Non-surimi								
1996	11.0	186.5	.0	.0	.8	3.3	4.3	4.8
Surimi								
1996	33.7	254.3	.1	.1	6.5	15.0	22.0	14.5

Members of the Council's Advisory Panel requested that the metric tons of halibut mortality in the pollock target fisheries be expressed in numbers of halibut. To convert the tons of halibut to numbers of animals, the total weight of halibut bycatch was divided by the mean weight of a halibut (3.5 kg was the assumed weight) taken in the bottom or midwater pollock target fisheries[8]. This calculation indicates that 91,600 halibut were removed as bycatch mortality in the 1996 pollock fishery. Halibut mortality in the 1997 pollock fishery was estimated to be about 74,300 animals[9].

[8] The average size of a halibut taken as bycatch in the 1996 bottom pollock fishery was 3.14 kg, and in the mid-water pollock fishery the average was 3.84 kg. These weights were taken from the 1997 "Report of Assessment and Research Activities" published by the International Pacific Halibut Commission, p. 286, 1998.

[9] Taken from the May 1998 draft of the Pelagic Trawl EA/RIR, D. Witherell, NPFMC.

Table 3.26 BS/AI Pollock Target Fishery Prohibited Species Bycatch Rates, by Processing Mode

[Metric tons/ton or number/ton]

	Halibut mort.	Herring	Red king crab	Other k.crab	Bairdi	Other Tanner	Chinook	Other salmon
	t/t	t/t	No./t	No./t	No./t	No./t	No./t	No./t
				Catcher/Processor				
Non-surimi								
1996	.00059	.00023	.02290	.00012	.09400	.09600	.02700	.01950
Surimi								
1996	.00030	.00167	.00220	.00015	.14300	.05660	.03300	.08170
				"True" Motherships				
1996	.00017	.00025	.00000	.00000	.00060	.00170	.07100	.15250
				Inshore				
Non-surimi								
1996	.00014	.00245	.00000	.00000	.01050	.04300	.05560	.06300
Surimi								
1996	.00011	.00080	.00021	.00038	.02048	.04690	.06770	.04550

Projections of PSC bycatch under the various alternatives are contained in Chapter 4.

3.12 Fishing in the Russian EEZ

In September, 1997, a report was prepared at the request of the Council, summarizing the entry and exit patterns of American fishing vessels moving between the U.S. EEZ off Alaska and the Russian zone. At that time, the question posed to the NMFS Enforcement Office, Juneau, which monitors these passages, was, "... how many U.S. vessels fished in the BS/AI or GOA pollock fisheries ***and*** operated in the Russian zone... ***in the same year***?" In other words, how many vessels fished ***both*** in the Russian zone and in the BS/AI or GOA pollock fishery in 1992; how many in ***both*** in 1993; etc.

The results suggested that almost no vessels had exhibited this pattern of operation over the period 1992 through 1996. When these data were presented to the Council, however, the Council expressed the opinion that the question had been too narrowly phrased. They asked that the data be re-examined to determine, "... how many American vessels had fished in a BS/AI or GOA pollock fishery, ***any time during this period***, and ***also*** "checked-in" to, or "checked-out" of, the Russian zone?" That is, for example, had a U.S. fishing vessel which fished in a pollock target fishery in the BS/AI in, say, 1994, ***ever*** notified NMFS of its intention to exit the U.S. zone to participate in fishing activities in the Russian zone, either before or after its pollock activity in 1994?

By re-phrasing the question in this way, it should be possible to identify vessels moving between the two zones across multiple-years, rather than within a single year, as posed in the original question.

Some limited opportunity apparently existed, over the period of interest, for U.S. groundfish operations to participate in fisheries in the Russian western Bering Sea and North Pacific EEZ. Federal regulations require that domestic fishing vessels 'check-in' and 'check-out' when moving between fisheries in the U.S. and Russian zones. The NMFS Enforcement Office, Juneau, maintains records of such activity. They report that these data were not collected for 1991 (the first year of this profile), but were compiled beginning in 1992.

The original draft of this discussion contained information on the total number of vessels which either checked in or out, and provided information regarding the subset of vessels which have also been involved in the BS/AI or GOA pollock fisheries over the same time period. The relevant information was that, in 1992 there were 22 vessels which checked in/out, and which also had some involvement in the pollock fishery between 1991 and 1996. In 1993 only one such vessel was identified; in 1994 only one vessel; in 1995 there were three vessels; and, in 1996 there were five. All the vessels involved were *C/Ps*, within the definition of this analysis, having operated as such in the U.S. EEZ. Despite this fact, some reportedly operated as motherships or catcher boats while fishing in the Russian zone.

No operations defined within the I/O3 analysis as *'true' motherships* exhibited these U.S. to Russian zone switching patterns, over the period. And no operations, identified as *catcher boats* within the I/O3 analytical definitions, fished in both the Russian EEZ and in the BS/AI *pollock target* fishery, over this period, according to NMFS Enforcement records.

Ideally, we would provide information to the Council which identifies the entry/exit patterns of the unique vessels over time, as well as perhaps their EEZ pollock activity; however, we have been informed that this is confidential data and cannot be disclosed.

3.13 State of Alaska Fish Taxes

In order to augment the discussion on value of the pollock fisheries to the state, the Alaska Department of Revenue has conducted the following analyses to compare tax revenues generated by fishery and by inshore and offshore sectors.

<u>The Fisheries Business Tax (AS 43.75)</u>

The current structure of the fisheries business tax was adopted by the Alaska legislature in 1979. This tax structure differentiates between established and developing species and whether or not the processing activity occurs in a floating facility, or shorebased facility. The tax is a percentage of the exvessel value (the amount paid to commercial fishers). For established species the tax rate is 5% for floating processing and 3% for other shorebased processing. For developing species it is 3% for floating processing, and 1% for shorebased processing.

For revenue from processing activities within a municipality, 50% of the taxes are shared with the respective municipalities in which the processing took place. If a municipality is within a borough, the 50% amount to be shared is generally split equally between the municipality and borough. For revenue from processing activities outside a municipality (unorganized borough), 50% of the taxes are shared through an allocation program administered by the Alaska Department of Community and Regional Affairs.

Because pollock was classified by the Alaska Department of Fish and Game as an established fishery in 1995 and 1996 (the two years addressed in this report), the relevant tax rates for pollock are 5% for floating processing, and 3% for shorebased processing. A shorebased business is defined under Alaska Statute (AS 43.75.290) as a business that is either "permanently attached to the land" or "remains in the same location in the state for the entire tax year."

The Fishery Resource Landing Tax (AS 43.77)

The landing tax became effective January 1, 1994. The tax is levied on processed fishery resources first landed in Alaska. The tax rate is 3% of the exvessel value for established species (e.g. pollock) and 1% for developing species. For the landing tax, the exvessel value is determined by multiplying the statewide average price per pound (computed by the Alaska Department of Fish and Game) by the unprocessed weight of the fish. For example, if a firm processes 100,000 pounds of raw pollock (outside of the 3 mile limit and then brings it into Alaska for transshipment) and the statewide average price is $.10/lb., they would owe $300 in tax.

Revenue from the fishery resource landing tax is shared in the same manner as from the fisheries business tax except the location of the sharing is a function of where the fish was landed not processed.

Assumptions for Excise Fish Tax Comparisons

Because data used by the Department of Revenue comes from fisheries business and fishery resource landing tax returns, the following assumptions need be made in order to identify pounds, value and revenue by species and area.

1. Pollock pounds and value attributed to the share locations Atka, Akutan, Saint Paul, Unalaska, the unorganized borough, and outside (longitude and latitude outside of borough boundaries) are representative of the Bering Sea and Aleutian Islands pollock harvest. Although some pollock caught in the Gulf might be processed in these share locations, and some pollock caught in the Bering Sea might be processed outside of these share locations, this is the only way we have to differentiate between Gulf, and Bering Sea and Aleutian Islands pollock. The total Fishery Business Tax for both the BS/AI and GOA combined are listed in Table 3.27.

2. Pollock pounds and value listed on fisheries business tax returns correspond to inshore pollock. Pollock pounds and value listed on landing tax returns correspond to offshore pollock.

3. The pounds and value listed on the fisheries business and fishery resource landing tax returns correspond to actual pounds and value caught.

4. Revenues are a direct calculation from pounds and value, not the actual revenue paid by taxpayers. Actual revenues will differ from these numbers because of carryforwards, credits, amended returns and the timing of estimated payments.

Comparison of Excise Taxes for BS/AI Pollock by Sector (see 3.28)

Using the above assumptions, we calculated the pounds, value and revenue for 1995 and 1996 inshore and offshore BS/AI pollock.

Comparison of Inshore and Offshore BS/AI Pollock

1. In 1995, the number of pounds of BS/AI pollock subject to the fisheries business tax (inshore) was 915 million (859 million in 1996) and the number of pounds subject to the landing tax (offshore) was 1.5 billion (1.4 billion in 1996).

Table 3.27: 1995 and 1996 Pollock Tax Revenue Data

FISHERIES BUSINESS TAX[1]
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
SHORE	1,016,357,336	$102,603,904		3.0%	$3,078,117
FLOAT	73,966,138	$4,766,612		5.0%	$238,331
1995	**1,090,323,474**	**$107,370,516**	**$0.098**		**$3,316,448**
POLLOCK					
SHORE	818,014,874	$68,549,631		3.0%	$2,056,489
FLOAT	175,261,183	$12,685,276		5.0%	$634,264
1996	**993,276,056**	**$81,235,005**	**$0.082**		**$2,690,753**

FISHERY RESOURCE LANDING TAX[2]
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
1995	**1,473,380,396**	**$135,550,996**	**$0.092**	3.0%	**$4,066,530**
1996	**1,388,720,806**	**$113,875,104**	**$0.082**	3.0%	**$3,416,253**

TAX TOTALS
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	REVENUE
1995	**2,563,703,871**	**$242,921,512**	**$0.095**	**$7,382,978**
1996	**2,381,996,862**	**$195,110,109**	**$0.082**	**$6,107,006**

NOTE: FROM FISHERIES BUSINESS TAX RETURNS & FISHERY RESOURCE LANDING TAX RETURNS (tax period ends 1995 & 1996)

[1] Estimated revenue is calculated using a 3% tax rate for shore processors and a 5% tax rate for floating processors. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Additionally, 50% of this revenue is shared to qualifying communities

[2] Estimated revenue is calculated using a 3% tax rate. Actual pounds and value might vary due to amended returns. Actual revenue will vary due to amended returns, credits, the timing of estimated payments. Additionally, 50% of this revenue is shared to qualifying communities.

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Table 3.28: Bering Sea 1995 and 1996 Pollock Tax Revenue

BERING SEA[1] FISHERIES BUSINESS TAX[2]
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
SHORE	840,717,171	$84,273,515		3.0%	$2,528,205
FLOAT	73,966,138	$4,766,612		5.0%	$238,331
1995	**914,683,309**	**$89,040,127**	**$0.097**		**$2,766,536**
POLLOCK					
SHORE	683,825,490	$56,644,800		3.0%	$1,699,344
FLOAT	175,261,183	$12,685,276		5.0%	$634,264
1996	**859,086,673**	**$69,330,076**	**$0.081**		**$2,333,608**

BERING SEA[1] FISHERY RESOURCE LANDING TAX[3]
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
1995	**1,473,380,396**	**$135,550,996**	**$0.092**	3.0%	**$4,066,530**
1996	**1,388,646,983**	**$113,869,050**	**$0.082**	3.0%	**$3,416,072**

BERING SEA[1] TOTALS
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	REVENUE
1995	**2,388,063,705**	**$224,591,123**	**$0.094**	**$6,833,066**
1996	**2,247,733,656**	**$183,199,126**	**$0.082**	**$5,749,679**

NOTE: FROM BERING SEA FISHERIES BUSINESS TAX RETURNS & FISHERY RESOURCE LANDING TAX RETURNS (tax period ends 1995 & 1996)

[1] Bering Sea (as defined here) corresponds to the following share locations: Atka, Akutan, Saint Paul, Unalaska, the unorganized borough, and outside (long. and lat. outside Borough and municipal boundaries).
[2] Estimated revenue is calculated using a 3% tax rate for shore processors and a 5% tax rate for floating processors. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Additionally, 50% of this revenue is shared to qualifying communities
[3] Estimated revenue is calculated using a 3% tax rate. Actual pounds and value might vary due to amended returns. Actual revenue will vary due to amended returns, credits, the timing of estimated payments. Additionally, 50% of this revenue is shared to qualifying communities.

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2. In 1995, the inshore BS/AI pollock total value was $89 million ($69 million in 1996) and the offshore BS/AI pollock total value was $136 million ($114 million in 1996). This translated to a total state revenue of $2.8 million for inshore ($2.3 million in 1996) and $4.1 million ($3.4 million in 1996) for offshore.

3. For 1995 and 1996, inshore BS/AI pollock (as defined here) accounted for 38% of BS/AI pounds (inshore plus offshore BS/AI pollock) and 40% of total revenue. For 1995, the two reasons for the higher revenue percentage were the higher tax rate on floating processing and the higher price on inshore BS/AI pollock. In 1996, the reason for the higher revenue percentage was the higher tax rate on floating processing ($250,000 in additional revenue).

4. In 1996, the inshore pounds of BS/AI pollock are down by 6%, total value down by 22%, and revenue down by 16% from 1995. The offshore pounds are down by 6%, and total value and revenue down by 16%.

Thus, for the indicator year for this analysis, the total 1996 value of the Bering Sea and Aleutian Islands pollock harvest (as defined here) is $195 million. This translates into approximately $2.3 million in revenue from the fisheries business tax (inshore) and $3.4 million in revenue from the fishery resource landing tax (offshore), for a total of $5.7 million.

Potential Reasons for High Inshore/Offshore Percentage

The Bering Sea and Aleutian Island pollock allocation for 1995 and 1996 was 35% inshore and 65% offshore (our data shows 38% inshore and 62% offshore). The following are possible reasons why our percentages differ from the allocation percentages:

1. The data used in this report are from fisheries business and fishery resource landing tax returns. Taxpayers list where the pollock was processed on their fisheries business tax returns not where it was caught. Consequently, if a taxpayer caught his pollock in the Gulf but then took this pollock to Bering Sea or Aleutian Island communities to be processed, we would still count this as BS/AI pollock. Conversely, if the pollock was caught in the Bering Sea but processed in Gulf communities, we would count this as Gulf pollock.

2. Processors or DOR may have made errors in data capturing and reporting pounds.

3. Taxpayers are taking their last load of pollock with them out of state (see leakage discussion below).

Comparison of BS/AI Pollock with Other Species (see Tables 3.29-.3.32)

The following percentages should help to put the revenue generated from BS/AI pollock in perspective relative to the revenue generated by other fish species.

1. In 1995, BS/AI pollock revenue was 93% of total statewide (landing and fisheries business) pollock revenue (94% in 1996).

2. In 1995, pollock revenue was 53% of total statewide groundfish revenue (50% in 1996).

Table 3.29: 1995 Landing Tax Pounds and Values

			ESTIMATED[1]		
SPECIES	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
GROUNDFISH	2,118,032,016	$216,634,800	$0.102	3.0%	$6,117,150 [2]
SHELLFISH	7,612,422	$19,540,840	$2.567	3.0%	$586,225
OTHER	79,845	$123,092	$1.542	3.0%	$3,693
TOTALS	**2,125,724,282**	**$236,298,731**	**$0.111**		**$6,707,068**
NOTE:	FROM FISHERY RESOURCE LANDING TAX RETURNS (tax period ends 1995)				

[1] Estimated revenue is calculated using a 3% rate for established species and a 1% rate for developing species. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Actual pounds and value might vary due to amended returns. Additionally, 50% of this revenue is shared to qualifying communities

[2] Adjusted for $381,894 in refunds due to retroactive application of developing species designation to the landing tax.

Table 3.30: Landing Tax Pounds and Values[1]

				ESTIMATED		
SPECIES		POUNDS	VALUE	PRICE	TAX RATE	REVENUE
GROUNDFISH						
	DEV.	280,840,684	$14,393,419	$0.051	1.0%	$143,934
	EST.	1,805,400,910	$175,725,308	$0.097	3.0%	$5,271,759
	TOTAL	**2,086,241,594**	**$190,118,728**	**$0.091**		**$5,415,693**
SHELLFISH						
	DEV.	295,515	$1,587,610	$5.372	1.0%	$15,876
	EST.	8,924,944	$14,159,576	$1.587	3.0%	$424,787
	TOTAL	**9,220,459**	**$15,747,186**	**$1.708**		**$440,663**
OTHER						
	EST.	35,189	$23,269	$0.661	3.0%	$698
	TOTAL	**35,189**	**$23,269**	**$0.661**		**$698**
TOTALS		**2,095,497,242**	**$205,889,183**	**$0.098**		**$5,857,055**
NOTE: FROM FISHERY RESOURCE LANDING TAX RETURNS (tax period ends 1996)						

[1] Estimated revenue is calculated using a 3% tax rate for established species and a 1% tax rate for developing species. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Actual pound and value might vary due to amended returns. Additionally, 50% of this revenue is shared to qualifying communities

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Table 3.31: 1995 Fisheries Business Pounds, Value and Revenue Data

		FISHERIES BUSINESS TAX[1]			
		ESTIMATED			
	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
SALMON					
SHORE EST.	395,789,374	$228,043,167		3.0%	$6,841,295
CAN EST.	406,055,010	$134,204,187		4.5%	$6,039,188
FLOAT EST.	163,825,497	$117,102,567		5.0%	$5,855,128
TOTAL	**965,669,881**	**$479,349,922**	**$0.496**		**$18,735,612**
SHELLFISH					
SHORE EST.	57,569,487	$142,786,796		3.0%	$4,283,604
SHORE DEV.	5,212,551	$4,904,600		1.0%	$49,046
FLOAT EST.	41,470,646	$99,774,526		5.0%	$4,988,726
TOTAL	**104,252,684**	**$247,465,922**	**$2.374**		**$9,321,376**
GROUNDFISH					
SHORE EST.	1,297,228,431	$237,045,595		3.0%	$7,111,368
SHORE DEV.	12,844,539	$1,409,814		1.0%	$14,098
FLOAT	110,880,098	$15,019,886		5.0%	$750,994
FLOAT DEV.	3,429,017	$283,506		3.0%	$8,505
TOTAL	**1,424,382,085**	**$253,758,801**	**$0.178**		**$7,884,965**
HERRING					
SHORE EST.	41,815,672	$20,707,448		3.0%	$621,223
FLOAT EST.	76,631,166	$32,300,628		5.0%	$1,615,031
TOTAL	**118,446,838**	**53,008,075**	**$0.448**		**$2,236,255**
HALIBUT					
SHORE EST.	30,014,357	$57,946,825		3.0%	$1,738,405
FLOAT EST.	249,360	$550,584		5.0%	$27,529
TOTAL	**30,263,717**	**58,497,409**	**$1.933**		**$1,765,934**
ALL SPECIES					
TOTALS	**2,643,015,205**	**$ 1,092,080,129**	**$0.413**		**$39,944,142**

NOTE: FROM 1995 FISHERIES BUSINESS TAX RETURNS (tax period ends 1995)

[1] Estimated revenue is calculated for established species using a 3% tax rate for shore processors, a 5% tax rate for floating processors and a 4.5% rate for canneries. For developing species (not broken out if they comprise less than 1% of total value), a 1% rate is used for shore and a 3% rate used for floating processors. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Actual pounds and value might vary due to amended returns. Additionally, 50% of this revenue is shared to qualifying communities.

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Table 3.32: 1996 Fisheries Business Pounds, Value and Revenue Data

		FISHERIES BUSINESS TAX[1] ESTIMATED			
	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
SALMON					
SHORE EST.	377,120,717	$207,103,505		3.0%	$6,213,105
CAN EST.	341,258,470	$89,641,178		4.5%	$4,033,853
FLOAT EST.	134,581,570	$82,161,868		5.0%	$4,108,093
TOTALS	**852,960,756**	**$378,906,550**	**$0.444**		**$14,355,052**
SHELLFISH					
SHORE EST.	57,013,720	$106,784,403		3.0%	$3,203,532
SHORE DEV.	6,619,129	$3,041,020		1.0%	$30,410
FLOAT EST.	31,931,619	$47,935,399		5.0%	$2,396,770
TOTALS	**95,564,468**	**$157,760,822**	**$1.651**		**$5,630,712**
GROUNDFISH					
SHORE EST.	1,113,875,396	$187,583,227		3.0%	$5,627,497
SHORE DEV.	15,586,309	$1,569,994		1.0%	$15,700
FLOAT EST.	227,947,357	$20,825,772		5.0%	$1,041,289
TOTALS	1,357,409,062	$209,978,993	$0.155		$6,684,485
HERRING					
SHORE EST.	51,800,870	$30,810,059		3.0%	$924,302
FLOAT EST.	58,924,511	$28,681,052		5.0%	$1,434,053
TOTALS	110,725,381	$59,491,111	$0.537		$2,358,354
HALIBUT					
SHORE EST.	32,387,495	$70,955,762		3.0%	$2,128,673
FLOAT EST.	183,933	$394,973		5.0%	$19,749
TOTALS	32,571,428	$71,350,734	$2.191		$2,148,421
ALL SPECIES					
TOTALS	**2,449,231,095**	**877,488,210**	**$0.358**		**$31,177,025**

NOTE: FROM 1996 FISHERIES BUSINESS TAX RETURNS (tax period ends 1996)

[1] Estimated revenue is calculated for established species using a 3% tax rate for shore processors, a 5% tax rate for floating processors and a 4.5% rate for canneries. For developing species (not broken out if they comprise less than 1% of total value), a 1% rate is used for shore and a 3% rate used for floating processors. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Actual pounds and value might vary due to amended returns. Additionally, 50% of this revenue is shared to qualifying communities.

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3. In 1995 and 1996, pollock revenue was 16% of total statewide fish revenue. In comparison salmon represented 40% (39% in 1996), shellfish 21% (16% in 1996), halibut 4% (6% in 1996) and Herring 5% (6% in 1996) of the total statewide fish revenue.

In summary, the total 1996 value of pollock represents 9% ($81.2 million) of the total value of all fish (shellfish, salmon, halibut, herring, groundfish & shellfish) listed on 1996 fisheries business returns ($877.5 million). Additionally, pollock represents 55% ($113.9 million) of the total value of all fish listed on fishery resource landing tax returns ($205.9 million).

Comparison of Corporate Revenues

In order to provide the council with a comprehensive view of revenues generated through the pollock fishery, the Department of Revenue attempted to analyze corporate tax revenue amounts attributable to pollock fishing activities. However, it was found that it is not possible to estimate the pollock only component. These corporations might fish multiple species or be involved in other business activities. The structure of the corporate tax reporting system precludes identifying corporate revenue attributable to the inshore and offshore pollock fisheries. Instead, the best data that can be provided is the total corporate revenue of landing and fisheries business taxpayers.

Evaluation of the Leakage Phenomenon (see Table 3.33 and table 3.34)

In order to be fully responsive to the Council's request, it was necessary to compare "tons-taxed" to "total tons" produced, on an annual basis. The council generally assumed that any difference observed represents the amount of catch which was landed 'outside' Alaska taxing jurisdictions. These ratios can be used to extrapolate leakages attributable to offshore catches landed outside Alaska for a given TAC apportionment.

The definition of leakage being applied for purposes of this discussion is "transshipments made outside of 3 miles and the last-load phenomenon". Federal data may exist to resolve this issue. Absent this information, one approach to addressing the leakage issue is to compare Department of Revenue and National Marine Fisheries Service (NMFS) pollock data. However, leakage is only one of many possible explanations for differences between the DOR and NMFS data.

Comparison between DOR and NMFS Pollock Data

Because of differences between the DOR and NMFS price estimation methodology, we use unprocessed pounds of pollock as our basis of comparison. Our data comes from fisheries business and landing taxpayers returns while NMFS data comes from information provided by the North Pacific Fishery Management Council on January 22, 1998.

As a result of looking into these issues of differences in reporting and possible leakages, the following findings emerged:

1. There is less than a 1% difference between the total pounds of pollock listed on 1996 Bering Sea and Aleutian Islands fisheries business tax returns and the total inshore 1996 pounds of Bering Sea and Aleutians Islands pollock identified by the National Marine Fisheries Service.

2. There is an 16% difference between the total pounds of pollock listed on 1996 fishery resource landing tax returns and the total offshore 1996 pounds of Bering Sea and Aleutians Islands pollock identified by the National Marine Fisheries Service.

Table 3.33: Comparison of 1995 & 1996 DOR Bering Sea and Aleutians Pollock Pounds Data with National Marine Fisheries Service Data

	DOR LANDING	NMFS OFFSHORE	% DIFF. NMFS	DOR FISH BUS.	NMFS INSHORE	% DIFF. NMFS
1995	1,473,380,396	1,797,899,331	-18.05%	914,683,309	915,068,440	-0.04%
1996	1,388,646,983	1,654,519,021	-16.07%	859,086,673	863,125,980	-0.47%

Tax data is from original fisheries business and fishery landing 1995 & 1996 tax returns. The NMFS data is from the National Pacific Fishery Management Council (January 22, 1998).

Table 3.34: Comparison of 1995 & 1996 DOR Bering Sea and Aleutians Pollock Pounds Data with National Marine Fisheries Service Data, and Revenue Difference if Assumed Taxable

	DOR LANDING	NMFS OFFSHORE	% DIFF. NMFS	DIFFERENCE POUNDS	REVENUE IF DIFF. ASSUMED TAXABLE
1995	1,473,380,396	1,797,899,331	-18.05%	-324,518,935	**-895,672**
1996	1,388,646,983	1,654,519,021	-16.07%	-265,872,038	**-654,045**
	DOR FISH BUS.	**NMFS INSHORE**	**% DIFF. NMFS**	**DIFFERENCE POUNDS**	**REVENUE IF DIFF. ASSUMED TAXABLE**
1995	914,683,309	915,068,440	-0.04%	-385,131	**-1,121**
1996	859,086,673	863,125,980	-0.47%	-4,039,307	**-9,816**

Tax data is from original fisheries business and fishery landing 1995 & 1996 tax returns. The NMFS data is from the National Pacific Fishery Management Council (January 22, 1998). Revenues were calculated for each year using the 3% landing tax for both offshore and onshore deliveries. The following product prices were used to estimate revenue: offshore (1995) $0.092/pound; (1996) $0.082/pound; onshore: (1995) $0.097/pound; (1996) $0.081/pound.

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3. Although there is no clear source of these differences, if these pounds had been landed in Alaska and taxed, then the combined revenue for the two years 1995 and 1996 would be approximately $11 thousand for the inshore fishery and $1.5 million for the offshore fishery.

Possible Reasons for Differences between DOR and NMFS Estimates

Inshore. The following are potential reasons for differences between DOR and NMFS estimates of the size of the inshore pollock harvest. In spite of these potential differences the NMFS and DOR estimates are less than 1% apart.

1. Reference Area: Differences between NMFS and DOR data could result from differences in the definition of BS/AI pollock used by DOR and NMFS. DOR inshore data is from fisheries business tax returns. NMFS data is from weekly production reports and observer data. Fisheries business taxpayers are only required to state the physical location of where the processing took place. Thus, if Bering Sea pollock is being processed in the Gulf, we would not include it as BS/AI pollock and if Gulf pollock was being processed in BS/AI communities, we would include it as BS/AI pollock. It is possible that BS/AI pollock processed in the Gulf offsets Gulf pollock processed in BS/AI communities.

2. Errors: Processors, DOR or NMFS may have made errors in data capturing and reporting pounds.

3. Noncompliance: There may be some taxpayers who are not reporting the total number of pounds of taxable pollock.

Offshore. The following are some of the potential reasons for the 18% (1995) and 16% (1996) difference between NMFS and DOR estimates of offshore pollock.

1. Calculation of Pounds: The landing taxpayer has three choices in listing the unprocessed pounds on their landing tax returns: (1) actual scale weight, (2) NMFS volumetric measurement, (3) NMFS recovery rate or (4) other (see Alaska Administrative Code - 15 AAC 77.045). Other includes using a verifiable industry average recovery rate. Consequently, the taxpayer's calculation of unprocessed pounds on his landing tax return might differ from the calculation used by NMFS.

2. Leakage: Taxpayers might be taking their last load of pollock out of the state with them on their last run.

3. Errors: Errors made by processors, DOR or NMFS in data capturing and reporting pounds.

4. Noncompliance: There may be some taxpayers who are not reporting the total number of pounds of taxable pollock.

Summary of Findings

The following are some of the findings of this report:

1. The total 1996 value of the Bering Sea and Aleutian Islands pollock harvest (as defined here) is $195 million. This translates into approximately $2.3 million in revenue from the fisheries business tax and $3.4 million in revenue from the fishery resource landing tax (for a total of $5.7 million).

2. The total 1996 value of pollock represents 9% ($81.2 million) of the total value of all fish (shellfish, salmon, halibut, herring, groundfish & shellfish) listed on 1996 fisheries business returns ($877.5

million). Additionally, pollock represents 55% ($113.9 million) of the total value of all fish listed on fishery resource landing tax returns ($205.9 million).

3. There is less than a 1% difference between the total pounds of pollock listed on 1996 Bering Sea and Aleutian Islands fisheries business tax returns and the total inshore 1996 pounds of Bering Sea and Aleutians Islands pollock identified by the National Marine Fisheries Service. There is a 16% difference between the total pounds of pollock listed on 1996 fishery resource landing tax returns and the total offshore 1996 pounds of Bering Sea and Aleutians Islands pollock identified by the National Marine Fisheries Service.

4. Although there is no clear source of these differences, if these pounds had been landed in Alaska and taxed, then the combined revenue for the two years 1995 and 1996 would be approximately $11 thousand for the inshore fishery and $1.5 million for the offshore fishery.

In addition to the fish taxes collected by the State, local governments within Alaska also collect fish taxes. Table 3.35 below lists the tax rates assessed by the local governments throughout Alaska. These rates apply to the ex-vessel value of raw fish landed in the borough or city. Only the cities of King Cove, Sand Point, Akutan, and Unalaska have processors that reported taking landings of Bering Sea or Aleutian Islands pollock during 1996. The remaining cities and boroughs have been included to provide a complete list of local fish taxes, although they do not generate taxes from Bering Sea and Aleutian Islands pollock.

Table 3.35 Regional Raw Fish Taxes

Alaska City and Borough Raw Fish Taxes (These taxes are paid in addition to the State taxes)			
Location	Borough	City	Total
King Cove	2%	2%	4%
Sand Point	2%	2%	4%
Akutan	2%	1%	3%
Unalaska	0%	2%	2%
Atka	0%	1%	1%
Pilot Point	2%	3%	5%
St. George	0%	3%	3%
Togiak	3%	2%	5%

Oregon Fish Taxes

Chapter 635, Division 6 - Department of Fish and Wildlife, of the Oregon Administrative Rules states that fish taxes are levied at 1.09% of the exvessel value (salmon and steelhead taxes are levied at 3.15%). However, over the last ten years the largest reported pollock landing in Oregon was 148 pounds[10]. These rare landings of small

10 Personal communication with Jerry Lukas of the Oregon Department of Fish and Wildlife.

amounts of pollock are likely the result of bycatch in other target fisheries. Therefore, only insignificant amounts of Alaskan pollock have been landed and taxed in Oregon over the past ten years.

Washington Fish Taxes

Fish taxes are not paid on round pollock that are caught from waters off Alaska's coast, and landed in Washington, or on processed pollock products (i.e., surimi) landed in Washington, when the fish were caught from waters off Alaska. The only taxable fish in Washington, caught from waters off Alaska's coast, are chinook salmon harvested from southeast Alaska waters and caught by trolling. Chapter 82.27 Revised Code of Washington, contains the official language regarding fish tax laws.

Other State and Federal Taxes

A variety of other state taxes are collected based on revenues earned through fishing pollock. State business and income taxes are examples. Federal taxes are also collected through business and personal income taxes. A full examination of tax-related issues would ideally include an assessment of these types of taxes, in addition to the fish taxes discussed above. Tracing these taxes through the system is well beyond the scope of this analysis. The information required to study this complex issue in detail is not currently available, and likely could not be collected if the analysts were given additional time and resources.

4.0 ANALYSIS OF BS/AI ALTERNATIVES

Previous sections described the 1991, 1994, and 1996 BS/AI pollock fisheries. The focus will now shift to providing information on the pollock allocation alternatives identified by the Council. Seven specific alternatives were studied in addition to the Council's preferred alternative.

Alternative 1 is the no action alternative. The No Action alternative would allow the inshore/offshore allocation to expire on December 31, 1998. Members of the current inshore and offshore sectors would then be allowed to process as much of the pollock TAC as they can before the fishery is closed. Alternative 2 would rollover the current 35% inshore and 65% offshore pollock allocation. Alternatives 3(A) through 3(D) provide information on four specific allocations the Council considered. The Council also considered an option that would allocate a percentage of the TAC to catcher vessels. The catcher vessel allocation alternative - referred to as the Harvester's Choice - could be delivered to any processing sector. Finally a discussion of the Council's preferred alternative is provided. The projections for the Council's preferred alternative are based on the same assumptions that were used to describe the outcomes under Alternative 2-3(D).

Several sub-options have been identified by the Council in addition to the sector allocations. However, for the sake of simplicity, those will be discussed outside of the general allocation alternatives. For example, there is a sub-option to sunset I/O3. The Council may choose to sunset the I/O3 program one year after implementation, three years after implementation, or make the program permanent until replaced by a comprehensive rationalization program (CRP). Any of these sub-options may be chosen regardless of the TAC allocation selected. Therefore, instead of discussing the sunset sub-options within each alternative, a section will be devoted to sunset options after the six general alternatives have been presented. The same procedure will be used for each of the other I/O3 sub-options included by the Council.

4.1 Basic Allocation Percentages

4.1.1 "No Action" Alternative

In April, 1990, the Council adopted its Problem Statement for the Inshore/offshore FMP Amendment. It characterized the management dilemma in the following way:

> *"The finite availability of fishery resources, combined with current and projected levels of harvesting and processing capacity and the differing capabilities of the inshore and offshore components of the industry, has generated concern for the future ecological, social and economic health of the resource and industry. These concerns include, but are not limited to, localized depletion of stocks or other behavioral impacts on stocks, shortened seasons, increased waste, harvests which exceed the TAC, and possible preemption of one industry component by another with the attendant social and economic disruption.*
>
> *Domestic harvesting and processing capacity currently exceeds available fish for all species in the Gulf of Alaska and most species in the Bering Sea. The seafood industry is composed of different geographic, social, and economic components which have differing needs and capabilities, including but not limited to the inshore and offshore components of the industry.*
>
> *The Council defines the problem as a resource allocation problem where one industry sector faces the risk of preemption by another ..."*

(Excerpted from the SEIS and RIR/RFA for Amendments 18/23 to the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands and the Gulf of Alaska, March 5, 1992.)

While not explicitly referenced in the problem statement, the original inshore/offshore apportionment debate was contained within the context of a somewhat broader discussion of CRP for the groundfish fisheries of the BS/AI and GOA. Thus, according to the public record on this issue, the original inshore/offshore amendment was principally intended as a temporary, or interim, action to address, among other concerns[11], the *"... risk of preemption"* within the BS/AI and GOA pollock fisheries, while the Council contemplated the development of a CRP.

Preemption has been broadly defined within the amendment to include a range of adverse economic and social effects imposed upon one sector by the activities of another. While the subsequent debate over these impacts was primarily concerned with apportionment of "catch-shares" among the several components of the industry, there was also apprehension expressed about adverse impacts upon community stability, employment opportunities for rural Alaska (and especially Native) residents, market structure and supply considerations, "spill-over" effects on other fisheries, as well as, impacts on marine mammals, sea birds, and other components of the physical environment.

The source of much of this concern was attributed to the rapid rates of growth in capacity, within both the at-sea and inshore sectors. Indeed, by the time I/O1 was adopted and implemented, there was general agreement that *both* the inshore and offshore sectors were very substantially overcapitalized, and that several times more total capacity existed, within the industry as a whole, than was necessary (much less optimal) to harvest and process the entire available pollock TAC.

One direct effect of this expansive growth was that the BS/AI pollock fishing season was increasingly concentrated, in time and geographic location. The open access race-for-fish was believed to be resulting in wasteful and inefficient fishing and processing practices, imposing costs at the operational, local, and societal levels. Many of these costs were assessed qualitatively in the original Inshore/offshore analysis and supporting documents (see, the Final Supplemental Environmental Impact Statement and Regulatory Impact Review/Initial Regulatory Flexibility Analysis of Proposed Inshore/offshore Allocation Alternatives [Amendments 18/23] to the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands and the Gulf of Alaska, March 5, 1992).

The original I/O amendment provided a temporary management structure which has tended to "stabilize" sector-shares of the BS/AI pollock TAC (although, initially providing a somewhat greater percentage of the TAC to the inshore sector than it had historically enjoyed).[12] While I/O has not eliminated capital growth in this fishery, it has, in large part, accomplished the Council's primary objective of preventing the outright "preemption" of less mobile components of the industry. This has not been achieved without imposing direct economic and social costs, and introducing market distortions. Nonetheless, I/O has imposed a degree of stability *between* (if not within) the sectors which likely would not have been attainable in the open access environment of this fishery, as it existed prior to the original inshore/offshore amendment. In this respect, the I/O amendment (and its

[11] As the analysts responsible for assessing I/O1 explained in the EA/RIR, *"The original concerns expressed in the Problem Statement are broad-based, touching on resource conservation, operating characteristics of firms, competitive behavior, and possible preemption of one industry component by another with the attendant social and economic disruptions"* (page 3-21, op cit.).

[12] See sector share profiles in Appendix.

subsequent renewal under I/O2) can be regarded as a "qualified success", having achieved many of the Council's stated objectives for the original action.

I/O1 was implemented beginning in the B-season of 1992. Its provisions were continued under I/O2 in 1995. I/O2 contains a sunset of December 31, 1998. Inaction (or the decision to take "no action") by the Council on I/O3 will, therefore, automatically result in elimination of the inshore/offshore amendment provisions, including sector apportionment of the BS/AI (and GOA) pollock TAC, specific CDQ provisions of the original I/O amendment[13], and the CVOA harvest management area.

The intervening period between initial implementation and the present has seen numerous structural changes in both the inshore and offshore sectors of the industry. Capital-stuffing has reportedly continued in both sectors, although perhaps in some cases emphasizing greater utilization of each fish caught, rather than faster capture and through-put. Capital and capacity have exited the fishery over this period, although not proportionally across each subsector. And some of this displaced capacity has re-entered under new ownership or reorganization.

Therefore, while the industry probably is still substantially over-capitalized, given the size of the current pollock TAC, it is a significantly different fishery and industry than existed prior to I/O1 (see, for example, the Sector Profiles, contained in the Appendix of this analysis). As a result, it is impossible to predict with certainty how the several individual subsectors of the industry would react to a return to a single, unapportioned pollock TAC and removal of the CVOA restrictions.

It is probable, however, that virtually all of the *"destabilizing"* and *"preemptive"* behavior, believed to have been observed in the fishery, and which prompted Council action on I/O1, would reemerge, although the rate and pattern of reemergence are speculative. That is to say, it is highly likely that the fastest, largest, and most mobile components of the industry would exploit these inherent operational assets in the BS/AI pollock target fisheries, resulting as before in a heightened risk of, *"... one sector preempting another."*

Reversion to 'open access' management of this fishery, as under the "No Action" alternative, could also induce operations to accelerate rates of fishing to maximize catch-share. This, in turn, could further reduce season length and potentially result in (1) diminished rates of catch utilization, (2) idling of capacity and crews earlier and for longer periods, (3) placing greater stress on fishing communities and their associated infrastructure, (4) destabilizing operational and market planning horizons, and (5) further complicating and delaying progress towards CRP, should the Council choose to proceed in this direction.

While regulatory changes adopted by the Council and implemented by the Secretary since adoption of I/O1 may ameliorate some of these effects (e.g., IR/IU, and the Vessel Entry Moratorium), it is unlikely that a return to an undifferentiated or unapportioned TAC and 'open access' management of the BS/AI pollock resource would result in any ... *net benefit to the Nation*. Therefore, the No Action alternative appears to be (relatively) inferior to other alternatives under consideration in I/O3, in terms of achieving the Council's specific objectives for this proposed management action.

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[13] The CDQ provisions are being addressed under a separate amendment action and, therefore, are not automatically at risk of "sunsetting" with the rest of I/O, should the Council take no action before December 31, 1998 to renew or 'roll-over' the I/O amendment.

4.1.2 Status Quo: Alternative 2 (35% Inshore and 65% Offshore)

By selecting Alternative 2, the Council would have kept the BS/AI pollock TAC allocations that have been in place since the 1992 B-season. This allocation would continue to allow the inshore sector to process 35% of the available BS/AI pollock TAC, and the offshore sector to process 65%.

The projections of catch and product mix under this alternative differ from those reported for the 1996 fishery, which are discussed in the baseline section of the document, only because we have assumed the future BS/AI pollock TAC (1.10 mmt) will be different from the 1996 harvest (1.16 mmt). Had the TAC been expected to remain at the 1996 levels, the 1996 and status quo numbers for catch, product mix, and gross revenue would be exactly equal.

Projected Processing by Sector

Given a TAC of 1.1 mmt and a 35/65 split of the pollock TAC, the Inshore sector would be allowed to process 356,125 mt of pollock excluding any CDQ fish. "True" motherships would process about 101,750 mt and offshore catcher processors would process about 559,625 mt, if they maintain the same proportions of the offshore processing as in 1996. CDQs would account for the remaining 82,500 mt of BS/AI pollock.

The total amount of product produced will vary depending on the allocation selected, because industry sectors may have different markets and/or utilization rates. The fillet catcher processor sector, for example, is projected to produce nearly 18,000 mt of deep skin fillets under a 1.1 mt TAC (Table 4.1). By definition the fillet catcher processors will produce no surimi. "True" motherships, on the other hand, are expected to produce no fillets and just under 20,000 mt of surimi. Changing the allocation between these two sectors will have substantial impacts on our estimates of the various products produced. Though of "True" motherships may add fillet equipment to their vessels under the right market conditions, predicting when a "True" mothership might add equipment to produce fillets, or when an additional "True" mothership with the capability to produce fillets might enter the pollock fishery, are well beyond our current knowledge base and this analysis.

Product mix assumptions:
1. Processors within a sector will continue to process products in the same relative proportions as they did in 1996.
2. Sectors will continue to have the same utilization rates as 1996 (**Use caution when comparing product projections across industry sectors).** The methods for estimating total catch differs between shorebased and at-sea processors, and therefore utilization rates may not be directly comparable. See the utilization rate discussion in Chapter 3.

At the bottom of Table 4.1 is a section on products produced from pollock harvested under the CDQ program. The amount of product produced will be the same under any alternative. These numbers do not change because CDQ pollock fisheries are outside of the Inshore/offshore allocation.

The product mix for 1996 is reported in Section 3.8, and was presented in the baseline information. Inshore CDQ products were not broken out in that table, because the NMFS Weekly Production Reports cannot separate products made from fish caught in pollock target and CDQ fisheries. One reason they cannot be separated is due to the mixing of fish that may occur during that week's processing. Pollock taken as bycatch in the Pacific cod fishery or in an open access pollock target fishery may be mixed with CDQ fish. To breakout the inshore CDQ pollock products in Table 4.1, the utilization rate for the combined open access and CDQ fishery was applied to the projected CDQ harvest. For additional information on the interactions of CDQ pollock and the Inshore/offshore allocation see Appendix 3.

Table 4.1 Estimated product mix under the current Inshore/Offshore program

Alternative 2 (35% Inshore and 65% Offshore)									
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	6,420	3,882	15,477	-	-	1,539
	Catcher Vessels	-	1,243	912	2,239	-	-	163
Non-surimi C/P Total		-	7,663	4,794	17,716	-	-	1,702
Surimi - C/P	Self Caught	49,618	13	1,080	6,282	10,695	337	5,042
	Catcher Vessels	7,022	-	26	651	1,341	-	438
Surimi - C/P Total		56,640	13	1,105	6,933	12,036	337	5,480
Catcher Processor Total[1]		**56,640**	**7,675**	**5,899**	**24,649**	**12,036**	**337**	**7,182**
"True" Mothership Total[1]		**19,819**	**-**	**-**	**-**	**4,520**	**318**	**969**
Inshore Total[1]		**64,252**	**2,365**	**8,311**	**6,702**	**25,092**	**7,667**	**3,978**
Grand Total		**140,711**	**10,040**	**14,210**	**31,351**	**41,649**	**8,322**	**12,128**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: This estimate assumes a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

Prices and Gross Revenue

Exvessel Prices. Exvessel prices were discussed in Section 3.7 of this document. That section provided a detailed description of how the inshore and at-sea exvessel prices were determined. The text box to the right contains a summary of the exvessel prices that will be used in our projections. Because the at-sea price is set as a percentage of the shoreside price, any allocation to catcher vessels delivering at-sea will result in less gross revenue than if the same amount of fish were delivered shoreside. However, it is important to remember that revenues are only half of the equation. Catcher vessels that choose to deliver at-sea likely do so for a reason. If they are operating their vessel to maximize profits, which is a reasonable assumption, they must either have the option of delivering more fish or they have a lower cost structure when delivering at-sea. It is possible they may realize both of these benefits. The additional fish and/or lower costs would then counteract the lower price and potentially yield equal or greater profits for the catcher vessels. We must point out, however, that without information on the catcher vessel's cost structure, it is not possible to determine if this would actually be the result.

Offshore exvessel price assumption: The price of pollock delivered to catcher processors or "true" motherships is assumed to be 87.5% of inshore exvessel price. The inshore price used in this analysis is $0.0850, therefore the offshore price equals $0.0744. We have also assumed that the quantity of pollock harvested does not impact the exvessel price.

- Catcher Vessel's Gross Revenue from Pollock

Catcher vessels generate revenue by selling the pollock they harvest to processors. All of the pollock allocated to the inshore and "true" mothership sectors will be delivered by catcher vessels. Catcher processors also supplement harvesting capability by taking deliveries from catcher vessels. In 1996, approximately 10% of the total amount of pollock processed, by the catcher processor sector was harvested by catcher vessels. Only that portion of the catcher processor allocation that is harvested by catcher vessels will be included in our estimates of catcher vessel gross revenue. Pollock that was caught and processed by catcher processors is included in the column titled "Own Harvest", but the revenue fields are intentionally left blank.

The Council considered a sub-option that would require a minimum of nine to 15% of the catcher processor's allocation be delivered by catcher vessels. This sub-option will be discussed in more detail in Section 4.2.2.

If the Council had chosen to roll-over the current Inshore/offshore allocation, there would be no change in the gross revenue catcher vessels will receive (it is the same allocation). That is reflected in the last line of Table 4.2 below. The second line from the bottom reports the total revenue catcher vessels are expected to receive from each sector, based on the price assumptions used in this analysis. Those projections indicate that catcher vessels would earn almost $93 million. Inshore processors would have paid catcher vessels about $67 million, "true" motherships about $17 million, and catcher processors about $9 million.

Table 4.2 **Alternative 2**: Impacts on Catcher Vessel's Gross Revenue

			Catcher Processors		
	Inshore	"True" Motherships	CV Deliveries	Own Harvest	Total
Allocation Percentages	**35%**	**10%**	**5.5%**	**49.5%**	**100%**
Sector's Allocation (mt)	356,125	101,750	55,963	503,663	1,017,500
Change from Status Quo [1] (mt)	-	-	-	-	-
Sector's Allocation Change (%)	0 %	0 %	0 %	0 %	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 66.7	$ 16.7	$ 9.2	n/a	$ 92.6
Est. Change in Exvessel Revenue (Million $)	$ 0.0	$ 0.0	$ 0.0	n/a	$ 0.0

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

First Wholesale Prices. FOB Alaska prices for each product form (excluding oil) and sector are discussed in detail in Chapter 3. Those prices, summarized in Table 4.3 below, are multiplied by the products reported in the product mix tables to generate gross revenues at the first wholesale level.

Table 4.3 Pollock First Wholesale Prices

	Wholesale Prices per Metric Ton of Product		
Product Form	Inshore	Catcher Processors	"True" Motherships
Surimi	$ 1,808	$ 1,907	$ 1,907
Fillets, Blocks, IQF	$ 2,116	$ 2,116	$ 2,116
Deep Skin Fillets	$ 2,734	$ 2,734	$ 2,734
Minced[1]	$ 1,146	$ 931	$ 931
Roe	$ 9,965	$ 13,294	$ 13,294
Meal	$ 661	$ 639	$ 639

Source: Production and Revenue/Price Data Reported to NMFS (1991, 1994) and ADF&G (1996) in the Commercial Operators Annual Report (COAR).
Note: To protect the confidentiality of processors, fillet prices are based on combining inshore and offshore data.
[1]Mince prices for 1991 and 1994 were not estimated. The 1996 offshore mince price was provided by APA as only one At-sea company reported mince prices to ADF&G. If APA and ADF&G data were combined the average 1996 offshore minced price would be $992/mt.

Processor's Gross Revenue at First Wholesale

Gross revenue can be estimated by multiplying the first wholesale revenue per ton of raw pollock by the number of tons processed. This method does not provide detail on the contribution of each product form to total revenue, but it does allow the reader to easily calculate total revenue within a processing sector. The adjacent text box lists the revenues per ton used in this analysis. These values were derived using the following formula:

Gross Revenue per Ton = $\sum(P_i * Q_i)/R$;

where;

Pi = the first wholesale price of product I by the sector during 1996

Qi = the quantity of product I the sector produced in 1996

R = tons of raw pollock processed by the sector in 1996

Our method of estimating gross revenue is straight forward. Prices are assumed to remain fixed at 1996 levels. Constant first wholesale prices mean the amount of product produced has no impact on the price. This assumption was necessary because of the limited information available on pollock demand. The most recent attempt to study pollock price and quantity relationships was conducted by Herrmann et.

1st Wholesale Gross Revenue
($/mt Raw Fish)

Sector	With Fish Meal	Without Fish Meal
Surimi Catcher Processor	**$ 540**	**$ 520**
Fillet Catcher Processor	**$ 516**	**$ 516**
Catcher Processor Total	**$ 532**	**$ 519**
"True" Mothership	**$ 526**	**$ 498**
Surimi Inshore	**$ 587**	**$ 539**
Fillet Inshore	**$ 616**	**$ 576**
Total Inshore	**$ 592**	**$ 546**
Total (weight average)	**$ 554**	**$ 526**

al.[14] However the literature in this area is sparse at best, and given our current data constraints no reliable model could be developed under the I/O3 time line.

Table 4.4 contains estimates of each processing sectors' gross revenues under the Status Quo alternative. This table, and the other first wholesale gross revenue tables in this section, report values at the product level. The additional detail was included so the reader could readily see the contribution of each product form. However, the same totals would be estimated if the revenues per ton, in the above text box, were multiplied by the tons of pollock allocated to the sector (see Table 4.2).

Alternative 2 would have generated the same first wholesale gross revenues as were earned during 1996, except we have assumed a slightly lower TAC under the Status Quo than was in place that year. However, all other variables that feed into the first wholesale gross revenue calculation are held constant at 1996 levels.

The total first wholesale revenue generated by all processing sectors, is $562.7 million. Combined revenues of the Non-surimi and Surimi catcher processor sectors totaled $298.2 million, "true" motherships earned $53.6 million, and the Inshore processors $211.0 million. Surimi brought in the most revenue for all of the processing sectors. However, in the Non-surimi catcher processor sub-sector, deep-skin fillet production generated the most revenue.

Table 4.4 First Wholesale Gross Revenue(millions $) -FOB Alaska: Alternative 2 (35% Inshore and 65% Offshore)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 6.0	$ 8.2	$ 42.3	$ 0.0	$ 20.5	$ 77.0
	Catcher Vessels	$ 0.0	$ 1.2	$ 1.9	$ 6.1	$ 0.0	$ 2.2	$ 11.4
Non-surimi C/P Total		$ 0.0	$ 7.1	$ 10.1	$ 48.4	$ 0.0	$ 22.6	$ 88.3
Surimi - C/P	Self Caught	$ 94.6	$ 0.0	$ 2.3	$ 17.2	$ 6.8	$ 67.0	$ 187.9
	Catcher Vessels	$ 13.4	$ 0.0	$ 0.1	$ 1.8	$ 0.9	$ 5.8	$ 21.9
Surimi - C/P Total		$ 108.0	$ 0.0	$ 2.3	$ 19.0	$ 7.7	$ 72.8	$ 209.8
Catcher Processor Total[1]		**$ 108.0**	**$ 7.1**	**$ 12.5**	**$ 67.4**	**$ 7.7**	**$ 95.5**	**$ 298.2**
Inshore Total[1]		**$ 116.2**	**$ 2.7**	**$ 17.6**	**$ 18.3**	**$ 16.6**	**$ 39.6**	**$ 211.0**
"True" Mothership Total[1]		**$ 37.8**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 2.9**	**$ 12.9**	**$ 53.6**
Grand Total		**$ 261.9**	**$ 9.9**	**$ 30.1**	**$ 85.7**	**$ 27.2**	**$ 148.0**	**$ 562.7**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

[14] Herrmann, M., K. R. Criddle, E. M. Feller, and J. A. Greenberg, "Estimated Economic Impacts of Potential Policy Changes Affecting The Total Allowable Catch for Walleye Pollock." *North American Journal of Fisheries Management*, 16(1996):770-782.

PSC Bycatch

The bycatch of PSC species is always a sensitive issue. However, the pollock fishery has some of the lowest bycatch rates in the North Pacific. Minimal amounts of halibut and crab are taken in the midwater portion of this fishery. Herring and salmon bycatch is of more concern. Yet, if the amount of pollock harvested is considered, only about one kilogram of herring is caught for each ton of pollock, and over 20 mt of pollock are harvested for each chinook salmon caught.

Table 4.5 PSC Bycatch by Processing Sector: Alternative 2

Alternative 2	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	118.4	46.6	4.6	0.0	18.9	19.3	5.4	3.9
C/Ps (surimi)	121.3	672.7	0.9	0.1	57.7	22.8	13.3	33.0
"True" Motherships	18.5	27.7	-	-	0.1	0.2	7.8	16.8
Inshore	43.6	433.6	0.1	0.1	7.1	17.8	25.1	18.9
Total	301.8	1,180.6	5.6	0.2	83.8	60.1	51.6	72.6

4.1.3 Alternatives that Change the Current Allocation

Under the original "inshore/offshore" amendment, and the subsequent 'rollover'," true" motherships were assumed to be part of the at-sea processing sector, for purposes of apportioning BS/AI pollock TAC. Under the I/O3 amendment, however, the Council has proposed to reexamine this assumption. To this end, the Council has identified, under Alternative 3, a series of four different optional apportionments, listed as 3(A) through 3(D), which specify discrete percentage shares of the allocated pollock TAC for the *C/P sector*, the *Inshore sector*, ***and*** the *"True" Mothership sector.*

In this latter case, the share across options ranges from 5% to 15%. This TAC-share could be reserved exclusively for the true MS sector and, as such, tracked separately from either the inshore or offshore components of the industry. Or, alternatively, the true MS share could be combined with either the offshore or inshore apportionment. These **"three"** fundamental alternative treatments of the true MS apportionment have very different implications for the effected sectors.

1. Should the Council select an option which "lumps" the true MS share with the C/P share as an undifferentiated *offshore* apportionment, one would have the effective "status quo", as under I/O1 and I/O2. In this case, the analytical implications condense to the same dichotomous debate concerning **"... how much pollock should be processed *inshore* versus *at-sea*"**. "True" motherships would, therefore, continue to compete with C/Ps for a share of the common, undifferentiated at-sea pollock TAC. Historically, the true MS subsector has accounted for approximately 8.5% to 11.5% of the aggregate at-sea BS/AI pollock harvest under I/O (see, for example, figures A.8 through A.10, in **Appendix I** of this report and table 4.22 in the catcher vessel set-aside section of this document).

Presumably, the true MS sector would continue to garner something on the order of this same percentage share, although this result is not assured. Because true MS operators must compete for their share of the at-sea apportionment, they may take ***less*** than, or ***more*** than their historical percentage share. One cannot predict which result will emerge, however, the potential for either result exists. Furthermore, had the Council selected an option from among 3(A) through 3(D) which results in the aggregated at-sea percentage being *greater* than the 65% status quo (I/O2) level, true MS may realize a larger total catch, even if the percentage-share they enjoy does not change (or changes only marginally). That is, if the aggregate at-sea allocation exceeds the 65% TAC share currently taken by the offshore sector, the true MS catch could increase, even if the percentage remained essentially static.

Alternatively, if the Council had selected an allocation option from the four under consideration which *reduces* the aggregate at-sea apportionment from its current 65%, then "lumping" the true MS percentage share with the C/P share could intensify the competition between C/Ps and true MSs for an effectively *smaller* available pollock catch. If one assumes, for the sake of argument, that the larger and more operationally diverse C/P fleet has 'real' operational advantages over one or more of the three existing true MS operations, then depending upon the relative operational efficiency of the two modes, C/Ps could reduce the impact of a smaller *at-sea* allocation by taking a larger total percentage share of the aggregate apportionment, at the expense of the true MS segment of the at-sea sector. It is possible that the relative operational advantage could work in the opposite direction, too. In this case, the true MS sector share of a reduced aggregate at-sea apportionment could increase at the expense of the C/P sector. Empirical data bearing on this issue are not available. However, the industry may ultimately be in the best position to judge which of these alternative scenarios is most probable.

2. The Council had the option to "reserve" the proposed percentage of the total BS/AI pollock TAC for true MS operations. In this case, the Council would set-aside 5% under option 3(A), 10% under options 3(B) and 3(C), or 15% under option 3(D), for the exclusive use of the true MS sector. This approach would, for example, insulate true MS operations from having to compete with C/Ps for a share of an aggregate at-sea pollock harvest (as under the status quo), but would simultaneously preclude the true MS sector from improving its relative share of the total pollock allocation. Indeed, under option 3(A) the true MS sector would experience a significant reduction in its share of the total BS/AI pollock catch, if limited to the 5% apportionment specified. Under either Option 3(B) or 3(C), the true MS sector would have seen its share slightly reduced, as compared to the 1996 reported performance.

   Whether an assured set-aside for the MS sector is preferable to the opportunity to compete for a larger total share of an aggregate TAC apportionment is beyond the scope and capability of this analysis to determine. It does, however, raise an important question that can, perhaps, best be answered by this segment of the industry itself.

3. Finally, the true MS apportionment could have been combined with the inshore allocation, under any of the four options specified within Alternative 3. In this situation, true MS operators would have to compete with inshore and inshore processors for a share of the aggregate "inshore" allocation. How they might fair, relative to their historical share of the at-sea I/O allocation, cannot be anticipated, *a priori*.

   It seems likely that true MSs would enjoy some operational advantage over inshore (or fixed inshore) processors, simply due to their greater relative mobility. However, objective data on operational capacity and total capability of the MS vessels which make up the current BS/AI pollock target fleet are not available. Therefore, any projection of true MS catch share under this arrangement would be purely speculative.

It is true, however, that, if the true MS percentage allocation (specified in options 3(A) through 3(D)) were "lumped" into a single, common *inshore* allocation, under options 3(B) through 3(D) the aggregate share of the BS/AI TAC available to the joint-inshore/true MS sector would be significantly greater than the inshore-share has been over the period since I/O was originally implemented.

4.1.3.1 Options for Defining "True" Motherships

At its April 1998 meeting, the Council clarified its definition of "true" motherships (i.e., have processed but never caught) and established the following two options to address the treatment of this potential newly defined sector:

Option 1: A "true" mothership would be defined as any mothership or floating processor **not** included in the inshore sector and that does not harvest fish when operating as a "true" mothership. Processor vessels would be required to declare whether they will operate in the inshore, "true" mothership, or offshore sector either:

suboption a: annually
suboption b: for the effective period of inshore/offshore 3.

Under this option, vessels wishing to operate in the "true" mothership sector would indicate on their Federal fisheries permit application that they wish to operate as a "true" mothership. NMFS would then issue a Federal fisheries permit that restricts the vessel to operating as a "true" mothership in the BS/AI for the time period indicated. Under such an option, vessels declared as catcher processors **would not** be prohibited from receiving catch from catcher vessels and operating in "true" mothership mode. However, catcher vessel deliveries made to vessels declared as catcher processors would be accrued against the offshore pollock quota and not the "true" mothership quota.

Vessels declared as "true" motherships would be prohibited from harvesting groundfish either:

suboption c: for the duration of the time period that they have declared to be in the "true" mothership sector
suboption d: when directed fishing for pollock is open to vessels harvesting pollock for processing by the "true" mothership or offshore sectors.

These suboptions address the restrictions on harvesting that would be placed on vessels that have declared themselves to be "true" motherships. Under suboption c, "true" motherships would be prohibited from harvesting any groundfish in the BS/AI or GOA for the time period that they have declared themselves to be in the "true" mothership sector. This suboption would be the simplest to implement and monitor. NMFS would simply issue a Federal fisheries permit to such vessels that would authorize the vessel to process groundfish that was harvested in the BS/AI or GOA but that does not authorize the vessel to harvest groundfish in the BS/AI or GOA. A vessel operating under the terms of a "true" mothership permit would therefore be prohibited from harvesting any groundfish in the BS/AI or GOA for the duration of the permit.

Under suboption d, vessels declared as "true" motherships would be prohibited from harvesting groundfish only when the directed fishery for pollock is open for the "true" mothership or offshore sectors. Such a category would be more difficult to monitor and enforce. In addition, a "true" mothership category that allows "true" motherships to operate as catcher processors in other groundfish fisheries would raise the issue of which sector's quota their pollock bycatch would be attributed to when such vessels are operating as catcher processors in other fisheries. NMFS could count all pollock bycatch by such vessels against the "true" mothership quota even if the vessel is operating as a catcher processor in another fishery. Or, alternatively, NMFS could count pollock bycatch by "true" motherships against the offshore quota when such vessels are operating as catcher processors in other fisheries. If the Council chooses to select this suboption, it should clarify how pollock bycatch should be treated when "true" motherships are operating as catcher processors in other groundfish fisheries.

Option 2: A "true" mothership would be defined as a mobile fish processor which has processed, but never caught, their own fish in the U.S. EEZ.

This definition has several implications with respect to the approval of an allocation of pollock to processing by "true" motherships.

Limited Access Implications and 303(b)(6) Guidelines. On it's face, the Council's definition of "true" motherships implies a limited group of vessels, namely those vessels that have processed but have never caught pollock in a pollock target fishery in the BS/AI EEZ. Under this definition, vessels that have never processed pollock in a pollock fishery in the BS/AI would be permanently excluded from processing pollock under a "true" mothership BS/AI pollock allocation as would all vessels that have ever caught pollock in a pollock target fishery in the BS/AI.

If a pollock allocation is granted to a "true" mothership category that excludes either (1) new vessels, or vessels without pollock processing history in the BS/AI, that may wish to enter the fishery as "true" motherships; or (2) existing catcher/processors in the fishery that have caught pollock in the BS/AI but may wish to operate as "true" motherships rather than catcher processors, then such an allocation would establish a limited access program for "true" motherships. Such an allocation would, therefore, be subject to review under the 303(b)(6) guidelines in the Magnuson-Stevens Act which set out the criteria that must be taken into account when establishing a limited access program.

Section 303(b)(6) of the Magnuson-Stevens Act specifies that:

> *. . .Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, may---. . . .*

(6) establish a limited access system for the fishery in order to achieve optimum yield if, in developing such system, the Council and the Secretary take into account--

> *(A) present participation in the fishery,*
> *(B) historical fishing practices in, and dependence on, the fishery,*
> *(C) the economics of the fishery,*
> *(D) the capability of fishing vessels used in the fishery to engage in other fisheries,*
> *(E) the cultural and social framework relevant to the fishery and any affected fishing communities, and*
> *(F) any other relevant considerations;*

The Council must take into account all factors contained in the 303(b)(6) guidelines before approving a pollock allocation to a "true" mothership sector that, by definition, limits entry into the sector. Furthermore, National Standard 4 specifies that "if it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges."

In establishing an exclusive category for "true" motherships that excludes vessels with fishing history and vessels that lack processing history, the Council must establish provisions or criteria for permit transfers, vessel reconstruction or lengthening, replacement of vessels lost or retired from the fishery. NMFS also would have to establish permit review and hearings procedures for permit applicants that have been denied a "true" mothership permit based on apparent lack of qualifying criteria, as well as a system for issuing interim permits while a permit denial is appealed. Finally, the Council would have to establish limits to prevent a single entity from acquiring a excessive share of the "true" mothership permits in violation of National Standard 4.

Current Inshore and Offshore Component Definitions. The 303(b)(6) guidelines do not apply to the current inshore and offshore component definitions because the current inshore/offshore allocations do not limit access or participation within either of the two components. At present, anyone can participate in the inshore processing component by building an inshore processing plant on land, or anchoring a floating processor in a fixed location in Alaska. Similarly, the offshore component does not, by definition, limit access or participation within that component. To be sure, the vessel moratorium and license limitation programs do limit access to the offshore component. However, these programs were adopted and implemented as separate FMP amendments that were analyzed and reviewed in light of the Magnuson-Stevens Act requirements for limited access programs. Both the vessel moratorium and license limitation programs specifically exempted "true" motherships from the requirements and restrictions of those programs. If the Council had wished to implement a limited access program for "true" motherships, the rationale for excluding "true" motherships from the vessel moratorium and license limitation programs should have been reexamined.

The Council could avoid the necessity to take into account all of the factors in the 303(b)(6) guidelines in making an allocation to a "true" mothership component if entry into the "true" mothership component is unrestricted. For example, each processing vessel could elect at the beginning of each fishing year to participate in either the inshore, "true" mothership, or offshore components and then would be issued a permit for participation in that component which would restrict participation in either of the other two components. In this manner, processing vessels would be forced to chose which component they intend to participate in for a calendar year, but would not be restricted from participation in any component provided that they comply with the requirements and restrictions for that component. At the February 1998 meeting, one of the clarifications requested by the AP (and the Council) was to "note throughout the analysis that there could be more than 3 "true" motherships in the future'. Staff interpreted this clarification as recognition that some operations, other than the 3 existing "true" motherships, may 'qualify' under the definition used in the analysis - i.e., other operations likely exist that have processed, but never caught, pollock in a BS/AI pollock target fishery. However, if the Council's intent is that no other operations could participate in that category (for example, C/Ps that have operated in a mothership mode at some time), additional analyses would have been required to comply with section 303(b)(6) of the Act.

4.1.3.2 Alternative 3(A): 25% Inshore, 5% "True" Motherships, and 70% Offshore Catcher Processors

Alternative 3(A) would allocate 10% less of the BS/AI pollock TAC to the Inshore sector, approximately 5% less to "true" motherships, and approximately 15% more to offshore catcher processors, than they would have harvested under the status quo. In reality, status quo harvests by "true" motherships and catcher processors are only limited by the 65% offshore allocation. Therefore, the changes between these sectors are driven by the assumption that they will continue to harvest the same percentage of the offshore quota, under the status quo alternative, as they harvested in 1996.

Projected Processing by Sector

Reallocating pollock under Alternative 3(A) is projected to increase the production of deep skin fillets and decrease the amount of surimi produced. In fact, any allocation that increases the amount of pollock processed by catcher processors will increase deep skin fillet and roe production, and decrease the production of surimi and other product forms in this analysis.

Table 4.6. Estimated product mix under allocation Alternative 3(A).

Alternative 3(A): 25% Inshore, 5% "True" Motherships, and 70% Catcher Processors								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	8,170	4,941	19,699	-	-	1,959
	Catcher Vessels	-	1,581	1,161	2,849	-	-	207
Non-surimi C/P Total		-	9,751	6,102	22,548	-	-	2,166
Surimi - C/P	Self Caught	63,150	17	1,374	7,995	13,612	429	6,417
	Catcher Vessels	8,937	-	33	829	1,707	-	557
Surimi - C/P Total		72,087	17	1,407	8,824	15,319	429	6,974
Catcher Processor Total[1]		**72,087**	**9,769**	**7,508**	**31,372**	**15,319**	**429**	**9,140**
"True" Mothership Total[1]		**9,910**	**-**	**-**	**-**	**2,260**	**159**	**484**
Inshore Total[1]		**45,894**	**1,689**	**5,936**	**4,787**	**17,923**	**5,476**	**2,841**
Grand Total		**127,891**	**11,458**	**13,445**	**36,159**	**35,502**	**6,064**	**12,466**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: This estimate assumes a 1.1 mmt TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock.

Increasing the allocation of pollock to the catcher processor sector will reduce the pollock available for catcher vessels to harvest. The impacts on catcher vessels would be lessened if a sub-option that guaranteed more than 10% of the catcher processor's allocation must be harvested by catcher vessels. However, even this sub-option would not prevent one catcher processor from delivering pollock to another, unless the catcher vessel definition was more tightly defined. Such a definition would likely require that catcher vessels never process their own fish.

The SSC has pointed out that "no new information is presented to the Council by calculating changes in gross earnings[15]". This is true because we have assumed constant prices for each of the industry sectors. These prices are then simply multiplied by the quantity of pollock allocated to the sector. The SSC's comment also holds true for gross revenue calculations at the first wholesale level.

[15] SSC minutes from their December 1998 meeting.

Table 4.7 **Alternative 3(A)**: Impacts on Catcher Vessel's Gross Revenue

	Inshore	"True" Motherships	Catcher Processors CV Deliveries	Catcher Processors Own Harvest	Total
Allocation Percentages	**25%**	**5%**	**7%**	**63%**	**100%**
Sector's Allocation (mt)	254,375	50,875	71,225	641,025	1,017,500
Change from Status Quo [1] (mt)	(101,750)	(50,875)	15,263	137,363	-
Sector's Allocation Change (%)	(29%)	(50%)	27%	27%	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 47.7	$ 8.3	$ 11.7	n/a	$ 67.7
Est. Change in Exvessel Revenue (Million $)	($ 19.1)	($ 8.3)	$ 2.5	n/a	($ 24.9)

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of Catcher Processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and Catcher Processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

Total gross revenue, at the first wholesale level, is projected to be $557.0 million. Compared to the Alternative 2 (Status Quo), this option would generate $5.8 million less revenue. If fish meal were excluded from the calculation, the reduction in revenue would only be $1.7 million. That relatively small change in total revenue masks the revenue shifts which take place between sectors. For example, the catcher processor sectors are projected to experience a $81.3 million increase. "True" motherships are projected to realize a $26.8 million drop in revenue, and the Inshore sector's revenue loss is $60.3 million. So while the total change in gross revenue is small, the distributional impacts are quite large.

As discussed above, the total change in gross revenue between this allocation and the Status Quo is projected to be less than $6.0 million. Because the uncertainty surrounding this estimate is not known, it is not possible to determine if the estimate is significantly different from zero.

> Given the concerns expressed throughout this document over utilization rates, prices, and costs, little can be said regarding the net economic benefits of selecting one alternative over another. However, changing the allocation will have distributional impacts, which may cause more instability within sectors.

Reducing the inshore and "true" mothership sector's gross revenues by $60.3 million and $26.8 million, respectively, is likely to cause hardships. The hardships may even be great enough to reduce the number of participants in these sectors. Catcher processors, on the other hand, would likely be in a better economic position. And individuals who have chosen not to participate in the catcher processor sector may see an opportunity to enter.

Table 4.8 1st Wholesale Gross Revenue (Million $)-FOB Alaska: Alternative 3(A) (25% Inshore, 5% "True" Motherships, and 70% Catcher Processors)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 7.6	$ 10.5	$ 53.9	$ 0.0	$ 26.0	$ 98.0
	Catcher Vessels	$ 0.0	$ 1.5	$ 2.5	$ 7.8	$ 0.0	$ 2.8	$ 14.5
Non-surimi C/P Total		$ 0.0	$ 9.1	$ 12.9	$ 61.6	$ 0.0	$ 28.8	$ 112.4
Surimi - C/P	Self Caught	$ 120.4	$ 0.0	$ 2.9	$ 21.9	$ 8.7	$ 85.3	$ 239.2
	Catcher Vessels	$ 17.0	$ 0.0	$ 0.1	$ 2.3	$ 1.1	$ 7.4	$ 27.9
Surimi - C/P Total		$ 137.4	$ 0.0	$ 3.0	$ 24.1	$ 9.8	$ 92.7	$ 267.1
Catcher Processor Total[1]		**$ 137.4**	**$ 9.1**	**$ 15.9**	**$ 85.8**	**$ 9.8**	**$ 121.5**	**$ 379.5**
Inshore Total[1]		**$ 83.0**	**$ 1.9**	**$ 12.6**	**$ 13.1**	**$ 11.9**	**$ 28.3**	**$ 150.7**
"True" Mothership Total[1]		**$ 18.9**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 1.4**	**$ 6.4**	**$ 26.8**
Grand Total		**$ 239.3**	**$ 11.0**	**$ 28.5**	**$ 98.8**	**$ 23.1**	**$ 156.3**	**$ 557.0**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

Changes in our PSC bycatch estimates are driven by the 1996 rates detailed in Chapter 3. Those rates, multiplied by the tons of pollock each sector is allocated, yields the projected PSC bycatch estimate for each alternative. Reductions in PSC will occur if more pollock is allocated to a sector with a low rate in the 1996 fishery. These rates will likely change future years, and currently one sector does not have lower bycatch rates for every PSC species.

Comparing the total PSC bycatch between Alternatives 2 and 3(A) shows that halibut mortality is projected to increase by about 44 mt under 3(A), and herring bycatch would increase by 58 mt. Red king crab bycatch would increase by about 1,400 animals, and bycatch of other king crab would stay about the same. The changes are slightly different for salmon species. Chinook salmon bycatch is projected to decrease by about 6,000 animals, but bycatch of other salmon would increase by about 6,000 animals. Therefore, the reader is left to make an individual judgement as to which PSC species are more important, while realizing that the relative rates between sectors could change in future years.

Table 4.9 PSC Bycatch by Processing Sector: Alternative 3(A)

Alternative 3(A)	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	150.8	59.4	5.9	0.0	24.1	24.6	6.9	5.0
C/Ps (surimi)	154.2	855.6	1.1	0.1	73.4	29.0	16.9	41.9
"True" Motherships	9.3	13.9	0.0	0.0	0.0	0.1	3.9	8.4
Inshore	31.1	309.7	0.0	0.1	5.1	12.7	18.0	13.5
Total	345.4	1,238.6	7.0	0.2	102.6	66.4	45.7	68.8

4.1.3.3 Alternative 3(B): 30% Inshore, 10% "True" Motherships, and 60% Offshore Catcher Processors

Alternative 3(B) would hold the "true" mothership allocation constant while decreasing the inshore sector's share of the BS/AI pollock fishery by 5% and increasing the catcher processor's share by 5%. These allocation changes in the overall TAC result in the catcher processor sector being allocated about 9% more BS/AI pollock and the inshore sector about 14% less pollock - than they would process under the status quo alternative.

Projected Processing by Sector

Comparing the production from "true" motherships under Alternative 2, Alternative 3(C), and this Alternative, we see that they are exactly the same. Under each of these alternatives, the "true" motherships are projected to produce 19,819 mt of surimi, 4,520 mt of meal, 318 mt of oil, and 969 mt of roe. Production of surimi by the catcher processors will increase to 61,789 mt under Alternative 3(B), up from a status quo amount of 56,640 mt. Deep skin fillet production will also increase from 24,649 mt to 26,890 mt. That is about a 9% increase. In fact, because the calculations are linear, all of the catcher processor's products increase by about 9%. Inshore processors will make 9,179 mt less surimi and 1,187 mt less fillets under this alternative. For the inshore sector, output of each product will decrease by about 14%.

Table 4.10. Estimated product mix under allocation Alternative 3(B).

Alternative 3(B) (30% Inshore, 10% "True" Motherships, and 60% Catcher Processors)								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	7,003	4,235	16,885	-	-	1,679
	Catcher Vessels	-	1,355	995	2,442	-	-	178
Non-surimi C/P Total		-	8,358	5,230	19,327	-	-	1,857
Surimi - C/P	Self Caught	54,128	15	1,178	6,853	11,667	367	5,500
	Catcher Vessels	7,661	-	28	710	1,463	-	478
Surimi - C/P Total		61,789	15	1,206	7,564	13,131	367	5,978
Catcher Processor Total[1]		**61,789**	**8,373**	**6,436**	**26,890**	**13,131**	**367**	**7,834**
"True" Mothership Total[1]		**19,819**	**-**	**-**	**-**	**4,520**	**318**	**969**
Inshore Total[1]		**55,073**	**2,027**	**7,124**	**5,745**	**21,508**	**6,572**	**3,409**
Grand Total		**136,681**	**10,400**	**13,559**	**32,635**	**39,159**	**7,257**	**12,213**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.
[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production
[3] CDQ production is assumed to remain constant under any of the allocation alternatives
Note: This estimate assumes a 1.1 mmt TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock

The gross revenues earned by catcher vessels are estimated to decrease $8.7 million under this alternative. Total gross revenue under the status quo was $92.6 million, and for this alternative it is $83.9 million. Catcher vessels delivering to the Inshore sector are projected to earn $9.5 million fewer dollars. The catcher vessels delivering to catcher processors partially offset this loss by earning an extra $0.8 million.

Table 4.11 **Alternative 3(B)**: Impacts on Catcher Vessel's Gross Revenue

			Catcher Processors		
	Inshore	"True" Motherships	CV Deliveries	Own Harvest	Total
Allocation Percentages	**30%**	**10%**	**6%**	**54%**	**100%**
Sector's Allocation (mt)	305,250	101,750	61,050	549,450	1,017,500
Change from Status Quo [1] (mt)	(50,875)	-	5,088	45,788	-
Sector's Allocation Change (%)	(14 %)	0 %	9 %	9 %	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 57.2	$ 16.7	$ 10.0	n/a	$ 83.9
Est. Change in Exvessel Revenue (Million $)	($ 9.5)	$ 0.0	$ 0.8	n/a	($ 8.7)

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)
[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.
[2] Remember, "true" mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

Almost $560 million in gross revenues are estimated to be earned under Alternative 3(B), which is down about $3 million from the Status Quo. Earnings from the catcher processor sector should total about $325 million. That number represents an increase of approximately $27 million over the Status Quo. "True" motherships receive the same allocation under this alterative as they received under the Status Quo, so their gross revenues are assumed not to change. The Inshore sector is allocated 5% less of the total BS/AI pollock quota under Alternative 3(B). That decrease in pollock is projected to decrease their gross revenue by about $30 million.

Table 4.12 First Wholesale Gross Revenue (Million $)-FOB Alaska: Alternative 3(B) (30% Inshore, 10% "True" Motherships, and 60% Catcher Processors)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 6.5	$ 9.0	$ 46.2	$ 0.0	$ 22.3	$ 84.0
	Catcher Vessels	$ 0.0	$ 1.3	$ 2.1	$ 6.7	$ 0.0	$ 2.4	$ 12.4
Non-surimi C/P Total		$ 0.0	$ 7.8	$ 11.1	$ 52.8	$ 0.0	$ 24.7	$ 96.4
Surimi - C/P	Self Caught	$ 103.2	$ 0.0	$ 2.5	$ 18.7	$ 7.5	$ 73.1	$ 205.0
	Catcher Vessels	$ 14.6	$ 0.0	$ 0.1	$ 1.9	$ 0.9	$ 6.3	$ 23.9
Surimi - C/P Total		$ 117.8	$ 0.0	$ 2.6	$ 20.7	$ 8.4	$ 79.5	$ 228.9
Catcher Processor Total[1]		**$ 117.8**	**$ 7.8**	**$ 13.6**	**$ 73.5**	**$ 8.4**	**$ 104.1**	**$ 325.3**
Inshore Total[1]		**$ 99.6**	**$ 2.3**	**$ 15.1**	**$ 15.7**	**$ 14.2**	**$ 34.0**	**$ 180.9**
"True" Mothership Total[1]		**$ 37.8**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 2.9**	**$ 12.9**	**$ 53.6**
Grand Total		**$ 255.1**	**$ 10.7**	**$ 28.7**	**$ 89.2**	**$ 25.5**	**$ 151.0**	**$ 559.7**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

The allocation shifts under Alternative 3(B) are not as large as they were under 3(A). Therefore, the PSC bycatch changes within a sector will not be as large when compared to the Status Quo.

Halibut bycatch mortality increases by about 12 mt under Alternative 3(B). Recall that the increase under 3(A) was about 44 mt. The increase is about equal between the Non-surimi and Surimi catcher processor sectors. Their combined halibut bycatch mortality is projected to be 261 mt. This is up from the 240 mt under Alternative 2.

- Total herring bycatch decreased from 1,181 mt, under Alternative 2, to 1,136 mt. Surimi catcher processors increased their herring bycatch by about 61 mt, but with the smaller allocation the Inshore sector decreased their herring bycatch by about 96 mt.

Table 4.13 Estimated PSC Bycatch by Processing Sector: Alternative 3(B)

Alternative 3(B)	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	129.3	50.9	5.0	0.0	20.7	21.1	5.9	4.3
C/Ps (surimi)	132.2	733.4	1.0	0.0	62.9	24.9	14.5	35.9
"True" Motherships	18.5	13.9	-	-	0.0	0.1	3.9	8.4
Inshore	34.0	337.9	0.1	0.1	5.5	13.8	19.6	14.7
Total	314.0	1,136.1	6.1	0.1	89.1	59.9	43.9	63.3

4.1.3.4 Alternative 3(C): 40% Inshore, 10% "True" Motherships, and 50% Offshore Catcher Processors

All of the alternatives studied up to this point have held constant or reduced the allocation to the inshore and "true" mothership sectors. The next two alternatives will study allocations where the catcher processor sector is allocated less pollock and the Inshore sector is allocated more. Because Alternative 3(A) and 3(B) are the reciprocals of 3(C) and 3(D), respectively. The magnitude of change will be equal with opposite signs.

Projected Processing by Sector

The "true" mothership sector is allocated the same amount of pollock under Alternative 3(C) as they were under Alternatives 2 (status quo) and 3(B). The amounts of product produced is therefore also the same for each alternative. Inshore processors are allocated 5% more the BS/AI pollock TAC, under this alternative as compared to the status quo. This is about a 14% increase in the amount of pollock they are allowed to process. In terms of surimi production, the Inshore sector is projected to produce 73,431 mt, or 9,179 mt more than then would have produced under Alternative 2. The increase in surimi production under this alternative is exactly equal to the decrease under Alternative 3(B). Catcher processors, on the other hand, loose the same amount of production under this alternative as they gained under Alternative 3(B).

Table 4.14. Estimated product mix under allocation Alternative 3(C).

Alternative 3(C) (40% Inshore, 10% "True" Motherships, and 50% Catcher Processors)								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	5,836	3,529	14,070	-	-	1,399
	Catcher Vessels	-	1,129	829	2,035	-	-	148
Non-surimi C/P Total		-	6,965	4,358	16,106	-	-	1,547
Surimi - C/P	Self Caught	45,107	12	981	5,711	9,723	306	4,583
	Catcher Vessels	6,384	-	23	592	1,219	-	398
Surimi - C/P Total		51,491	12	1,005	6,303	10,942	306	4,981
Catcher Processor Total[1]		**51,491**	**6,978**	**5,363**	**22,408**	**10,942**	**306**	**6,529**
"True" Mothership Total[1]		**19,819**	**-**	**-**	**-**	**4,520**	**318**	**969**
Inshore Total[1]		**73,431**	**2,703**	**9,498**	**7,659**	**28,677**	**8,762**	**4,546**
Grand Total		**144,741**	**9,681**	**14,861**	**30,068**	**44,140**	**9,386**	**12,043**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: This estimate assumes a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock.

The catcher vessel fleet's gross revenues increase $8.7 million under this alternative. As was discussed under the production section of this Alternative, this is the opposite of what happened under Alternative 3(B). All of the numbers in this table, which reflect changes from the status quo, are equal in magnitude, but have the opposite sign to those reported in Alternative 3(B) table.

Table 4.15 **Alternative 3(C)**: Impacts on Catcher Vessel's Gross Revenue

	Inshore	"True" Motherships	Catcher Processors CV Deliveries	Catcher Processors Own Harvest	Total
Allocation Percentages	**40%**	**10%**	**5%**	**45%**	**100%**
Sector's Allocation (mt)	407,000	101,750	50,875	457,875	1,017,500
Change from Status Quo [1] (mt)	50,875	-	(5,088)	(45,788)	-
Sector's Allocation Change (%)	14 %	0 %	(9 %)	(9 %)	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 76.3	$ 16.7	$ 8.3	n/a	$ 101.3
Est. Change in Exvessel Revenue (Million $)	$ 9.5	$ 0.0	($ 0.8)	n/a	$ 8.7

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

The catcher vessel gross revenue discussion pointed out that the magnitude of the changes between the Status Quo and this alternative are the same, but of opposite sign, as those projected under Alternative 3(B). This same relationship occurs for gross revenues at the first wholesale level. Surimi catcher processors were expected to increase their gross revenue, under Alternative 2, from $210 million to $229 million. If Alternative 3(B) were selected instead, their gross revenues would be expected to decrease from $210 million to $191 million. In the first case the Surimi catcher processors would gain $19 million in gross revenue and in the second case they would loose $19 million. Inshore processors, on the other hand, would loose approximately $30 million under Alternative 2 and gain $30 million if Alternative 3 was selected by the Council.

Table 4.16 1st Wholesale Gross Revenue (Million $) FOB Alaska: Alternative 3(C) (40% Inshore, 10% "True" Motherships, and 50% Catcher Processors)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 5.4	$ 7.5	$ 38.5	$ 0.0	$ 18.6	$ 70.0
	Catcher Vessels	$ 0.0	$ 1.1	$ 1.8	$ 5.6	$ 0.0	$ 2.0	$ 10.3
Non-surimi C/P Total		$ 0.0	$ 6.5	$ 9.2	$ 44.0	$ 0.0	$ 20.6	$ 80.3
Surimi - C/P	Self Caught	$ 86.0	$ 0.0	$ 2.1	$ 15.6	$ 6.2	$ 60.9	$ 170.8
	Catcher Vessels	$ 12.2	$ 0.0	$ 0.0	$ 1.6	$ 0.8	$ 5.3	$ 19.9
Surimi - C/P Total		$ 98.2	$ 0.0	$ 2.1	$ 17.2	$ 7.0	$ 66.2	$ 190.8
Catcher Processor Total[1]		**$ 98.2**	**$ 6.5**	**$ 11.4**	**$ 61.3**	**$ 7.0**	**$ 86.8**	**$ 271.1**
Inshore Total[1]		**$ 132.7**	**$ 3.1**	**$ 20.1**	**$ 20.9**	**$ 19.0**	**$ 45.3**	**$ 241.2**
"True" Mothership Total[1]		**$ 37.8**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 2.9**	**$ 12.9**	**$ 53.6**
Grand Total		**$ 268.7**	**$ 9.6**	**$ 31.5**	**$ 82.2**	**$ 28.9**	**$ 145.0**	**$ 565.8**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

Because catcher processors are allocated less pollock, and catcher vessels delivering to the Inshore processors are allocated more pollock, under this Alternative, halibut mortality is projected to decrease. From discussions provided for the earlier alternatives, we know that this is a result of the relative bycatch catch rates taken from the 1996 fishery. Those rates showed that the Inshore sector had a lower halibut mortality rate than the catcher processor sector. On the other hand, herring bycatch is projected to decrease by about 5 mt., because the Inshore sector had a slightly lower herring bycatch rate than catcher processors in 1996. Overall, the relative rates of halibut, herring, and crab bycatch were higher in the catcher processor pollock fisheries, and the inshore and "true" mothership pollock fisheries had higher bycatch rates of chinook and other salmon.

Table 4.17 Estimated PSC Bycatch by Processing Sector: Alternative 3(C)

Alternative 3(C)	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi Tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	108.1	42.6	4.2	0.0	17.3	17.7	5.0	3.6
C/Ps (surimi)	110.0	610.1	0.1	0.1	52.3	20.7	12.1	29.9
"True" Motherships	18.5	27.7	-	-	0.1	0.2	7.8	16.8
Inshore	49.8	495.6	0.1	0.1	8.1	20.3	28.8	21.6
Total	286.4	1,176.0	4.4	0.2	77.8	58.9	53.7	71.9

4.1.3.5 Alternative 3(D): 45% Inshore, 15% "True" Motherships, and 40% Offshore Catcher Processors

Alternative 3(D) would allocate more pollock for processing by the inshore and "true" mothership sectors. Processors in the inshore sector would be allowed to process 10% more of the BS/AI TAC while the "true" motherships would get an additional 5%. Catcher processors, on the other hand, would be allocated 15% less of the TAC. The changes in this allocation are basically the reciprocals of those under Alternative 3(A).

Projected Processing by Sector

This allocation would result in the Inshore sector producing over 82,610 mt of surimi, or 18,358 mt more than they would have produced under the status quo. "True" mothership would produce 29,729 mt of surimi. In total, 153,531 mt of pollock surimi would be made by all industry sectors under this alternative. The status quo estimate was 140,741 mt of surimi production. So, about 20,000 mt more surimi are projected to be produced from BS/AI pollock, if this alternative is selected.

Total deep skin fillet production would drop from 31,351 mt under the status quo to 26,544 mt. Decreasing production by about 4,800 mt represents about a 15% drop in total deep skin fillet production.

Table 4.18. Estimated product mix under allocation Alternative 3(D).

Alternative 3(D) (45% Inshore, 15% "True" Motherships, and 40% Catcher Processors)								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	4,669	2,823	11,256	-	-	1,119
	Catcher Vessels	-	904	663	1,628	-	-	119
Non-surimi C/P Total		-	5,572	3,487	12,884	-	-	1,238
Surimi - C/P	Self Caught	36,086	10	785	4,569	7,778	245	3,667
	Catcher Vessels	5,107	-	19	474	976	-	318
Surimi - C/P Total		41,193	10	804	5,042	8,754	245	3,985
Catcher Processor Total[1]		**41,193**	**5,582**	**4,290**	**17,927**	**8,754**	**245**	**5,223**
"True" Mothership Total[1]		**29,729**	**-**	**-**	**-**	**6,781**	**477**	**1,453**
Inshore Total[1]		**82,610**	**3,041**	**10,685**	**8,617**	**32,262**	**9,857**	**5,114**
Grand Total		**153,531**	**8,623**	**14,976**	**26,544**	**47,796**	**10,580**	**11,790**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: This estimate assumes a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock

The total amount of gross revenue earned by catcher vessels under this alternative is $117.5 million. Inshore delivery vessels and vessels delivering to "true" motherships are projected to increase their revenues by $19.1 and $8.3 million, respectively. Catcher vessels delivering to the catcher processor sector are projected to realize a $2.5 million decrease. Overall, catcher vessel revenues increase by $24.9 million.

Table 4.19 **Alternative 3(D)**: Impacts on Catcher Vessel's Gross Revenue

			Catcher Processors		
	Inshore	"True" Motherships	CV Deliveries	Own Harvest	Total
Allocation Percentages	**45%**	**15%**	**4%**	**36%**	**100%**
Sector's Allocation (mt)	457,875	152,625	40,700	366,300	1,017,500
Change from Status Quo [1] (mt)	101,750	50,875	(12,263)	(137,363)	-
Sector's Allocation Change (%)	29 %	50 %	(27 %)	(27 %)	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 85.8	$ 25.0	$ 6.7	n/a	$ 117.5
Est. Change in Exvessel Revenue (Million $)	$ 19.1	$ 8.3	($ 2.5)	n/a	$ 24.9

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

Gross revenue estimates indicate that this alternative would generate about $6 million more income, for processors, than any of the other allocations under consideration. Overall, the change in gross revenue amounts to a 1.03% increase. Making definitive statements about the appropriateness of selecting this alternative, on economic grounds, not possible. The relatively small change in total gross revenue, coupled with the concerns expressed over the utilization rates and prices, which were important factors in generating these estimates of gross revenue, severely limit the analysts ability to make recommendations.

Table 4.20 1st Wholesale Gross Revenue (Million $) FOB Alaska: Alternative 3(D) (45% Inshore, 15% "True" Motherships, and 40% Catcher Processors)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 4.3	$ 6.0	$ 30.8	$ 0.0	$ 14.9	$ 56.0
	Catcher Vessels	$ 0.0	$ 0.8	$ 1.4	$ 4.5	$ 0.0	$ 1.6	$ 8.3
Non-surimi C/P Total		$ 0.0	$ 5.2	$ 7.4	$ 35.2	$ 0.0	$ 16.5	$ 64.2
Surimi - C/P	Self Caught	$ 68.8	$ 0.0	$ 1.7	$ 12.5	$ 5.0	$ 48.7	$ 136.7
	Catcher Vessels	$ 9.7	$ 0.0	$ 0.0	$ 1.3	$ 0.6	$ 4.2	$ 15.9
Surimi - C/P Total		$ 78.5	$ 0.0	$ 1.7	$ 13.8	$ 5.6	$ 53.0	$ 152.6
Catcher Processor Total[1]		**$ 78.5**	**$ 5.2**	**$ 9.1**	**$ 49.0**	**$ 5.6**	**$ 69.4**	**$ 216.9**
Inshore Total[1]		**$ 149.3**	**$ 3.5**	**$ 22.6**	**$ 23.6**	**$ 21.3**	**$ 51.0**	**$ 271.3**
"True" Mothership Total[1]		**$ 56.7**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 4.3**	**$ 19.3**	**$ 80.3**
Grand Total		**$ 284.6**	**$ 8.7**	**$ 31.7**	**$ 72.6**	**$ 31.3**	**$ 139.7**	**$ 568.5**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

A mirror image of the changes in PSC bycatch between the Status Quo and Alternative 3(A) are presented under Alternative 3(D). Where the change in halibut bycatch was projected to increase by about 44 mt under Alternative 2, here it is projected to decrease by the same amount. The same patterns holds for all of the PSC species.

Table 4.21 Estimated PSC Bycatch by Processing Sector: Alternative 3(D)

Alternative 3(D)	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi Tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	86.4	34.0	3.4	0.0	13.8	14.1	4.0	2.9
C/Ps (surimi)	88.1	488.4	0.1	0.0	41.9	16.6	9.7	23.9
"True" Motherships	27.8	41.6	0.0	0.0	0.1	0.3	11.7	25.2
Inshore	56.0	557.5	0.1	0.2	9.1	22.9	32.3	24.3
Total	258.3	1,121.5	3.6	0.2	64.9	53.9	57.7	76.3

4.2 Suboptions

The Council has selected a suite of sub-options for each of the TAC allocations discussed in Section 4.1. Each of those sub-options will be outlined in this section of the document. The first sub-option would set up a reserve of 40-65% of the inshore and/or "true" mothership quotas from which only catcher vessels less than 125' could harvest pollock. The second sub-option would reserve nine to 15% of the offshore quota for catcher vessels delivering to catcher processors. Finally, the last sub-option defines the length of the I/O3 allocation. Here there are three basic choices: (1) An allocation that would expire only when replaced by the Comprehensive Rationalization Program, (2) a one-year allocation that would expire on December 31, 1999, (3) a three-year allocation that would expire on December 31, 2001. Any of these sub-options may be selected in conjunction with the TAC allocation selected by the Council. CVOA sub-options are discussed in Chapter 5.

4.2.1 Reserve set aside for catcher vessels less than 125 feet

The Council had proposed, as one option under I/O3, to reserve between 40% and 65% of *"... the inshore and "true" mothership sector quotas"* ... for catcher vessels under 125 feet in length. Based upon the "Fleet Profile", provided to the Council in September, 1998, these are approximately the percentages observed for catcher vessels delivering "inshore" over the period 1991 through 1996, inclusive. Note that the upper end of the range denotes the share percentage observed in 1991, while the lower end approximates the share in 1996. Therefore, depending upon the percentage selected, the Council could either "lock-in" the smaller boat share of the inshore pollock TAC at approximately 1996 levels, or "restore" to the smaller catcher boats some or all of the percentage share they enjoyed in 1991, but have surrendered to larger vessels since that time.

Very little economic or operational data exist with which to assess the potential impacts of this proposed option. Circumstantial evidence suggests that catcher boats under 125' are, perhaps, less operationally efficient than larger vessels, given that their total share of the inshore pollock catch has declined rather markedly over the period of analysis, even as their numbers have increased. But, there may be other structural changes or considerations at work within the inshore sector which equally well explain these relative declines, including delivery rotation systems used by many shorebased processors.

For example, prior to the implementation of the vessel moratorium, some vessels under 125' were lengthened and may now be substantially longer than 125' and the shift in catch to larger vessels may have been accounted for, in part, by vessel lengthening rather than a shift in catch between small and large vessels. However, the vessel moratorium and license limitation programs now restrict increases in vessel size that occur after the control date of June 24, 1992. Vessels under 125' may undergo a 20% increase in LOA from their original qualifying length up to a maximum LOA of 125'. Vessels over 125' may not be lengthened under the moratorium or license limitation programs. Consequently, any shift in catch from vessels under 125' to vessels over 125' that has occurred after the implementation of the vessel moratorium program cannot be accounted for by vessel reconstructions (i.e. the "loss of share" from 1994-1996 is actually because a different set of (larger) vessels taking more fish).

What one may conclude on this issue is that, if the Council places a high value on retaining a meaningful role for catcher vessels under 125' in the inshore pollock fisheries of the BS/AI, this option may achieve that objective. Absent this, based solely on the relative performance of this subsector over the period of analysis, it would appear that the share of inshore TAC caught and delivered by boats under 125' in the BS/AI pollock target fisheries will likely continue to decline.

The reduction in catch-share in the under 125' segment of the industry has been matched by increases in catch-share among the 125' to 155' category of catcher boats delivering inshore. That trend might be expected to continue, as well, absent the proposed option. Whether these trends are "desirable" or "undesirable" is dependent upon the specific objectives of the Council, with respect to the distribution of catch-share inshore, by vessel size category. There are, however, several other important implications which derive from the proposed "shares-option". These are directly related to the way in which management of the BS/AI pollock resource is currently performed.

4.2.1.1 Management barriers to implementing a "reserve" set aside for catcher vessels under 125'

Managing a reserve set aside for catcher vessels under 125' would require wholesale changes in NMFS quota monitoring procedures that **could not be implemented by January 1999.** Such an option would need to be phased-in for the 2000 fishing year or later. Currently, NMFS monitors TACs by processors rather than by individual catcher vessel. For shoreside processors, NMFS uses weekly reports of landings by species and area to monitor quotas. For motherships, NMFS uses weekly production data to monitor TACs. Neither of these two sources of information provide information to NMFS on landings by individual catcher vessels. As a consequence, NMFS would be unable to use the current shoreside and mothership reporting system to monitor a reserve set aside for catcher vessels under 125' without major revisions in shoreside processor and mothership recordkeeping and reporting requirements.

At a minimum, three major changes in the NMFS recordkeeping and reporting system would be required to monitor a reserve set aside based on catcher vessel size:

1. Shoreside daily cumulative production logbooks and shoreside weekly processor reports would have to be revised to accommodate reporting of pollock landings by individual catcher vessels. This information is currently reported on ADF&G fish tickets, but is not available to NMFS on a timely enough basis to accommodate inseason quota monitoring. An electronic fish ticket reporting system would be the least burdensome means of collecting this information from industry and the data generated could be shared by NMFS and ADF&G. However, an electronic fish ticket reporting system would require a significant time for development and implementation, and would not be available by January 1, 1999. In addition, substantial lead times are required for changes to recordkeeping and reporting regulations, OMB review and approval of revised logbook forms, and publication and distribution of 1999 logbooks and reporting forms. Consequently, major revisions to NMFS shoreside logbooks and shoreside reporting forms could not be made in time for the 1999 fishing season following Council action in June of 1998.

2. Mothership daily cumulative production logbooks and weekly production reports would have to be revised to accommodate reporting of information on the individual catcher vessel level. At present, NMFS uses weekly production reports from motherships for quota monitoring and these reports are not subdivided by individual catcher vessels. As is the case with shoreside logbooks and reporting forms, such major changes could not be made in time for the 1999 fishing season following Council action in June of 1998.

3. In addition to revising logbook and reporting forms, monitoring a reserve set aside for catcher vessels under 125' delivering to motherships would most likely require NMFS to shift to a scale weight system for quota monitoring aboard motherships so that codends from different catcher vessels could be weighed and reported individually. While scale requirements are currently being implemented for the CDQ fisheries, scales are not currently required aboard motherships fishing in open access fisheries. Given the lead time required to develop regulations and provide for installation and testing of scales, it is not reasonable to expect that a scale requirement for motherships could be implemented for the 1999 fishing year.

Nevertheless, none of the obstacles cited above appear to present a barrier to a phased-in implementation of a set-aside for catcher vessels under 125 ft beginning in the year 2000 or later had the Council decided to adopt such an option.

4.2.1.2 Other implications of a "reserve" set aside for catcher vessels under 125'

Other implications which the Council considered as it reviewed this option are as follows: Catcher boats under 125' are, in general, less mobile, e.g., have a shorter range of operation; have a smaller capacity to carry catch, and are more operationally constrained by weather, sea conditions, and ice than are larger vessels. To the extent that relatively "greater" amounts of the inshore catch (say, than was taken by these vessels in 1996 or 1997) is reserved for boats under 125', one might expect the inshore component of the BS/AI pollock target fishery to slow.

This could have both desirable and undesirable implications for the inshore industry, depending upon the rate of slowing, the condition of the fish, and other environmental and operational considerations. These cannot be readily characterized here, but might be appropriate subjects for discussion as the Council considers this option.

To the extent that relatively greater shares of the inshore pollock TAC are reserved for these smaller vessels, it seems likely that the fishery could be somewhat concentrated geographically. Because these boats, in general, have a more constrained operational range, there could be implications for the geographic distribution of catch, although no empirical data are available with which to rigorously evaluate this potentiality.

However, because virtually all of the inshore catch can be expected to come from the CVOA, and with this proposal, perhaps the majority of the catch from sub-areas of the CVOA nearer, rather than farther from, inshore processing facilities, there may be implications for marine mammal management, localized stock depletion, etc.

4.2.2 Set Aside for Catcher Vessels delivering offshore

The Council had proposed reserving 9-15% of the offshore quota for catcher vessels delivering to catcher processors. Blend data from the 1996 pollock target fisheries indicated that slightly less than 10% of the pollock processed by catcher processors was harvested by catcher vessels (Table 4.22). Information from 1991 through 1997 is also presented in the table to show trends. Using that 1996 ratio, projections of catch, product mix, and gross revenues are calculated and presented for alternatives 2 through 3(D).

Table 4.22 1991-1997 BS/AI Target Pollock Catch by Processing Mode (mt)

Sector	1991	1994	1996	1997
C/Ps Own Catch	1,005,803	733,018	582,208	556,272
C/V Deliveries to C/P	22,436	35,031	63,386	44,612
C/P Total	1,028,239	768,049	645,594	600,884
"True" Motherships	144,138	113,077	121,959	123,571
Inshore (Shoreplants)	375,570	375,602	324,846	296,421
Inshore (Motherships&CP)	32,372	48,519	70,696	58,370
Inshore Total	407,942	424,121	395,542	354,791
Grand Total	1,580,319	1,305,247	1,163,095	1,079,246
Catcher Vessel Deliveries to Catcher Processors				
% of CP	**2.18%**	**4.56%**	**9.82%**	**7.42%**
% of Offshore	1.91%	3.98%	8.26%	6.16%
% of total	1.42%	2.68%	5.45%	4.13%
Catcher Vessel Deliveries to "True" Motherships				
% Offshore	12.29%	12.83%	15.89%	17.06%
% Total	**9.12%**	**8.66%**	**10.49%**	**11.45%**

Note: Catch totals include CDQ harvests. Also the numbers may differ slightly from the information reported in the sector profiles because different versions of the Blend data sets were used. Recall that Blend data changes over time as the files are amended.
Source: NMFS Blend data for 1991, 1994, 1996, and 1997

In general, this allocation would likely benefit catcher vessels that have contracts to deliver to catcher processors. The ranges selected for this allocation are about equal to or are higher than those observed between 1991 and 1996. However, some of the alternatives would shift pollock away from the catcher processors and the catcher vessels would be guaranteed less pollock than they delivered in 1996.

4.2.2.1 Estimating the Catcher Vessel Reserve

This discussion assumes that the offshore quota applies only to the catcher processors share of the TAC. Still, there are two ways to estimate this allocation. Had the Council selected Alternative 2, the allocation to catcher vessels could have either come out of the entire 65% offshore quota or only that portion catcher processors historically (1996) processed. Calculating the catcher vessel allocation using the entire offshore quota would result in a range of 59,524 mt to 99,206 mt with a reserve of 9-15%, respectively. If only the catcher processors portion of the offshore quota was used the range would be 50,366 mt to 83,944 mt. In other words, under the 9% reserve and using the entire offshore quota (i.e., no "true" mothership allocation), catcher vessels delivering to catcher processors would receive about 9,000 mt more than if the calculation was based on the portion of the offshore quota that was historically taken by catcher processors.

4.2.2.2 In-season Management

Managing this allocation would have caused problems for NMFS. Weekly Production Reports submitted by the processor, and observer data will need to be analyzed to estimate when to close fisheries. These reports do indicate if the catch was delivered by a catcher vessel, or if a catcher processors harvested its own fish. As long as there are no size categories for the catcher vessels, and the fishery takes place over a long enough time period, this allocation could be monitored using the current reporting system[16]. However, tracking this allocation may require additional NMFS staff and resources, and problems will likely arise in determining when to close the catcher processor's own harvest. Sorting out these problems will depend on how the allocation is managed. It may be simpler to manage the catcher vessel set aside as an absolute amount of pollock catcher vessels are allowed to deliver to catcher processors. However, staff has assumed that the Council intended this allocation would be a guaranteed minimum, and catcher vessels would be allowed to deliver more, but not less, pollock to catcher processors than the allocation specified.

Under this allocation, catcher vessels are assumed to be allowed to make deliveries to catcher processors during the same time period catcher processors are harvesting their own fish. NMFS in-season management staff would then be required to determine if the catcher processors own harvest must be shut down before the entire quota is taken, or if catcher vessels have already harvested their TAC set aside. Tracking both catch rates will add another layer of complexity for NMFS in-season management.

4.2.3 Duration of Allocation

The Council has proposed two suboptions under the general alternative of an interim allocation until the Comprehensive Rationalization Program is completed. The first of these two suboptions would extend this apportionment for only one-year beyond the current December 31, 1998, I/O2 'sunset' date. The second suboption proposes to extend the selected allocation for a three year period (effectively retaining that apportionment through the 2001 fishing year).

Implicit in the two of these suboptions is the presence of the other 'sunset' date (until replaced by CRP), under which the Council will have had to complete work on a CRP program, decided to abandon CRP in favor of an alternative management strategy (e.g., allow the fishery to revert to its original 'open access' condition), or 'rollover' the I/O3 program for yet another interim period.

The first of the two proposed I/O suboptions would retain the inshore/offshore pollock TAC split in the BS/AI management area for the 1999 fishing year, only. If adopted, this suggests that the Council would effectively be required to revisit their I/O3 decision almost immediately upon completion of the current (1998) amendment cycle. This is so, because, by adopting a 'one-year rollover', the Council will have established a new 'sunset' date for I/O3 of December 31, 1999. In order to have an alternative management program in place by January 1, 2000 (for the BS/AI pollock fishing season), a "preliminary" decision on I/O4 (e.g., an EA/RIR/IRFA) would have to be made available for public comment by the Council's April 1999 meeting, and a "final" action taken on I/O4 by the Council at its June 1999 meeting.

Given the status of existing data collection programs (among other considerations), it would appear unlikely that substantially more quantitative information or empirical analysis can be made available to the Council, by April 1999, than the Council currently has before it for the I/O3 decision. That is, the one year rollover window would likely not provide adequate time for the analysis to be significantly strengthened, given the 'meeting' schedules and administrative submission deadlines involved, and the development process underway to systematically collect and analyze economic and performance data for the several commercial sectors of the BS/AI and GOA fishing industry.

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[16] Implementation of the electronic reporting system will likely improve in-season management's ability to track smaller divisions of the TAC and close fisheries before the TAC is exceeded. Access to real time harvest information is critical as the quotas being managed become smaller and the season lengths are compressed.

A one year rollover could also occupy the Council's attention and perpetuate the "inshore - offshore" political conflict, when other pressing issues such as the Comprehensive Rationalization Program, Magnuson-Stevens Act mandates, limited access programs, bycatch amendments, and an assortment of other programs are before the Council. In addition, a one year rollover would likely not provide the industry with the structural stability (e.g., planning and marketing stability) which it has repeatedly testified is highly desirable for 'rational' commercial prosecution of the pollock fishery. These conclusions suggest that there is likely little meaningful potential benefit, either to the Council or the industry, from a 'one-year' rollover decision.

On the other hand, a 'three year' rollover (the second of the two suboptions proposed under this alternative) could potentially resolve many of these concerns. That is, if 'rolled over' for three years, I/O3 would effectively result in a December 31, 2001, 'sunset' date. This would likely provide time for the Council to acquire and adequately analyze additional economic and social data, and evaluate the implications of alternative allocation options, including the broader CRP initiative for which I/O was to be an interim measure, within a somewhat 'less politically charged' decision environment. It could also produce a degree of operational stability within the industry, not available under a 'one-year' rollover program.

If, however, the Council determined, at any time during the three-year I/O3 rollover period, that the BS/AI I/O pollock apportionment needed to be re-examined (e.g., if the status of stocks changed dramatically), the Council would retain the ability to take action it deemed necessary and appropriate (subject to Secretarial approval). Therefore, adoption of the three-year rollover suboption under Alternative 2 would appear to provide the Council with tangible benefits, when compared with the 'one-year' rollover suboption, while retaining significantly more flexibility to respond to a changing "inshore/offshore" management environment .

It should be noted that, over the next three years, ABC projections for the BS/AI pollock resource suggest a relatively stable biomass, permitting a TAC of approximately 1.1 mmt, annually. The Council, of course, may deviate from this level, but these data imply that the fishery could sustain catch levels on the order of those recorded in the most recent past, for the entire 'rollover' period (whether one or three-years). Therefore, sector catch *'shares'* (based upon the fixed percentages identified in I/O) would translate, in this case, into relatively stable sector catch *'tonnages'* over this period. This is in marked contrast to the situation observed between I/O1 and I/O2, when constant *'percentage shares'* actually resulted in smaller total catches for some sectors, when compared to pre-I/O base year performance (see, for example, the Sector Profiles contained in the Appendix of this report).

Because either of the rollover suboptions would result in continuation of the BS/AI pollock fisheries in essentially their present form (based upon 1996 and 1997 catch and production amounts), these suboptions represent the effective ***"Status Quo"*** alternative under I/O3. Due to the presence of the 'sunset' clause, they do not represent the ***"No Action"*** alternative. The latter option is, however, treated elsewhere in this analysis.

4.3 Alternative 4 (Harvester's Choice for Catcher Vessels Less Than 125' LOA)

A new alternative was added during the April 1998 Council meeting. The new alternative would provide a set-aside for catcher vessels less than 125' LOA. The set-aside would be based on:

- 40-65% of the inshore quota, plus
- 9-15% of the offshore (catcher processor) quota, plus
- 100% of the "true" mothership quota.

This alternative would allow catcher vessels less than 125' LOA to deliver their Inshore/offshore allocation to any processor. The amount of pollock that would be allocated to these small catcher vessels would be determined using the sector allocation percentages discussed under Alternatives 2 and 3, and the set-aside percentages above. Once the amount of the small catcher vessel quota is determined, they will be allowed to sell their pollock to the processor of their choice in the inshore, "true" mothership, or catcher processor sector.

NMFS currently measures total catch at the processor level and uses that information to manage fisheries in-season. This alternative will require NMFS to measure catch at the harvesting vessel level. We have been advised that because of the changes this allocation would require in the catch accounting system, this option could not be implemented for the 1999 fishing year. However, the Council could have selected this alternative with the understanding that it would be implemented at a latter date.

Table 4.23 provides a breakdown of some potential allocations under Alternative 4. The results show that changing the basic inshore/offshore allocation percentages has a greater impact on the catcher processors than changing the small catcher vessel set-aside. For example, the difference between the maximum and minimum catcher processors harvest allocation under Alternative 2 is 3.3% (50.1-46.8). A change of 3.3% is also the average difference between the maximum and minimum for all the alternatives. However, the change in the mid-range allocation between Alternative 2 and Alternatives 3(A) or 3(D) is 13.2%. This larger change is expected because the catcher processors allocation is only reduced by 9-15%, depending on the small vessel set-aside selected. However, their basic allocation changes by 27% (Table 4.7).

The opposite is true for the inshore sector. Their guaranteed processing allocation is impacted more by wide swings in the set-aside than the basic Inshore/offshore allocation split. This does not necessarily mean that the impacts of changing the set-aside versus the basic allocation percentages would be greater. That would depend on the inshore sectors ability to compete with the "true" motherships and catcher processors for the small catcher vessel quota.

The reason the inshore sector's guaranteed allocation is reduced more by the set-aside than the basic allocation percentages, is because a relatively larger percentage of their allocation goes to the set-aside (and it is the catcher vessel set-aside that is "up for grabs" in terms of where it is delivered). A range of 40-65% of the inshore quota is currently being considered. That mean using the basic inshore/offshore allocation split described under Alternative 2, the guaranteed inshore allocation could change by 8.7% (21.0 - 12.3) of the BS/AI TAC (after CDQs are taken off the top) depending on the set-aside selected. The difference between the mid-range set-aside under Alternative 2 and Alternatives 3(A) allocation splits is 4.7% of the TAC.

"True" motherships would not have any pollock guarantee under Alternative 4. Their entire allocation would be placed in the small vessel set-aside. The "true" motherships would then need to be successful in attracting small catcher vessels to deliver to them to maintain their market share. Public testimony before the Council has indicated that at least one of the "true" motherships is partially owned by the catcher vessels that deliver its pollock. This ownership arrangement will likely afford that "true" mothership more protection from loosing its harvest fleet than other "true" motherships that are only bound to their harvesting fleet through annual or seasonal contracts.

Table 4.24 lists the outcomes under the status quo split 35/10/55 and a 52.5% Inshore set aside for small catcher vessels, 12% set aside for small catcher vessels delivering to catcher processors, and 100% small vessel set aside of the "true" mothership quota. This the mid-range scenario of Alternative 2 in Table 4.23. The total ranges show that the Inshore sector may processes between 16.6% and 51.6% of the BS/AI pollock TAC. Their actual processing would depend on their success in purchasing catch from the small catcher vessels. The "true" motherships would process between zero and 35% of the TAC. Their processing levels would come totally from the small catcher vessel allocation. Finally the catcher processors would harvest 48.4% of the TAC, in this example, and if they were able to purchase all of the small catcher vessels quota they would be able to process up to 83.4% of the TAC. It is unlikely, however, that any processing sector would be able to purchase all of the small vessel quota.

Table 4.23 Alternative 4 (Harvester's Choice of Markets for Catcher Vessels Less Than 125' LOA)

Allocation Split	Potential Set-Aside Allocation Range	Harvesting Sectors Guaranteed Percent of TAC		
		Catcher Vessels		Catcher Processors[3]
		<125' LOA[1]	>= 125' LOA[2]	
35/10/55 (Alt. 2)	Minimum[4]	29.0%	12.3%	46.8%
35/10/55 (Alt. 2)	Mid-range[5]	35.0%	16.6%	48.4%
35/10/55 (Alt. 2)	Maximum[6]	41.0%	21.0%	50.1%
25/5/70 (Alt. 3A)	Minimum	21.3%	8.8%	59.5%
25/5/70 (Alt. 3A)	Mid-range	26.5%	11.9%	61.6%
25/5/70 (Alt. 3A)	Maximum	31.8%	15.0%	63.7%
30/10/60 (Alt. 3B)	Minimum	27.4%	10.5%	51.0%
30/10/60 (Alt. 3B)	Mid-range	33.0%	14.3%	52.8%
30/10/60 (Alt. 3B)	Maximum	38.5%	18.0%	54.6%
40/10/50 (Alt. 3C)	Minimum	30.5%	14.0%	42.5%
40/10/50 (Alt. 3C)	Mid-range	37.0%	19.0%	44.0%
40/10/50 (Alt. 3C)	Maximum	43.5%	24.0%	45.5%
45/15/40 (Alt. 3D)	Minimum	36.6%	15.8%	34.0%
45/15/40 (Alt. 3D)	Mid-range	43.4%	21.4%	35.2%
45/15/40 (Alt. 3D)	Maximum	50.3%	27.0%	36.4%

1 / May be delivered to any processing sector (inshore, catcher processors, or "true" motherships), **after the pollock is allocated to the small catcher vessels it no longer has an inshore/offshore designation**. This includes 100% of the "True" mothership allocation, 9-12-15% of the catcher processor allocation, and 40-52.5-65% of the Inshore allocation).

2 / Must be delivered to the Inshore sector (this is the only pollock guaranteed for the Inshore sector)

3 / This is the guaranteed harvest for catcher processors.

4 / The minimum allocation for catcher vessels less than 125' LOA would be when they receive 100% of the "true" mothership allocation, 40% of the Inshore allocation, and 9% of the catcher processor allocation. The minimum allocation for catcher vessels greater than or equal to 125' would be when the small catcher vessels are allocated 60% of the Inshore allocation. The minimum allocation for catcher processors would be when small catcher vessels are allocated 15% of the catcher processor allocation.

5 / The mid-range allocation for catcher vessels less than 125' LOA would be when they receive 100% of the "true" mothership allocation, 52.5% of the Inshore allocation, and 12% of the catcher processor allocation. The mid-range allocation for catcher vessels greater than or equal to 125' would be when the small catcher vessels are allocated 52.5% of the Inshore allocation. The mid-range allocation for catcher processors would be when small catcher vessels are allocated 12% of the catcher processor allocation.

6 / The maximum allocation for catcher vessels less than 125' LOA would be when they receive 100% of the "true" mothership allocation, 60% of the Inshore allocation, and 15% of the catcher processor allocation. The maximum allocation for catcher vessels greater than or equal to 125' would be when the small catcher vessels are allocated 40% of the Inshore allocation. The maximum allocation for catcher processors would be when small catcher vessels are allocated 9% of the catcher processor allocation.

Note: The "true" motherships are not guaranteed any pollock under Alternative 4, and catcher vessels not included in the set-aside are required to deliver their pollock inshore (they cannot deliver to offshore markets) .

Table 4.24 Alternative 4 allocations using the Alternative 2 TAC splits and the mid-range small catcher vessel allocations.

Harvesters	Guaranteed Deliveries To Inshore	Guaranteed Deliveries To "True" Motherships	Guaranteed Deliveries To Catcher Processors
Catcher Vessels			
<125' LOA	??	??	??
>125' LOA	16.6%	n/a	n/a
Catcher Processors	n/a	n/a	48.4%
Total	16.6% to 51.6%	0% to 35%	48.4% to 83.4%

Note: catcher vessels less than 125' LOA may deliver their allocation to any processing sector.

4.4 Alternative 5 (Harvester's Choice for Catcher Vessels 155' LOA and Shorter)

This alternative is basically the same as alternative 4 except that catcher vessels from 125' LOA through 155' LOA are also included in the small catcher vessel set-aside. Including these vessels would give them the freedom to deliver to the market of their choice. This would tend to reduce the guaranteed deliveries to the Inshore sector, while having no impact the guaranteed deliveries to the other processing sectors. It would also allow the 125' through 155' catcher vessels to compete directly with those less than 125' for the pollock in the set-aside.

The data provided in Tab 1 (Figure A.14) of Appendix 1 indicate that the catcher vessels less than 125' delivered about 65% of the Inshore quota in 1991, by 1996 their deliveries accounted for about 42% of the Inshore quota. All of that pollock lost by the catcher vessels less than 125' was taken by catcher vessels 125' through 155'. They increased their share from 15% in 1991 to 38% in 1996. The largest catcher vessels, those greater than 155' caught 19% of the Inshore quota in both 1991 and 1996.

One of the justifications for implementing allocations to small catcher vessels was to protect them from larger catcher vessels with greater harvesting capacity. Including the catcher vessels between 125' and 155' in the set-aside would not likely afford the protection that the boats less than 125' are seeking.

4.5 The Council's Preferred Alternative (Alternative 6)

After reviewing the alternatives analyzed in earlier drafts of this document, the Council selected their preferred alternative. This alternative would shift of 4% of the Bering Sea and Aleutian Islands (BS/AI) pollock TAC from the offshore sector to the inshore sector. The result would be that 39% of the BS/AI pollock would be allocated inshore and 61% offshore, after CDQs are deducted from the BS/AI TAC. No separate allocation to "true" motherships was included in this alternative. Instead, the "true" motherships will remain within the offshore sector.

In addition to the basic allocation split, the Council created a set-aside for BS/AI catcher vessels less than 125' LOA delivering to processors in the inshore sector. These small catcher vessels were allocated 2.5% of the combined BS/AI pollock TAC (adjusted for the 7.5% CDQ). Harvest of the set-aside will take place before the Bering Sea pollock B-season (there is no Aleutian Island B-season), starting on or about August 25. Any overages or underages resulting from the set-aside fishery will be subtracted from/added to the inshore BS open access B-season quota.

The rules and regulations pertaining to the CVOA will remain the same as under I/O2, except that during the B-season, harvesting operations allowed inside the CVOA will be restricted to catcher vessels delivering to the inshore sector. Under the current regulations, catcher vessels delivering to any sector are allowed to operate inside the CVOA during both the A and B-seasons. The new regulations will restrict catcher vessels delivering to offshore processors (including "true" motherships) from operating inside the CVOA during the pollock B-season. Catcher processors will continue to be restricted from harvesting pollock inside the CVOA during the B-season.

A three year sunset date is also included in the Council's preferred alternative. Therefore, I/O3 will remain in effect only for the 1999, 2000, and 2001 pollock fishing seasons, if the Secretary implements this program.

Projected Processing by Sector

Our estimates indicate that the Council's preferred allocation alternative would result in the Inshore sector producing over 71,595 mt of surimi, or 7,343 mt more than they would have produced under status quo. Offshore processors would produce 4,595 mt less surimi. In total, 143,459 mt of pollock surimi would be made by the Inshore and Offshore sectors under this alternative. The status quo estimate was 140,741 mt of surimi production. So, about 2,718 mt more surimi are projected to be produced under the Council's preferred alternative.

Total deep skin fillet production would drop from 31,351 mt under the status quo to 30,549 mt under the Council's preferred alternative. Decreasing the production by 802 mt represents about a 3% drop in the total BS/AI pollock deep skin fillet production. The production of minced product and roe are also expected to decline under this alternative. However, the production of other fillets, fish meal, and fish oil are expected to increase.

Table 4.25. Estimated product mix under allocation Alternative 6.

Alternative 5 (39% Inshore and 61% Offshore)								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	6,011	3,635	14,493	-	-	1,441
	Catcher Vessels	-	1,163	854	2,096	-	-	152
Non-surimi C/P Total		-	7,174	4,489	16,589	-	-	1,594
Surimi - C/P	Self Caught	46,460	13	1,011	5,882	10,014	315	4,721
	Catcher Vessels	6,575	-	24	610	1,256	-	410
Surimi - C/P Total		53,036	13	1,035	6,492	11,271	315	5,131
Catcher Processor Total[1]		**53,036**	**7,187**	**5,524**	**23,081**	**11,271**	**315**	**6,725**
"True" Mothership Total[1]		**18,828**	**-**	**-**	**-**	**4,294**	**302**	**920**
Offshore Total[1]		**71,864**	**7,187**	**5,524**	**23,081**	**15,565**	**618**	**7,645**
Inshore Total[1]		**71,595**	**2,636**	**9,261**	**7,468**	**27,960**	**8,543**	**4,432**
Grand Total		**143,459**	**9,822**	**14,785**	**30,549**	**43,525**	**9,161**	**12,077**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
True M'ship	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.
[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production
[3] CDQ production is assumed to remain constant under any of the allocation alternatives
Note: This estimate assumes a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock

The total gross revenue earned by all catcher vessels is projected to be $97.7 million. Inshore delivery vessels are expected to increase their gross revenues by about $7.6 million, when compared to the status quo allocation. Catcher vessels delivering to processors in the offshore sector are projected to realize a $2.5 million decrease in gross revenue. Overall, catcher vessel revenues increase by $5.1 million. The increase appears rather large because a majority of the pollock harvested in the offshore sector is taken by catcher processors, and their harvests are not included in the catcher vessel gross revenue calculation. Only vessels that have a market transaction at the ex-vessel level are considered.

Given the projected increase in total catcher vessel gross revenue, catcher vessels as a whole will be better off under the Council's preferred alternative, when compared to the status quo. However, some catcher vessels in the offshore sector may be worse off. If catcher vessels that typically participate in the offshore sector are unable to develop markets to harvest part of the increased inshore quota, because of hold capacity, vessel configuration, or other constraints, they will likely realize a decrease in revenue.

Catcher vessels that currently have markets in both sectors, or offshore catcher vessels that can develop inshore markets may be able to recover some of the lost offshore revenues. Catcher vessels <125' LOA that have traditionally fished in the offshore sector may find a new market during the inshore set-aside fishery that takes place prior to the start of the B-season. Recall that about 58% of the inshore catch in 1996 was delivered by catcher vessels ≥125' LOA. To replace this harvesting capacity, inshore processors will likely contract with vessels that traditionally fish pollock in the GOA or offshore catcher vessels from the BS/AI. The offshore catcher vessels that gain markets in the inshore set-aside fishery may be in the best position to recover some of their lost revenues.

Table 4.26 **Alternative 6**: Impacts on Catcher Vessel's Gross Revenue

	Inshore	Offshore	Total
Allocation Percentages	**39%**	**61%**	**100%**
Sector's Allocation (mt)	396,825	620,675	1,017,500
Change from Status Quo [1] (mt)	40,700	(40,700)	-
Sector's Allocation Change (%)	11 %	(6 %)	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	n/a
Est. Catcher Vessel Revenue (Million $)	$ 74.4	$ 23.4	$ 97.7
Est. Change in Exvessel Revenue (Million $)	$ 7.6	($ 2.5)	$ 5.1

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "True" Mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

First wholesale gross revenue estimates are about $2.4 million more under this alternative, than under the status quo allocation. Overall, the change in gross revenue amounts to less than a 0.5% increase. Making definitive statements about the appropriateness of selecting this alternative, on economic grounds, is not possible. The relatively small change in total first wholesale gross revenue, coupled with the concerns expressed over utilization rate and price data, which were important factors in generating these estimates of gross revenue, severely limit the analysts ability to make such statements.

Table 4.27 1st Wholesale Gross Revenue (Million $) FOB Alaska: Alternative 6 (39% Inshore and 61% Offshore)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 5.6	$ 7.7	$ 39.6	$ 0.0	$ 19.2	$72.1
	Catcher Vessels	$ 0.0	$ 1.1	$ 1.8	$ 5.7	$ 0.0	$ 2.0	$ 10.6
Non-surimi C/P Total		$ 0.0	$ 6.7	$ 9.5	$ 45.3	$ 0.0	$ 21.2	$82.7
Surimi - C/P	Self Caught	$ 88.6	$ 0.0	$ 2.1	$ 16.1	$ 6.4	$ 62.8	$ 176.0
	Catcher Vessels	$ 12.5	$ 0.0	$ 0.1	$ 1.7	$ 0.8	$ 5.4	$ 20.5
Surimi - C/P Total		$ 101.1	$ 0.0	$ 2.2	$ 17.7	$ 7.2	$ 68.2	$ 196.5
Catcher Processor Total[1]		**$ 101.1**	**$ 6.7**	**$ 11.7**	**$ 63.1**	**$ 7.2**	**$ 89.4**	**$ 279.2**
"True" Mothership Total[1]		**$ 35.9**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 2.7**	**$ 12.2**	**$ 50.8**
Offshore Total[1]		**$ 137.0**	**$ 6.7**	**$ 11.7**	**$ 63.1**	**$ 10.0**	**$ 101.6**	**$ 330.0**
Inshore Total[1]		**$ 129.4**	**$ 3.0**	**$ 19.6**	**$ 20.4**	**$ 18.5**	**$ 44.2**	**$ 235.1**
Grand Total		**$ 266.4**	**$ 9.7**	**$ 31.3**	**$ 83.5**	**$ 28.4**	**$ 145.8**	**$ 565.1**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

Halibut bycatch mortality is projected to decrease by about 11 mt under the Council's preferred alternative, when compared to the status quo. This estimate is based on the halibut mortality rate of each sector during the 1996 pollock target fishery and their projected catch in 1999. However, an FMP amendment was approved at the June 1998 Council meeting that would ban bottom trawling for pollock. It is assumed that this amendment will be in place during the 1999 fishing season. Eliminating bottom trawling for pollock will likely reduce the amount of halibut bycatch mortality and crab bycatch by more than is reported in Table 4.28 (NPFMC, 1998[17]).

[17] NPFMC. 1998. Environmental Assessment/ Regulatory Impact Review /Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) for the Proposed Reauthorization of Amendments 57 to the Bering Sea/Aleutian Islands Fishery Management Plans (Pollock Bottom Trawl Prohibition). NPFMC, 605 W. 4th Avenue, Suite 306, Anchorage, AK.

Bairdi crab bycatch decreases by about 3,800 animals when the Council's preferred alternative is compared to the status quo estimate. This is approximately a 4% decrease in Bairdi crab bycatch.

Chinook salmon bycatch is projected to increase by about 1,300 animals under the Council's preferred alternative. This is a result of the catcher vessels delivering to inshore processors having higher chinook bycatch rates than vessels in the offshore sector. However, the amount of bycatch is still low. Only one chinook salmon is taken in the inshore sector for every 15.3 mt of pollock harvested.

Table 4.28 Estimated PSC Bycatch by Processing Sector: Alternative 6

Alternative 6	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi Tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	111.1	43.8	4.3	0.0	17.8	18.2	5.1	3.7
C/Ps (surimi)	113.8	631.3	0.8	0.0	54.2	21.4	12.5	30.9
"True" Motherships	17.4	26.0	0.0	0.0	0.1	0.2	7.3	15.7
Inshore	48.6	483.2	0.1	0.1	7.9	19.8	28.0	21.0
Total	290.9	1,184.3	5.2	0.1	80.0	59.6	52.9	71.3

4.6 Summary and Conclusions

The Council has considered changing the pollock TAC allocation from the current split of 35% to the Inshore sector and 65% to the Offshore sector. In addition to letting the I/O allocation expire, the new alternatives would allocate between 25-45% of the TAC to the Inshore sector, 5-15% to "true" motherships, and 40-70% to offshore catcher processors. Three sub-options are also being considered within each of these general allocations. The first sub-option would reserve 40-65% of the Inshore quota for catcher vessels less than 125' LOA. The second sub-option would reserve nine to 15% of the offshore quota for catcher vessels delivering to catcher processors. Finally, the third sub-option defines the length of the I/O3 allocation which could be one year, three years, or until replaced by the Comprehensive Rationalization Program. There is also the decision of whether or not to separate the "true" mothership sector from the catcher processor sector. Currently both sectors are combined into the offshore component of the pollock fishery and fish from the same allocation. If the "true" motherships were separated from the catcher processors, each sector would be allocated their own quota.

Selecting the no action alternative would allow the I/O2 program to expire on December 31, 1998. Inshore/offshore was implemented originally as a temporary measure to address, among other concerns, the risk of preemption within the pollock fisheries. Implementation of the Inshore/offshore program has imposed a degree of stability between industry sectors. It is probable that virtually all of the destabilizing and preemptive behavior that existed prior to the first Inshore/offshore would resurface if the current program was not in place. Therefore, the no-action alternative appears to be inferior to the other alternatives under consideration by the Council.

Alternatives 3(A) through 3(D) change the current allocation percentages. Because each industry sector produces a different product mix, changing the allocation between sectors will alter the amounts of pollock products in the market. Within each sector, the product mix is assumed to remain at the 1996 proportions. The exvessel and first wholesale prices are also assumed to remain fixed at the 1996 levels. Therefore, the calculations to estimate gross revenue and total production within a sector are linear and the changes depend solely on the tons of raw pollock they process. Table 4.23 reports the relationship between a 50,875 mt change in each sector's allocation (5% of the 1,017,500 mt CDQ-adjusted TAC) and the change in total gross revenue (both exvessel and first wholesale) and the products produced within the sector. All of the information reported in Table 4.23 represents the change from the status quo allocation. Because the calculations are linear, the effects of other allocation amounts may be calculated easily using the information in the table. For example, an allocation that would grant a sector 7.5% more of the TAC would increase their revenues and products by 1.5 times those listed in Table 4.29.

Table 4.29 Changes resulting from a 5% shift in the BS/AI Pollock TAC within each industry sector

	Inshore	"True" Mothership	Catcher Processor
% Change Within the Sector[1]	14.3 %	50.0 %	9.1 %
Raw Fish (mt)	50,875	50,875	50,875
Catcher Vessel Gr. Rev. (exvessel, million $)[2]	$ 9.5	$ 8.3	$ 0.8
Gross Revenue (1st Wholesale, million $)	$ 30.1	$ 26.8	$ 27.1
Surimi (mt)	9,179	9,910	5,149
Minced (mt)	338	-	698
Fillet/Block and IQF (mt)	1,187	-	536
Deep Skin Fillet (mt)	957	-	2,241
Meal (mt)	3,585	2,260	1,094
Oil (mt)	1,095	159	31
Roe (mt)	568	484	653

1/ The percentage change within a sector is calculated as (((status quo tons + 50,875)/(status quo tons))- 1)*100. So, it represents the percentage increase that sector will receive.

2/ Only the catch delivered by catcher vessels is included for catcher processors.

Note: A 5% TAC decrease to a sector will result in numbers of equal magnitude, but with a negative sign

The reader should use caution when comparing the information in Table 4.23 across industry sectors. A complete discussion of the issues associated with comparing these data is provided in Chapters 3 and 4.

The Council considered reserving between 40% and 65% of the Inshore allocation for catcher vessels less than 125' LOA. The upper end of this range represents the pollock catch delivered inshore by catcher vessels less than 125' LOA in 1991. The lower end of the range is about equal to that group's harvest during 1996. Therefore, the Council could guarantee these smaller catcher vessels the percent of harvest they currently (1996) take or restore them to the levels they harvested in earlier years.

Catcher vessels less than 125' LOA are in general less mobile, carry fewer fish, and are more operationally constrained by weather and sea conditions than larger catcher vessels. These constraints may result in the inshore harvest being slowed somewhat, if the small catcher vessels are allocated more of the inshore pollock than they currently harvest.

NMFS has indicated that an allocation to catcher vessels less than 125' LOA could not be implemented by January 1999. To monitor this alternative the mechanisms currently used to estimate inshore catch would need to be changed. Presently NMFS estimates total catch at the processor level. To monitor catch at the harvest vessel level a new reporting system would need to be implemented. Changing the record keeping and reporting requirement must be reviewed and approved by OMB. Currently there is no estimate of how long this process would take.

The Council also considered a nine to 15% set aside of the offshore allocation to catcher vessels delivering to catcher processors. Between 1991 and 1997 catcher vessels have harvested between 2 and 10% of the pollock processed by offshore catcher processors annually. During 1996 catcher vessels delivered 9.8%, the most of any year in the time series. The allocation being considered would guarantee catcher vessels a level greater or about equal to their best year. This allocation could be monitored and in place January 1999 if no catcher vessel size requirements were included.

Three sunset dates were considered by the Council. A sunset date one year after I/O3 is implemented. This option will require the Council to begin analyzing the I/O4 immediately upon passing I/O3. An initial analysis would need to be prepared by April 1999 with a final decision at the June 1999 Council meeting. Given the status of the data collection programs it is unlikely that would allow enough time to conduct a formal cost/benefit analysis. A short allocation would also provide a less stable environment for vessel and plant owners to make business decisions.

A three-year sunset would potentially resolve many of the concerns expressed under the one-year option. Three years may provide adequate time to collect the cost and earnings data to conduct a formal cost/benefit analysis. Three years would also provide the industry with a more stable decision environment. Implicit within the one and three year sunset sub-options is the option to leave I/O3 in place until replaced by CRP, though the exact nature of CRP has not been specifically defined.

The alternatives that would set-aside a portion of the TAC for small catcher vessels to deliver to the processors of their choice, would give the small boats greater flexibility. However, the processors would realize reductions in the amount of pollock their sector is guaranteed. This reduction could be made up though deliveries from the small catcher vessel allocation, if a processing sector is successful in making purchases from the set-aside.

If the purpose of the set-aside is to protect catcher vessels less than 125' LOA, then only those vessels should be allowed to harvest the set-aside. The data presented in this document shows that all of the inshore share lost by catcher vessels less than 125' LOA, between 1991 and 1996, was taken by catcher vessels in the 125' through 155' LOA class. So, including those larger vessels in the set-aside would not afford the smaller catcher vessel class any protection from having their share eroded.

Preferred Alternative

After considering all of the above alternatives, the Council opted to change the basic percentage allocation to 39% inshore and 61% offshore, with no separate "true" mothership allocation. Part of the justification provided for not including a separate allocation to the "true" motherships was concern that a three way split could potentially allow the catcher processor sector to form a cooperative, much like they did in the whiting fishery off the Pacific coast. At least one Council member indicated that he felt the Pacific Council was unaware that the industry intended to form a cooperative in the whiting fishery when they passed the three sector allocation. Given his prior knowledge of the industries intent to form a cooperative, he could not support a three sector split.

Some members of the Council were uncomfortable with the short time frame they were given to consider the impacts of a cooperative. One member of the Council indicated that he had first heard of the cooperative concept earlier in the meeting, and that was not adequate time to develop an full understanding of the issues. Information available to the Council regarding the impacts of a cooperative, during the meeting, was limited to industry comments and personal studies they may have undertaken on the whiting industry.

The cooperative was believed to be much like an IFQ program, which some members of the Council were not willing to sanction. Given the current prohibition on IFQs in the Magnuson-Stevens Act, members felt that endorsing a cooperative would not reflect the current spirit, if not the letter, of the Act. Because of those concerns, the Council was unwilling to support a three sector allocation split.

The Council's preferred alternative moved 4% of the BS/AI TAC (after CDQs are deducted) from the offshore to the inshore sector. The justification used to move additional quota inshore was based on previous Council actions under the original inshore/offshore amendment and information provided to the Council in the I/O3 analysis. When the Council passed I/O1 it contained a stepwise increase of the inshore allocation, beginning at 35% in 1992 and increasing to 45%. The Secretary of Commerce disapproved the step increases, partly based on an economic analysis conducted within NMFS. Because the Council had originally intended to increase the inshore quota under I/O1, they felt that the increased inshore allocation was justified under I/O3, both in terms of their previous actions and the information contained with in the current analysis.

The I/O3 analysis indicated that the inshore sector produced more product from a ton of raw pollock than the offshore sector. Members of the Council felt that reducing waste was an important factor in their decision. They also cited slightly higher gross revenues reported in the document for the inshore sector, higher percentage of Alaskan employees, more taxes paid to the local and state governments, and less tax leakage due to product being shipped directly overseas or out of state, as important factors in their decision.

Protecting the inshore catcher vessels less than 125' LOA was a also raised as an area of concern. The analysis indicated that from 1991 to 1996 these catcher vessels have had their share of the inshore quota reduced from 65% to 42%. Basically all of the quota lost by the small catcher vessels, was taken by catcher vessels in the 125' to 155' LOA range. Vessels were added to the 125' - 155' LOA fleet during the 1991-1996 time period. At least one of the vessels was outfitted with a large holding tank and could transport more fish than other vessels in this class. This new vessel, and other vessels that were added, played an important role in increasing this sector's harvesting capacity. The largest catcher vessel class consisted of vessels > 155' LOA. The relative amount of catch taken by inshore catcher vessels in this class was fairly stable over the 1991-1996 time period (about 19%).

To provide some protection for the less than 125' LOA inshore catcher vessels, a 2.5% set-aside of the BS/AI TAC (after CDQs are deducted) was established. The set-aside will be harvested during a period starting on or about August 25, prior to the B-season.

Setting aside 2.5% of the BS/AI TAC, after CDQ deductions, is approximately equal to reserving 7% of the inshore quota. Therefore, if the small catcher vessels are able to maintain their current share of the inshore open access fishery, they should harvest between 45% and 50% of the inshore quota during 1999.

Catcher vessels delivering to the offshore sector will be restricted from fishing inside the CVOA during the B-season, if the Council's preferred alternative is approved by the Secretary. Previous inshore/offshore allocations have allowed catcher vessels delivering to any sector to fish inside the CVOA whenever the BS pollock fishery is open. The new definition requires all offshore harvesters to fish outside the CVOA during the B-season. This includes both catcher processors, which have traditionally been excluded during the B-season, and now the catcher vessels delivering to the offshore fleet.

The duration of the inshore/offshore allocation is for three years (1999, 2000, and 2001). After that time the program will sunset and revert to an open access fishery with no inshore/offshore allocation, unless the Council takes action to implement a new program. A three year sunset was also included in each of the previous inshore/offshore plan amendments.

5.0 CATCHER VESSEL OPERATIONAL AREA

This chapter describes the location and composition of pollock harvests in relation to the Catcher Vessel Operational Area (CVOA), and how they may change under the alternatives and options being considered in I/O3. Projected impacts are considered on the catcher/processor fleet, motherships, and catcher vessels. Though pollock fisheries are described in and around special Steller sea lion areas, the impacts on Steller sea lions are described in the environmental assessment in Chapter 6.

5.1. Pollock Catch Distribution and Composition for 1991-1996

This section provides information on pollock harvests and fishing effort inside and outside the CVOA during the A and B seasons of 1991, 1994, and 1996. The composition of the catch is described in terms of pollock length and mean individual weight. Harvest rates are compared for the three above years with the 1997 B-season fishery.

5.1.1 Data Sources and Methods

Observer data were used to summarize pollock fishery catch distribution, CPUE, and pollock size distribution by fishery sector inside and outside the CVOA in the A and B seasons of 1991, 1994, and 1996. Only data collected on the Eastern Bering Sea (EBS) shelf were considered; data from the Aleutian Islands (areas 540-543) and the Bogoslof districts (area 518) were excluded. A target species was assigned to each haul that was sampled by observers for species composition based on the groundfish species or species group that comprised the largest fraction of all of the groundfish caught in the haul. Only data from pollock target fisheries were included in this analysis. The fishery sectors considered were catcher processors (observer mode 1), catcher boats for shoreside processing plants (observer mode 3), and motherships (observer mode 2). A haul assigned a mode of 1 was done by a catcher-processor that both caught and processed the catch from that haul; this group consists solely of offshore vessels. The catch from a haul assigned a mode of 3 was delivered to a shoreside plant for processing, and as such, can be assigned entirely to the inshore group. The mothership sector in the observer summaries provided is a mixture of both offshore and inshore data. All data contained in the following summaries are representative of each sector's performance based on observer sampling.

Observer data were summarized for each season, A and B, based on the opening and closing dates of the entire pollock fishery in 1991 and each sector in 1994 and 1996 in Table 5.1:

Table 5.1 Opening and Closing Dates for Pollock Fisheries in 1991, 1994 and 1996

	A-Season		B-Season	
Year	***Offshore***	***Inshore***	***Offshore***	***Inshore***
1991	January 1 - February 22		June 1 - September 4	
1994	Jan 20 - Feb 18	Jan 20 - Mar 2	Aug 15 - Sep 24	Aug 15 - Oct 4
1996	Jan 26 - Feb 26	Jan 20 - Mar 2	Sep 1 - Oct 17	Sep 1 - Oct 17

Source: NMFS Alaska Region Bulletin Board (NMFS F/AKR home page on the Internet).

"True" mothership opening and closing dates were set equivalent to the inshore sector's dates. Catch-per-unit-effort was defined as the total pollock catch (metric tons=mt) divided by the total hours trawled summed over all sampled hauls in each sector-season cell. Similarly, mean individual pollock weight (in kg) was calculated as the total pollock catch weight divided by the total estimated number of pollock caught in all sampled hauls in each sector-season cell. Pelagic and bottom trawls were considered separately and only pelagic trawl data are reported for CPUE, mean weight, and length-frequency. However, data on catch distribution (charts and percent inside and outside of the CVOA) include both bottom and pelagic trawl-caught pollock. Charts of pollock fishery trawl locations include the Bogoslof area for 1991, but these data were not included in CPUE or mean pollock weight calculations nor pollock length-frequency summaries.

Pollock population-at-length estimates inside and outside of the CVOA were available from bottom trawl and hydroacoustic-midwater trawl surveys conducted in 1991, 1994, and 1996. These surveys were conducted in summer. Population-at-length estimates by region in the eastern Bering Sea are not available for any other season.

Important Note: The CVOA used in these analyses is 163° W to 168°W south of 56°N and north of the Alaskan peninsula and Aleutian Islands, as originally defined in the 1992 BS/AI FMP Amendment 18. CVOA was reduced in 1995 by moving the western boundary eastward by ½° longitude to 167°30'W. Consequently, the size of the CVOA used to characterize its impact on the 1996 fishery is slightly larger than that actually enforced that year. As shown in Figures 5.2 and 5.6 the deleted area was not used extensively during the A- or B-seasons of 1996 by any fishery sector.

5.1.2 A-Season Fisheries

In 1991 and 1994, 96-100% of the observed EBS shelf A-season pollock was caught within the CVOA by each sector (Figures 5.1 and 5.2). The CVOA percentage dropped to 46-75% in 1996, as all sectors utilized areas north and west of the CVOA along the 100 m contour. Ice could have constrained the fishery more in 1991 and 1994 than in 1996, since the extent of the ice edge was over 2° latitude (120 nautical miles) further south in mid-March of 1991 and 1994 than in 1996.

Latitude of Southern Extent of Ice Edge Along Meridian:

Year	*165°W*	*170°W*
1991	56.5°N	57.0°N
1994	56.5°N	57.0°N
1996	58.8°N	59.5°N

Source: National Ice Center

The last year that the Bogoslof district, to the southwest, was open was in 1991, and approximately 50% of the A-season pollock catch came from that area, primarily by offshore catcher-processors (Figure 5.2).

In 1991, the average pollock CPUE of catcher-processors during the A-season was 72% greater inside the CVOA than outside the CVOA on the EBS shelf (Figure 5.3). In the A-season of 1994, catcher processor CPUE was 107% greater inside the CVOA than outside, while that of catcher boats was 67% greater. In 1996, the spatial CPUE relationship reversed: the average CPUEs of catcher processors and catcher boats were 48% and 122% greater outside the CVOA than inside, respectively. These data should not be used to make firm conclusions regarding spatial differences in CPUE because of the small size of the sample available from outside the CVOA in 1991 and 1994 and differences in the southern extent of ice.

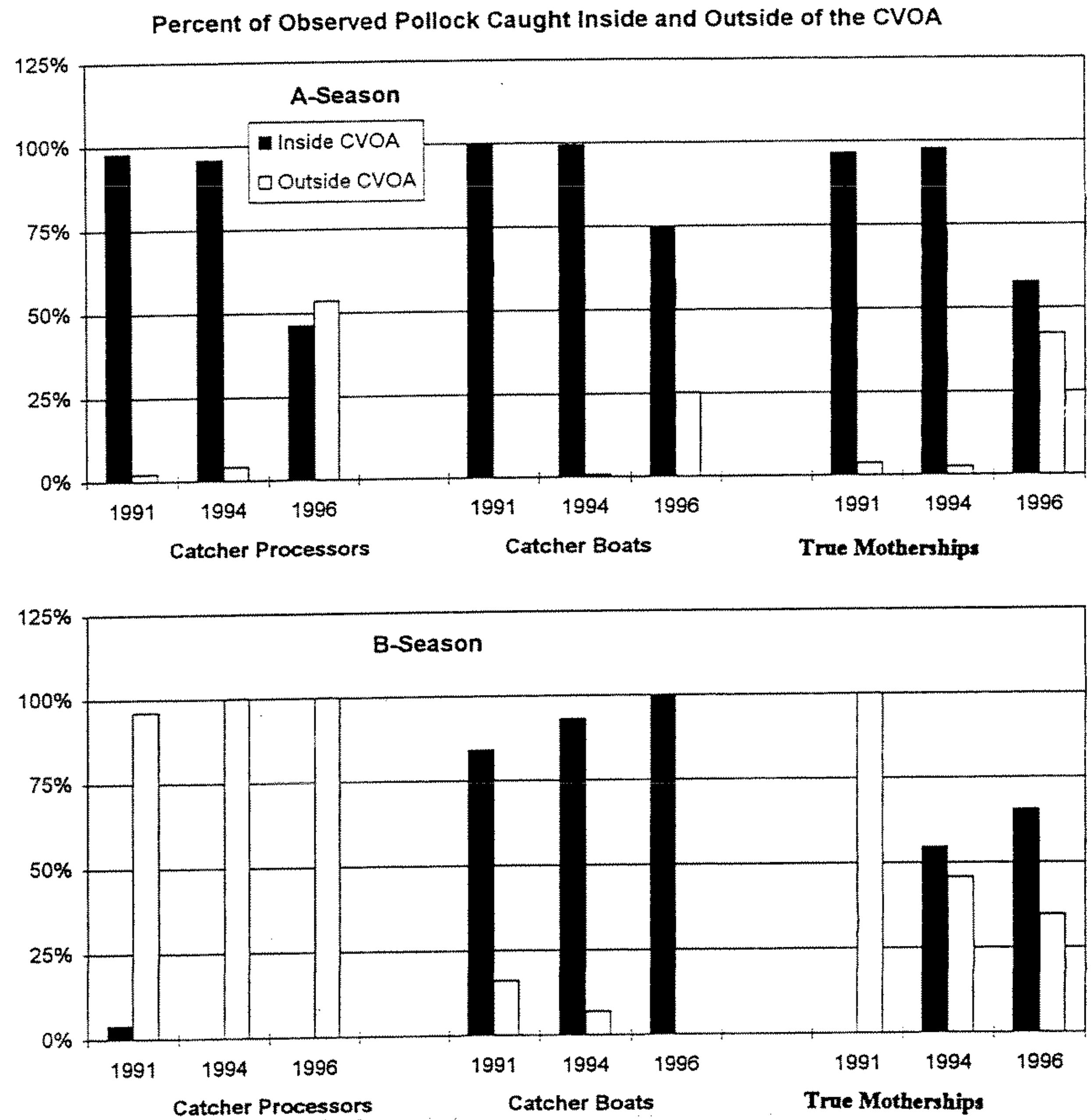

Figure 5.1 Observed pollock catch distribution by season, sector and area by pollock fisheries on the eastern Bering Sea shelf in 1991, 1994, and 1996. Aleutian Islands and Bogoslof data were excluded.

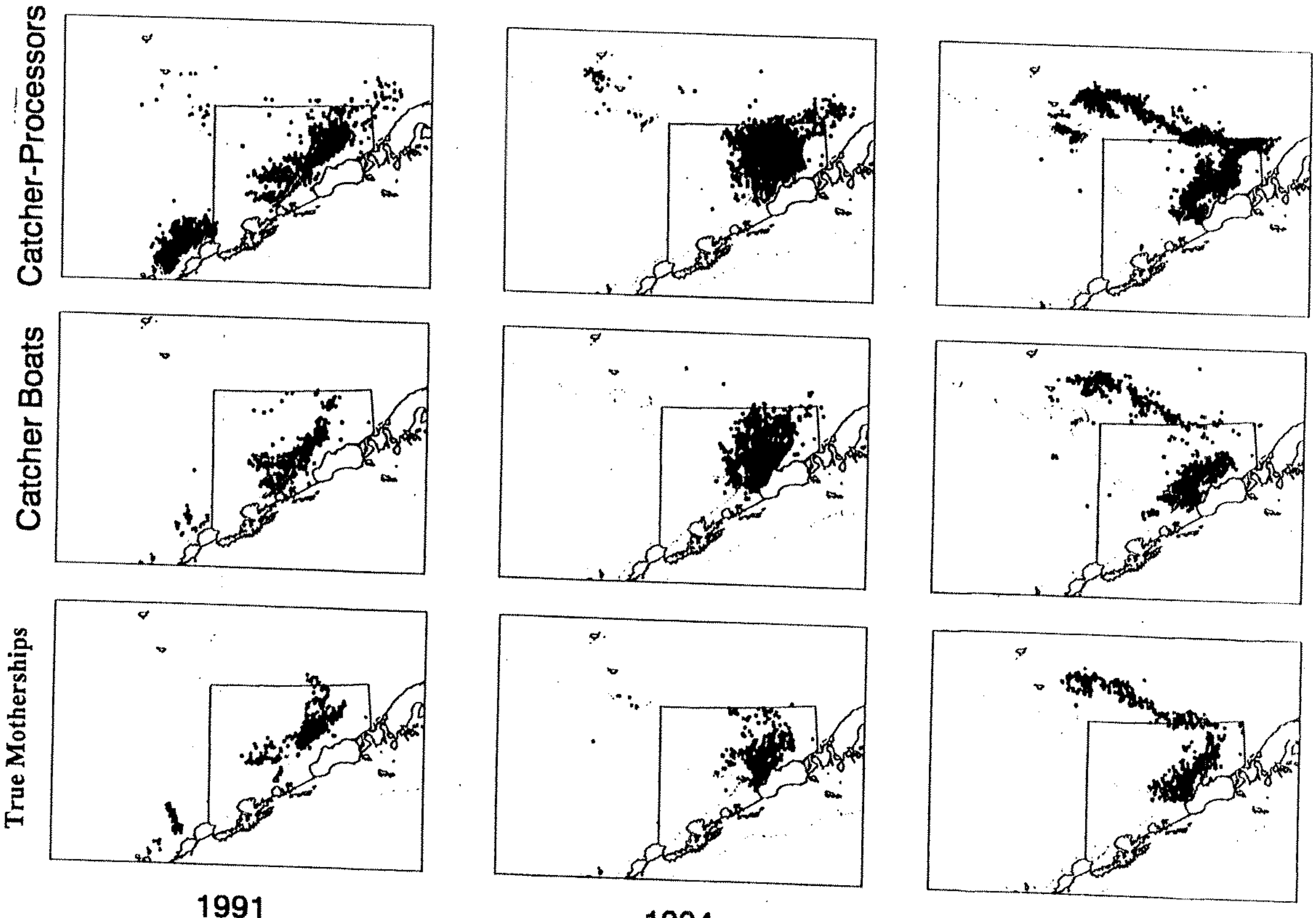

Figure 5.2 Observer pollock fishery trawl locations in the A-seasons of 1991, 1994, and 1996 by catcher processor (top), catcher boats (middle), and true motherships (bottom) inside (red) and outside(blue) of the CVOA. Dept contour=200 m.

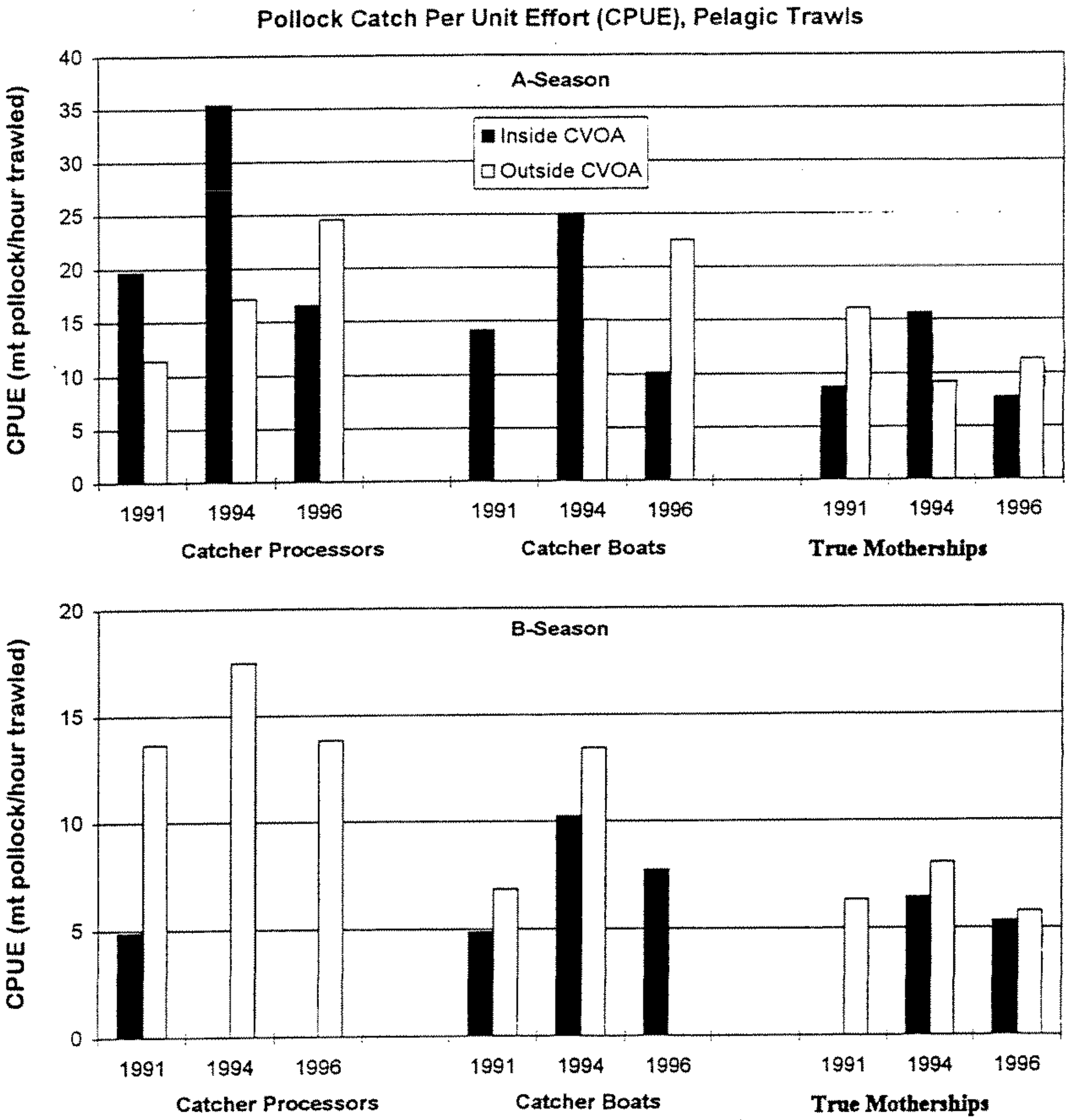

Figure 5.3 Pollock CPUE by season, sector and area by pollock fisheries on the eastern Bering Sea shelf in 1991, 1994, and 1996. Aleutian Islands and Bogoslof data were excluded.

Pollock caught by the fishery were generally larger and more uniform in size within the CVOA than outside on the EBS shelf during the A-seasons of 1991, 1994 and 1996 (Figures 5.4 and 5.5). This is most clearly evident in 1996 when the modal length and mean individual weight of pollock caught by each sector outside of the CVOA was 4-6 cm smaller and 0.2 kg lighter than inside of the CVOA. In 1991 and 1994, modal lengths were similar, but there were a greater percentage of pollock < 40 cm in length outside of the CVOA than inside (see table 5.2 below), and mean individual weight tended to be lighter (Figure 5.5):

Table 5.2 Percent of Pollock < 40 cm in Length in A-Season Fishery Samples

	Catcher Processors		**Catcher Boats**		**"True" Motherships**	
Year	***Outside CVOA***	***Inside CVOA***	***Outside CVOA***	***Inside CVOA***	***Outside CVOA***	***Inside CVOA***
1991	21%	5%		5%	2%	5%
1994	9%	4%	3%	3%	7%	2%
1996	6%	1%	11%	1%	5%	1%

5.1.3 B-Season Fisheries

The CVOA became operational in the B-season of 1992 and has been an exclusive inshore operational area each B-season since. In 1991, the last year that catcher-processor effort distribution was unconstrained by the CVOA, the offshore sector caught approximately 96% of its B-season pollock outside of the CVOA across a broad section of the outer shelf from the Pribilof Islands to the edge of the EEZ (Figures 5.1 and 5.6). In 1994, most of the catcher processor effort was concentrated north of the CVOA in the middle shelf and to a lesser extent west and north of the Pribilof Islands. However, in 1996, catcher processors worked exclusively north of the CVOA and west of St. Matthew Island, and not in the area west of the Pribilof Islands. Catcher boats caught about 84% of their B-season pollock in the CVOA in 1991, and this percentage increased to 100% in 1996 as the distribution of their B-season effort contracted (Figures 5.1 and 5.6).

Pollock CPUE was greater outside than inside of the CVOA in each of the paired comparisons available for the three years and fishery sectors (Figure 5.3). Pollock size, however, tended to be larger and more uniform inside than outside of the CVOA (Figures 5.5 and 5.7). Furthermore, pollock < 40 cm in length were more commonly encountered outside than inside the CVOA. This occurred even when there was a large, widely distributed incoming yearclass, which occurred in 1991 with the incoming 1989 yearclass as evidenced by the mode in the high 20 cms in all length-frequency samples (Figure 5.7) and the high percentages of pollock < 40 cm, particularly inside of the CVOA:

Table 5.3 Percent of Pollock < 40 cm in Length in B-Season Fishery Samples

	Catcher Processors		**Catcher Boats**		**"True" Motherships**	
Year	***Outside CVOA***	***Inside CVOA***	***Outside CVOA***	***Inside CVOA***	***Outside CVOA***	***Inside CVOA***
1991	20%	10%	10%	12%	18%	
1994	13%		5%	1%	21%	1%
1996	19%			1%	15%	0%

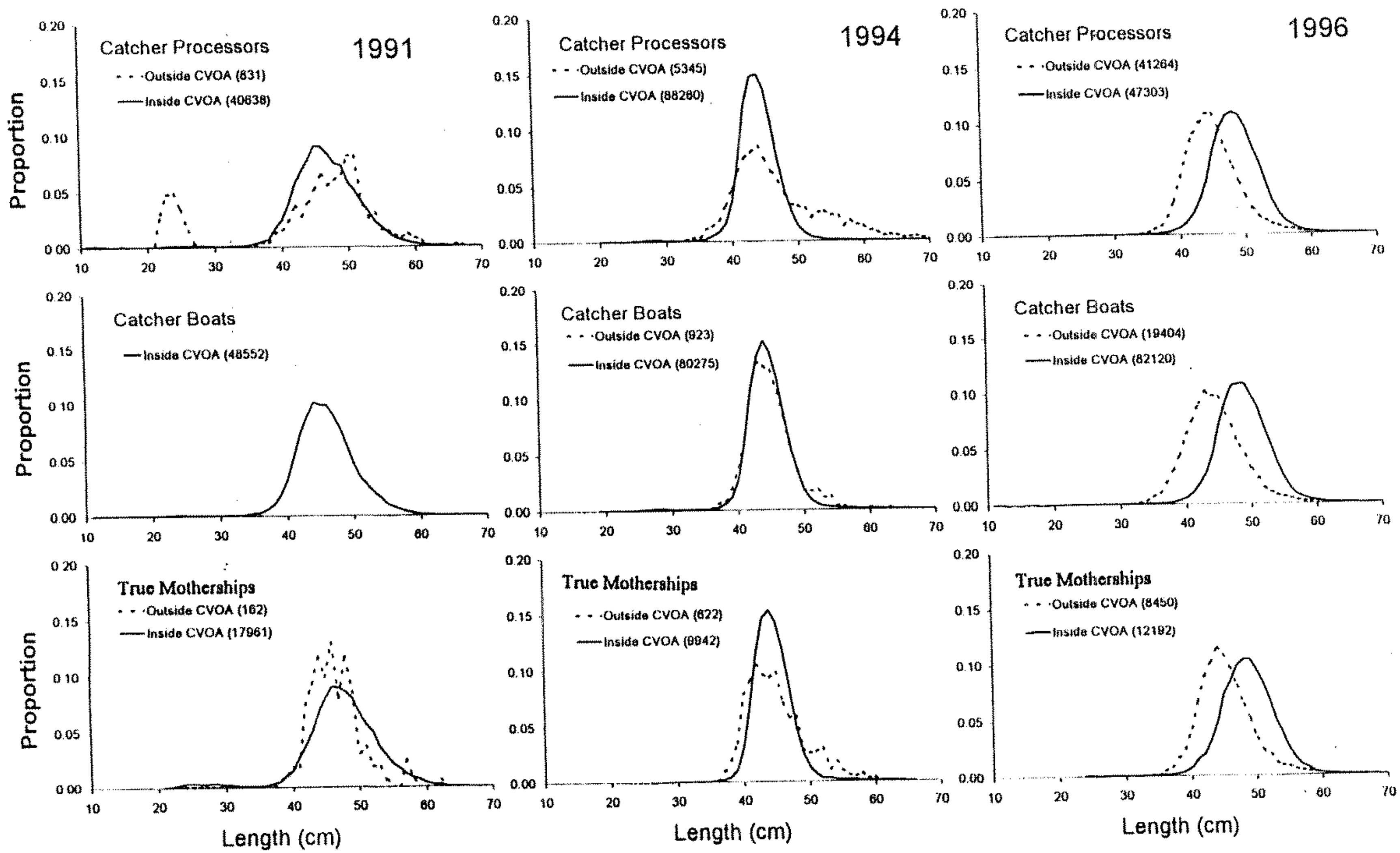

Figure 5.4 Pollock length-frequency from samples collected aboard offshore catch processors (top), onshore catcher boats (middle), and mixed true motherships (bottom) in the A-season of 1991 (left), 1994 (middle), and 1996 (right) inside and outside of the CVOA (number of pollock measured in legend).

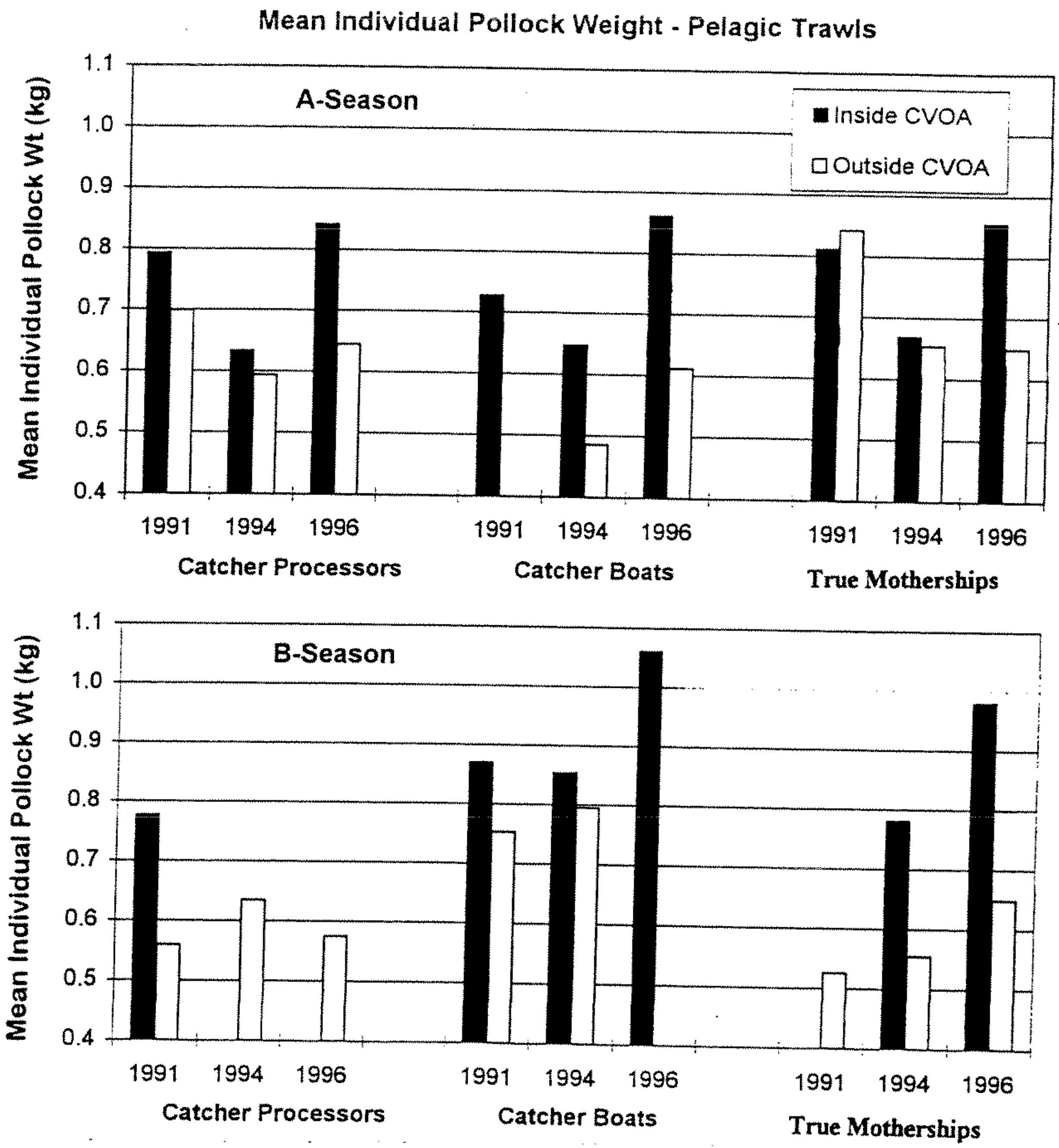

Figure 5.5 Mean individual pollock weight by season, sector and area by pollock fisheries on the eastern Bering Sea shelf in 1991, 1994, and 1996. Aleutian Islands and Bogoslof data were excluded.

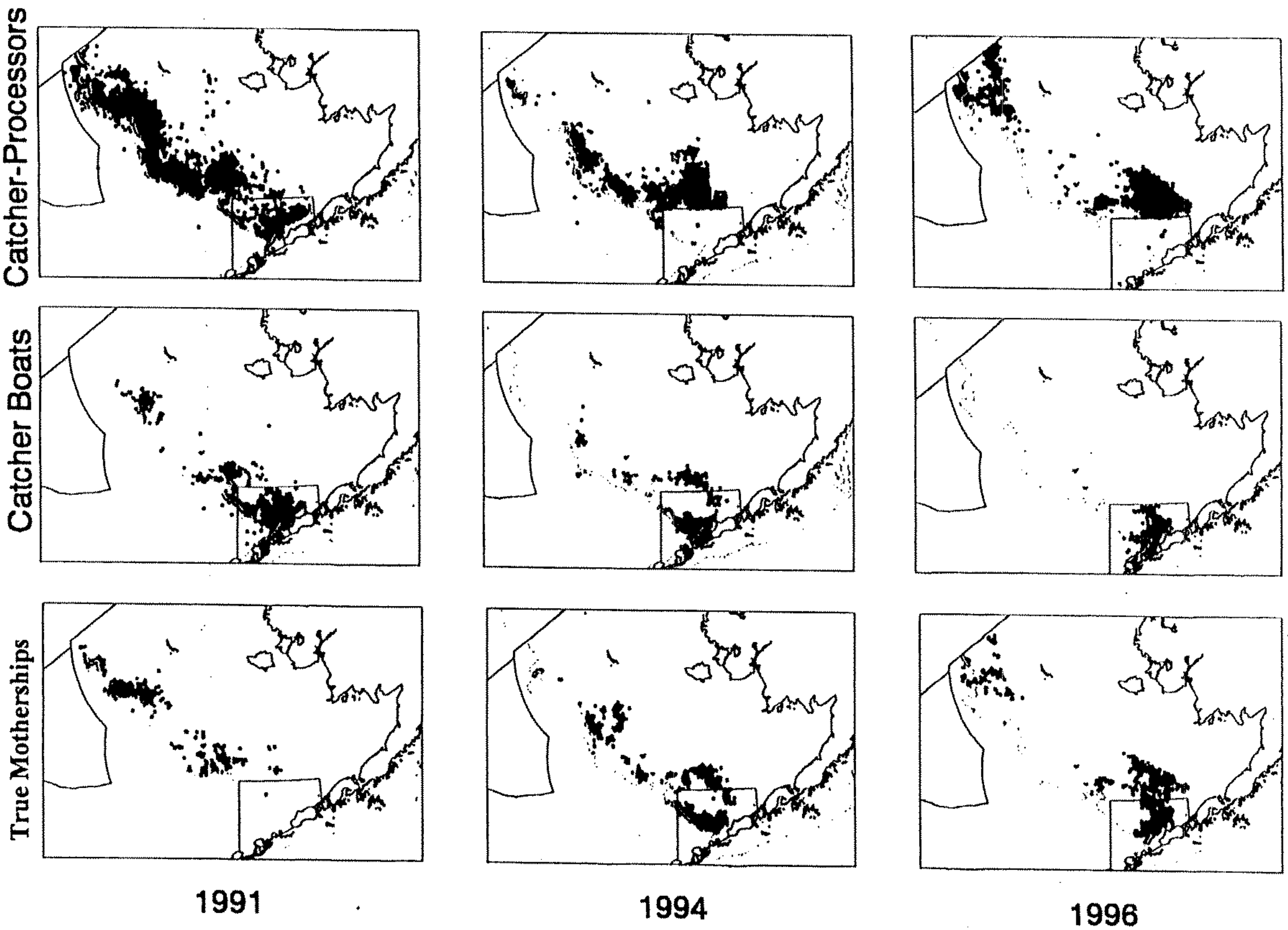

Figure 5.6 Observer pollock fishery trawl locations in the B-seasons of 1991, 1994, and 1996 by catcher processor (top), catcher boats (middle), and true motherships (bottom) inside (red) and outside(blue) of the CVOA. Dept contour=200 m.

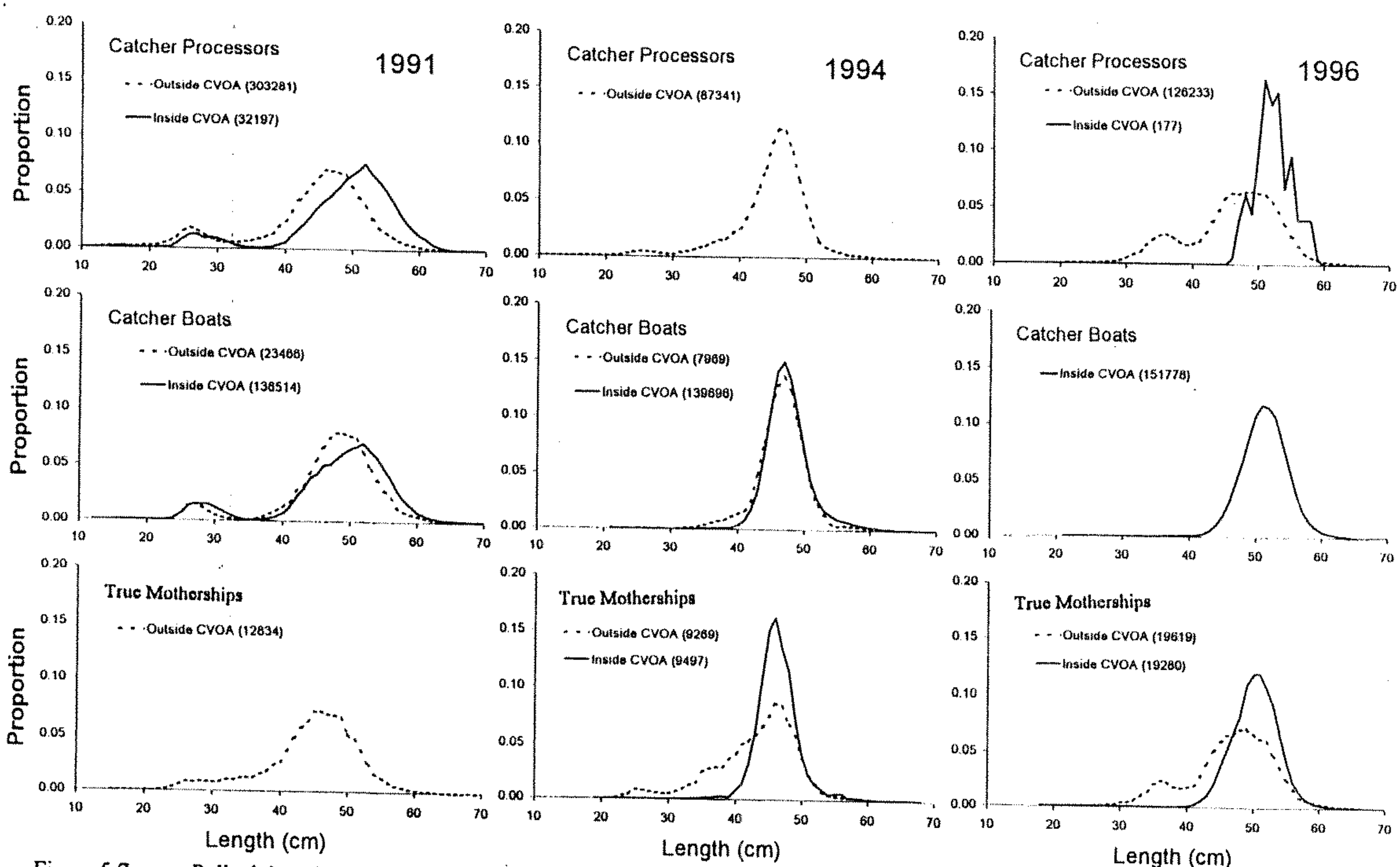

Figure 5.7 Pollock length-frequency from samples collected aboard offshore catch processors (top), onshore catcher boats (middle), and mixed true motherships (bottom) in the B-season of 1991 (left), 1994 (middle), and 1996 (right) inside and outside of the CVOA (number of pollock measured in legend).

5.1.4 Survey Biomass Distributions

Bottom trawl and echo-integration/midwater trawl (EIMWT) surveys of the pollock population were conducted in the summers of 1991, 1994 and 1996. The EIMWT estimate is from the surface to within 3 m of the bottom, while the bottom trawl estimate is for the bottom 3 m; hence the two estimates can be summed to estimate the total pollock population. Pollock population estimates by length in three regions for each of the three years are presented in Figure 5.8. The three regions are: the CVOA, east of 170°W outside of the CVOA (equivalent to INPFC Area 51 outside of the CVOA), and west of 170°W (equivalent to INPFC Area 52). Data east of 170°W from the 1991 EIMWT survey could not be separated into areas inside and outside of the CVOA. Therefore, in Figure 5.8 and in the Table 5.4 below, the 1991 CVOA data are from the bottom trawl survey only; for the area labeled as "East of 170°W, Outside of the CVOA", this includes both areas inside and outside of the CVOA east of 170°W for 1991.

Table 5.4 Pollock Population Estimates and Percentages < 40 cm in Length by Area for the 1991, 1994, and 1996 Combined Bottom Trawl and EIMWT Surveys of the Eastern Bering Sea Shelf

	CVOA		East of 170°W Outside of CVOA		West of 170°W	
Year	*Pollock Population ($x10^9$)*	*% < 40 cm*	*Pollock Population ($x10^9$)*	*% < 40 cm*	*Pollock Population ($x10^9$)*	*% < 40 cm*
1991	7.3[1]	1.1[1]	60.1[2]	62.2[2]	104.8	68.9
1994	18.7	2.1	32.7	23.3	116.1	68.8
1996	7.7	9.2	31.8	24.1	88.8	68.8

[1] For 1991, data for the CVOA is bottom trawl only. These data are included in the total for the area east of 170°W for 1991.

[2] For 1991, data for the area east of 170°W, outside of the CVOA is actually for the entire area east of 170°W including the CVOA, both midwater and bottom.

In each of the three summers surveyed, about 2/3 of the pollock population by numbers was located west of 170°W, but over 2/3 of those encountered each year were < 40 cm in length. In the summers of 1994 and 1996, the CVOA contained only 11% and 6%, respectively, of the eastern Bering Sea pollock population, but small pollock were generally absent.

5.1.5 B-Season Harvest Rates: 1991-1997

B-season pollock harvest rates were analyzed spatially by estimating pollock abundances and catches in three areas and four years. The three areas chosen were: (1) the CVOA, (2) east of 170°W outside of the CVOA, and (3) west of 170°W (Figure 5.9). The years 1991, 1994, 1996, and 1997 were chosen because combined bottom trawl-hydroacoustic surveys of the pollock population were conducted each summer. The following method was used to calculate areal harvest rates (shown in Figure 5.10):

- The distribution of survey estimates of age 3+ pollock biomass (30+ cm in length) in each area and year was used to apportion the stock assessment model (Wespestad et al. 1997) estimate of total eastern Bering Sea age 3+ biomass by area and year. This yielded estimates of age 3+ pollock biomass by area for each of the 4 years.

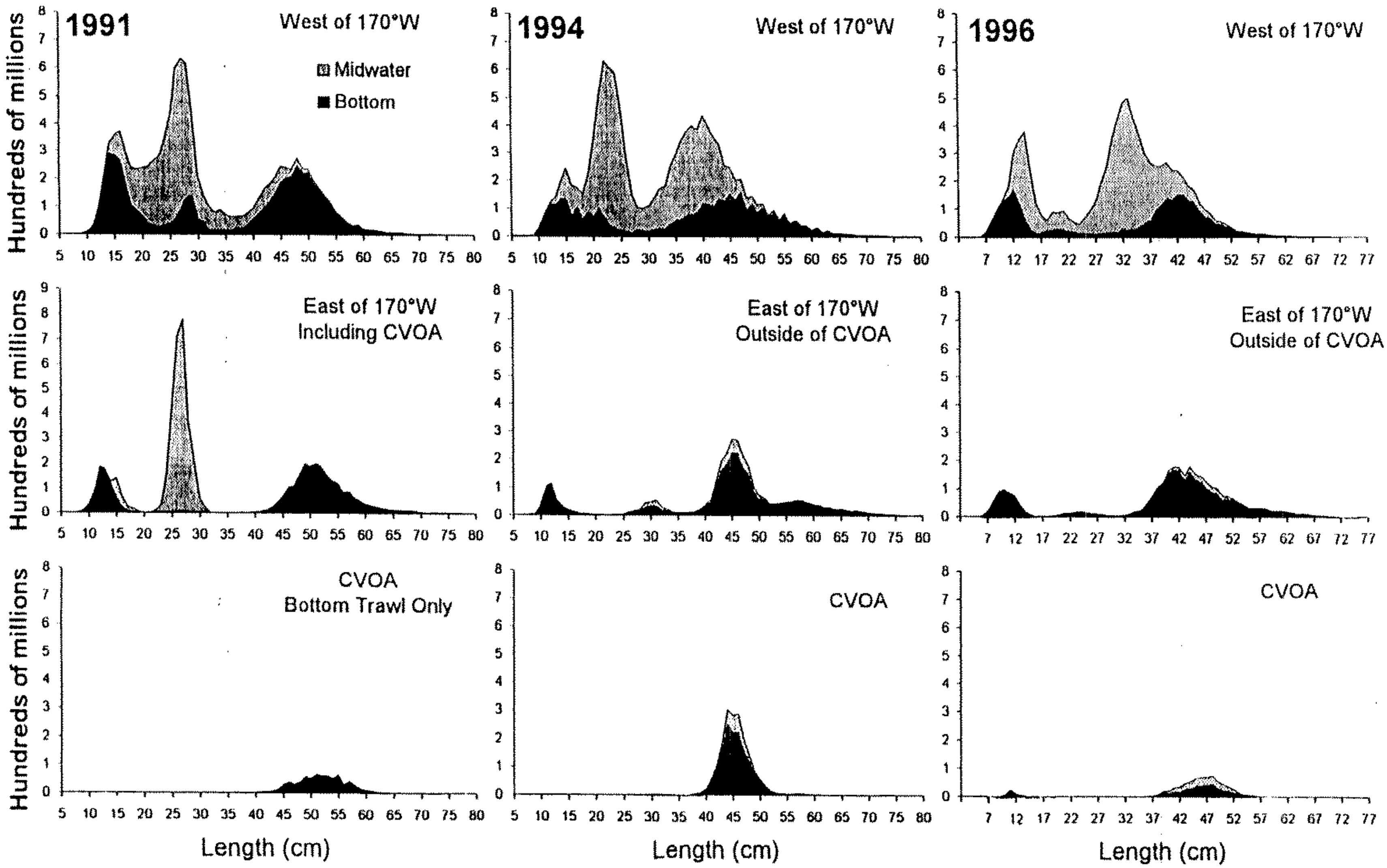

Figure 5.8 Pollock populations at-length estimates from the hydroacoustic-midwater (Midwater) and bottom trawl surveys conducted on the eastern Bering Sea shelf in 1991 (left), 1994 (middle), and 1996 (right). Population estimates are provided for the CVOA (bottom), east of 170 degrees W out side of the CVOA (middle), and west 170 degrees W (top). The 1991 midwater data east of 170 degrees could not be split inside and outside of the CVOA.

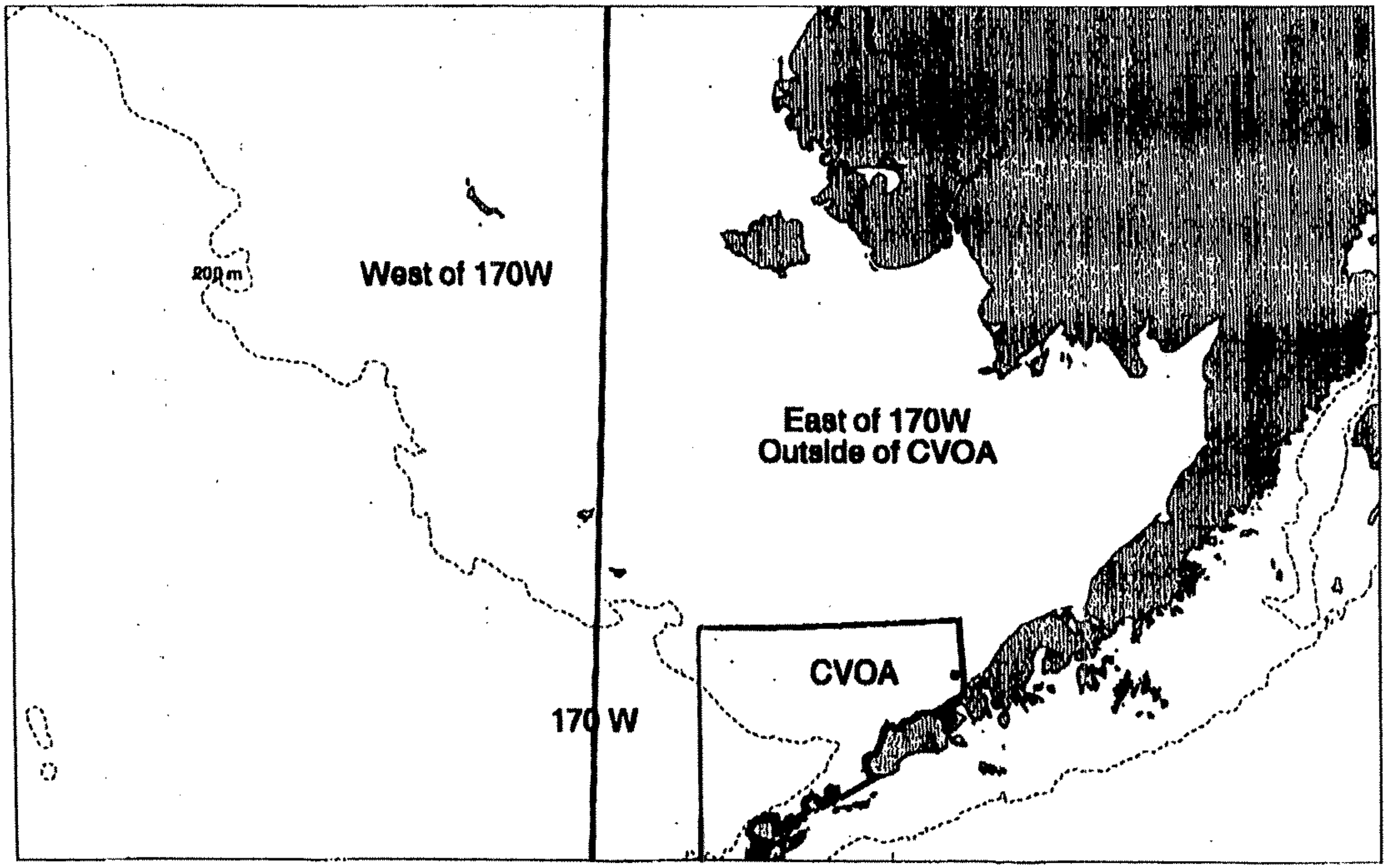

Figure 5.9 Areas of the eastern Bering Sea shelf used in the spatial analysis of pollock harvest rates.

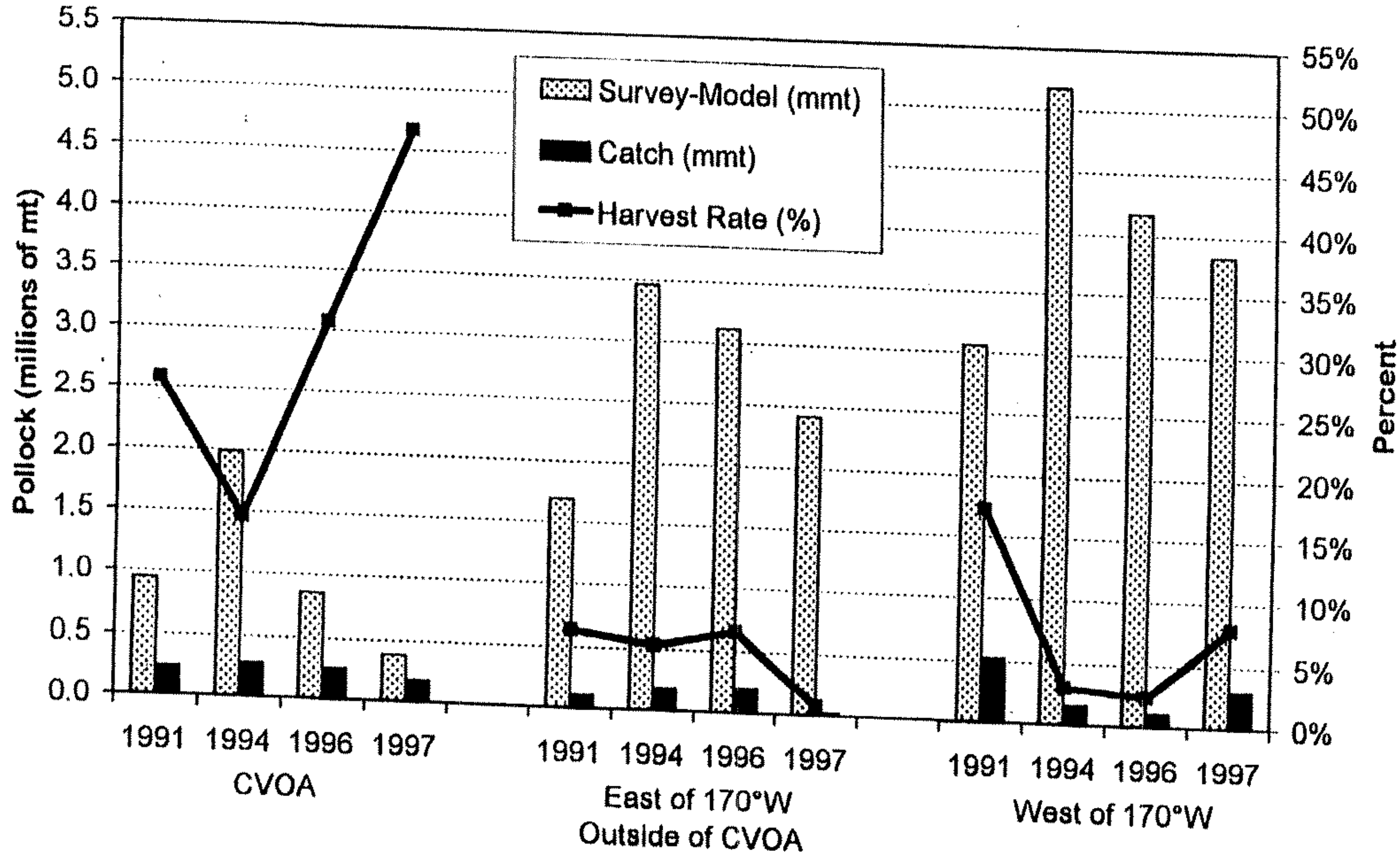

Figure 5.10 Distribution of age 3+ pollock biomass (millions of mt) from the combined bottom trawl and hydroacoustic surveys and the 1997 stock assessment, commercial catches of pollock (millions of mt) from observer and blend data, and pollock harvest rates (% caught) by area in the B-seasons of 1991, 1994, 1996, and 1997.

- Observer estimates of B-season pollock catch distribution by sector (offshore, "true" mothership, and inshore), area, and year were used to apportion the blend estimates of B-season pollock catch by sector and year to each area. This yielded estimates of B-season pollock catch (almost entirely composed of pollock age 3 years and older) by area for each of the 4 years.
- Harvest rates were calculating using the ratio of catch to biomass by area.

Harvest rates of age 3+ pollock have been higher in the CVOA than in either of the other two areas analyzed in the eastern Bering Sea (Figure 5.10). For each of the four years, harvest rates in the CVOA ranged from a low of 15% in 1994 to 47% in 1997, while in the other two areas, only one of the eight annual harvest rate estimates was greater than 10% and three were less than 5%. Furthermore, data suggest that harvest rates within the CVOA increased in 1996 and 1997 (when they were 31% and 46%, respectively) relative to 1991 and 1994 (when they were 26% and 15%, respectively). Total eastern Bering Sea survey/model age 3+ pollock biomass declined 38% from 1994 to 1997, but this decline was not evenly dispersed among each of the three areas. The decline was most acute in the CVOA, where pollock biomass declined 81% from 1994 to 1997, while in the other areas east and west of 170°, the decline was only 30% and 26%, respectively.

5.1.6 Pollock Catches in Steller Seal Lion Critical Habitat

The western stock of Steller sea lions, located west of Cape Suckling (147°W) including the Bering Sea and Aleutian Islands, was recently (1997) reclassified as endangered under the Endangered Species Act. Much of the CVOA is designated as Steller sea lion critical habitat or is closed to trawlers in an effort to spatially segregate trawl fisheries from sea lions (Figure 5.11). Trawl exclusion zones that overlap with the CVOA surround sea lion rookeries on the following islands (from east to west in Figure 5.9):

Table5.5 Trawl Exclusion Zones Around Steller sea lion rookeries that overlap with the CVOA

Rookery Island	*10 nm Annual Trawl Exclusion Zone*	*20 nm A-Season Trawl Exclusion Zone*
Sea Lion Rock	X	X
Ugamak Island	X	X
Akun Island	X	X
Akutan Island	X	X
Bogoslof Island	X	

The cause of the decline in the population of the western stock of Steller sea lions is not known. While there are a large number of possible causes including disease and predation, reduced food availability resulting from climate change and/or fisheries appears to be the most likely. Despite efforts to reduce interactions between groundfish fisheries and Steller sea lions, the population continues to decline and pollock removals from designated critical habitat in the Bering Sea/Aleutian Islands (BS/AI) increased 45% between 1991 and 1995 (Figure 5.12) (Fritz et al.1995; Fritz and Ferrero, in press). Pollock harvests from critical habitat in the BS/AI come chiefly from the southeast Bering Sea foraging area which extends from 164°-170°W north of the Aleutian Islands and overlaps considerably with the CVOA. In 1996, pollock harvests from critical habitat declined to 1991 levels primarily because of the increased use of areas outside of the CVOA during the A-season (Figure 5.2).

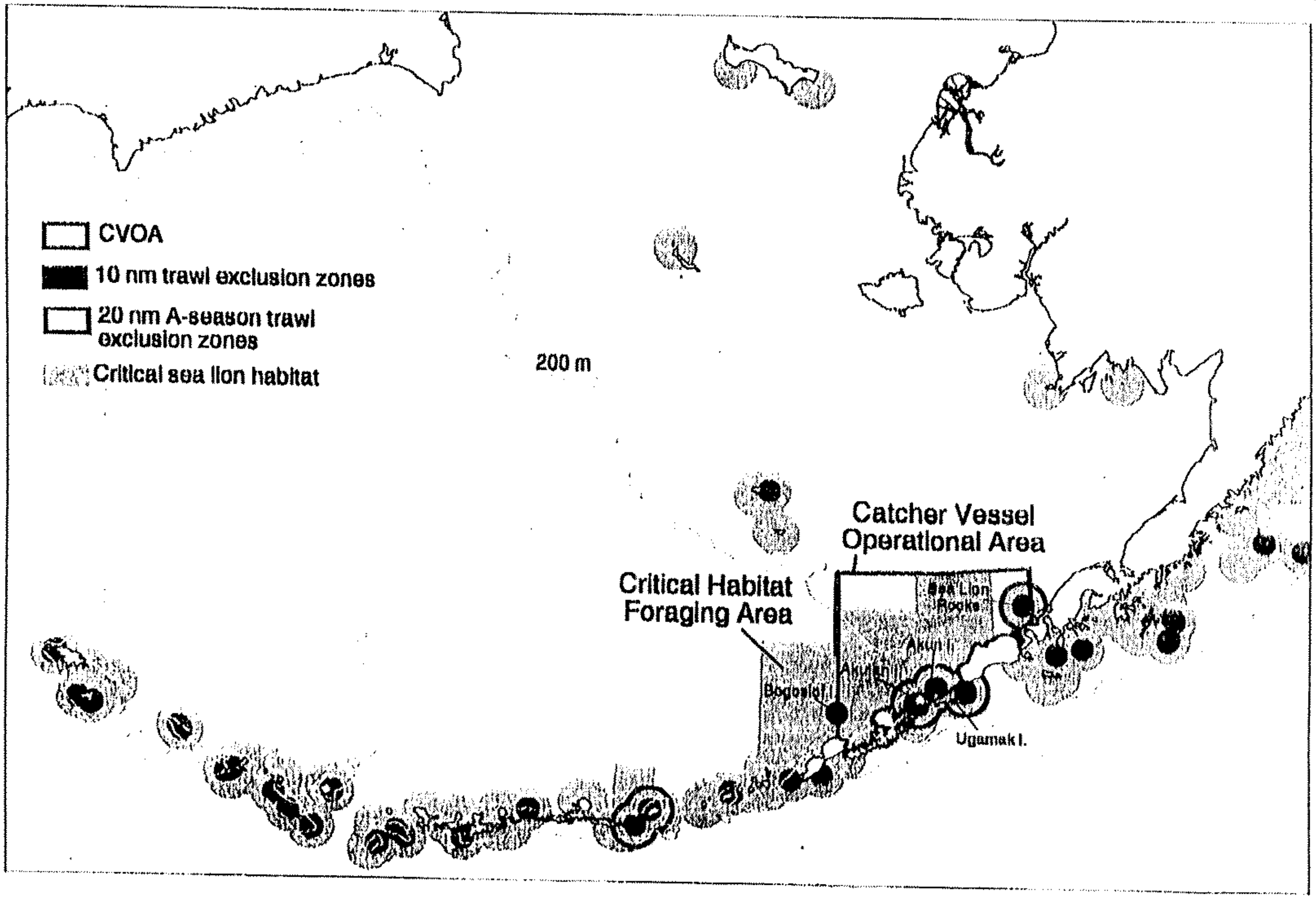

Figure 5.11 Location of the Catcher Vessel Operational Area (red line) in relation to Steller sea lion critical habitat and trawl exclusion zones around rookeries in the Bering Sea and Aleutian Islands.

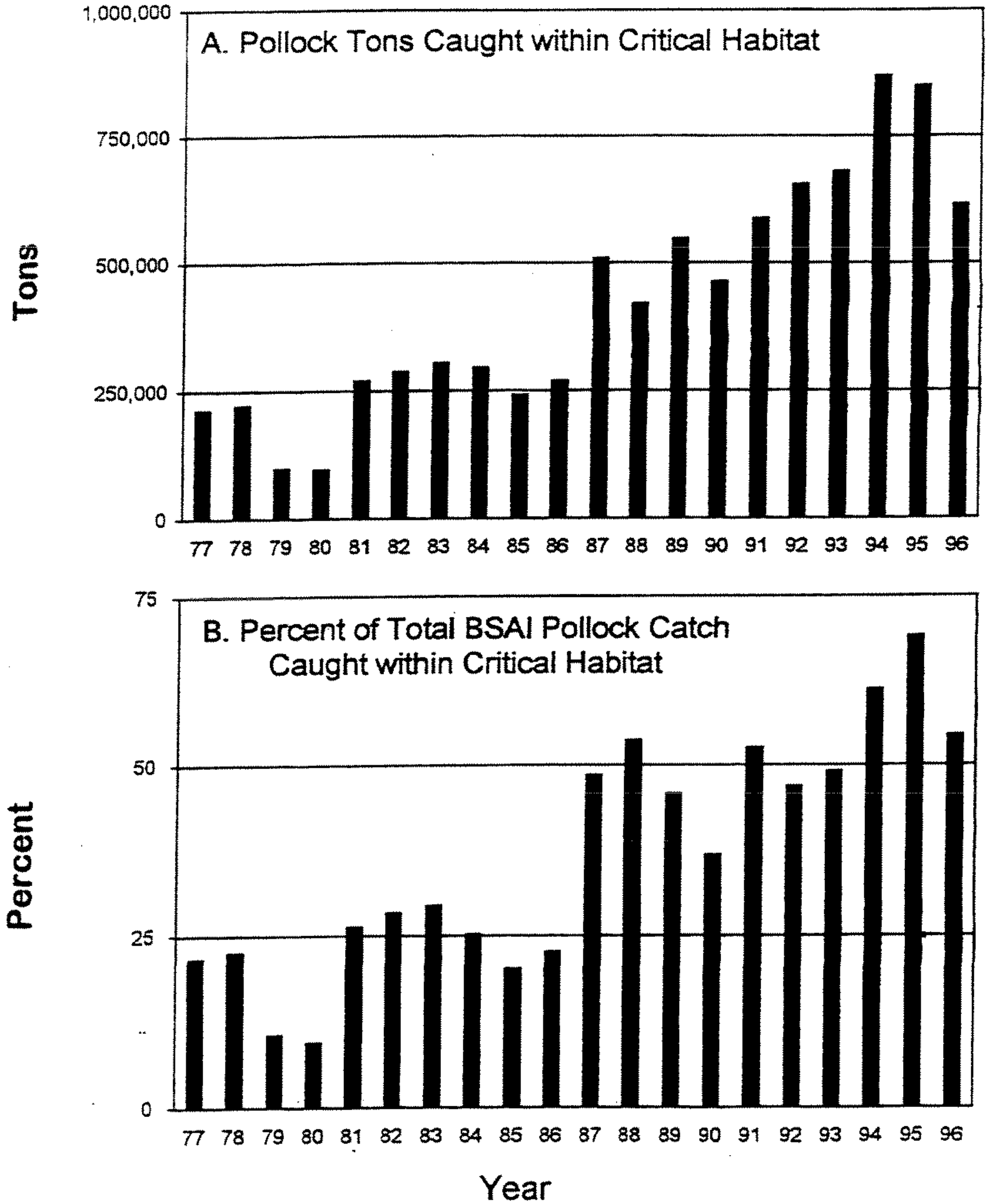

Figure 5.12 Pollock fishery effort within Steller sea lion critical habitat in the Bering Sea/Aleutian Islands region.

5.2 Projected Changes under the CVOA Alternatives

This section describes how the fishery may change under the various CVOA alternatives. Projections are made of pollock catches and harvest rates inside and outside the CVOA, and within Steller sea lion critical habitat. Actual impacts on Steller sea lions will be described in the environmental assessment in Chapter 6.

5.2.1 Estimation Procedures

Pollock catches inside and outside the CVOA were estimated using the following criteria and conditions:

- Eastern Bering Sea pollock TAC=1.1 million mt;
- A:B season split is 45%:55%;
- fishery sectors (offshore, motherships, inshore) are allocated percentages of the pollock TAC according to the Sector Allocation Alternatives 1-4 and Status Quo:

	Sector Allocation Alternatives				
Sector	1	2	Status Quo	3	4
Offshore	70	60	55	50	40
Motherships	5	10	10	10	15
Inshore	25	30	35	40	45

- fishery sectors are excluded from fishing in the CVOA by season according to the CVOA Alternatives 1-3 and Status Quo (SQ) (Y=can fish in the CVOA; N=cannot fish in the CVOA). Note that in the A-season, the SQ and Alternative 3 are the same, and in the B-season, the SQ and Alternative 1 are the same.

	A-Season CVOA Alternatives				B-Season CVOA Alternatives			
Sector	SQ	1	2	3	SQ	1	2	3
Offshore	Y	N	N	Y	N	N	N	Y
Motherships	Y	Y	N	Y	Y	Y	N	Y
Inshore	Y	Y	Y	Y	Y	Y	Y	Y

- two types of A-season pollock fishery distribution patterns, one in which each sector caught the vast majority of its allocation within the CVOA (the 1994 pattern: cold year), and one in which each sector caught significant amounts of pollock outside of the CVOA (the 1996 pattern: warm year):

Percent of A-Season Pollock Caught Inside and Outside of the CVOA

	1994		1996	
Sector	Inside	Outside	Inside	Outside
Offshore	95.5%	4.5%	46.7%	53.3%
"True" Motherships	99.5%	0.5%	65.5%	34.5%
Inshore	99.4%	0.6%	74.1%	25.9%

- pollock fishery distribution patterns observed in the B-season of 1996 were used to estimate B-season catch distributions under each CVOA alternative, except for the offshore sector under CVOA alternative 3 (no CVOA). In this single instance, two scenarios were run: (1) data were used from 1991, the most recent year when the offshore sector could fish in the CVOA; and (2) the distribution of "true" motherships in the B-season of 1996 was used to estimate the catch distribution of the offshore fleet. As the table below shows, the percentages inside and outside resulting from the two scenarios are very different (NA=not applicable):

Percent of B-Season Pollock Caught Inside and Outside of the CVOA

	1991		1996	
Sector	Inside	Outside	Inside	Outside
Offshore	4.0%	96.0%	0%	100%
"True" Motherships	NA	NA	99.6%	0.4%
Inshore	NA	NA	97.1%	2.9%

- if a sector could not fish inside the CVOA, it was assumed it could catch its entire allocation outside the CVOA. If a sector could fish in the CVOA, it was assumed it would have the same catch distribution inside and outside of the CVOA as it had in the A-seasons of 1994 and 1996, and the B-seasons of 1996 and 1991 (offshore sector, CVOA alternative 3 only).

Is should be noted that CVOA impacts were discussed in the I/O1 and I/O2 analyses, and some of that discussion is used here. However, the CVOA options under I/O3 are much broader. They include restricting catcher processors from operating in the CVOA during the A-season as well as the B-season, and doing away with the CVOA entirely. Additionally, catcher vessels delivering to the catcher processor or "true" mothership sectors may be restricted from operating in the CVOA during the A-season and/or B-season, in addition to the status quo. Finally, the Council considered options that would exclude catcher vessels longer than 155' LOA or catcher vessels 125' LOA and longer from the CVOA in the A-season and/or B-season.

To provide the reader some indication of the hold capacity of catcher vessels, Figure 5.13 had been included. This figure shows a comparison of catcher vessel length to hold capacity. Each of the 119 catcher vessels that were reported fishing in the 1996 pollock target fisheries are included in this figure. The hold capacity information was taken from the 1996 CFEC Vessel Permit file. Twenty-nine of the catcher vessels reported a hold capacity of zero in the CFEC file. This maybe the result of not filling out the field on the permit or not having useable hold capacity.

The information in Figure 5.13 shows that none of the catcher vessels less than 125' report a hold capacity greater than 12,500 cubic feet. However, six vessels greater than 125' reported hold capacities of 20,000 cubic feet or larger.

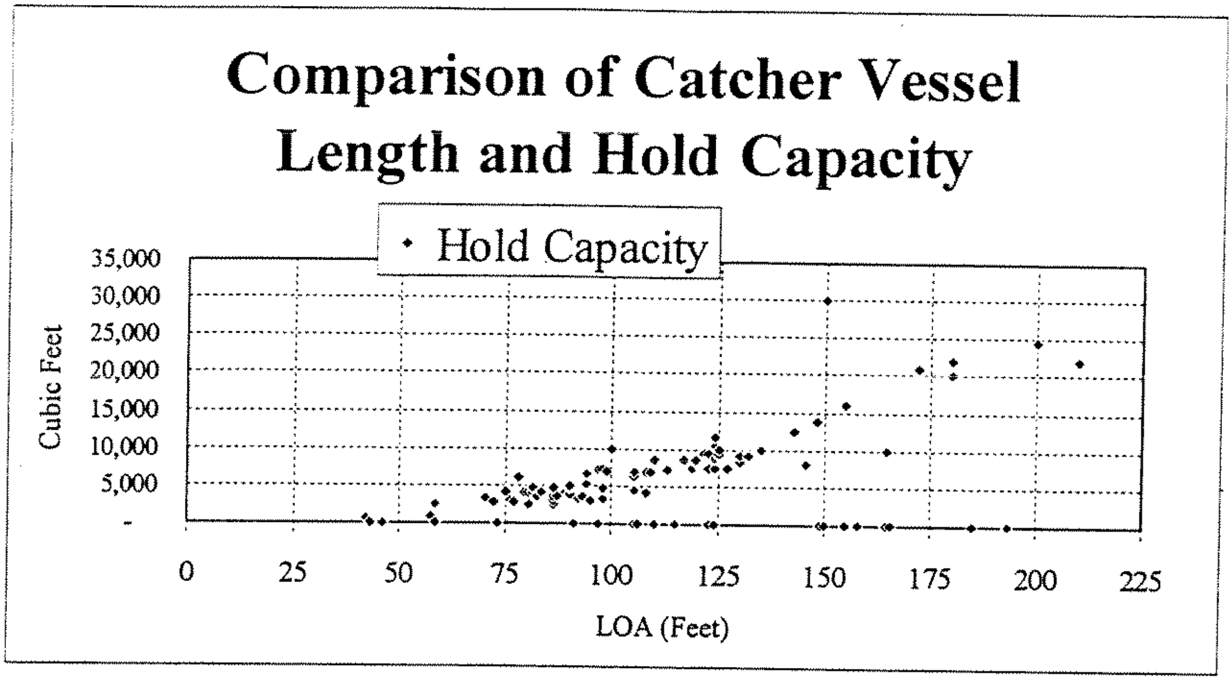

Figure 5.13. Catcher Vessel Length and Hold Capacity

5.2.2 Impacts on Catcher/Processors

Higher Cost for Fuel. Additional costs could result if catcher/processors have to run further to fishing grounds. However this cost is likely to be incremental because catcher/processors make generally less than 10 runs to and from an in-season port such as Dutch Harbor. Additionally, although fuel expenses are thought to be a significant portion of operating cost, much of this likely occurs in daily operations rather than in running to and from port.

Fish Finding Costs. If catcher/processors are forced into areas they did not fish in past years they may need to spend more time determining where fish aggregations are located. However, the incremental increase in costs may be small because aggregations of pollock are notoriously dynamic, and fish finding costs occur regardless of where one is fishing. Also, catcher processors did harvest more pollock outside the CVOA in 1996. This experience outside the CVOA may also tend to lessen their search costs in future years.

Length of Fish. Smaller fish are more expensive to process because filleting machines are constrained by the number of fish they can handle per unit of time. It appears, from data presented above, that fish are generally smaller outside than inside the CVOA. However, this trend was more pronounced in 1996 than earlier years. And the 1996 pollock size distribution inside and outside the CVOA could change in the future.

Greater Variance in the Length of Fish. The I/O2 analysis stated that the more variance in the size of fish, the less the product recovery rate in general. This occurs because filleting machines are set for an average fish size; therefore the more variance around the mean, the less consistent the fillets will be. Again referring to the figures presented earlier that show the length-frequency samples for 1996, the shape of the curves is similar inside and outside the CVOA. The same shape indicates that the variation in pollock lengths were about the same inside and outside the CVOA during 1996. However, this was not the case during the 1994 fishery when fish inside the CVOA were more uniform in size than those outside.

Higher CPUEs Outside CVOA. The offshore catcher processor sector experienced higher CPUEs outside the CVOA than inside during the 1996 A-season. However, during the 1991 and 1994 A-season their CPUE was higher inside the CVOA. This switch may also be linked to the location of the ice edge in those years.

Harvesting Roe Bearing Pollock. Preventing catcher processors from operating in the CVOA during the A-season raises questions about their ability to harvest quality roe bearing pollock outside the CVOA. Given that catcher processors received about $13,300/mt for pollock roe in 1996, reducing their ability to harvest/process a quality roe product would likely lead to negative economic impacts on their operations.

Until 1996, catcher processors harvested over 90% of their A-season pollock inside the CVOA. In 1996 the split was closer to a 53% outside the CVOA and 47% inside. One possible explanation for more pollock being harvested outside of the CVOA has to do with the location of the ice edge. Since predicting the location of the ice edge in future years is not possible, we cannot determine if ice will be a problem in the future. However, forcing catcher processors into areas close to the ice edge could raise safety as well as efficiency issues.

Summary of CVOA Alternatives for the Catcher Processor Sector. Since the majority of fishing effort for the catcher processor sector took place outside the CVOA during the 1996 A-season and in 1991, prior to implementation of the CVOA, one can assume it was more profitable for those vessels to operate there. Otherwise they would have operated at a higher rate inside the CVOA. Some individual vessels probably would find it more profitable to operate inside the CVOA. Those vessels will likely experience higher costs if forced to fish outside of the CVOA during the A-season, in years similar to 1996. In years where almost all of the catch was taken inside the CVOA, due to factors such as ice, pollock size, pollock roe maturity, or stock abundance, the catcher processors would likely be disadvantaged even more if forced to fish outside.

A sub-option would reserve 9-15% of the catcher processor allocation for harvest by catcher vessels. It is the analysts' assumption that the catcher processors choosing to buy pollock from catcher vessels will have the option of processing that fish inside or outside of the CVOA, and that the catcher vessels harvesting the pollock can fish inside or outside the CVOA, under the current system. If the CVOA definition changes such that "true" motherships are not allowed to process pollock harvested from within the CVOA, we will then assume that catcher processors acting as motherships would be required to abide by the same rules. In other words, "true" motherships and catcher processors acting as motherships will be treated the same under any of the CVOA alternatives.

5.2.3 Impacts on "True" Motherships

"True" mothership operations would face many of the same issues discussed for the catcher processors, if forced out of the CVOA during the A-and/or B-season. Perhaps they would experience even greater problems, because they have been more dependent over time on the CVOA. This is especially true in recent B-seasons, as catcher processors have been excluded from the CVOA since 1992 and "true" mothership have continued to operate inside. Additionally, catcher vessels delivering to "true" motherships would likely experience higher fuel costs due to increased running time to and from port. If "true" mothership operations are allowed to take deliveries from catcher vessels fishing inside the CVOA, that added flexibility would give them an advantage over industry sectors forced to operate outside of the CVOA. During years like 1991 and 1994 when almost all of the A-season harvest occurred inside the CVOA, it would be greater advantage than in years like 1996 when more catch was taken outside of the CVOA.

5.2.4 Impacts on Inshore Sector

Options that would allow additional effort to enter the CVOA during the B-season could potentially have adverse impacts on the Inshore sector. Recall the concerns expressed when the CVOA was initially considered. One point focused on the catcher processor fleet operating in the waters near the shoreplants and harvesting those fish first and moving on to the schools farther away from the plants. This would in turn force catcher vessels to fish farther away from the plants, increasing the harvest costs, and perhaps reducing the quality of the pollock they deliver.

Options that would reduce fishing effort close to the processing plants during the A-season would also likely benefit the Inshore sector. The figures presented earlier in this chapter that show trawl locations in the 1996 A-season reveal that catcher processors and catcher vessels often work in the same general locations. Forcing the catcher processors outside the CVOA would result in less direct competition between them. However, recall the discussion in the catcher processor section, that talks about the negative impacts that sector might incur.

In addition to these issues, the Council added options (in April 1998) which could limit the amount of catch in the CVOA by certain categories of catcher vessels (>155' or >125'). While such options could be used to mitigate sea lion concerns, they would likely impose negative operational impacts on these catcher vessels.

5.3 Effects of TAC Allocations on CVOA Catches

Table 5.1 contains the projected A and B-season pollock catches (in mt) inside and outside of the CVOA for each sector allocation and CVOA alternative combination. Figure 5.14 shows the percent change in A season, B season, and annual pollock catches within the CVOA under each sector allocation and CVOA alternative combination relative to the base year of 1996. While it has been noted that there are two different recent patterns of A-season fishery distribution, only the 1996 pattern will be discussed further for simplicity.

5.3.1 Alternative 2: Status Quo

Keeping the current CVOA definition would result in no change in the projected fishing patterns inside and outside of the CVOA. If catcher processors were excluded from fishing pollock inside the CVOA during both the A and B-seasons, the catch inside the CVOA is projected to decrease by 23% (from 554,628 mt to 426,111 mt). Excluding both the catcher processors and the catcher vessels delivering to "true" motherships would reduce the catch in the CVOA by 40% (to 333,558 mt). Forcing either of these sectors outside of the CVOA during the A-season could cause economic hardships. During bad ice years, for example, this may even force vessels to take additional risks and fish close to the ice or perhaps even forgo harvesting the pollock while roe is prime to avoid the ice.

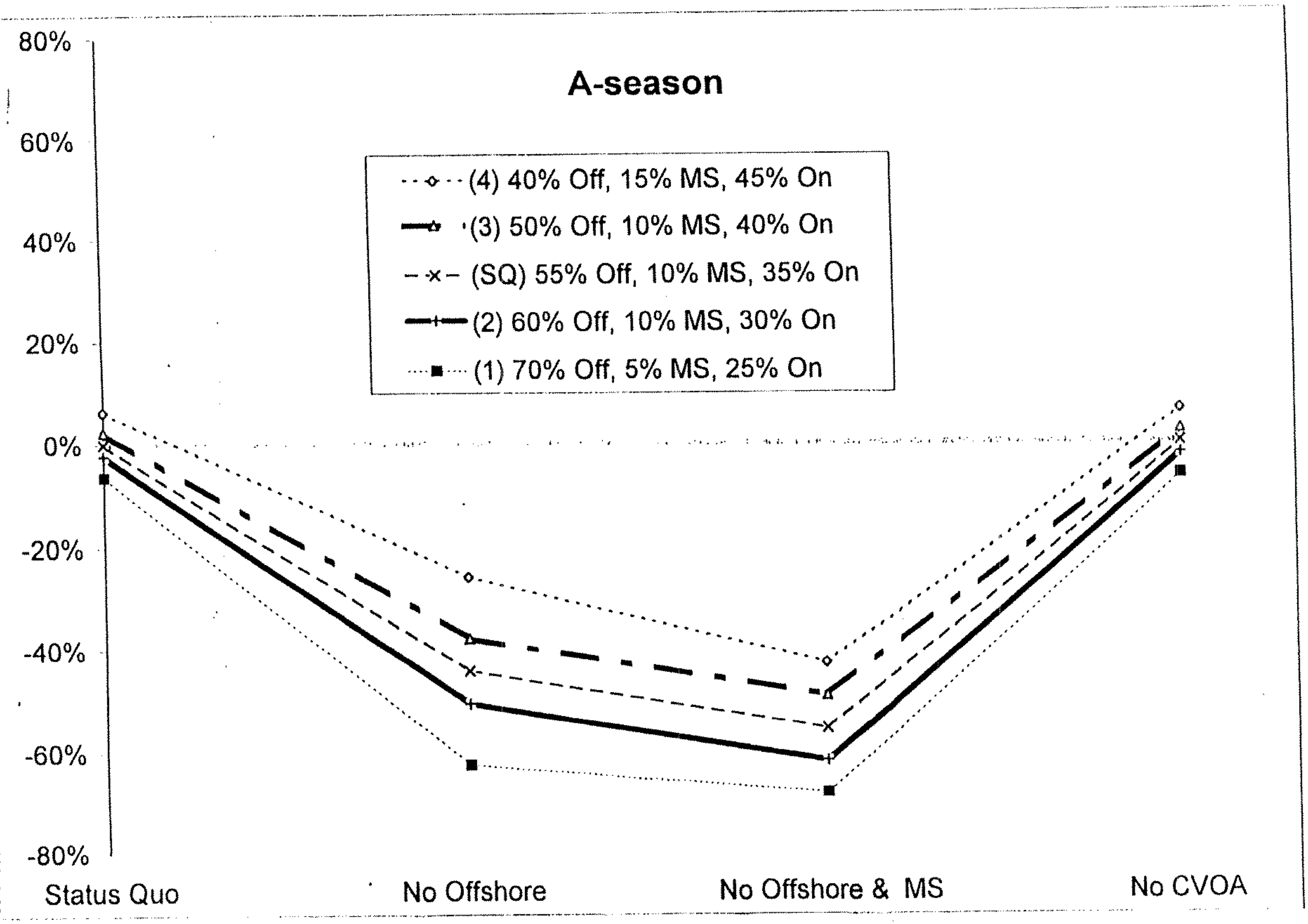
A-season
(4) 40% Off, 15% MS, 45% On
(3) 50% Off, 10% MS, 40% On
(SQ) 55% Off, 10% MS, 35% On
(2) 60% Off, 10% MS, 30% On
(1) 70% Off, 5% MS, 25% On
80%
60%
40%
20%
0%
-20%
-40%
-60%
-80%
Status Quo
No Offshore
No Offshore & MS
No CVOA

Figure 5.14

Table 5.1 Estimated pollock catches inside and outside of the CVOA under each sector allocation and CVOA alternative. 1996 sector distributions were used for all projections, except for the B-season, offshore, No CVOA (2 methods were used).

Pollock TAC assumed to be 1.1 million mt; A:B season split assumed to be 45%:55%.

CVOA Alternative

Sector Allocation Alternative 2: Status Quo

	Status Quo		No Offshore		No Offshore, No MS		No CVOA (1991 Used for Offshore, B)		No CVOA (1996 MS Used for Offshore B)	
	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA
1. A-season										
Offshore C/P	128,517	146,483	-	275,000	-	275,000	128,517	146,483	128,517	146,483
True MS	32,771	17,229	32,771	17,229	-	50,000	32,771	17,229	32,771	17,229
Inshore	129,665	45,335	129,665	45,335	129,665	45,335	129,665	45,335	129,665	45,335
Total	290,953	209,047	162,436	337,564	129,665	370,335	290,953	209,047	290,953	209,047
2. B-Season										
Offshore C/P	-	330,000	-	330,000	-	330,000	13,356	316,644	328,805	1,195
True MS	59,783	217	59,783	217	-	60,000	59,783	217	59,783	217
Inshore	203,892	6,108	203,892	6,108	203,892	6,108	203,892	6,108	203,892	6,108
Total	263,675	336,325	263,675	336,325	203,892	396,108	277,031	322,969	592,480	7,520
3. Annual	554,628	545,372	426,111	673,889	333,558	766,442	567,984	532,016	883,433	216,567
	0%		-23%		-40%		2%		59%	

Sector Allocation Alternative 3(C): 50% Offshore Catcher Processors, 10% True Motherships, 40% Inshore

	Status Quo		No Offshore		No Offshore, No MS		No CVOA (1991 Used for Offshore, B)		No CVOA (1996 MS Used for Offshore B)	
	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA
1. A-season										
Offshore C/P	116,834	133,166	-	250,000	-	250,000	116,834	133,166	116,834	133,166
True MS	32,771	17,229	32,771	17,229	-	50,000	32,771	17,229	32,771	17,229
Inshore	148,189	51,811	148,189	51,811	148,189	51,811	148,189	51,811	148,189	51,811
Total	297,793	202,207	180,960	319,040	148,189	351,811	297,793	202,207	297,793	202,207
2. B-Season										
Offshore C/P	-	300,000	-	300,000	-	300,000	12,142	287,858	298,913	1,087
True MS	59,783	217	59,783	217	-	60,000	59,783	217	59,783	217
Inshore	233,020	6,980	233,020	6,980	233,020	6,980	233,020	6,980	233,020	6,980
Total	292,802	307,198	292,802	307,198	233,020	366,980	304,944	295,056	591,716	8,284
3. Annual	590,596	509,404	473,762	626,238	381,209	718,791	602,738	497,262	889,509	210,491
	6%		-15%		-31%		9%		60%	

Table 5.1 Estimated pollock catches inside and outside of the CVOA under each sector allocation and CVOA alternative. 1996 sector distributions were used for all projections, except for the B-season, offshore, No CVOA (2 methods were used).

Pollock TAC assumed to be 1.1 million mt; A:B season split assumed to be 45%:55%.

CVOA Alternative

	Status Quo		No Offshore		No Offshore, No MS		No CVOA 1991 Used for Offshore, B		No CVOA 1996 MS Used for Offshore B	
	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA
Sector Allocation Alternative 3(A): 70% Offshore Catcher Processors, 5% True Motherships, 25% Inshore										
1. A-season										
Offshore C/P	163,567	186,433	-	350,000	-	350,000	163,567	186,433	163,567	186,433
True MS	16,385	8,615	16,385	8,615	-	25,000	16,385	8,615	16,385	8,615
Inshore	92,618	32,382	92,618	32,382	92,618	32,382	92,618	32,382	92,618	32,382
Total	272,571	227,429	109,004	390,996	92,618	407,382	272,571	227,429	272,571	227,429
2. B-Season										
Offshore C/P	-	420,000	-	420,000	-	420,000	16,999	403,001	418,479	1,521
True MS	29,891	109	29,891	109	-	30,000	29,891	109	29,891	109
Inshore	145,637	4,363	145,637	4,363	145,637	4,363	145,637	4,363	145,637	4,363
Total	175,529	424,471	175,529	424,471	145,637	454,363	192,527	407,473	594,008	5,992
3. Annual	448,099	651,901	284,532	815,468	238,256	861,744	465,098	634,902	866,578	233,422
% change	-19%		-49%		-57%		-16%		56%	
Sector Allocation Alternative 3(B): 60% Offshore Catcher Processors, 10% True Motherships, 30% Inshore										
1. A-season										
Offshore C/P	140,200	159,800	-	300,000	-	300,000	140,200	159,800	140,200	159,800
True MS	32,771	17,229	32,771	17,229	-	50,000	32,771	17,229	32,771	17,229
Inshore	111,142	38,858	111,142	38,858	111,142	38,858	111,142	38,858	111,142	38,858
Total	284,113	215,887	143,913	356,087	111,142	388,858	284,113	215,887	284,113	215,887
2. B-Season										
Offshore C/P	-	360,000	-	360,000	-	360,000	14,570	345,430	358,696	1,304
True MS	59,783	217	59,783	217	-	60,000	59,783	217	59,783	217
Inshore	174,765	5,235	174,765	5,235	174,765	5,235	174,765	5,235	174,765	5,235
Total	234,548	365,452	234,548	365,452	174,765	425,235	249,118	350,882	593,244	6,756
3. Annual	518,660	581,340	378,460	721,540	285,907	814,093	533,231	566,769	877,357	222,643
	-6%		-32%		-48%		-4%		58%	

Status Quo Sector Allocation Alternative 2: 55% Offshore Catcher Processors, 10% True Motherships, 35% Inshore

Table 5.1 Estimated pollock catches inside and outside of the CVOA under each sector allocation and CVOA alternative. 1996 sector distributions were used for all projections, except for the B-season, offshore, No CVOA (2 methods were used).

Pollock TAC assumed to be 1.1 million mt; A:B season split assumed to be 45%:55%.

CVOA Alternative

Sector Allocation Alternative 3(D): 40% Offshore Catcher Processors, 15% True Motherships, 45% Inshore

	Status Quo		No Offshore		No Offshore, No MS		No CVOA 1991 Used for Offshore, B		No CVOA 1996 MS Used for Offshore B	
	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA
1. A-season										
Offshore C/P	93,467	106,533	-	200,000	-	200,000	93,467	106,533	93,467	106,533
True MS	49,156	25,844	49,156	25,844	-	75,000	49,156	25,844	49,156	25,844
Inshore	166,713	58,287	166,713	58,287	166,713	58,287	166,713	58,287	166,713	58,287
Total	309,336	190,664	215,869	284,131	166,713	333,287	309,336	190,664	309,336	190,664
2. B-Season										
Offshore C/P	-	240,000	-	240,000	-	240,000	9,713	230,287	239,131	869
True MS	89,674	326	89,674	326	-	90,000	89,674	326	89,674	326
Inshore	262,147	7,853	262,147	7,853	262,147	7,853	262,147	7,853	262,147	7,853
Total	351,821	248,179	351,821	248,179	262,147	337,853	361,535	238,465	590,952	9,048
3. Annual	661,157	438,843	567,690	532,310	428,860	671,140	670,870	429,130	900,288	199,712
	19%		2%		-23%		21%		62%	

Two projections were calculated under a no CVOA scenario. In this case the CVOA would be revoked, and catcher processors would no longer be restricted to fishing outside of the CVOA during the B-season. The first projection used the 1991 catcher processor catch distribution, inside and outside the CVOA during the B-season, to estimate catcher processor effort inside the CVOA. Results from that projection indicated that catch inside the CVOA would increase by 2% to 567,984 mt. The other projection used the inside and outside catch rates for catcher vessels delivering to "true" motherships during the 1996 B-season. In this case the catch rates inside the CVOA increased by 59% to 883,433 mt. The use of these two methods basically represent the expected bounds of catch that would occur if the there were no restrictions on who could fish inside the CVOA. This also illustrates the variability, and therefore uncertainty with which we are able to predict.

5.3.2 Alternative 3(A): 70% Offshore Catcher Processors, 5% "True" Motherships, 25% Inshore

Under the current CVOA definition this alternative would result in 19% less pollock being harvested from inside the CVOA. Catcher processors would still be restricted from fishing inside the CVOA during the B-season, but they would be granted 70% of the available BS/AI pollock TAC. The reduction results from the vessels that are allowed to fish inside the CVOA during the "B" being allocated less pollock. If the offshore catcher processors were excluded from the CVOA during both the A and B-seasons the harvest inside the CVOA is projected to drop 49% to 284,532 mt. Restricting both the catcher processors and the "true" motherships would reduce the harvest by 57% to 238,256 mt.

The two projections under the no CVOA alternative result in a 16% reduction and 56% increase, respectively. This once again points out the difference in the amount of fish harvested by catcher processors inside the CVOA during the 1991 B-season, and the catcher vessels delivering to "true" motherships during the 1996 B-season.

5.3.3 Alternative 3(B): 60% Offshore Catcher Processors, 10% "True" Motherships, 30% Inshore

Alternative 3(B) allocates 5% more of the BS/AI TAC to catcher processor, and reduces the allocation inshore by the same amount. If the CVOA is not altered the projected harvests from inside the CVOA would decrease by 6% from the status quo levels. Excluding catcher processors from fishing in the CVOA during both the A and B-seasons would reduce the catch inside by 48%. Both these reductions are smaller than under alternative 3(A) simply because catcher processors are allocated less pollock.

Dropping the CVOA regulations altogether would result in a 4% decrease in pollock catch inside the current boundaries, using the 1991 catcher processor rates. However, if the 1996 "true" mothership rates were used in the projection, the catch inside the CVOA would increase 58%. All of the difference in these two projections is the result of the 1991 rate being about 96% outside the CVOA and the 1996 rate being about 99% inside the CVOA.

5.3.4 Alternative 3(C): 50% Offshore Catcher Processors, 10% "True" Motherships, 40% Inshore

Alternative 3(C) allocates 5% more of the BS/AI TAC to the Inshore sector and 5% less to catcher processors. The allocation to the "true" mothership sector remains the same as the status quo. This allocation, in conjunction with the various CVOA alternatives tend to increase the harvest of pollock inside the CVOA. The only options that reduce the catch inside are those that exclude the catcher processors (15% decrease) and catcher processors and "true" motherships (31% decrease) from operating within the CVOA. The status quo CVOA option results in a projected 6% increase in catch inside. The two estimates of no CVOA result in an estimated 9% increase (1991 catcher processor rates) and a 60% increase (1996 "true" mothership rates)

5.3.5 Alternative 3(D): 40% Offshore Catcher Processors, 15% "True" Motherships, 45% Inshore

This alternative results in higher catches inside the CVOA in all but one case. When both the catcher processors and "true" motherships are excluded from operating in the CVOA during both the A and B-seasons the catch inside decreases by 23%. If only the catcher processors were excluded during both seasons, the catch inside the CVOA is projected to increase by 2%. Catches under the status quo CVOA are predicted to increase by 19% under this TAC allocation. With no CVOA, the catch inside the current CVOA boundaries are expected to increase between 21% and 62%. A 62% increase means that over 900,00 mt would be harvested from the CVOA.

5.3.6 Alternative 6: Council's Preferred Alternative (61% Offshore and 39% Inshore)

The Council's preferred alternative shifts more pollock inshore where it can be harvested inside the CVOA during the B-season. However, the Council also restricted the catcher vessels delivering to the offshore sector from operating inside the CVOA during the B-season. This measure was taken to increase the stability in the offshore sector. Information provided in chapter three of this document shows that the "true" mothership sector has increased their share of the offshore quota between 1991 and 1996. This measure was viewed as a way to keep the amount of pollock processed by the "true" motherships and catcher processors in the offshore sector relatively stabile. It was not viewed as a Stellar sea lion issue.

Some members of the Council were concerned that the "true" mothership sector's processing had increased over the years considered in this study. Because of this increase, the Council concluded that neither the catcher vessels delivering to "true" motherships nor offshore catcher processor operations should be allowed to harvest pollock inside the CVOA during the B-season. This change will force all vessels harvesting pollock from the offshore quota to compete in the same areas during both the A and B-seasons.

The Council also indicated that they plan to address the issue of Stellar sea lions in a more comprehensive fashion outside of the I/O3 context, as soon as adequate information is developed. That being said, the result of this action also reduces the maximum amount of the BS/AI pollock TAC that can be harvested from the CVOA to about 66% (not including CDQ harvests). This is well below the 72.5% that is currently allowed.

5.3.7 Comparison of Roe Recovery Rates

In April 1998, after reviewing the initial draft of this document, the Council requested staff to explore the possibility of comparing roe recovery rates inside and outside the CVOA. Consultation with NMFS biologists and managers indicates that this cannot be done with any confidence in the validity of such comparisons. The reasons are summarized as follows: (1) for at-sea processors, weekly processor reports have product weight and calculated catch based on PRRs. Using the blend data or the observer data catch weight as the denominator will be confounded by timing mismatches between these data sets which could skew comparisons; (2) for inshore vessels, fish tickets provide estimates of catch by ADF&G area, but matching catch from inside/outside with only that roe recovered from inside/outside will be very difficult, if not impossible; (3) for both sectors, the number of 'clean' weeks (where a vessel fished inside/outside for the entire week) is small, and tended to be near the end of the 'A' season - differences in roe maturity as the season progresses would further confound any such comparisons.

5.4 CVOA Summary and Conclusions

The CVOA boundaries used in this analysis were 163°W to 168°W south of 56°N and north of the Alaskan peninsula and the Aleutian Islands. This area represents the CVOA before the western boundary was moved from 168°W to 167°30'W in 1995. Consequently the data used to represent the CVOA in 1996 are from an area slightly larger than the actual CVOA that year.

During 1991 and 1994 over 96% of the observed EBS pollock catch, during the A-season was harvested inside the CVOA. In 1996 each sector harvested between 46-75% of their A-season pollock from inside the CVOA. One possible explanation for this shift in effort is that the ice edge was over 120 nautical miles further north in mid-March of 1996, when compared to 1991 and 1994.

The CPUE was between 67-107% greater inside the CVOA during the 1991 and 1994 A-seasons. In 1996 the trend reversed and CPUE was 48-122% greater outside the CVOA depending on the sector. Firm conclusions should not be drawn from these data because of the small sample sizes outside the CVOA during 1991 and 1994, and the changes in the location of the ice edge.

Pollock were generally larger and more uniform in size inside the CVOA during the 1991, 1994 and 1996 A-seasons. This was most evident in 1996 when pollock were on average 4-6 cm smaller and 0.2 kg lighter outside the CVOA.

Pollock catch by catcher vessels during the B-season increased from about 84% in 1991 to 100% in 1996. Catcher processors harvested about 96% of their B-season pollock outside the CVOA during 1991. That was the last year they were allowed to fish inside the CVOA during the B-season. Since that time, 100% of the catcher processor harvest has taken place outside the CVOA.

CPUE was greater outside the CVOA for each year 1991, 1994, and 1996. However, the pollock that were harvested tended to be larger and of more uniform size inside the CVOA. This is also reflected in the pollock population estimates. The number of pollock inside the CVOA ranged from 18.7 $\times 10^9$ in 1994 to 7.7 $\times 10^9$, but only 2.1 and 9.2% of those pollock were less than 40 cm, respectively. Outside the CVOA numbers of pollock were much greater, but so was the percent of pollock less than 40 cm.

The general conclusions drawn from this analysis are that:

- Increased pollock allocations to the offshore sector leads to less pollock catch in the CVOA relative to the status quo;
- During the A-season, excluding the offshore sectors (CVOA alternative 1), and offshore and "true" mothership sectors (CVOA alternative 2) from the CVOA yields *reductions* in A-season CVOA pollock catches;
- During the A-season, no combination of allocation alternative or CVOA alternative leads to *increases* in A-season CVOA pollock catch greater than 6%;
- Predicting B-season removals from the CVOA under the No CVOA alternative is highly speculative regardless of the allocation alternative, and depend considerably on how the offshore fleet is distributed.
- In the B-season and for CVOA alternatives 1, 2, and status quo, *reductions* in CVOA pollock catches are predicted for those sector allocation alternatives that *increase* the offshore sector's allocation (except for the combination of sector alternative 3(C) and CVOA alternative 2);

Fritz, L. W., and R. C. Ferrero. In press. Options in Steller sea lion recovery and groundfish fishery management. Journal of Nature and Wildlife Conservation.

Fritz, L. W., R. C. Ferrero, and R. J. Berg. 1995. The threatened status of Steller sea lions, *Eumetopias jubatus*, under the Endangered Species Act: effects on Alaska groundfish fisheries management. Marine Fisheries Review. 57(2): 14-27.

Wespestad, V. G., J. N. Ianelli, L. Fritz, T. Honkalehto, N. Williamson, and G. Walters. 1997. Bering Sea-Aleutian Islands walleye pollock assessment for 1998. *In* Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Regions as Projected for 1998. North Pacific Fisheries Management Council, P.O. Box 103136, Anchorage, AK.

6.0 ENVIRONMENTAL ASSESSMENT

6.1 NEPA Requirements

An Environmental Assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will significantly impact the human environment. An Environmental Impact Study (EIS) must be prepared if the proposed action may reasonably be expected to: (1) jeopardize the productive capability of the target resource species or any related stocks that may be affected by the action; (2) allow substantial damage to the ocean and coastal habitats; (3) have a substantial adverse impact on public health or safety; (4) affect adversely an endangered or threatened species or a marine mammal population; or (5) result in cumulative effects that could have a substantial adverse effect on the target resource species or any related stocks that may be affected by the action. An EA is sufficient as the environmental assessment document if the action is found to have no significant impact (FONSI) on the human environment.

6.2 General Discussion

The original SEIS prepared for Amendment 18/23 addressed overall biological impacts, impacts to the human environment, and marine mammal implications of the proposed actions. The action currently contemplated is a continuation of the existing allocations, or altered allocation percentages, for a specified time period. Potential impacts relative to NEPA are expected to be consistent with those previously predicted. Nothing in the examination of the current fisheries leads the analysts to any differing conclusions, with respect to environmental impacts. Total removals of the pollock and Pacific cod resources are controlled by the setting of total allowable catches (TAC), and their monitoring has been enhanced recently to guard against overruns. Allocations between industry sectors will not change total removals from the stocks, and may provide an extra margin of safety against overruns by further partitioning the TACs.

Prohibited species catch (PSC) such as crab, herring, and halibut are controlled as necessary and appropriate by extensive management measures in the BS/AI and in the GOA, including closed areas, PSC quotas, bycatch disincentive programs, and authorizations to the NMFS Regional Director to limit bycatch and close areas. Bycatch rates of all prohibited species are very low in the directed BS/AI pollock fisheries, for all sectors involved, though bycatch of salmon remains an issue for the mid-water pollock fisheries. Measures to control the bycatch of salmon have been implemented by the Council since approval of the original inshore/offshore allocations and are currently under review by the Council. The Council's preferred alternative is not anticipated to change PSC or biological impacts on bycatch species, though there may be changes in fishing patterns that will need to be monitored by the Council.

Marine mammals have direct and indirect interactions with commercial fisheries. Direct interactions include shooting, harassment, disturbance, and entanglement in fishing gear or gear debris. Indirect effects include commercial fisheries related reductions in prey species for marine mammals. The Council's preferred alternative is not expected to measurably increase the direct impacts on marine mammals. Though the Council decision to allocate pollock and Pacific cod between inshore and offshore users could increase vessel traffic to and around coastal communities, the Council and NMFS have established protective buffer zones around major sea lion rookeries and walrus haul outs to minimize disturbance. Shooting and harassment also are banned. Should future problems be identified, establishment of traffic lanes or other measures could be implemented to reduce these interactions. Evidence from previous analyses suggests that the creation of the CVOA, which excludes offshore processing vessels from the area for the pollock B season, likely suppressed harvest rates and total removals of pollock from critical habitat areas, compared to what would have occurred in the absence of the CVOA.

Trophic interactions and the potential for fisheries to degrade the prey available to marine mammals are currently issues of great concern. There are no data available that give conclusive evidence that the pollock fisheries are negatively impacting sea lion populations. Studies of sea lion pups in 1991 show that they generally appear healthy and without signs of anemia or malnutrition. The Council's preferred alternative for to the inshore/offshore preemption problem will not change how harvest quotas are set for the pollock resource. The quotas will continue to be set taking into account a variety of factors including the potential for impacts on marine mammal populations. These considerations, used in combination with existing restrictions on fishing operations such as buffer zones and restrictions on the amount of pollock that may be taken by quarter and area, will provide protection for sea lion populations. Section 7 consultations by NMFS during consideration of the original Amendments 18/23 or Amendments 38/40 concluded that the groundfish fisheries are unlikely to jeopardize the continued existence and recovery of any endangered or threatened species under the jurisdiction of NMFS. However, catch patterns may be impacted by changes currently proposed for the CVOA, which may in turn hold implications for Steller sea lion considerations. These are discussed below.

6.3 Overview of Steller Sea Lion Considerations

The Council's list of alternatives specifically requests the identification and examination of potential 'ecological' implications to the proposed reapportionment of TAC among the several sectors. Most of this type of consideration relates to pollock fishing patterns in the CVOA, and more specifically to the potential impacts to sea lions of existing or future CVOA catch patterns. NMFS has several concurrent initiatives under way with regard to Steller sea lion issues, with the net result being a broad consideration of current management measures, aside from the specific implications of the I/O3 allocation issue. Nevertheless, this EA specifically addresses the sea lion implications of the current inshore/offshore alternatives and options. NMFS Protected Resources Management Division (PRMD) and National Marine Mammal Laboratory scientists have reviewed the preceding analyses with the intent of attempting to identify for the Council any alternatives or suboptions which hold adverse (or positive) implications for Steller sea lions.

While this assessment may not provide definitive guidance in terms of an 'optimal allocation', it is intended to at least address the alternatives in a general fashion, and be able to flag any alternatives that appear to be unreasonable choices in terms of Steller sea lion implications; i.e., for which we are unable to make a Finding of No Significant Impact (FONSI). In April 1998, NMFS issued guidance to the Council that, whatever alternative/options are chosen, they should not result in a 'proportional' increase in pollock removals from the CVOA (which overlaps considerably with the critical habitat area for sea lions). Clarification of the baseline for defining 'proportional' has been provided by NMFS, and is explained in the following sections. Now that a Council decision has been made, a more formal 'Section 7 Consultation' will occur relative to the specific alternative chosen.

Implications of I/O3 attributable impacts, e.g., impacts on Steller sea lions caused by lesser or greater fishing activity in the CVOA, would ideally be addressed in a comprehensive impact analysis. Such ecological impacts could result in "losses" to some individuals and/or groups, some of which might be expressed in the form of nonmarket impacts. These are largely beyond our current capability to measure, but may be referenced in the analysis, if appropriate. Ecological, or 'ecosystem', impacts beyond Steller sea lion issues are even more difficult to project, and are likely beyond the scope of the analysts' ability to predict.

6.4 Effects of the CVOA and Gulf of Alaska Allocation Alternatives on Marine Mammals

Natural histories of marine mammals inhabiting the Bering Sea and neighboring North Pacific Ocean waters were summarized in the analyses for Amendments 18/23 and 38/40; by reference, those entire summaries are incorporated here. Since the 1995 analysis for amendments 38/40, new research information has become available on some marine mammals (Steller sea lions, harbor seals, northern fur seals, and killer whales) that frequent the CVOA and/or Gulf of Alaska (GOA). That new information is summarized below. After those updates, the question of fishery impacts within the CVOA and in the GOA is addressed.

6.4.1 Steller sea lion life history

Movements and distribution: Steller sea lions are found predominately from shore to the edge of the continental shelf, but are not uncommon in waters several thousand meters deep. During the breeding season (summer), adult Steller sea lions (ages 4+) are generally located near shore and near rookeries. Juveniles (1-3 year olds) are less tied to the rookeries during summer, but are often found at nearby haulouts. After the breeding season, sea lions may disperse widely, such that rookeries that were populated in the summer may be vacated in winter. In the Bering Sea, sea lions have been most often sighted over shelf waters from Unimak Pass northward and near the Aleutian Islands. On the shelf, sightings are clustered in the southeastern Bering Sea (including the CVOA). The sighting data, however, has not been standardized by effort and cannot by itself be used to determine relative importance of certain areas to Steller sea lions. Nevertheless, population distribution prior to the decline and more recent telemetry data indicate that the southeastern Bering Sea shelf is an important foraging area for sea lions. This information led to the designation of the Eastern Bering Sea foraging area as critical habitat.

Diet and Foraging: In 13 studies summarized by NMFS (1995), walleye pollock ranked first in importance as a prey item for Steller sea lions in 11 studies, and second in the remaining two. Other prey consumed off Alaska were Pacific cod, Atka mackerel, salmon, octopus, squid, Pacific herring, capelin, sand lance, flatfishes, and sculpins. Most of the prey are schooling fish, many of which are commercially exploited. Juvenile sea lions tend to eat smaller fish than adults. Consequently, the overlap in the size distribution of their food with commercial fisheries may be less than that of adults.

Sea lion pups (less than 1 year old) are more restricted than adults in their foraging range, both vertically and horizontally (Merrick and Loughlin 1997). By their sixth month (January), pups were able to range more than 300 km in a trip, but most of their trips offshore were brief (< 1 day), and most of their dives were shallow (<10 m) and short (< 1 min). In summer, adult females with pups foraged close to shore (usually < 20 km) and to shallow depths (most < 30 m), while in winter, they ranged much farther (some > 500 km offshore) and dove to greater depths (often > 250 m).

Evidence obtained from scats (feces) collected on rookeries in the GOA and Aleutian Islands region indicate that pollock and Atka mackerel are important prey items for Steller sea lions, but the evidence also indicates that diet diversity may be as important as particular prey type. Merrick et al. (1997) examined scats from sites throughout the region, developed indices of prey diversity based on those scats, and then correlated the observed diversity to population trends at those sites. The results indicated that population trends worsened as diet diversity decreased.

The value of roe-bearing versus non-roe-bearing pollock: The relative value of any prey depends on at least three factors. First, the nutritional characteristics of the prey tissues (in terms of caloric and nutritional content) must determine, in part, the relative value of the prey. Different species of prey, and prey of the same species but different age, size, or physiological condition have different nutritional content. Presumably, pollock have greater nutritional value, both in terms of calories and nutrients, when they are bearing roe. Therefore, it is reasonable to expect that consumption of roe-bearing pollock may be an advantage to sea lions.

Second, the relative value of a prey type must also depend on the energetic costs of capturing, consuming, and digesting the prey. It is likely that the aggregation of roe-bearing pollock leads to a reduction in sea lion energetic costs associated with foraging. The aggregation of roe-bearing pollock appears to be relatively predictable in, for example, Shelikof Strait or the southeastern Bering Sea, which supports the idea that these are important foraging areas for sea lions.

Third, the relative value of prey depends, in part, on the nutritional needs of the predator. Roe-bearing pollock are available at the end of the winter season when sea lions are likely to be in their worst condition. The added nutritional value of roe-bearing pollock may be essential for sea lions, particularly reproductive females, to regain good condition. Roe-bearing pollock may also be a particular benefit to young sea lions, with less developed foraging skills and relatively greater nutritional demands for growth and thermoregulation.

These arguments, which are more theoretical than scientifically demonstrated, all suggest that the availability of roe-bearing pollock may be of particular benefit to Steller sea lions. However, the argument that pollock may provide better prey when they are roe-bearing does not lessen the potential value of pollock during the remainder of the year. Sea lions eat pollock throughout the year. Therefore, our best information suggests that pollock are an important prey throughout the year, but that pollock in roe-bearing condition may provide a particular advantage to sea lions for the reasons listed above.

Critical life history stages and critical seasons: Steller sea lions, like other pinnipeds, probably face their most critical transition during the post weaning phase. The strategy for most pinnipeds involves a period of nursing when the pup gains relatively large amounts of weight (i.e., increasing three- or four-fold or more) to provide a large energy store to sustain the pup after weaning and as it learns to forage on its own. The length of time of the nursing period varies considerably for different pinnipeds, from days to months or even several years, depending on a number of factors such as climate, environmental conditions, location of birth, vulnerability of the adult female to predators, annual reproductive rate, and so on. The development of essential and sufficient foraging skills may also take months or years.

For Steller sea lions, births peak in early June and virtually all births in a year have occurred by the end of that month. For at least the next four months, pups nurse and gain considerable weight. Weaning may be abrupt (i.e., the pup is abandoned and all suckling stops) or may occur over a prolonged period (that is, the pup continues to nurse in spite of its physical development and the development of foraging skills, and the resulting energy demands placed on the adult female). The process of weaning for Steller sea lions is poorly understood due to the often inaccessible locations where births occur, the highly variable length of the nursing period, and the fact that many (if not most) pups are weaned in their first winter. Pups may wean as early as four months of age, and most pups have probably been weaned by the next birthing season, if not sooner (York et al. 1996). Some pups may nurse longer, which makes the most sense if the adult female is not pregnant or does not give birth and therefore may have more energy to direct to her pup.

Due to the chronology of pupping, nursing, and weaning, many pups may be weaned in the winter months; i.e., October through March or April. Therefore, many pups may face the critical transition to independence during a period when environmental conditions may be the most harsh; sea surface conditions worsen, prey availability decreases, and winter weather conditions increase energy requirements to thermoregulate (Merrick and Loughlin 1997). A precise or quantitative description of the increased energy costs associated with winter months is not possible at this time, but the period from October to March or April is likely the most critical period of the year for pups and juveniles.

The reproductive cycle of Steller sea lions may also result in stress to adult females during the winter period. Parturient females may lose considerable weight and condition during the nursing period, when they may also be pregnant. Delayed implantation probably reduces the metabolic demands of pregnancy during the period when the female is nursing, but implantation must occur sometime during winter months when, again, environmental conditions are most harsh. Merrick and Loughlin (1997) found that adult females studied in winter months did not increase their overall foraging effort compared to adult females studied in summer months. This may be because they reduce their energy demands when they wean their pups. But it is also likely that sea lions do not maintain a steady body condition throughout the year, but rather experience periods of relatively good condition and other periods when their condition may be poorer. Perez and Mooney (1986) estimated that metabolic demands may be 60% greater for lactating versus non-lactating female fur seals, so lactation may reduce considerably the condition of an adult female.

If condition varies throughout the year, and winter imposes increased demands that may lead to a decline in body condition, then the remainder of the year may also be important in that it provides an essential period for sea lions to recover and achieve good condition prior to the next winter. Therefore, while it is important to recognize that sea lions may be most vulnerable to harsh winter conditions, their ability to withstand those conditions may depend, in part, on the availability of prey during the rest of the year. Winter is probably the most demanding period, but other times of the year are also important.

Listing status: Steller sea lions were listed as threatened under the Endangered Species Act by emergency rule in April 1990 after a significant (-64%) decline in their population size in Alaska between the mid 1960s (or possibly earlier) through 1989. From 1989 to 1994, the decline continued (another 24%), with most losses in southwest Alaska (western and central GOA, Bering Sea, and Aleutian Islands). The status review completed by NMFS in 1995 was part of the process of considering a reclassification of their listing to endangered. In 1997, the species was split into two populations (to the east and west of 144°W longitude); the status of the eastern stock was left as threatened, while the western stock was reclassified as endangered.

Population viability: Population viability analyses (Merrick and York 1994) predict that the western stock will be reduced to very low levels (< 10 animals) within 100 years if 1985-94 trends persist. Times to extinction were consistent when the population model used aggregate counts on rookeries from the Kenai Peninsula to Kiska Island (63 years to extinction), or individual trends for each of the 26 rookeries in the area (95 years). If trends from 1989-94 were used, neither type model (aggregate versus individual rookery) predicted extinction of the western population, but the decline would continue and could result in as few as 3,000 adult females within 20 years, at which time individual rookeries would disappear. The results of this modeling exercise, combined with continued declines in pups counts, prompted the Recovery Team to recommend a change in listing status for the western population.

Counts were conducted in 1996 from SE Alaska through Attu Island in the western Aleutian Islands. Between 1994 and 1996, the overall count at trend sites decreased by 7.8% (nonpups). In the Aleutian Islands region, these counts were up by 1.1%, and in the eastern Aleutian Islands the count was up by 6.6%. However, the Kenai-to-Kiska trend decreased by 4.6%.

In 1997, counts were conducted from Kenai Peninsula through the eastern Aleutian Islands to determine if trends observed from 1994 to 1996 continued. In the eastern Aleutian Islands, the counts were down by 4.9% at all 40 sites counted, and 13.2% at the ten trend sites. Thus, the most recent counts indicate that the decline is continuing.

Management Actions Taken by NMFS and NPFMC: The record of specific Steller sea lion conservation management actions taken by NMFS and the NPFMC since the 1990 listing includes:

- Creation of 3-nautical-mile (nmi) radius no-entry buffer zones around all sea lion rookeries west of 150° W longitude (April 1990);

- Prohibition of shooting at or near sea lions and reductions in the number of sea lions that could be killed incidental to commercial fishing (April 1990);

- Spatial allocations, and conditions on temporal allocations of pollock TAC in the GOA (June 1991);

- Creation of year-round 10-nmi radius trawl fishery exclusion zones around all rookeries west of 150°W longitude, and 20-nmi radius trawl fishery exclusion zones around 6 rookeries in the eastern Aleutian Islands during the BS/AI pollock A-season (June 1991, January 1992, and January 1993);

- Publication of a final recovery plan for the species written by the recovery team for NMFS (December 1992);

- Designation of critical habitat under the ESA in April 1993 (58 FR 17181). Specific areas designated as critical habitat were (1) all rookeries and major haul outs (where greater than 200 sea lions had been counted, but where few pups are present and little breeding takes place), including a) a zone 3,000 feet (914 m) landward and seaward from each site east of 144°W longitude (including those in Alaska, Washington, Oregon and California); and b) a zone 3,000 feet (914 m) landward and 20 nmi (36.5 km) seaward of each site (36 rookeries and 79 haul outs) west of 144°W longitude where the population had declined more precipitously and where the former center of abundance of the species was located; and 2) three aquatic foraging regions within the core of the species' range;

- Splitting of the species into eastern and western populations and changing of the listing status of the western population to endangered (May 1997); and

- Protection of forage fish from directed fishing (April 1998).

The rationale behind each management action was outlined in each Federal Register notice announcing the action. The shooting prohibition, reduction in incidental take mortality and creation of no-entry zones around rookeries were enacted to limit potential for direct human-related mortality, and had only minor impact on groundfish fisheries in the BS/AI and GOA. Spatial-temporal allocations of pollock TAC in the GOA, and creation of trawl-exclusion zones around rookeries were promulgated as part of the ESA Section 7 consultation for the 1991 GOA pollock TAC specifications. In that document, NMFS reviewed and presented data which showed that (1) pollock is a major component of the sea lion diet; (2) sea lions collected near Kodiak Island in the 1980s were lighter, had smaller girths and thinner blubber layers than sea lions from the same area collected in the 1970s; and (3) the pollock fishery had become increasingly concentrated in time and in areas thought to be important to sea lions. NMFS concluded that the spatial and temporal compression of the pollock fishery in the 1980s in both the GOA and BS/AI could have created localized depletions of Steller sea lion prey, which in turn could have contributed to or exacerbated the decline of the sea lion population (5 June 1991). Much of the area in which the pollock fisheries (and other groundfish trawl fisheries; e.g., Atka mackerel and Pacific cod) became spatially compressed is designated as critical habitat for Steller sea lions (Fritz 1993abc). Estimated removals of pollock from Steller sea lion critical habitat in the BS/AI region have increased from between 250,000-300,000 mt from 1981-1986 (between 20-30% of total BS/AI pollock landings) to between 410,000-870,000 mt in 1987-96 (35-69% of total landings). Much of this increase in pollock landings from critical habitat came from the eastern Bering Sea foraging area, which overlaps considerably with the CVOA. The species was split into two stocks based largely on genetics information (Bickham et al. 1996). Finally, certain forage fish were removed from the "other" category of the BS/AI-FMP and protected from directed fisheries, to ensure that these potential prey for marine mammals and other predators were not depleted.

Pacific harbor seals

Harbor seals are found in all coastal areas of the GOA and are widely distributed in nearshore habitats of the Bering Sea (Pitcher, 1980a; Calkins, 1986; Frost and Lowry 1986). They are generally thought of as a coastal, non-migratory species, although individuals are occasionally observed as far as 100 km offshore (Pitcher, 1980a).

Only limited information is available on the diet of harbor seals in Alaska. Pitcher (1980a; b) reported that the harbor seal diet in the GOA was composed of at least 27 species of fish, as well as cephalopods (both octopi and squids) and shrimp in 269 stomachs analyzed. The seven principal prey were (in order of frequency of occurrence): pollock (21%), octopus (17%), capelin (9%), herring (6%), Pacific cod (6%), flatfishes (5%), and eulachon (5%). There were some significant regional differences in the harbor seal diet throughout the GOA. Octopus, capelin and Pacific cod were more important components of the diet in the Kodiak area, while pollock was the principal prey in the Prince William Sound area. Fewer data are available on harbor seal food habits in the Bering Sea (16 stomachs analyzed by Lowry et al., 1986 from animals collected in Bristol Bay). Herring and capelin were the principal components of the diet of harbor seals in Bristol Bay.

Little information is available on the size composition of fish in the diet of harbor seals compared with Steller sea lions and northern fur seals. Pitcher (1981) found that harbor seals collected from the same area and during the same period as Steller sea lions consumed smaller pollock (mean length of pollock ingested by harbor seals = 19.2 cm; for Steller sea lions, 29.8 cm). This suggests a low overlap in body size between pollock harvested by the fishery and those ingested by harbor seals.

Recent trends in abundance vary markedly for different harbor seal populations in Alaska and the North Pacific. The central and western GOA stock may have decreased recently by as much as 90% (Pitcher 1990) since the 1970s. Populations in other portions of the range may be more stable (southeast Alaska) or increasing (British Columbia; Olesiak et al. 1990). The decline in harbor seals in the central and western GOA has not been explained.

The Bering Sea stock of harbor seals was surveyed in 1991 (Bristol Bay and the northern side of the Alaskan Peninsula), 1994 (the Aleutian Islands), and 1995 (northern side of the Alaskan Peninsula and Bristol Bay/Togiak NWR). The total mean count for 1991 survey was 9,324 seals, with 797 from Bristol Bay and 8,527 from the north side of the Alaskan peninsula (Loughlin 1992). The sum of the mean counts from the 1994 Aleutian survey was 2,056 (NMFS unpublished), yielding a total mean count for all three areas of 11,380. The 1995 counts were 7,785 (cv = 0.044) for the northern side of the Alaskan Peninsula, and 955 (cv = 0.071) for Bristol Bay. These numbers indicate a decline of harbor seals in this area of about 40% since the 1970s.

Northern fur seals

The northern fur seal is a migratory species, returning to the Bering Sea (both Pribilof Islands and Bogoslof Island) in summer to breed. For the remainder of the year, fur seals are distributed throughout the North Pacific Ocean. From May to December, seals forage in and transit through the CVOA and, during August and September, this region is particularly important for pregnant and lactating females, juveniles and departing adult males. Recent studies of fur seal pup migration indicate that newly weaned migrating pups move through and may reside in the CVOA during the period from November to February (Ragen et al. 1995).

The most recent estimate for the number of northern fur seals in the North Pacific Ocean is approximately 1,000,000, down approximately 20% from the 1.25 million estimated in 1974, and perhaps as much as 60% from the numbers observed in the early and mid 1950s. Since a short period of apparent increase in the early 1970s, counts declined sharply in the late 1970s and then began to stabilize in the 1980s. Northern fur seals are listed as depleted under the MMPA because the population has declined to less than 50% of the estimated size in the 1950s. The St. George population, which is closest to the CVOA, declined until approximately 1990 and stayed at about the same level until 1996, when it showed a moderate increase. The larger St. Paul Island population has been stable since 1980.

Important known sources of mortality over the past four decades include direct killing and entanglement in marine debris. From 1956 to 1974, over 300,000 adult females were killed in land-based and pelagic harvests. Many of those females had nursing pups, which also must of succumbed from starvation. The killing of these animals accounts for a large portion of the decline observed in northern fur seals after the mid 1950s (York and Hartley 1981). When the harvest was ended, the population appeared to start a recovery in the early and mid 1970s, but then declined further into the 1980s and eventually reached a period of apparent stability at a much reduced level. One possible (partial) explanation for the continued decline in the late 1970s and 1980s is mortality from entanglement in marine debris associated with commercial fishing (Fowler 1985; Fowler et al. 1994). Entanglement monitoring programs conducted on the Pribilof Islands throughout the 1980s and 1990s have found that trawl netting is a significant component of entanglement debris found on northern fur seals (Fowler et al. 1994). While harvests of females and entanglement in fishing gear have contributed to the decline in the size of the population since the 1950s, there is also evidence that the carrying capacity of the North Pacific and Bering Sea for fur seals changed substantially in that period (NMFS 1993). The apparent change in carrying capacity may reflect a natural oceanographic phenomenon, or the impact of intense fishing, or both.

The diet of the northern fur seal in the GOA and the Bering Sea has been studied at least since the mid 1950s and has been summarized by Kajimura (1984) and Perez and Bigg (1986). In 1,800 stomachs from fur seals collected in the Bering Sea from 1960-1974, pollock was a principle prey species, but it occurred in less than 25% of the samples (Kajimura 1984, Perez and Bigg 1986). In contrast Sinclair et al. (1996) found that juvenile walleye pollock were present in approximately 80% of fecal and gastrointestinal samples obtained from the Bering Sea between 1981 and 1990.

In the GOA, data exist for the months of February-July, and indicate a varied diet composed primarily of herring, Pacific sand lance, capelin, squid and pollock. In the Bering Sea, data exist for the months of June-October, and also reveal a varied diet of small schooling fish and squid. Pollock composed a larger percentage of the diet in the Bering Sea (35% of diet volume) than in the GOA (5%) and Atka mackerel comprised between 10-20% of the diet in the Bering Sea during June. Foraging occurs to depths up to 200 m over both shelf and pelagic waters (Kajimura 1984; Loughlin et al. 1987; Gentry et al. 1986; Goebel et al. 1991).

The data for northern fur seals, although obtained primarily from females, suggest that they ingest smaller fish than Steller sea lions. Perez and Bigg (1986) reported that fur seals collected in the North Pacific Ocean ingested primarily 1-2 year-old pollock (total range of 4-40 cm; n = 1,721 pollock from 71 stomachs). Sinclair et al. (1994) reported that juvenile pollock (especially 0- and 1-year-old fish) are the principle prey of lactating fur seals. In addition, the relative strength of pollock year classes is reflected in the fur seal diet, so that pollock from strong year classes show up with markedly higher frequency as the year class ages (Sinclair et al. 1994). The largest fish consumed by northern fur seals in the collections of Perez and Bigg (1986) (n > 3,000 fish) was a 41-cm salmon. Pollock and Atka mackerel fisheries primarily catch fish (target species) larger than 30 and 35 cm, respectively (Hollowed et al. 1991; Lowe 1991; Wespested and Dawson 1991). Consequently, the overlap between fisheries takes and the preferred fish sizes of northern fur seals may be low, a conclusion also reached by Swartzman and Haar (1983).

Killer Whales

One of the most common marine mammal/fishery interactions in the Bering Sea is between longline fishing vessels (particularly those targeting on sablefish or Greenland turbot) and killer whales. While this proposal does not deal with longline vessels, it should be noted that the area where interactions are most frequent is a triangular-shaped area from Unimak Pass to the Pribilof Islands to Seguam Pass, much of which also overlaps with the CVOA (Yano and Dahlheim 1995.) The shelf edge from Unimak Pass to the Pribilof Islands also has a preponderance of the killer whale sightings in the platform of opportunity sighting data, particularly in May-December, but the preponderance may simply reflect the distribution of sighting effort. Interactions between killer whales and trawlers have not been as frequent as with longliners in the area. Killer whale populations off Alaska are thought to be stable, and they probably number in the many hundreds of animals, not in the many thousands. This estimate is based on sighting information and surveys conducted in the 1980s, and replicate surveys conducted in 1992 and 1993 by NMFS.

6.4.2 Interactions between the Pollock Fishery and Marine Mammals within the CVOA

Walleye pollock comprises the largest portion of groundfish occurring in the Bering Sea. Pollock is consumed by marine fishes (including cannibalistic pollock), human fisheries, marine birds, and marine mammals. The availability of pollock to these consumers depends on the size structure of pollock populations, their areal and temporal distributions, and the areal and temporal distribution of the consumers. The amount of pollock taken by each consumer type must vary annually, but Livingston (1993) estimated that marine fishes consumed the largest portion (principally ages 0-1), followed by human fisheries (age 3+), marine birds (ages 0-1), and marine mammals (ages 1+).

The amount of pollock taken by fisheries is determined by a complex stock assessment and TAC-setting process that uses the best available commercial and scientific information on both the fish stocks and the fishery. TAC-setting is done conservatively, in recognition of the fact that maintenance of a healthy ecosystem requires allowance of unfished biomass sufficient to support other consumers (e.g., marine birds and mammals). In addition to the conservative TAC-setting process, areal and time closures have been imposed to disperse fishing effort and prevent competition between various sectors of the fishery. The CVOA and associated allocation regimen was originally established as a mechanism for limiting competition between inshore vessels and offshore factory trawlers. These dispersion measures also benefit other marine consumers by preventing localized depletions of prey.

The CVOA encompasses waters known to be important for Steller sea lions and northern fur seals, and likely to be important (at least in part) for harbor seals. Given the current understanding of foraging patterns by these marine mammals, it is not possible to demonstrate, with certainty, that these species do or do not compete with fisheries for pollock. However, the potential for competition could be exacerbated given the recent (1994 to 1997) 81% decline in the summer CVOA pollock biomass estimate, and the recent (also 1994 to 1997) tripling in summer pollock harvest rates by the fishery in the CVOA.

The CVOA overlaps considerably with the eastern Bering Sea foraging area designated as part of Steller sea lion critical habitat in 1993. The overlap is not total and management's primary concern is with the effect of the fishery within areas designated as critical habitat. Nevertheless, in the absence of fishery management measures that distinguish between these two areas, the effects of fishing activities within the CVOA may be indistinguishable from those within Steller sea lion critical habit (the eastern Bering Sea foraging area). Because of the extensive degree of overlap (Fig. 5.11), pollock catches from the CVOA and Steller sea lion critical habitat are closely correlated in both the A- and B-seasons (Figs. 6.1 and 6.2; Table 6.1; Fritz 1993c).

Table 6.1. Observed catches of pollock (in mt) and percent of seasonal observed pollock caught in the Catcher Vessel Operational Area (CVOA) and in Steller sea lion critical habitat. There is considerable overlap in CVOA and critical habitat; therefore, much of the observed catch in each area is the same. Observed percent distribution was used to estimate total catches in each area (Est. Catch).

	A-Season			B-Season			Annual		
Year Area	Observed	Percent	Est. Catch	Observed	Percent	Est. Catch	Observed	Percent	Est. Catch
1992 CVOA	155,572	47%	229,325	226,411	46%	334,525	381,983	46%	563,850
Critical Habitat	173,283	53%	255,433	243,927	50%	360,405	417,210	51%	615,838
Total for Season			485,274			727,911			1,213,185
1993 CVOA	180,488	49%	307,023	224,369	50%	381,217	404,857	50%	688,241
Critical Habitat	204,285	56%	347,504	236,192	53%	401,305	440,477	54%	748,809
Total for Season			622,680			761,053			1,383,733
1994 CVOA	324,363	91%	582,431	190,221	43%	334,976	514,584	64%	917,407
Critical Habitat	302,936	85%	543,956	208,482	47%	367,133	511,418	64%	911,089
Total for Season			639,943			782,152			1,422,095
1995 CVOA	358,657	93%	553,076	215,566	49%	359,593	574,223	70%	912,669
Critical Habitat	345,113	89%	532,190	213,450	49%	356,063	558,563	68%	888,253
Total for Season			597,238			729,957			1,327,195
1996 CVOA	193,001	57%	315,298	188,978	49%	329,690	381,979	53%	644,988
Critical Habitat	187,663	56%	306,578	189,131	49%	329,957	376,794	52%	636,534
Total for Season			549,828			672,012			1,221,840
1997 CVOA	235,359	77%	396,850	125,327	36%	224,054	360,686	55%	620,904
Critical Habitat	228,024	75%	384,482	125,405	36%	224,194	353,429	54%	608,676
Total for Season			512,230			626,058			1,138,288

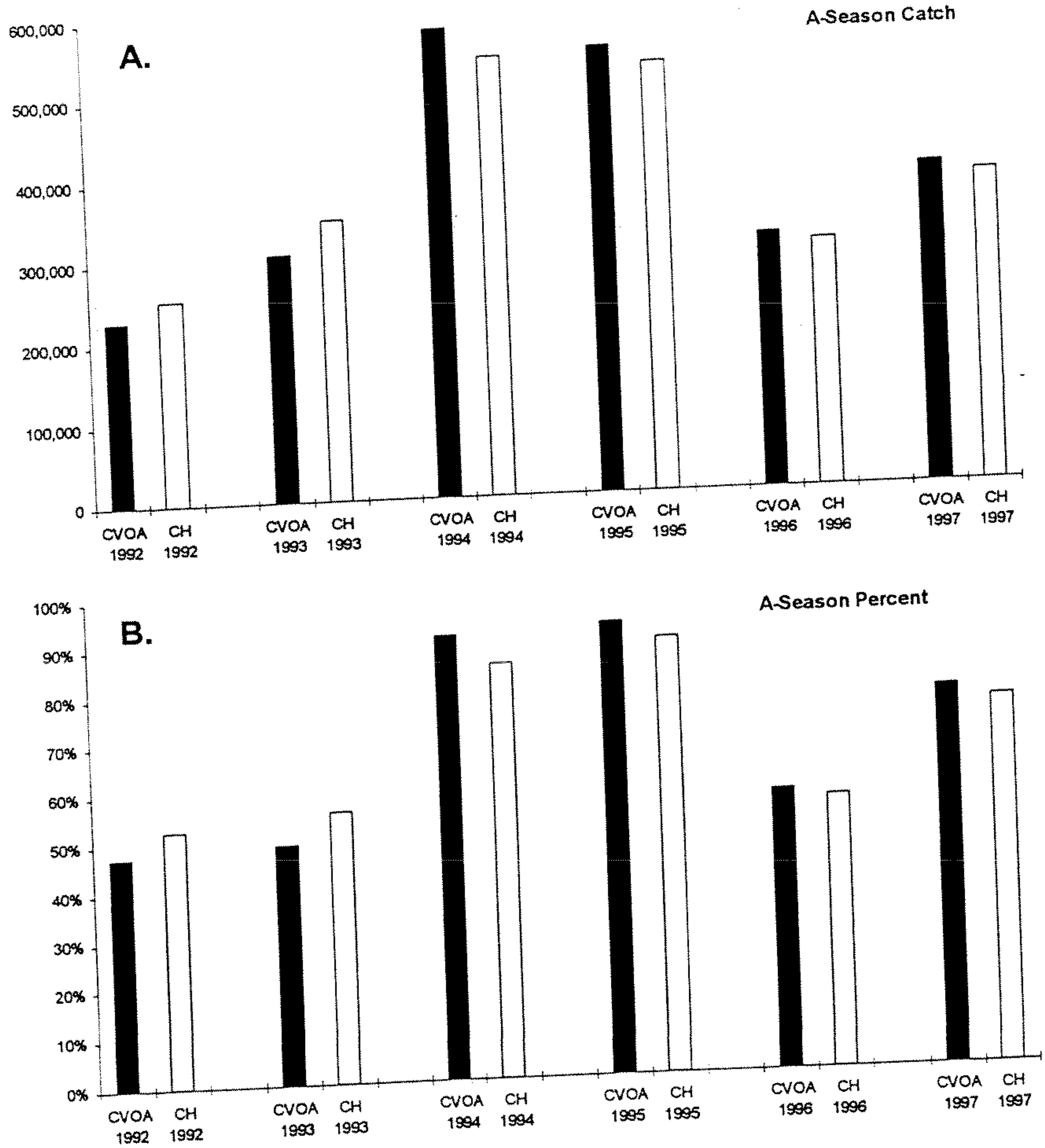

Figure 6.1 A-season catches (A; in mt) of pollock in the BS/AI in 1992-97 in the Catcher Vessel Operational Area (CVOA) and in Critical Habitat (CH) for the Steller sea lion. Percent of total A-season BS/AI pollock catch is shown in B.

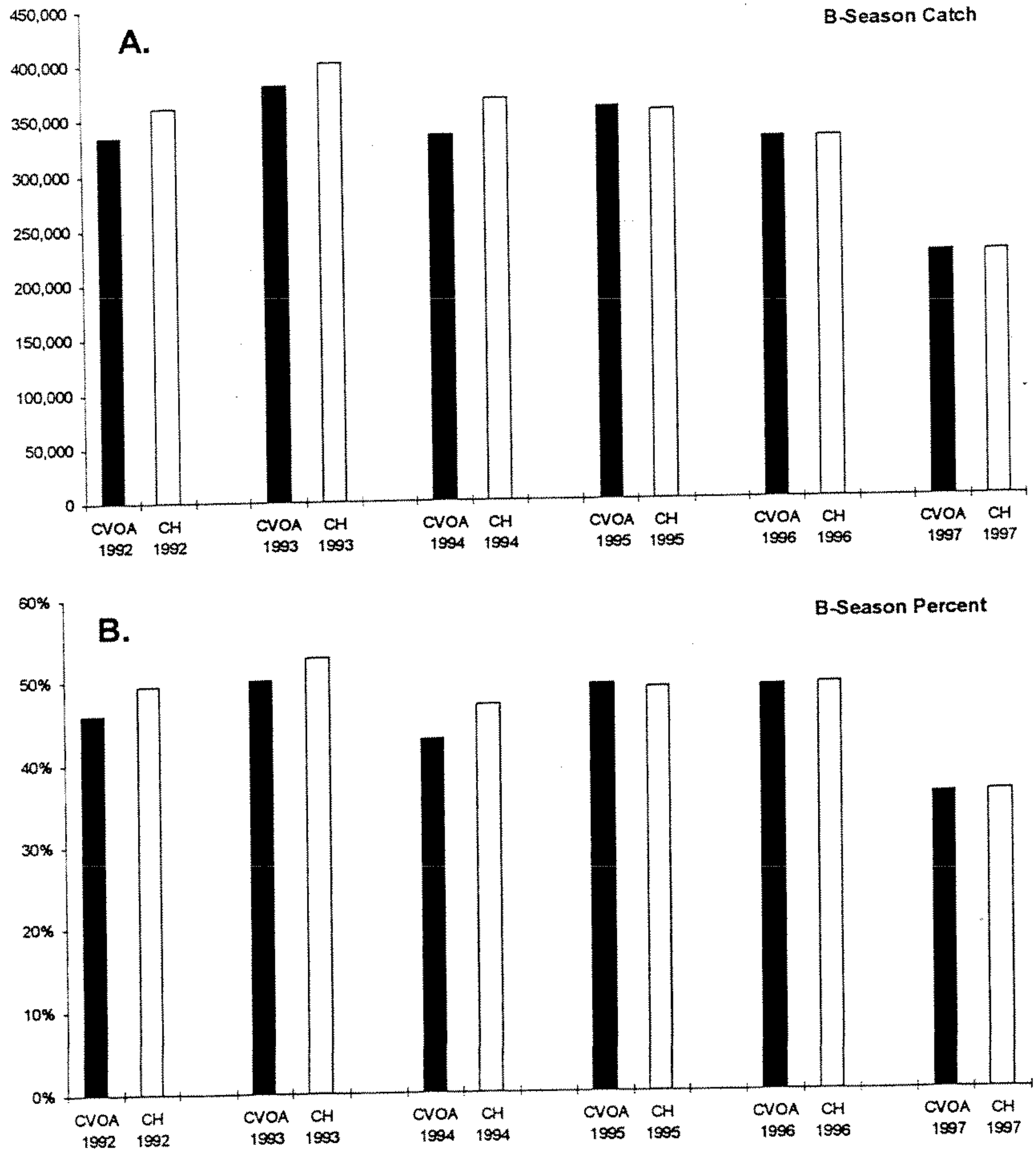

Figure 6.2 B-season catches (A; in mt) of pollock in the BS/AI in 1992-97 in the Catcher Vessel Operational Area (CVOA) and in Critical Habitat (CH) for the Steller sea lion. Percent of total B-season BS/AI pollock catch is shown in B.

Fritz (1993c) compiled pollock catches from critical habitat in the first quarter from 1977-1992. Pollock removals from critical habitat during the first part of the year increased from negligible levels in the late 1970s to over half a million mt in the mid 1990s. Pollock removals from critical habitat were less than 50,000 mt annually during the first quarters of 1977-1985, but varied from 1986-1991 (i.e., 75,000 mt in 1989 to almost 450,000 mt in 1987). While A-season pollock catch from both the CVOA and critical habitat increased from about 240,000 mt in 1992 to 320,000 mt in 1993, the percent of total A-season BS/AI catches from those areas remained at about 50%. In 1994 and 1995, A-season pollock removals from the two areas increased to between 530,000 and 580,000 mt, or about 85-93% of the total A-season removals in those years. Areas outside of the CVOA and critical habitat were used by the A-season fishery in 1996 and 1997, resulting in decreases in both magnitude and percent removals compared with 1994 and 1995. However, approximately 75% (almost 400,000 mt) of the A-season pollock were removed from the CVOA or critical habitat in 1997.

During the B season, pollock removals from the CVOA and critical habitat ranged between 330,000-400,000 mt from 1992-1996, which represented approximately 50% of the B-season catch each year (Fig. 6.2). B-season catches from the CVOA and critical habitat dropped to about 220,000 mt in 1997, about one-third of the B-season BS/AI pollock landings.

About 10-30% of total annual pollock catch came from the CVOA or critical habitat from 1977-86. This percent reached 50% in 1992-93, increased further to 65-70% in 1994-95, and then decreased to just over 50% in 1996-97 (Figure 6.3).

6.4.3 Effects of Sector Allocation and the CVOA alternatives on marine mammals

The various sector allocation and CVOA alternatives could affect pollock removals from the CVOA in the following manner. First, increases in the inshore sector's allocation will likely lead to greater pollock removals from the CVOA and critical habitat. Second, exclusion of various fishing sectors from the CVOA during the A-season will likely decrease pollock removals from the CVOA and critical habitat. The exclusion of the offshore sector from the CVOA in the A season would likely result in the greatest reduction in pollock removals. Third, under the No CVOA alternative, B-season pollock catch from the CVOA is difficult to predict and depends on the scenario to distribute offshore effort during the season. If both the offshore vessels and "true" motherships are excluded, then CVOA B-season catch of pollock will likely be reduced.

Increases in pollock catch outside the CVOA would tend to increase catches of small, young pollock (< 40 cm in length). Growth of pollock is slower to the north and west along the outer shelf in the eastern Bering Sea (Wespestad et al. 1997). Therefore, while more smaller pollock may be caught, many of these would be in the same yearclass as those caught to the southeast in the CVOA. Also, age 1-3 pollock tend to be distributed more to the northwest than to the southeast in the Eastern Bering Sea, and actions which would increase effort in these areas would lead to greater removals of juvenile pollock. However, selectivity of age 1 and 2 pollock by the fishery is very low (5% or less; Wespestad et al. 1997). On the average, pollock fisheries in the eastern Bering Sea have caught only about 2% of the 2-year-old pollock each year (Fritz 1996). Therefore, while increases in effort north and west of the Pribilof Islands (outside of Steller sea lion critical habitat) would lead to higher catches of young pollock, it is not expected that this would significantly affect either the yearclass size of pre-recruit pollock or the availability of pollock to sea lions.

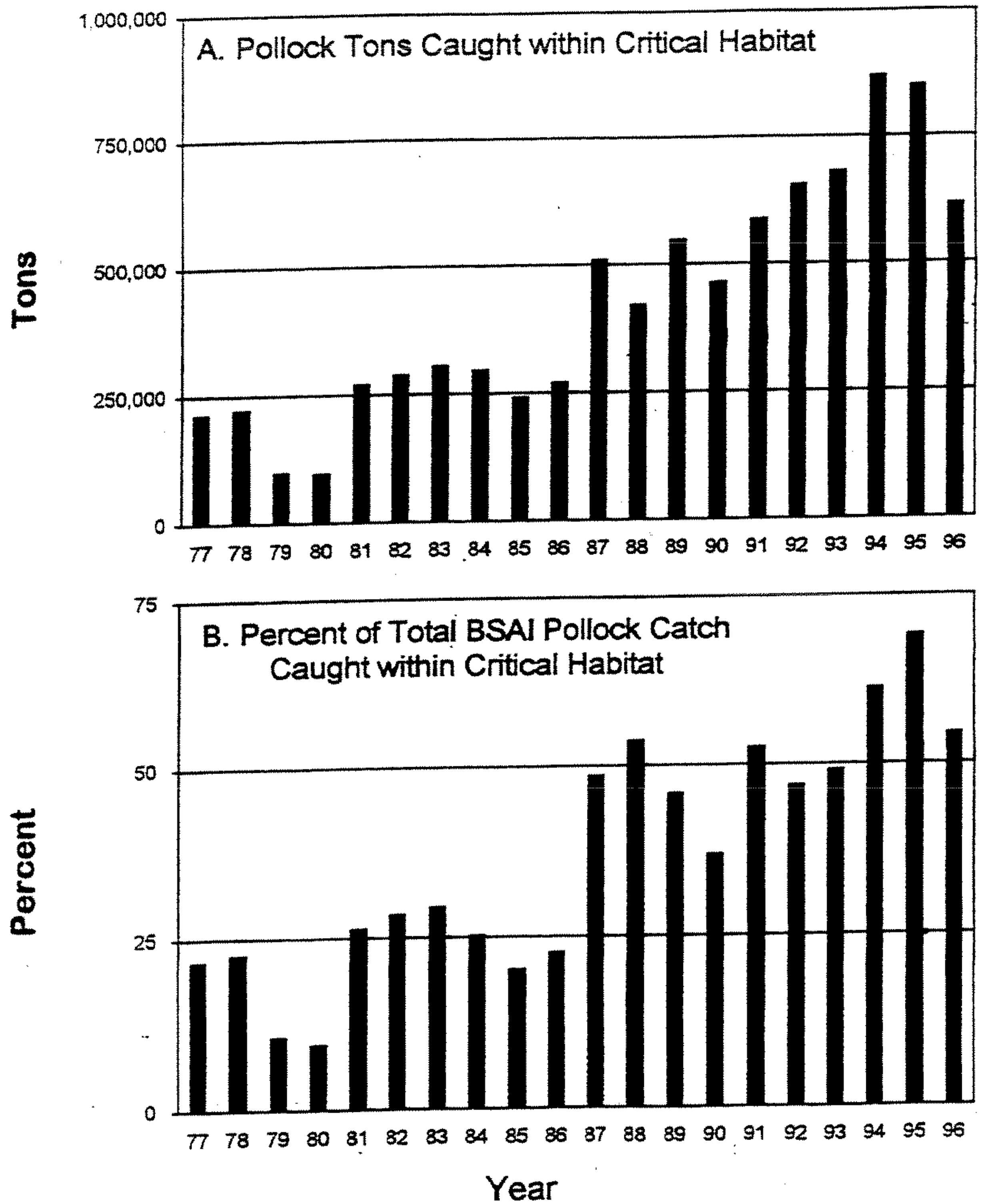

Figure 6.3 Pollock fishery effort within Steller sea lion critical habitat in the Bering Sea/Aleutian Islands region.

The chosen combination of sector allocation and CVOA alternatives should not increase the potential for competition between the fishery and Steller sea lions. Certain combinations under consideration could result in a larger proportion of the pollock TAC being removed from the CVOA and, therefore, from Steller sea lion critical habitat. In turn, this could only increase the potential for detrimental competition. The guideline suggested to prevent such an increase is that the chosen combination not increase (relative to the status quo) the proportion of the total annual TAC that could be taken from the CVOA (and overlapping critical habitat). Under the status quo, the proportion that could be taken from the CVOA (maximum) is determined on the basis of 1) A:B season apportionments, 2) inshore:offshore:"true" mothership allocations, 3) allowance for all CDQ fishing in the CVOA, 4) allowance for all "true" mothership fishing in the CVOA during the B season, and 5) the assumption that no more than 9% of the offshore allocation during the B season could be taken by catcher vessels in the CVOA.

6.4.4 Maintaining Current Levels of CVOA Pollock Removals

Because of marine mammal concerns, NMFS has advised the Council that they cannot support any Inshore/offshore alternatives that proportionally increase pollock harvests from the CVOA. NMFS has also provide guidance on the percentage of catch that they have determined to be the baseline, and therefore should not be exceeded under an Inshore/offshore allocation.

The bottom right hand corner of Table 6.1 shows how NMFS determined that 72.5% of the BS/AI pollock harvest could have been taken from the CVOA during 1996/97. That percentage was calculated using the following assumptions:

1. The inshore, "true" mothership, and catcher processor sectors processed 35%, 10%, and 55% of the BS/AI TAC, respectively, in 1996.

2. Nine percent of the pollock processed by catcher processors was harvested by catcher vessels, and all the catcher vessel's catch could be harvested inside the CVOA.

3. All of the pollock harvested by catcher processors during the B-season was taken outside the CVOA, and all the catcher processors catch in the A-season could be taken inside the CVOA.

4. All harvests by catcher vessels delivering to the inshore and "true" mothership sectors, in both the A-season and the B-season, could be taken from the CVOA.

5. The pollock TAC was split for a 45% harvest in the A-season and a 55% harvest during the B-season.

Using 72.5% as the maximum harvest allowed from the CVOA, it is possible to run different scenarios to determine if they exceed that level. Table 6.2 provides an example that shows the harvest percentage allowed in the CVOA if the Inshore sector's allocation was increased to 40% and the catcher processors allocation was decreased to 50%. The bottom right hand corner of that table shows the increased allocation Inshore would result in 75% of the TAC being allowed to be taken from the CVOA. This exceeds the maximum allowed by 2.5%. Therefore if this basic allocation alternative were selected, additional measures to reduce catch in the CVOA would need to be implemented. Several methods could be employed to keep the maximum percentage under 72.5%. For example, certain sizes of catcher vessels could be required to fish outside the CVOA at given times of the year. The catcher vessels delivering to certain processing sectors could be required to fish outside the CVOA. The A-season and B-season splits could be altered. Finally, a percentage of the catcher processor harvest in the A-season could be reserved for outside the CVOA only.

Changing the basic allocation so that 5% more pollock was issued to the catcher processor sector, and 5% less to the Inshore sector, would result in 70% of the TAC harvest being allowed inside the CVOA. This is under the 72.5% baseline so no additional measures would not be required. In fact, because only the catcher processor sector is currently restricted from operating inside the CVOA, any increase in their allocation would be acceptable in terms of staying under the 72.5% inside the CVOA (so long as the A-season and B-season splits are not changed).

Table 6.2 Percent of Pollock Harvest Allowed in the CVOA: Based on 100% of Non-CDQ Allocation

	Inshore	True MS	CPs	Total
Overall Allocation	35.0%	10.0%	55.0%	100.0%
Allocation to Catcher Vessels <125' LOA	42.0%	98.0%	9.0%	n/a
Allocation to Catcher Vessels 125-155' LOA	38.5%	1.0%	0.0%	n/a
Allocation to Catcher Vessels >155' LOA	19.5%	1.0%	0.0%	n/a
A-season %	45%	45%	45%	45%
B-season %	55%	55%	55%	55%
A-season: % of CP Catch Allowed In CVOA	n/a	n/a	100%	
A-season: % of <125' CV Catch Allowed In CVOA	100%	100%	100%	
A-season: % of 125'-155' CV Catch Allowed In CVOA	100%	100%	100%	
A-season: % of >155' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of CP Catch Allowed In CVOA	n/a	n/a	0%	
B-season: % of <125' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of 125'-155' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of >155' CV Catch Allowed In CVOA	100%	100%	100%	
Total % Catch Allowed in CVOA During the A-season	15.8%	4.5%	24.8%	45.0%
Total % Catch Allowed in CVOA During the B-season	19.3%	5.5%	2.7%	27.5%
Total % Catch Allowed in the CVOA	35.0%	10.0%	27.5%	72.5%

Table 6.3 Percent of Pollock Harvest Allowed in the CVOA: Based on 100% of Non-CDQ Allocation

	Inshore	True MS	CPs	Total
Overall Allocation	40.0%	10.0%	50.0%	100.0%
Allocation to Catcher Vessels <125' LOA	42.0%	98.0%	9.0%	n/a
Allocation to Catcher Vessels 125-155' LOA	38.5%	1.0%	0.0%	n/a
Allocation to Catcher Vessels >155' LOA	19.5%	1.0%	0.0%	n/a
A-season %	45%	45%	45%	45%
B-season %	55%	55%	55%	55%
A-season: % of CP Catch Allowed In CVOA	n/a	n/a	100%	
A-season: % of <125' CV Catch Allowed In CVOA	100%	100%	100%	
A-season: % of 125'-155' CV Catch Allowed In CVOA	100%	100%	100%	
A-season: % of >155' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of CP Catch Allowed In CVOA	n/a	n/a	0%	
B-season: % of <125' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of 125'-155' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of >155' CV Catch Allowed In CVOA	100%	100%	100%	
Total % Catch Allowed in CVOA During the A-season	18.0%	4.5%	22.5%	45.0%
Total % Catch Allowed in CVOA During the B-season	22.0%	5.5%	2.5%	30.0%
Total % Catch Allowed in the CVOA	40.0%	10.0%	25.0%	75.0%

Table 6.3 shows that increasing the Inshore allocation by 5%, and decreasing the catcher processor allocation by 5% allows 75% of the BS/AI pollock TAC to come from the CVOA. Some management measures that could be used to reduce that percentage were mentioned above. Now specific examples will be discussed that would bring the total catch allowed in the CVOA down to an acceptable level. First, if only 85% the catcher processor harvest was allowed inside the CVOA during the A-season it would reduce the CVOA percentage to 71.9%. This would be considered an acceptable level. Another option would be to restrict catcher vessels greater than 155' LOA delivering inshore from fishing inside the CVOA during the B-season. Excluding those catcher vessels and the catcher processors during the B-season would result in 70.8%. Yet another option would be to restrict catcher vessels delivering to "true" motherships to harvesting a maximum of 50% of their B-season allocation from the CVOA. This would reduce the maximum amount that could be taken to 72.2%. Finally the last option that will be discussed is the option to change the A-season and B-season splits. If the split were changed to 40% during the A-season and 60% during the B-season the resulting maximum harvest from the CVOA would be 72.7% (again, assuming a 5% increase in the overall inshore allocation). This is slightly over the 72.5% maximum that NMFS would support.

There are many other allocation combinations that the Council may wish to consider, and several measures could be used to keep CVOA harvests within an acceptable range. The examples provided above are only a small subset of those possible, and are not intended to be the only options that may be considered.

The limits imposed by this guideline are not intended to provide an advantage or disadvantage for any of the fishing sectors involved in the allocation discussion. The sole intent of this guideline is to ensure that the final allocation scheme does not result in increased potential for competition between the fishery and the Steller sea lion. Because of the uncertainty involved in assessing that competition, this guideline may or may not be sufficient, and additional management measures may be necessary in the future to ensure the recovery and conservation of the Steller sea lion.

6.4.5 The Council's Preferred Alternative

The Council's preferred alternative will keep the maximum removals from the CVOA under the 72.5% calculated as the status quo. Allocating 4% more of the pollock TAC inshore was mitigated by forcing all offshore operations out of the CVOA during the B-season. The new estimate of maximum removals from the CVOA during the B-season is 66.5%.

It is important to note that the Council opted to restrict all of the offshore sector from operating inside the CVOA during the B-season for fairness reasons within the offshore sector, and not marine mammal issues. Several members of the Council felt that the Stellar sea lion issue was too complex to treat under I/O3. A separate comprehensive analysis of the actions required to protect Stellar sea lions was requested by the Council. NMFS, in conjunction with the Stellar sea lion recovery team, will work over the summer and fall to prepare a paper for the Council to review. Then with a better understanding of the problem and a wider range of alternative solutions, appropriate actions can be taken by the Council to help protect Stellar sea lions.

6.4.6 Effects of Allocation Alternatives in the GOA

The alternatives under consideration for inshore/offshore allocation of pollock and Pacific cod in the GOA involve (1) a continuation of the current allocation scheme, or (2) a discontinuation of that scheme and a return to a fishery open to participation by both the inshore and offshore sectors. The current allocation scheme does not allow offshore vessels to target pollock or Pacific cod in the Gulf, but does allow 10% of the pollock allocation for bycatch by offshore vessels.

With respect to the GOA pollock fishery, the distinctions between these two vessels types is related to (1) the rate at which the TAC is taken, and (2) the areas fished by the inshore versus offshore vessels. In the few years that offshore vessels fished in the Gulf, they fished a large portion of the TAC in a matter of weeks, ending the fishing season abruptly, and leaving the inshore vessels with no opportunity to continue the fishery. This rapid removal of the TAC lead to the current allocation scheme that preclude the offshore sector from the fishery.

With respect to Steller sea lions or other marine mammals in the Gulf, the effects of continuing the current allocation scheme versus an open fishery with offshore participation are somewhat uncertain. Presumably, participation by the offshore fleet would increase the probability of fishery-induced localized depletions due to the rapid and extensive removal of pollock. Such localized depletions have been considered as a threat to other marine consumers as they reduce foraging success and increase the energetic costs associated with finding sufficient prey.

On the other hand, inshore vessels may, on average, focus on pollock concentrations closer to shore and, therefore, of potentially greater benefit to pinnipeds such as the Steller sea lion and harbor seal. These pinnipeds may then be required to expend more energy and travel greater distances from shore to find sufficient prey. The additional energetic costs may be particularly important for young animals with a smaller foraging range and for mature adult females either pregnant or nursing or both. The offshore sector has not fished for pollock or Pacific cod in the GOA for a sufficient period of time to predict how their distribution might vary from the inshore sector, but the distribution of both would likely to be determined by the distribution of prey.

The distribution of the fishery has largely been delimited by the 200 m isobath from Portlock Bank (west of Kodiak Island) to south of Umnak Island. The smaller shelf in the GOA effectively keeps the fishery closer to shore and to rookeries and haulout sites of Steller sea lions and harbor seals. Large aggregations of spawning pollock were discovered in Shelikof Strait and those aggregations were fished heavily in winter months (Jan-Apr) from 1982 to 1986.

Estimated pollock biomass in the GOA near or less than one million tons until the late 1970s, increased sharply to over 2.5 million tons in the early 1980s, dropped to less than 1.5 million tons in the mid 1980s, and then declined to less than 1 million tons by the mid 1990s. The estimated harvest rate of Gulf pollock also increased significantly from less than 10% to nearly 18% in 1984 and 1985.

Counts of Steller sea lions in the central GOA (Kenai Peninsula to northeast of Shumagin Islands) declined have declined severely during the period of this fishery. In 1976, counts of sea lions in this region totaled 24,678. By 1985, the count total dropped to 19,002, and then plummeted to 8,552 in 1989. The most recent count (1997) was 3,352, indicating a total decline of 86% since 1976. About 42% of this decline occurred between 1985 and 1989, after the fishery had focused intense effort on the winter spawning aggregations of pollock in Shelikof Strait.

In the western GOA (Shumagin Islands to the eastern end of Umnak Island), the decline has also been severe. Counts in this region totaled 8,311 in 1976, dropped to 6,275 in 1985, dropped sharply to 3,800 in 1989, and were 3,633 in 1997. The total decline was 56% from 1976 to 1997, and 30% occurred between 1985 and 1989.

The concern about competition between the GOA pollock fishery and the endangered western population of Steller sea lions is largely founded on (1) the primary importance of pollock in virtually all studies of feeding habits of the Steller sea lion, (2) the apparent coincidence of the extensive Shelikof Strait fishery with the most severe period of decline of Steller sea lions in the region, and (3) the fact that, in general, extensive amounts of pollock are removed from areas (such as Shelikof Strait) that are designated as critical habitat for the Steller sea lion.

Pollock removals, both in mt and as a percentage of total GOA pollock landings, from Steller sea lion critical habitat in the GOA from 1977-96 are shown in Figure 6.4. The magnitude and percent of pollock removals from critical habitat increased from negligible levels in 1977 to over 200,000 mt in 1984-85, which represented between 75-80% of the GOA pollock landings. As the total catch for pollock in the GOA declined after 1985, so did the magnitude of removals from critical habitat, to between 40,000 and 85,000 mt from 1986-96. However, the percent of total GOA pollock landings from critical habitat did not decline along with the magnitude, and has remained between 55-90% from 1986-96.

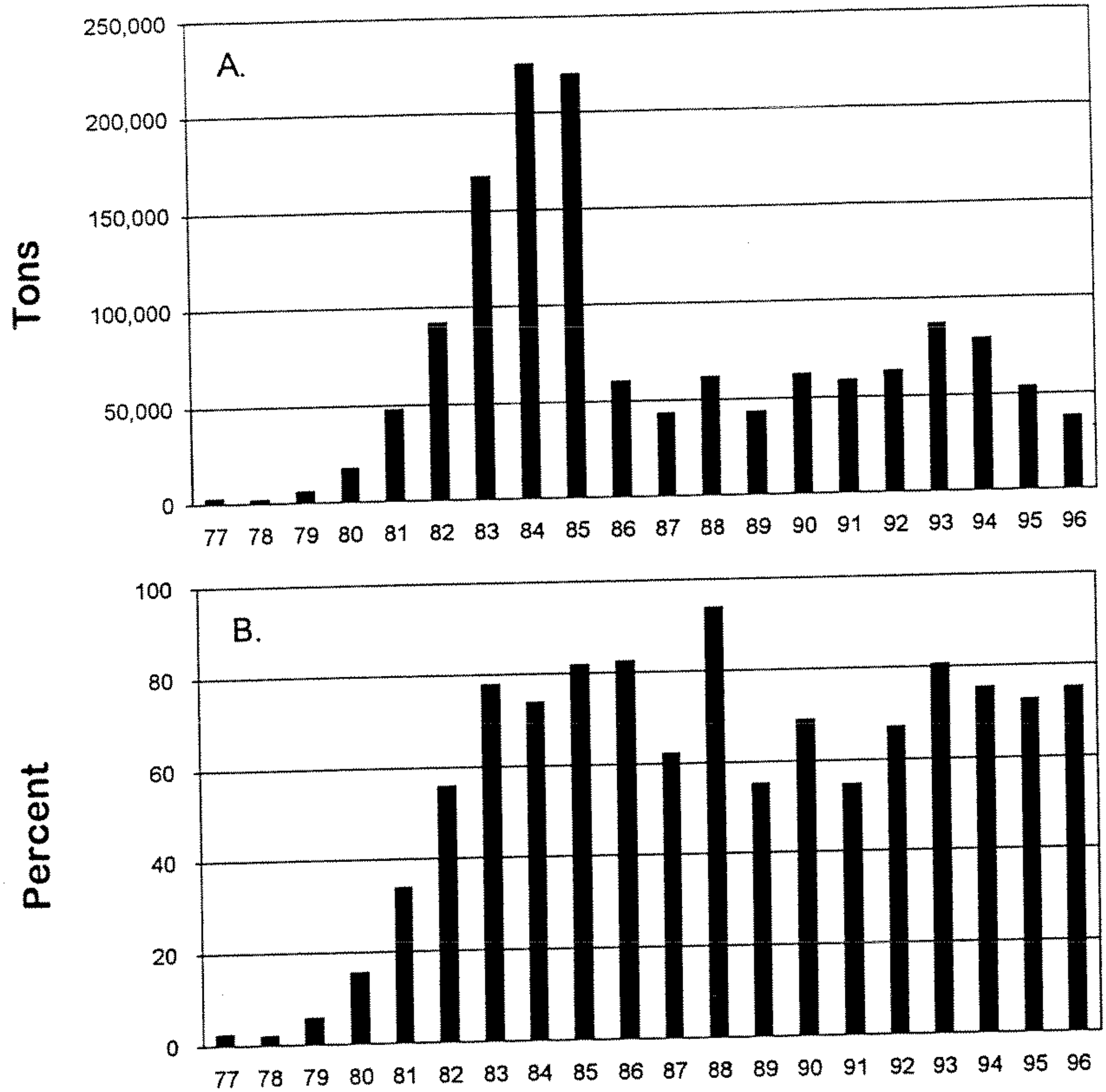

Figure 6.4 Catch of pollock in critical habitat of the Steller sea lion in the Gulf of Alaska. A. Tons of pollock caught in critical habitat. B. Percent of annual catch removed from critical habitat.

6.5 Discharge of Fish Processing Waste

During the Council discussions of reauthorizing the provisions of amendments 18 and 23, and during recent discussions of further extending the inshore/offshore allocations, members of the public expressed concern that continuation of those provisions might lead to continued or increased degradation of the marine environment from fish processing wastes disposed into the bay(s). Although past and current disposal of fish processing wastes into Unalaska Bay, and other areas, have 'degraded' some local benthic environments, those discharges are controlled under permits issued and monitored by the U.S. Environmental Protection Agency (Environmental Protection Agency, 1995 and 1998).

According to a letter to the Council from the Alaska Department of Environmental Conservation [Burden, 1995], there has been confusion about the listing of South Unalaska and Akutan Bays as "impaired" water bodies. The DEC states that these water bodies were listed as such for several years, but that agencies and processors have been working through the permitting process and a management regime known as "Total Maximum Daily Load" (TMDL), to control discharges and manage effluents into these water bodies.

The TMDL process, according to the Environmental Protection Agency [Harper, 1995 and 1998], sets limits on the amount of "pollutants" that may be discharged on any given day by individual processors. If these TMDLs are not exceeded, then the agencies believe the water bodies will maintain or improve their levels of quality. The EPA noted that the overall amount of fish or shellfish coming into a facility was not the issue so much as the amount discharged on a daily basis.

The amount of waste disposed into the marine environment (of Unalaska Bay and other marine areas receiving fish processing wastes) and the impacts of those discharges are not entirely dependent on the percentages of the walleye pollock and Pacific cod harvests allocated to the inshore processing component. Instead, they are related to the amount of fish (of all species) processed, the amount of processing waste that must be disposed of, how much of the total that will be disposed of in the marine environment, and the way it is disposed of in the marine environment. For example, while current alternatives allow for increased share of processing by the inshore plants, the overall pollock TACs have declined, such that an increased percentage share will result in similar amounts of pollock being processed in 1999 as were processed in the mid-1990's by these same plants. The same is true for the overboard disposal of harvest discards and fish processing wastes from vessels in the offshore component.

Given the above comments from State and Federal authorities, and noting the basic conclusion of previous analyses regarding the daily maximum throughput of inshore plants, i.e. the amount of fish processed daily is not expected to change significantly regardless of the Inshore/offshore allocation, it is unlikely that reauthorization of these amendments will have a negative impact on the water quality in these areas. Nevertheless the Council requested clarification of the EPA's current position on discharge waste. The following section contains further discussion of this issue from the EPA perspective and includes tables which summarize the 1997 discharges for the major inshore processing plants.

6.6 EPA and Seafood Processing Discharges

6.6.1 Seafood processing pollutants

The pollution from seafood processing comes from two sources: the solid seafood wastes and the wastewater from the butchering process, surimi process, canning process, and fish meal process. In addition wastewater also included disinfectants and detergents used in wash down water and non-process wastewaters include noncontact cooling water, refrigeration condensate, water used to transfer product, live tank water, and boiler water. These wastewaters contain pollutants such as total suspended solids, oil and grease, biochemical oxygen demand, and settleable solids.

6.6.2 Discharge control measures

EPA issues permits which regulate the amount of pollutants allowed to be discharged to waters of the U.S. There are two types of permits:

General permits authorize discharges from facilities that grind the seafood wastes to 0.5 inch before discharging and covers shore-based facilities and vessels operating near-shore and at sea. Most of these facilities are seasonal and relatively small processors. The general permit does not cover seafood processors that produce surimi and fish meal or discharge to water quality limited water bodies or are in protected areas, such as wildlife refuges, national parks, or endangered/threatened species habitats. Any waste accumulation over 0.5 inch or thicker on the seafloor cannot exceed one acre

Individual permits are issued to processors processing seafood into product as well as producing surimi and fish meal and/or are discharging to identified water quality limited water bodies. These processors are usually the very large facilities located in Dutch Harbor and Akutan Harbor as well as several other areas including Kodiak. Vessels operating within 1 mile of shore (near shore) and producing fish meal and/or surimi are also covered under individual permits.

6.6.3 Individual permit requirements

Individual permits may require sampling and monitoring of the discharge as well as the water body where the discharges occur. Southeast Unalaska Bay, Captains Bay, and Akutan Harbor are three water bodies that have been identified as impaired by seafood wastes accumulating on the seafloor and having a discharge high in biochemical oxygen demand (BOD) . Past monitoring of the water bodies found that in late summer when the water column is more likely to be stratified, the apparently naturally occurring low dissolved oxygen of the water was further impacted by the discharge of pollutants from the seafood processors in Captains Bay, Dutch Harbor, and Akutan Harbor.

6.6.4 Pollutant explanation

Dissolved oxygen (DO) levels in natural and wastewaters depend on the physical, chemical, and biochemical activities in the water body. The analysis for DO is a key test in water pollution and waste treatment process control. The control of (BOD) in a discharge is one way of assuring that the water body can absorb the pollutant without depressing the dissolved oxygen.

Dissolved oxygen concentration in ambient waters is a measure of the health of the water body and for the protection of aquatic life. Low DO concentrations are known to stress the water body and cause adverse effects to the range of aquatic species that form the food chain from insects to cold water fish.

6.6.5 Water quality limited water bodies

When a water body is identified as water quality limited, EPA and the State are required to implement a total maximum daily load plan which identifies the degree of pollution control needed to attain and maintain compliance with water quality standards and assigns allowable wasteload allocation to the contributing point sources. The TMDL and wasteload allocations are calculated by modeling the water body.

The Captains Bay, Dutch Harbor, and Akutan Harbor facilities all have stringent BOD limitations in their permits for the months of August through October. During this late summer period, each permittee is required to do extensive monitoring DO, temperature, salinity, and density which is the only means of assessing the efficacy of the permit limitations to control the impacts of the BOD discharge on ambient levels of dissolved oxygen in the receiving water.

While the statistics of how much BOD is discharged from these facilities appears to be extremely high, the stringent limitations are expected to improve the health and quality of the receiving water. These facilities have installed extensive and expensive treatment processes to assure that the discharge is in compliance with permit limitations. In addition the fish meal facilities are required to recycle as much as possible the stickwater (a high BOD pollutant load from the production of fish meal) back into the fish meal to reduce the discharge of this particular waste stream.

6.6.6 Vessels operating at sea

For the vessels that process seafood, produce surimi, and recycle seafood wastes into fish meal, there are no specific limitations. They are allowed to discharge solid wastes ground to 0.5 inch, are not required to recycle the stickwater, or to reduce pollutant loading on the receiving waters in any way. Also, the vessels are not required to do any monitoring, sampling, or analyses of the discharge nor monitoring of the ambient water quality of the receiving water.

6.7 Summary

A final version, and Finding of No Significant Impact (FONSI), will depend on the Council's selection of a 'Preferred Alternative'. This section will be completed following a Council decision, and prior to review by the Secretary of Commerce.

Assistant Administrator for Fisheries

Date

TABLE 6.4

Westward
BOD lbs discharged
Limit: July-Oct

	(Days)	Total lbs	58000 lbs monthly aver	90000 lbs daily maximum	Production finfish raw surimi/bottomfish	finfish finished surimi/bottomfish	crab raw	crabfinished
1997								
Dec	(6)	36,305	6,051	10,350	0 / 113,631	0 / 51,134	62,238	36,068
Nov	(16)	70,970	4,436	9,107	0 / 761,272	0 / 384,650	1,075,363	691,283
Oct	(30)	1,056,531	35,218	73,300	28,923,462/ 1,311,039	7,383,068/ 691,427	538,860	322,900
Sep	(30)	1,330,658	44,355	73,584	45,645,377/ 188,385	11,479,380 / 156,818	643,575	408,680
Aug	(27)	88,241	3,268	21,692	364,151/ 589,520	85,140 / 496,410	20,642	11,230
July	(27)	56,915	2,108	9,608	0 / 1,996,827	0 / 1,865,442	0	0
June	(30)	383,576	12,786	72,258	2,568,279/ 1,668,260	500,676/ 1,111,875	78,032	45,305
May	(31)	467,220	20,314	47,171	1,245,094/ 2,763,477	403,216/ 2,763,477	130,564	77,249
Apr	(29)	547,027	18,863	25,037	0 / 8,068,799	0 / 3,376,561	71,669	42,976
Mar	(29)	728,833	25,132	57,112	13,466,149/ 2,556,154	2,956,888/ 1,150,269	3,906,505	2,515,416
Feb	(28)	949,432	109,975	212,970	44,445,017/ 938,997	11,260,480/ 412,856	4,942,481	2,139,205
Jan	(14)	1,238,629	88,474	140,112	20,973,119/ 0	5,054,544/ 0	27,626	16,409
1996								
Dec		0	0	0	0	0	0	0
Nov	(13)	133,606	10,277	18,331	0 / 87,025	0 / 39,286	1,357,381	861,994
Oct	(19)	891,828	33,031	59,840	28,625,818/ 583,919	7,403,396/ 284,709	546,135	311,322
Sep	(27)	1,012,264	34,906	55,565	44,445,017/ 453,373	11,260,480/ 367,032	434,135	263,286
Aug	(14)	105,646	4,402	8,999	0 / 737,588	0 / 504,490	83,866	48,770
July	(21)	48,912	2,717	7,981	0 / 1,187,175	0 / 746,791	292,059	169,848
June	(18)	210,657	9,159	18,508	482,154 / 2,341,555	122,936/ 1,202,315	268,972	156,522
May	(27)	947,468	33,838	77,454	1,236,426 / 3,480,150	426,404/ 1,604,416	402,587	232.383
April	(27)	566,052	20,216	25,020	0 / 7,014,604	0 / 3,225,330	347,967	202,867
March	(30)	3,299,763	109,922	143,615	22,607,215/ 4,817,265	22,607,215/ 2,346,595	1,031,437	647,917
Feb	(29)	1,696,200	58,490	116,360	39,739,299/ 759,850	10,035,344/ 247,038	2,562,220	1,614,536
Jan	(8)	335,093	41,887	121,897	13,052,686/ 224,091	3,186,920/ 152,546	69,979	41,116

Table 6.5

Trident Akutan

BOD lbs discharged Limit: May-Oct (eff. May)	(Days)	Total lbs	129,000 lbs monthly avr.	206,000 lbs daily max.	Production finfish raw pollock/bottomfish	finfish finished pollock/bottomfish	crab raw	crab finished
1997								
Dec		36**						
Nov		35**						
Oct	(18)	1,095,383	60,582	202,091	45,697,827/ 315,093	16,999,642/ 118,790	0	0
Sept	(28)	2,029,732	72,072	192,854	66,380,081/ 225,548	24,134,819/ 149,366	116,519	75,488
Aug	(9)	453,641	50,306	106,665	7,486,070/ 186,684	2,549,209/ 59,583	0	0
July	(8)	54**			0 0	0 0	0	
June	(17)	45**			0 / 954,095	0 / 318,986	0	0
May	(23)	103**			0 / 3,662,464	0 / 1,414,154	0	0
Apr	(30)	360**			0 / 19,975,174	0 / 6,796,734	0	0
Mar	(30)	5,817,397	191,383	375,133	1,907,535/ 13,959,515	724,021/ 5,266,352	1,814,353	1,198,229
Feb	(27)	4,372,043	161,422	224,729	53,232,514/ 13,267,701	18,921,874/ 5,001,923	430,603	281,619
Jan	(11)	2,299,837	208,667	211,169	24,659,106/ 2,323,783	8,525,886/ 867,066	0	0
1996								
Dec		14**						
Nov		62**						
Oct	(23)	1,280,081	104,345	267,519*	47,829,956 / 759,563	13,021,666/ 318,083	75,352	42,633
Sep	(29)	1,754,056	188,029*	243,608*	72,531,667/ 460,549	17,129,531/ 242,089	107,168	67,595
Aug	(6)	179,017	10,807	82,124	6,814,238/ 17,194	1,522,735/ 17,171	0	0
July		83**			0	0	0	0
June		166**			0	0	0	0
May	(10)	3,099	1,963	2,734	0 / 1,616,176	0 / 322,913	30,234	16,259
Apr	(28)	20,974	5,220	9,241	0 / 11,543,062	0 / 2,308,420	32,406	17,095
Mar	(31)	1,722,028	128,327	275,495	17,202,026 /11,227,986	3,048,382/ 3,583,999	19,557	11,698
Feb	(29)	2,891,576	173,674	304,018	55,891,631 / 6,325,790	13,724,010/ 2,238,638	893,305	509,274
Jan	(11)	462,336	151,974	210,602	21,083,093/ 2,558,826	4,960,851/ 740,044	0	0

* permit limits challenged
**sanitary only

Table 6.6

UniSea
BOD lbs discharged
Limit: July-Oct

	(Days)	Total lbs	185,000 lbs monthly aver	297,000lbs daily max	Production finfish raw surimi/bottomfish	finfish finished surimi/bottomfish	crab raw	crab finished
1997								
Dec	(4)	Report not required						
Nov	(19)	Report not required						
Oct	(19)	n/a	120,826	194,240				
Sep	(29)	n/a	125,762	187,103				
Aug	(28)	n/a	8,498	11,198				
July	(21)	Report not required						
June	(21)	Report not required						
May		Report not required						
Ap		Report not required						
Mar	(27)	n/a	16,887	28,182				
Feb	(28)	n/a	166,095	296,170				
Jan	(28)	n/a	100,163	292,359				
1996								
Dec	(4)	Report not required						
Nov	(19)	Report not required						
Oct	(26)	2,607,809	120,826	194,240	42,647,451/ 1,021,850	9,751,392/ 492,752	1,335,168	807,408
Sept	(30)	2,996,694	125,886	187,224	71,573,953/ 389,798	16,249,527/ 305,645	139,615	81,540
Aug	(22)	39,366	7,506	11,233	0 / 1,078,562	0 / 582,297	54,915	32,250
July	(21)	Report not required						
June	(21)	Report not required						
May		Report not required						
Apr	(28)	5,003	n/a	n/a	50,473 / n/a	2,049/ n/a	12,850	7,967
Mar	(31)	40,325	n/a	n/a	19,676,404/ 8,718,691	4,288,182/ 5,895,750	533,953	402,740
Feb	(29)	88,728	n/a	n/a	70,020,968/ 1,327,353	16,793,571/ n/a	568,204	313,620
Jan	(9)	81,742	n/a	n/a	21,313,715/ 489,110	4,705,870/ n/a		

Table 6.7

Alyeska Seafoods

BOD lbs discharged Limit: July-Oct	(Days)	Total lbs	90,000 lbs monthly aver	144,000 lbs daily max	Production finfish raw pollock/bottomfish	finfish finished pollock/bottomfish	crab raw	crab finished
1997								
Dec	Report not required							
Nov	Report not required							
Oct	(23)	634,523	20,468	99,687	18,098,548/ 1,268,802	n/a	n/a	n/a
Sep	(25)	547,180	29,747	63,132	30,142,875/22,670,046	n/a	n/a	n/a
Aug	no production							
July	Report not required							
June	Report not required							
May	Report not required							
Apr	Report not required							
Mar	(24)	483,250	15,600	70,600	3,796,870/ 527,499	n/a	1,307.374	n/a
					[3,055,263 yellowfin]			
Feb	(27)	1,401,391	50,050	84,957	34,650,783/ 204,376	n/a	2,267,834	n/a
Jan	(11)	429,916	14,331	54,480	15,770,682/ 228,523	n/a	n/a	n/a
1996								
Dec	(6)	Report not required						
Nov	(21)	Report not required						
Oct	(27)	718,484	23,953	73,658	14,357,662/ 1,915,257	11,538,364/ 1,037,453	330,146	205,667
Sept	(24)	722,451			22,786,378/ 189,408		395,699	130,103
Aug	(15)	3,851			0 / 612,817	0 /	148,766	
July	(15)	Report not required						
June	(23)	Report not required						
May	(31)	675,681	21,796	44,452	0 / 3,459,457	0 / 1,812,682	162,768	96,560
Apr	(26)	608,812	20,291	38,604	0 / 8,257,042	0 / 3,104,571	91,810	54,400
Mar	(29)	714,014	41,311	44,357	9,380,833/ 4,553,673	2,121,944 / 2,490.406	925,832	605,089
Feb	(25)	2,064,584	67,530	72,291	26,553,622/ 914,398	6,479,084/ 469,949	1,435,189	951,674
Jan	(15)	896,761	n/a	n/a	9,111,061/ 448,946	2,289,610/ 229,859	72,446	43,208

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7.0 REGULATORY IMPACT REVIEW SUMMARY (E.O. 12866 considerations)

7.1 Regulatory Impact Review

Executive Order 12866, "Regulatory Planning and Review," was signed on September 30, 1993, and established guidelines for promulgating and reviewing regulations. While the executive order covers a wide variety of regulatory policy considerations, the benefits and costs of regulatory actions are a prominent concern. Section 1 of the order deals with the regulatory philosophy and principles that are to guide agency development of regulations. The regulatory philosophy stresses that, in deciding whether and how to regulate, agencies should assess all costs and benefits of all regulatory alternatives. In choosing among regulatory approaches, the philosophy is to choose those approaches that maximize net benefits to society.

The regulatory principles in E.O. 12866 emphasize careful identification of the problem to be addressed. The agency is to identify and assess alternatives to direct regulation, including economic incentives, such as user fees or marketable permits, to encourage the desired behavior. When an agency determines that a regulation is the best available method of achieving the regulatory objective, it shall design its regulations in the most cost-effective manner to achieve the regulatory objective. Each agency shall assess both the costs and benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Each agency shall base its decisions on the best reasonably obtainable scientific, technical, economic, and other information concerning the need for, and consequences of, the intended regulation.

The National Marine Fisheries Service (NMFS) requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new Fishery Management Plan (FMP) or significantly amend an existing plan or regulations. The RIR is part of the process of preparing and reviewing FMPs and provides a comprehensive review of the changes in net economic benefits to society associated with proposed regulatory actions. The analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems. The purpose of the analysis is to ensure that the regulatory agency systematically and comprehensively considers all available alternatives so that public welfare can be enhanced in the most efficient and cost-effective way. The RIR addresses many of the items in the regulatory philosophy and principle of E.O. 12866.

E.O. 12866 requires that the Office of Management and Budget (OMB) 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 in item (1) above. The RIR is designed to provide information to determine whether the proposed regulation is likely to be "economically significant."

7.2 Summary of Impacts

Several alternatives which reallocate pollock between industry sectors are considered in this analysis. Overall, there are relatively small differences in total gross revenues when comparing the alternatives against the status quo allocation. Changes in gross revenue, at the first wholesale level, are listed for each major industry sector and alternative in Table 7.1. Additional information, at the sub-sector level is provided in Chapters 3 and 4.

Table 7.1 First Wholesale Gross Revenue ($ millions) Changes Compared to the Status Quo (Alternative 2).

Alternatives	Inshore	True MS	C/Ps	Total
2: 35% Inshore, 10% True MS, 55% C/Ps	0.0	0.0	0.0	0.0
3(A): 25% Inshore, 5% True MS, 70% C/Ps	-60.3	-26.8	81.3	-5.8
3(B): 30% Inshore, 10% True MS, 60% C/Ps	-30.1	0.0	27.1	-3.0
3(C): 40% Inshore, 10% True MS, 50% C/Ps	30.1	0.0	-27.1	3.0
3(D): 45% Inshore, 15% True MS, 40% C/Ps	60.3	26.8	-81.3	5.8

Table 7.1 shows that under the most extreme allocation changes the Inshore sector could loose (or gain) $60.3 million, "true" motherships $26.8 million, and catcher processors $81.3 million. However, in total the gross revenue changes are much smaller. The industry as a whole is projected to gain $5.8 million under alternative 3(D) and loose $5.8 million under 3(A). These two alternatives represented the largest shifts in TAC as well as gross revenue.

Table 7.1 also shows that our method of estimating changes are linear. For example, increasing the Inshore sector's allocation by 5% of the BS/AI TAC (after deducting the 7.5% CDQ setaside) results in a $30.1 million increase in gross revenues. Increasing their allocation by 10% doubles their change in gross revenue to $60.3 million. These linear changes also occur in the product mix and exvessel gross revenue calculations. To show these changes Table 7.2 was developed. It reports the changes in exvessel gross revenue, first wholesale gross revenue, and the products produced if a sector was allocated 5% more of the BS/AI pollock TAC (again, as adjusted for CDQs). If they were allocated 5% less, then the numbers presented in Table 7.2 would be negative. If the allocation change was a 10% increase the numbers in Table 7.2 would be multiplied by two, and so on.

Using Table 7.2 the reader could calculate the gross revenue and product changes from the status quo for any alternative. For example, if one wanted to estimate the change in total surimi production under alternative 3(B), one would know that 5% less fish go to the Inshore sector and 5% more pollock go to the catcher processors. So, 9,179 mt less surimi would be produced inshore, "true" mothership suirimi production would not change, and 5,149 mt more would be produced by catcher processors. Therefore, Alternative 3(B) results in 4,030 mt less surimi production overall.

Table 7.2 Changes resulting from a 5% BS/AI Pollock TAC Increase on each industry sector

	Inshore	"True" Mothership	Catcher Processor
Raw Fish (mt)	50,875	50,875	50,875
Catcher Vessel Gr. Rev. (exvessel, $ millions)[1]	9.5	8.3	0.8
Gross Revenue (1st Wholesale, $ millions)	30.1	26.8	27.1
Surimi (mt)	9,179	9,910	5,149
Minced (mt)	338	-	698
Fillet/Block and IQF (mt)	1,187	-	536
Deep Skin Fillet (mt)	957	-	2,241
Meal (mt)	3,585	2,260	1,094
Oil (mt)	1,095	159	31
Roe (mt)	568	484	653

[1]Only the catch delivered by catcher vessels is included for catcher processors

Note: A 5% TAC decrease will result in numbers of equal magnitude but with a negative sign

The differences in total gross revenue between alternatives indicate that the industry sectors do not receive the same value from each ton of raw pollock. However, because the differences in total gross revenue are relatively small, the revenues generated per ton of raw pollock between sectors are fairly close. Our findings indicate that the Inshore sector generated $592/mt, "true" motherships $526/mt, and catcher processors $532/mt during the 1996 fishery. These gross revenue estimates may not be directly comparable, since NMFS estimates total catch differently for shoreplants and at-sea processors. Shorebased plants weigh their fish on scales and report that weight to NMFS. NMFS currently uses volumetric measures and density factors or PRRs and product weights to back-calculate round weight on most at-sea processors. The difference between the actual weight and the estimated weight using these methods is not known. Since these round weight estimates were used to calculate utilization rates, which feed into the gross revenue calculations, any errors in the total weight estimates are carried through to the gross revenue estimates.

7.3 Net Benefit Considerations

Throughout the recent discussions regarding the I/O3 issue, we have stressed our inability to conduct a quantitative cost/benefit analysis. Cost information, including fixed and variable operating cost statistics, is a crucial element of an effective net benefit analysis. Cost data for the BS/AI and GOA groundfish harvesting and processing sectors are not currently available to the analysts. Therefore, it will not be possible to complete a quantitative cost/benefit examination of the I/O3 proposal, nor to derive comparative net benefit conclusions about the several competing alternatives and sub-options. This fact has been recognized, and reinforced, by the Council's Scientific and Statistical Committee.

Changes in net benefits to the nation cannot be determined with a gross revenue analysis or by comparing utilization rates between industry sectors. Therefore, we are unable to ascertain if overall changes in net national benefits are positive or negative. Given the small changes in gross revenues associated with the alternatives, it is not likely that overall net benefits to the Nation would change significantly, particularly if costs of production are assumed to be similar across sectors. However, without cost information for each sector, the magnitude and direction of change cannot be determined with certainty. What we are able to say is that some product forms are more likely to stay in the U.S. economy after the first wholesale than other product, and would continue to add to the net national benefit calculation. For example, all or most all of the domestic deep-skin fillet production is sold to the US market, and offshore catcher processors produced about 77% of the pollock deep-skin fillets in 1996. Two major buyers purchased most of this product, and in most cases it was ultimately consumed within the US. Because this product form tends to stay in the US economy longer, surpluses would be added to the net benefit calculation all the way through to the final consumer. Products such as surimi and roe generally leave the US economy after the first wholesale level. These products are produced by all industry sectors, but "true" motherships and inshore processors have traditionally relied more heavily on surimi than catcher processors. Once a product, like surimi or roe, leaves the US economy, consumer and producer surpluses are no longer counted[18] in a formal net benefit analysis. Therefore, if deep-skin fillets and surimi generated equal surpluses at the first wholesale level, it is likely that deep-skin fillets would result in greater net benefits when estimated through the economy to the final consumer level.

This analysis assumed that product prices and the mix of products will be constant within industry sectors and independent of any allocation alternative. Assuming away any relationship between the quantity of a product produced and the prices buyers of that product are willing to pay, allowed the analysts to make the gross revenue estimates in this analysis. However, the elasticity of demand is a critical determinate in the estimation of consumer and producer surplus. Before reliable net benefit analyses can be conducted for the pollock fishery, additional work needs to be undertaken at the most basic levels. Collecting the data necessary to estimate demand curves for the pollock markets, is the first step. Then models could be developed to rigorously study net benefits to the nation from various segments of industry.

As was stated earlier, the total change in gross revenue at the first wholesale level is projected to be $2.4 million annually, when the Council's preferred alternative is compared to the status quo. Given this relatively small overall change in first wholesale revenue, it is unlikely that the net benefits to the US economy would decrease by $100 million annually once costs were included in the calculation. Therefore, the Council's preferred alternative would not be expected to constitute a 'significant' action under E.O. 12866, recognizing that there are distributional economic impacts among the competing sectors within the pollock industry.

7.4 Consistency with the Problem Statement and other Issues Raised

The Council's Problem Statement references several issues which are critical to the context of the current decision on the inshore/offshore allocations. Other issues have been raised during Council discussions. To the extent possible, these issues are addressed in the following discussion.

7.4.1 Utilization Rates

Chapter 3.5 provided a discussion of Product Recovery Rates (PRRs), which are the assumed recovery rates used by NMFS (in addition to other information), to back calculate total catch. That Chapter also discussed overall utilization rates (the ratio of total product produced to raw fish input), and compared the progress in utilization rates by the different processing sectors over time. That information clearly illustrates a significantly higher utilization rate by the inshore sector, when compared to the offshore sector, and significant improvement in those rates between 1991 and 1996. The offshore sector has increased from around 17% overall in 1991 to around 20% overall in 1996, while the "true" mothership sector increased from about 19% in 1991 to 25% in 1996. The inshore sector has steadily increased over time from around 23% in 1991 to 30% in 1994, and up to about 34% in 1996 (aggregate rate across surimi and non-surimi operations).

Previous discussions of utilization rates have raised the issue of 'comparability' of rates across the different sectors, primarily due to differences in how the underlying catch is estimated for each sector. For example,

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18 Personal communication with Dan Cohen, Mark Millikin, and Richard Raulerson 10/30/97.

because 'total catch' estimates are derived differently for the respective sectors (e.g., 'blend' estimates vs. weighed catch reported on fish tickets), differences in apparent utilization rates could be attributable to differences in data sources, as opposed to actual performance. Nevertheless, this is the best information available to the analysts and it is the same information upon which we base in-season management of the fisheries, including overall TAC attainment. Because the Council has highlighted this as an important consideration in the management of the pollock fisheries, additional information is provided on the use of utilization rates in previous analyses/decisions and the current iteration. Lastly, a discussion of utilization rates as they relate to economic benefits is provided.

7.4.1.1 Utilization Rates (PRRs) in I/O 1

When the inshore/offshore allocations were first analyzed in 1991 and 1992, assumed PRRs were an important variable in the analyses. At that time PRRs were the primary basis for catch estimation for both sectors; as such, these assumed PRRs were critical in estimating both the existing catch shares of each sector and the total product (and therefore revenues) associated with alternative allocation percentages. Surimi PRRs were particularly at issue with that being the major primary product for both sectors. A range of PRRs was considered in the analyses, using both NMFS assumed (published) rates and rates compiled from the OMB survey conducted at that time. The Monte Carlo simulation model used in the final analysis (NMFS and Council staff) allowed consideration of a variety of assumed PRRs (as well as prices and other variables) to arrive at model conclusions regarding net profits (benefits) from the fishery under various allocation alternatives. This allowed the analysts to test the sensitivity of the results to marginal changes in assumed PRRs. Ultimately the assumed PRRs for primary products ended up being very similar for both sectors, with a slightly higher rate assumed for the inshore sector (18% vs 20% for surimi, for example).

As would be expected, changes in the PRRs relative to baseline assumptions resulted in changes in the projected net benefits from the fishery - to the extent higher recovery rates were assumed for the inshore sector, the projected overall net losses of the proposed allocation would be reduced. To the extent higher prices were assumed for the offshore sector, net losses from the proposed allocation would be greater, all else equal, and so forth. In the context of that analysis, the issue of utilization rate was considered jointly with a variety of other factors, including prices and costs of production. To quote from the analysis, "The net economic losses associated with diverting offshore pollock production to shorebased operations stem from the capability, at least now, of the offshore sector to convert the resource into higher valued product at lower relative costs. This advantage in efficiency is adequate to more than compensate for the fact that offshore production has a somewhat lower resource utilization rate (i.e., higher discards and lower recovery rates) than production by inshore plants..."

With respect to the review process by the Secretary of Commerce, the Council's original allocation alternative was partially rejected by the SOC based on overall net benefit (loss) considerations, with a resubmitted amendment being subsequently approved (at the 65/35 allocation). In the letters to the Council Dr. Knauss noted that PRRs were a subject of debate and that industry comments showed disagreement with the assumptions in the analyses. The letters also noted the importance of utilization rates in the decision process, saying that, "preventing preemption by one fleet over another, safeguarding capital investments, protecting coastal communities that are dependent on a local fleet, and encouraging fuller utilization of harvested fish are desirable objectives that are provided for under the Magnuson Act". A number of comments received from the public and the industry during the Secretarial review period focused on the issue of overall utilization and discards. It is fair to say that utilization rates were a critical consideration in the original inshore/offshore allocations, and were taken into account in the analyses.

7.4.1.2 Utilization Rates in I/O 2

In 1995 an analysis was prepared to extend the provisions of the original allocations, for both the GOA and the BS/AI, for an additional three years. (see general summary in Chapter 1). Amendments 38/40 also extended the BS/AI pollock CDQ program for an additional three years. At that time the Council considered only two alternatives - allow the allocations to expire or continue them at the current percentages of 65% offshore and 35% inshore. During the second iteration the context of the inshore/offshore issue was very different from the original iteration, and very different from the current iteration. In 1995 the Council was deeply involved in the Comprehensive Rationalization Program planning and development, including a license limitation program for the groundfish and crab fisheries, and initial development of an IFQ program for the BS/AI pollock fisheries. Stability within and across industry sectors was of primary importance at that time and was reflected in the Council's Problem Statement for I/O 2. Ultimately the Council voted unanimously (one abstention) to extend the allocations for three years, and there was little disagreement or contention within the industry.

The ease with which the Council made this decision was based, in part, on the analysis for I/O 2 which not only supported the decision based on stability considerations, but illustrated that net losses to the Nation from the allocations were likely overstated in the original analysis. While that analysis did not contain any formal assessments of net benefits per se, it did re-examine several of the primary parameters and assumptions that went into the original analyses, and projected gross revenues from the fishery for the two alternatives under consideration (including the existing 65/35 split).

Fundamental to the findings of the I/O 2 analysis were the relative changes in utilization rates experienced by the two sectors. For example, 1994 prices for fish products were lower for both sectors in the I/O 2 analysis when compared to 1992 prices, and therefore gross revenues per mt of product, and gross revenues per mt of raw fish, were lower for both sectors; however, while gross revenues per mt of product overall were 32.6% lower for the offshore sector, they were only 11.3% lower for the inshore sector ($384.85 per mt of catch for the offshore sector vs $433.36 per mt of catch for the inshore sector in 1994). The primary reason for the difference lies in the differential utilization rates of raw fish for each sector - 18.11% overall for the offshore sector in 1994 compared to 30.36% overall for the inshore sector.

In summary, the higher product yield from each fish processed allowed the inshore sector to realize more revenues from each fish processed. While these findings did not take cost of operations into account (and therefore cannot be viewed as indicative of 'net' revenue impacts in an absolute sense), they do illustrate that economic losses originally projected in I/O 1 were likely overstated.

7.4.1.3 Utilization Rates in I/O 3

In the current analysis we have not attempted to reassess net benefits from the alternatives, primarily due to the lack of current cost data necessary to conduct such an assessment. Gross revenue implications are assessed, and these are based on a combination of factors including fish prices for product forms, by sector, and overall utilization rates of raw fish to product. The utilization rates realized by each sector in 1996 are intrinsic within these gross revenue calculations. Sectoral differences in gross revenue per mt of fish depends partly on differential fish prices, but primarily upon differential utilization rates.

7.4.1.4 Implications and Caveats Regarding Economic Benefits

Relative utilization rates by sector are undoubtedly an important consideration for the Council, the public, and the Secretary in arriving at a decision on the inshore/offshore alternatives. This may be due to general policy preference, recognizing the recent nation-wide emphasis on waste reduction both at a public level and generally contained in the provisions of the Magnuson-Stevens Act. As noted previously, care should be exercised however not to equate higher utilization rates with higher economic benefits from the fisheries. Higher utilization rates, in and of themselves, do not necessarily imply that higher economic benefits are being derived from the fishery. It is not true that more total output - at any price - is necessarily better than less total output. If it costs $1.00 to produce $0.10 worth of additional output, society has wasted $0.90 in the process.

The utilization debate could lead to the erroneous conclusion that the highest utilization rate produces the highest value (in a highest and best use sense). If this were true, then all fish should be marketed in-the-round (i.e., 100% utilization, with no 'waste' ... but also no value-added processing applied). Or, as expressed in the original (I/O 1) analysis, it would be preferable to process all cattle into ground beef, as opposed to production of trimmed steaks and other cuts which may be of significantly higher value, but lower yield. This, of course, is not a rational conclusion from an economic perspective. A strict equating of 'utilization rates' with 'economic efficiency' is, therefore, inappropriate. Consideration of the products produced, and their relative value and market destination, should also be considered. Finally, costs of production are an important, but currently absent, variable in such an assessment.

Regarding the assertion, in public testimony and in Council discussions, that "... inshore operations produce more 'human-grade' food output than do offshore operators, per unit raw pollock input", that is assessed by comparing raw input to food-grade output, by sector and/or sub-sector, from Weekly Production Reports, for pollock target fisheries (as is done in Chapter 4). Attempts to assess the assertion about 'human-grade' product is confounded by the issues raised above regarding PRRs, their 'appropriate' use, their variability over time and between operations, etc. There still do not exist high quality, reliable data on firm-by-firm PRRs, which would be important in differentiating relative production performance, i.e., "who produced .... more food-grade product per fish?" It would also beg the question, "was that additional production cost effective?" Assessing the proposition that offshore operators produce higher value products is likewise constrained by the absence of comprehensive product 'grade/quality' data and extremely limited associated price information.

Regarding the assertion that the Magnuson-Stevens Act mandates management measures to achieve higher utilization, NOAA General Counsel has provided the following legal opinion (electronic mail correspondence, February 1998):

> "There is no mandate in the Magnuson-Stevens Act to give preference to one sector over another based on a higher utilization rate. The Council must analyze the economic costs of greater utilization. While the Council may choose to allocate a higher percentage of fish to either sector (depending on the record), it cannot justify a higher percentage on the basis that the Magnuson-Stevens Act mandates utilization."

Notwithstanding this advice from NOAA GC, and the preceding cautionary notes regarding economic benefits, the Council was informed that they may consider overall utilization rates as part of their decision criteria. In the preceding analysis (Chapter 4) it is clear that the inshore sector achieves a higher utilization rate and produces more product/fish (food grade included) than the offshore sector. This higher yield from the fishery is also reflected in at least one economic index - the higher gross revenues per mt of raw fish achieved by the inshore sector, noting that costs of production are absent from the analysis.

7.4.2 National Standard 4--Excessive Shares Issue

During previous Council discussions the issue of "excessive shares" has been raised, and reference to shares of pollock harvest and processing is contained in the Council's I/O3 Problem Statement. It has been suggested that the current Magnuson-Stevens Act contains specific guidance relative to this issue. National Standard 4, which has long been in place within the Act, states that:

"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 an 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."

7.4.2.1 NMFS National Standard 4 Guidelines

NMFS has established regulatory guidelines for interpreting the National Standards of the Magnuson-Stevens Act. These National Standard Guidelines were recently updated in a final rule published on May 1, 1998 (63 FR 24212). The revised guidelines for National Standard 4 are set out at 50 CFR 600.325 and are repeated below:

§ 600.325 National Standard 4--Allocations.

(a) 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:

(1) Fair and equitable to all such fishermen.

(2) Reasonably calculated to promote conservation.

(3) Carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

(b) Discrimination among residents of different states. An FMP may not differentiate among U.S. citizens, nationals, resident aliens, or corporations on the basis of their state of residence. An FMP may not incorporate or rely on a state statute or regulation that discriminates against residents of another state. Conservation and management measures that have different effects on persons in various geographic locations are permissible if they satisfy the other guidelines under Standard 4. Examples of these precepts are:

(1) An FMP that restricted fishing in the EEZ to those holding a permit from state X would violate Standard 4 if state X issued permits only to its own citizens.

(2) An FMP that closed a spawning ground might disadvantage fishermen living in the state closest to it, because they would have to travel farther to an open area, but the closure could be justified under Standard 4 as a conservation measure with no discriminatory intent.

(c) Allocation of fishing privileges. An FMP may contain management measures that allocate fishing privileges if such measures are necessary or helpful in furthering legitimate objectives or in achieving the OY, and if the measures conform with paragraphs (c)(3)(i) through (c)(3)(iii) of this section.

1. Definition. An "allocation" or "assignment" of fishing privileges is a direct and deliberate distribution of the opportunity to participate in a fishery among identifiable, discrete user groups or individuals. Any management measure (or lack of management) has incidental allocative effects, but only those measures that result in direct distributions of fishing privileges will be judged against the allocation requirements of Standard 4. Adoption of an FMP that merely perpetuates existing fishing *practices may result in an allocation, if those practices directly distribute the opportunity to participate in the fishery. Allocations of fishing privileges include, for example, per-vessel catch limits, quotas by vessel class and gear type, different quotas or fishing seasons for recreational and commercial fishermen, assignment of ocean areas to different gear users, and limitation of permits to a certain number of vessels or fishermen.*

2. Analysis of allocations. Each FMP should contain a description and analysis of the allocations existing in the fishery and of those made in the FMP. The effects of eliminating an existing allocation system should be examined. Allocation schemes considered, but rejected by the Council, should be included in the discussion. The analysis should relate the recommended allocations to the FMP's objectives and OY specification, and discuss the factors listed in paragraph (c)(3) of this section.

3. Factors in making allocations. An allocation of fishing privileges must be fair and equitable, must be reasonably calculated to promote conservation, and must avoid excessive shares. These tests are explained in paragraphs (c)(3)(i) through (c)(3)(iii) of this section:

(i) Fairness and equity. (A) An allocation of fishing privileges should be rationally connected to the achievement of OY or with the furtherance of a legitimate FMP objective. Inherent in an allocation is the advantaging of one group to the detriment of another. The motive for making a particular allocation should be justified in terms of the objectives of the FMP; otherwise, the disadvantaged user groups or individuals would suffer without cause. For instance, an FMP objective to preserve the economic status quo cannot be achieved by excluding a group of long-time participants in the fishery. On the other hand, there is a rational connection between an objective of harvesting shrimp at their maximum size and closing a nursery area to trawling.

(B) An allocation of fishing privileges may impose a hardship on one group if it is outweighed by the total benefits received by another group or groups. An allocation need not preserve the status quo in the fishery to qualify as "fair and equitable," if a restructuring of fishing privileges would maximize overall benefits. The Council should make an initial estimate of the relative benefits and hardships imposed by the allocation, and compare its consequences with those of alternative allocation schemes, including the status quo. Where relevant, judicial guidance and government policy concerning the rights of treaty Indians and aboriginal Americans must be considered in determining whether an allocation is fair and equitable.

(ii) Promotion of conservation. Numerous methods of allocating fishing privileges are considered "conservation and management" measures under section 303 of the Magnuson-Stevens Act. An allocation scheme may promote conservation by encouraging a rational, more easily managed use of the resource. Or, it may promote conservation (in the sense of wise use) by optimizing the yield in terms of size, value, market mix, price, or economic or social benefit of the product. To the extent that rebuilding plans or other conservation and management measures that reduce the overall harvest in a fishery are necessary, any harvest restrictions or recovery benefits must be allocated fairly and equitably among the commercial, recreational, and charter fishing sectors of the fishery.

(iii) Avoidance of excessive shares. An allocation scheme must be designed to deter any person or other entity from acquiring an excessive share of fishing privileges, and to avoid creating conditions fostering inordinate control, by buyers or sellers, that would not otherwise exist.

(iv) Other factors. In designing an allocation scheme, a Council should consider other factors relevant to the FMP's objectives. Examples are economic and social consequences of the scheme,

food production, consumer interest, dependence on the fishery by present participants and coastal communities, efficiency of various types of gear used in the fishery, transferability of effort to and impact on other fisheries, opportunity for new participants to enter the fishery, and enhancement of opportunities for recreational fishing.

7.4.2.2 Analysis of National Standard 4 Relative to Inshore/offshore

Any inshore/offshore allocation alternative adopted by the Council must be consistent with all National Standards, including National Standard 4. To determine, however, whether the inshore/offshore alternatives under consideration raise National Standard 4 issues, it is useful to examine each aspect of National Standard 4 individually. Several terms in National Standard 4 must be defined and understood with respect to I/O3 including: "*allocate*," "*assign*,", "*fishing privilege*," and "*excessive share*."

Allocate or assign. As noted in the National Standard 4 guidelines cited above, NMFS has determined that an "allocation" or "assignment" of fishing privileges is a direct and deliberate distribution of the opportunity to participate in a fishery among identifiable, discrete user groups or individuals. Any management measure (or lack of management) has incidental allocative effects, but only those measures that result in direct distributions of fishing privileges will be judged against the allocation requirements of Standard 4. The intent of inshore/offshore is to allocate a certain percentage of the pollock TAC (currently 35% in the BS/AI and 100% in the GOA) to vessels delivering to processors defined as "inshore." The remaining TAC is allocated to vessels delivering to all other processors that do not fit the definition of "inshore." While the intent of inshore/offshore is clearly allocative, it is less clear whether the inshore/offshore allocation results in direct distribution of "fishing privileges."

Fishing privileges. Strictly speaking, only four categories of fishing privileges are distributed or assigned in the groundfish fisheries of the North Pacific: (1) Federal fisheries permits, (2) Federal processor permits, (3) groundfish moratorium permits, and (4) IFQ permits. Any individual may apply for and receive a Federal fisheries permit or Federal processor permit under the current management regime. Federal fisheries permits are required for all vessels over 5 net tons that operate as catcher vessels, catcher processors, "true" motherships, tenders or support vessels in the groundfish fisheries of the EEZ off Alaska, or receive groundfish caught in the EEZ off Alaska. Federal processor permits are required for all shore plants and inshore sector floating processors. Since both Federal fisheries permits and Federal processor permits are free and available to any person who applies for one, an infinite number of Federal fisheries and Federal processor permits are theoretically available, and it is, therefore impossible for any U.S. fisherman to acquire an excessive share of such privileges. Only fishermen who have had their Federal fishing privileges revoked as part of a civil administrative proceeding are denied Federal fisheries or processor permits. Such a distribution of such fishing privileges to anyone who applies can be considered "fair and equitable."

However, while all vessels operating in the groundfish fisheries of the EEZ off Alaska must obtain Federal fisheries permits, owners of vessels over 32 ft LOA in the BS/AI and 26 ft LOA in the GOA wishing to harvest groundfish must also obtain groundfish moratorium permits to harvest non-IFQ species and IFQ permits to harvest halibut and sablefish. Clearly, both moratorium permits and IFQ permits are "fishing privileges" under National Standard 4 and are allocated or assigned to individual U.S. fishermen. Since both types of permits are limited in number and assigned based on past participation in specific fisheries, the distribution of such privileges must be fair and equitable and carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges". With respect to IFQ permits, the Council has dealt with the issue of excessive shares directly, by establishing a system of ownership caps.

With respect to the vessel moratorium program, no limits were placed on the number or type of permits that may be acquired by any particular individual or corporation. However, the moratorium program is temporary and is scheduled to be replaced by LLP. In the design of LLP, the Council did take into account the issue of excessive shares, at least with respect to the future acquisition of shares. Under LLP, there are no limits on the number of licenses that can be assigned to an individual or corporation during the initial distribution of licenses. However, no individual or corporation may subsequently acquire more than 10 groundfish licenses or 5 crab licenses if they were not "grandfathered" into the program based on their initial qualifying.

While Federal fisheries permits, groundfish moratorium permits and IFQ permits clearly constitute "fishing privileges" under National Standard 4, it is less clear whether inshore and offshore TAC allocations also represent "fishing privileges" under National Standard 4. The I/O3 analysis has demonstrated that a great deal of fluidity exists between fishermen and vessels participating in the inshore and offshore components of the industry. Under the current inshore/offshore allocation, individual catcher vessels are free to deliver to either sector or both sectors during any fishing year. Indeed, the Council's alternative of a set-aside for catcher vessels under 125 underscores the potential mobility of the catcher vessel fleet. Furthermore, offshore catcher processors and "true" motherships are free to operate as inshore processors if they choose to process groundfish in a fixed geographic location during the fishing year. They may also choose to catch and deliver fish to the inshore sector as demonstrated by the example of one offshore factory trawler that has recently converted to an inshore catcher vessel. Since fishermen are free to move between sectors, inshore/offshore does not assign "fishing privileges" to various U.S. fishermen, but rather, simply determines the percentage of the TAC that may caught for delivery to different processing sectors. Once a particular inshore or offshore TAC is reached, fishermen need not stop fishing, they simply need to shift their delivery destination to the processing sector that remains open.

Excessive shares. National Standard 4 requires that allocations or assignments of "fishing privileges" be carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. NMFS has interpreted this aspect of National Standard 4 as applying primarily to limited access programs. In other words, those programs that actually restrict fishing privileges and assign them to individual fishermen. I/O3 would not allocate fishing privileges to particular individuals, corporations, or other entities, and does not create actual fishing privileges that can be acquired by any entity. Competition for the pollock resource under inshore/offshore is no different from the competition for any other groundfish species in the North Pacific for which an inshore/offshore allocation split does not exist. During the development of I/O3 alternatives, substantial discussion has centered on the percentage of the pollock TAC that particular entities have been able to harvest in a given year. However, as is pointed out above, the relevant fishing privileges in the BS/AI and GOA pollock fishery are groundfish moratorium permits and not the TAC itself. If the Council is concerned with the dominance of particular entities in the pollock fishery of the BS/AI it may be more appropriate to examine the programs that directly allocate and assign fishing privileges in the North Pacific, the groundfish moratorium and LLP, rather than inshore/offshore TAC allocations which, at best, have an indirect relationship to the harvest percentages taken by such entities.

The NMFS National Standard guidelines state that "an allocation scheme must be designed to deter any person or other entity from acquiring an excessive share of fishing privileges, and to avoid creating conditions fostering inordinate control, by buyers or sellers, that would not otherwise exist." In other words, the fact that a particular entity may harvest a significant portion of a particular TAC does not necessarily mean that the allocation scheme that governs the fishery is inconsistent with National Standard 4. To be inconsistent with National Standard 4, the allocation scheme itself must either (1) allocate or allow direct control of an excessive share of fishing privileges (e.g. permits, licenses, IFQ) by a particular entity; or, (2) create conditions that foster inordinate control of the market that would not otherwise exist in the absence of the allocation scheme. For an I/O3 alternative to fall under the National Standard 4 prohibition on excessive shares of fishing privileges, the alternative would have to allocate fishing privileges directly to individual entities, or create conditions that foster inordinate market control that would not otherwise exist in the absence of the allocation. Of the alternatives under consideration, only the alternatives establishing a "true" mothership allocation to vessels that have processed pollock but have never caught pollock in the U.S. EEZ would create the conditions under which a particular entity could acquire an excessive share of fishing privileges. Under this "true" mothership alternative only a limited number of vessels would qualify to process pollock under this allocation and one entity could acquire all "true" motherships, effectively controlling 100% of the "true" mothership allocation.

The fact that one particular entity may have inordinate market control under an I/O3 alternative does not mean that alternative is inconsistent with National Standard 4 unless that market control is created by I/O3 and would not otherwise exist in the absence of I/O3. Market control in a particular fishery does not in and of itself mean that the fishery is in violation of National Standard 4. If this were the case, the Council would have to examine all of the fisheries in its jurisdiction and take steps to limit the acquisition of market control in every fishery. In other words, for a particular I/O3 alternative to be found in violation of the National Standard 4 guidelines on "excessive shares" the alternative would have to foster excessive market control by a particular entity that would not otherwise exist in the absence of an inshore/offshore allocation.

To underscore these points, NOAA General Counsel has offered the following advice relative to this issue (electronic mail correspondence, February 1998):

> "National Standard 4 applies to the inshore/offshore allocation. The Council is allocating fishing privileges among U.S. fishermen (it allocates TAC among vessels delivering to the inshore and offshore sectors of the industry) and so the allocation must be fair and equitable and reasonably calculated to promote conservation. However, it is not an allocation of fishing privileges to specific fishermen or entities and does not limit anyone's participation in the fishery; it only further limits the overall amount of fish that can be harvested by each sector. Since it does not allocate or assign fishing privileges to any particular individual or entity, no individual or entity can acquire and 'excessive share' of such privileges. If the Council wants to monitor the amount of an individual fisherman's or entity's actual harvest, they can do so under an IFQ or other similar program."

Relative share may nevertheless be an issue of concern to the Council even if a particular I/O3 alternative is found to be consistent with National Standard 4. Confidentiality requirements at section 402(b) of the Magnuson-Stevens Act prohibit the release of catch information that illustrates the relative shares of harvest and processing of BS/AI pollock on a company-specific level. Nevertheless, certain information of this type has been provided to the Council previously in public testimony (September 1997 meeting), or is generally known through industry publications or other sources.

7.4.3 Concentration/Outmigration of Capital, Transfer Pricing, and Market Control

The issue of capital concentration/outmigration is specifically raised in the Council's Problem Statement and is at least related to the issue above, in the sense that relative share of the fishery might correspond to capital concentration. This is further related to the overall issue of industrial organization, which in turn is associated with a variety of other issues raised in public testimony and/or Council discussions (printed document submitted by Council member Pereyra). These include: market opportunity; market control; vertical integration, transfer pricing; foreign ownership of harvest and processing capacity; and, the general economic health of each sector as a whole since the original allocations were made in 1992.

While much of the information compiled in this document relates to these issues, there is no focused analysis which specifically addresses each of these issues, or which attempts to relate these issues specifically to the alternatives under consideration. For example, we do not have specific information on the current capital structure, the evolution of capital structure over the past several years, or the potential future capital structure of the pollock industry or of specific companies. Such information is either unavailable or would require an inordinate amount of available staff time to research. At the April 1998 meeting, the Council heard public testimony which again raised the issue of vertical integration, as it relates to transfer pricing and overall, global market control. At that time the Council requested that additional information on these issues be provided in the document, recognizing the limitations on the analysts' ability to quantify such information. A qualitative discussion is provided below.

Transfer Pricing

Transfer pricing is a business management strategy, undertaken by a vertically integrated firm which operates in multiple political jurisdictions (e.g., countries). Simply stated, through wholly internal mechanisms, operating 'revenues' and 'costs' are shifted among the firm's operations to strategically manipulate the apparent 'profitability' of a given plant, so as to avoid tax obligations. That is, a company, say, owned and headquartered in Japan, with production operations in the U.S., Japan, and Korea, for example, could employ internal management and bookkeeping strategies which made the operating costs of its facility(ies) in a relatively high-tax location appear greater than revenues (i.e., they show an operating loss and thus incur no income tax obligation). At the same time, this vertically integrated firm could reflect operating profits [including any generated by the plant(s) located in high-tax locations] in its plant(s) located in relatively lower-tax jurisdictions. In this way, the parent firm avoids some or all of its tax obligations for earnings attributable to its operation(s) in higher-taxed locations, while simultaneously increasing the aggregate profits of the vertically integrated parent firm.

This practice is illegal under U.S. law. There is no evidence available to the analysts that indicates any firm participating in the BS/AI groundfish fisheries has employed transfer pricing practices. If such evidence did exist, the U.S. Internal Revenue Service or the U.S. Department of Justice would, presumably, take appropriate action against such a firm.

Market Control

Economic theory confirms that, all else equal, the competitive marketplace works to bring willing buyers and willing suppliers together and, through this process, establishes a 'fair' market clearing price for the exchange. Competition depends, among other things, upon the presence of sufficient numbers of participants on both sides of the market to assure all exchanges are, indeed, made by 'willing' demanders or suppliers. That is, neither side is able to induce the other to enter into an exchange that is not seen to be in each trader's best interest. As fewer and fewer participants (either buyers or sellers) are present in a market, the potential for market control, distortion, and/or failure increases. Such market failures diminish the aggregate 'benefit' deriving from the trade.

As the number of independent operators in any sector of the BS/AI groundfish fishery (e.g., catcher vessels, "true" motherships, C/Ps, plants) declines, the benefits of the competitive market are reduced. Ownership consolidation and/or operational control within sectors, as well as management actions which narrow or dictate operator's market options in the fishery, increase the probability that market distorting pricing practices will emerge. For example, if the number of, say, pollock processors is very small, and/or the ability of independent catcher boats to deliver their catch to whomever they choose is restricted, processors may be in a position to exercise some degree of market control (i.e., capture some of the 'rents' that would have otherwise gone to the catcher boat, by reducing the price paid for raw catch). Further, if one or more of those processors is vertically integrated (e.g., controlling capacity to harvest, process, re-process, and/or market) and represents a significant share of the effective capacity within these sectors, such firms may exercise a degree of market control which could be 'price distorting'. That is, such a firm could be a 'price setter', essentially establishing the effective price for the rest of the market (perhaps at several different stages of the market, e.g., exvessel, wholesale, retail).

All others wishing to sell into that market would be 'price takers', accepting the established price or exiting the market.

The above examples demonstrate a form of 'market failure'. To the extent that they are present in the BS/AI groundfish fisheries (particularly those which target pollock), they reduce the overall benefit to the Nation which could otherwise have been realized from the harvesting, processing, and marketing of this important U.S. fishery resource. Actions proposed under I/O3 could result in further consolidation of capacity and control within the subsectors identified in the analysis. This would be expected to further reduce the degree of competition in this fishery and increase the likelihood of distorting market failures. Quantification of these impacts, however, cannot be provided, given the available data.

7.4.4 Relationship to overall CRP

In September the Council requested that this issue be discussed in the analysis. The first inshore/offshore decision process in 1992 was the impetus for the Council to embark on a Comprehensive Rationalization Planning process, labeled CRP, which included examination of a variety of traditional and limited entry management tools. This process began in 1993 and eventually led the Council to focus on an IFQ program for the groundfish and crab fisheries, with some effort directed at a more simple license limitation program. In 1994 the focus was shifted to license limitation and resulted in the June 1995 Council decision for the LLP for groundfish and crab fisheries. This coincided with approval of Amendments 38/40 which extended the inshore/offshore allocations through 1998.

At that same meeting, the Council also initiated the next major step in the CRP process - development of an IFQ program for the BS/AI pollock fisheries. After initial analyses for that program in late 1995 and early 1996, the project was put on hold due primarily to the Congressional moratorium on IFQ program approval and implementation through October 2001. Refinements to the LLP are currently being considered by the Council as further steps in the CRP process.

The place of I/O3 in the overall CRP process depends somewhat on the ultimate direction of the CRP process. A continuation of some allocation, whether it be the existing allocation or some variation, appears critical to the CRP process regardless of its ultimate direction. This is particularly true for the GOA, where existing programs, including inshore/offshore allocation and the LLP, may be the final steps in the CRP process. If an IFQ program is envisioned as the ultimate CRP goal, then it is likely that the current decision on these allocations will set the stage for eventual allocations, at least in terms of the percentages by major industry sector for the BS/AI. Processor allocations (the two-pie system discussed in previous IFQ development), in addition to harvest vessel allocations, will also be a consideration in any future IFQ program and could be affected by resolution of the inshore/offshore percentages in the I/O3 decision process.

The actual percentages allocated to each sector, whether that be the existing 65/35 or some other percentages, would not appear to directly affect any eventual IFQ program development, though it would obviously have significant implications relative to distribution of those IFQs across harvesting and processing operations. Basic program design, implementation issues, and monitoring issues would be similar regardless of the inshore/offshore sector allocations. If CRP does not include an IFQ program, then the resolution of I/O3 has equally significant implications, perhaps more so, because the allocations themselves, coupled with other management programs like LLP, would be a fundamental part of defining the playing field for future prosecution of the fisheries. With any IFQ program at least 4-5 years away, due to the Congressional moratorium, continuation of some type of inshore/offshore allocation would appear to be a necessary step in the overall CRP process.

7.4.5 American Fisheries Act

The American Fisheries Act has been proposed in Congress by Senator Ted Stevens which would, among other things, require a 75% U.S. ownership for fishing vessels to remain active in the EEZ. Other provisions would phase out large vessels regardless of ownership. While a specific analysis of this proposed legislation is beyond the scope of this project, there are implications to the I/O3 consideration. If approved, this bill could result in a significant capacity reduction (by the disqualification of several vessels involved in the pollock fisheries), or at least the re-structuring of the ownership of those vessels. It is still unclear when this issue will be resolved. However, the Council was aware of the issue and its potential impact on the inshore and offshore sectors prior to the selecting their preferred alternative.

Initial examination of Coast Guard records shows that 15 vessels, which currently target pollock off Alaska, do not fit the 75% ownership requirement proposed by the bill. Attachment 7.4.5 contains information provided by the Coast Guard regarding these vessels, though the accuracy of some of that information has been questioned, for at least two of the vessels identified. At this time it is the best information that we have. The only additional information we can provide in this document is the total pollock catch for these 15 vessels in 1996, which was 243,662 mt, or 21% of the total pollock target catch for 1996 (and 32% of the offshore total).

U.S. Department of Transportation
United States Coast Guard

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ATTACHMENT 7.4.5

16701
JAN 20 1998

Dr. Clarence Pautzke
Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252

Dear Dr. Pautzke,

Back in October you asked me to query the Coast Guard data base regarding ownership and rebuild information for fishing vessels greater than 165 feet operating in Alaska. My staff faxed a copy of the results, Enclosure (1), to Mr. Darryl Brannan.

At the December meeting Dr. Pereyra indicated on Enclosure (2) mistakes in the information for several vessels. Although we queried our data base a second time, we got the same information as we did in our first query, indicating a potential problem with our data base. This could have occurred for several reasons:

a. Incorrect information provided to the CG by vessel owners;
b. Vessel data changes/updates not reported by owners to the CG;
c. Correct information mis-entered by CG data clerks.

The Coast Guard does not routinely verify vessel documentation information; vessel owners are required by law to provide correct information to the Coast Guard and keep it updated.

With regard to the task at hand, I recommend your staff use the information we have provided and identify the Coast Guard as the source. As your analysis document goes through the public review process, individual vessel owners can then work directly with the National Vessel Documentation Center at 1-800-799-8362 to correct and update information for their vessels. I think this is about the best we can do, and hope it meets your needs.

Sincerely,

J. V. O'Shea

J. V. O'SHEA
Captain, U. S. Coast Guard
By direction of the Commander

Encl: (1) Vessel List
(2) Vessel List as annotated by Dr. Pereyra

Copy: Dr. Walter Pereyra, Arctic Storm, Inc.
Ms. Kristine Norosz, Icicle Seafoods
H:\IN-OFF-3\1SECREV\IO3EA.SOC

Factory Trawlers/Trawlers Targetting Alaska Pollock

Vsl Name	CG #	ADF&G	Reg. Len	LOA	GRT	HP	75%	Yr Built	Last Rebuild
	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(COD)	(COD)
Alaska Juris	569276	54693	200.8	223	1213	3600	Y	1975	
Alaska Ocean	637856	60407	344	376	4555	6250	N	1981	Abroad
Alaska Victory	569752	61083	205.7	227	1215	5800	Y	1975	Abroad
Alaska Voyager	536484	51926	203.5	214	1245	4000	Y	1971	
Alaskan Rose	529154	55466	116	131	380	1300	Y	1970	
American Enterprise	594803	54836	191.7	210	1537	3000	Y	1978	
American Empress	942347	57623	280.6	306.4	2493	8254	Y	1974	Abroad
American Dynasty	951307	59378	240.7	272	3659	8000	Y	1974	Abroad
American Triumph	646737	60660	251.7	285	4294	7939	Y	1961	
American No. 1	610654	36202	143.2	160.2	560	2250	Y	1979	
Arctic Fjord	940866	57450	253.5	272	3369	6060	N	1974	
Arctic Storm	903511	54886	314.3	334	4068	6000	N	1942	Abroad
Bountiful	593404	34053	150.5	155	1032	*	Y	1978	
Browns Point	587440	55511	179.7	190	947	2700	Y	1977	
Christina Ann	653045	54852	177.4	204	831	5050	N	1982	
Constellation	640364	*	150.2	*	194	2250	Y	1981	
Elizabeth Ann	534721	54637	196.1	220	1478	3300	N	1971	Abroad
Endurance	592206	57201	239.1	277	2117	5300	N	1978	
Harvester Enterprise	584902	55183	170.2	188	1203	1800	Y	1977	
Highland Light	577044	56974	244	270	1533	5750	Y	1976	
Island Enterprise	610290	59503	273.8	304	2766	3950	Y	1979	
Katie Ann	518441	55301	267.4	296	1593	4497	N	1969	
Kodiak Enterprise	579450	59170	253.2	275	1584	5830	Y	1977	
Legacy	664882	*	117.2	132	194	1240	Y	1983	
Northern Glacier	663457	48075	175.6	201	1109	3000	Y	1983	
Northern Eagle	506694	56618	310.5	341	4437	6590	Y	1966	Abroad
Northern Jaeger	521069	60202	308.4	*	3732	6322	N	1969	
Northern Hawk	643771	60795	310.1	341	3582	8790	Y	1981	
Ocean Peace	677399	55767	199.5	*	1144	2250	N	1984	
Ocean Rover	552100	56987	223	*	4345	7080	N	1973	Abroad

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(August 26, 1998, 1:00 pm)

ENCLOSURE (1)

Factory Trawlers/Trawlers Targetting Alaska Pollock

Vsl Name	CG #	ADF&G	Reg. Len	LOA	GRT	HP	75%	Yr Built	Last Rebuild
	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(COD)	(COD)
Pacific Explorer	942592	57629	213.7	236	1389	4000	Y	1982	
Pacific Glacier	933627	56991	253.5	276	2241	6600	Y	1974	
Pacific Navigator	592204	54859	195	*	1097	3600	Y	1978	Abroad
Pacific Scout	934772	57438	213.7	236	1389	4000	Y	1982	
Rebecca Ann	592205	56197	200.2	217	1166	3300	Y	1978	Abroad
Rebecca Irene	697637	*	115.3	140	191	1800	Y	1981	
Seafisher	575587	56964	211.4	230	1453	3000	N	1976	Abroad
Seattle Enterprise	904767	56789	247	270.1	1519	3900	Y	1973	
Starbound	944658	57621	205.8	240	1533	5000	Y	1989	
U.S. Intrepid	604439	54392	173.2	185	1027	4800	Y	1979	
Victoria Ann	592207	56196	192.5	217	1112	3360	N	1978	Abroad
Former U.S. Vessels, Now Foreign Flagged									
Claymore Sea	L7391288		244		3072	*	N	1974	Abroad
Heather Sea	L7391317		264.4	292	3200	*	N	1975	Abroad
Saga Sea	L7390416		271		4848	*	N	1974	Abroad

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Legend

(COD) *Information copied from CG Certificate of Documentation
(F/V. . .) *Information copied from 4th Edition of <u>Fishing Vessels of the United States</u>
CG # CG official documentation number
ADF&G State number
Reg Len - Registered Length
LOA Length Overall
GRT - Gross Registered Tonnage
HP - Horsepower
75% - 75% U.S. Ownership
Yr. Built Year Built
Last Rebuild Location of last rebuild
***** - I Information unavailable

(August 26, 1998, 1:00 pm)

Factory Trawlers/Trawlers Targetting Alaska Pollock

Vsl Name	CG # (COD)	ADF&G (F/V...)	Reg. Len (COD)	LOA (F/V...)	GRT (COD)	HP (F/V...)	75% (COD)	Yr Built (COD)	Last Rebuild (COD)
Alaska Juris	569276	54693	200.8	223	1213	3600	Y	1975	
Alaska Ocean	637856	60407	344	376	4555	6260	N	1981	Abroad
Alaska Victory	589752	61083	205.7	227	1215	5800	Y	1975	Abroad
Alaska Voyager	536484	51926	203.5	214	1245	4000	Y	1971	
Alaskan Rose	529154	50466	116	131	380	1300	Y	1970	
American Enterprise	594803	54836	191.7	210	1537	3000	Y	1978	
American Empress	942347	57623	280.6	306.4	2493	8254	Y	1974	Abroad
American Dynasty	951307	59378	240.7	272	3659	8000	Y	1974	Abroad
American Triumph	646737	60660	251.7	285	4294	7939	Y	1961	
American No. 1	610854	36202	143.2	160.2	560	2250	Y	1979	
Arctic Fjord	940866	57450	253.5	272	3369	6060	N (circled) [Y]	1974	
Arctic Storm	903511	54886	314.3	334	4068	6000	N	1942	Abroad (circled)
Bountiful	593404	34053	150.5	155	1032	*	Y	1978	
Browns Point	587440	55511	179.7	190	947	2700	Y	1977	
Christina Ann	653046	54852	177.4	204	831	5050	N	1982	
Constellation	640364	*	150.2	*	194	2250	Y	1981	
Elizabeth Ann	534721	54637	198.1	220	1478	3300	N	1971	Abroad
Endurance	592208	57201	239.1	277	2117	5300	N	1978	
Harvester Enterprise	584902	55183	170.2	188	1203	1800	Y	1977	
Highland Light	577044	58974	244	270	1533	5750	Y	1976	
Island Enterprise	610290	59503	273.8	304	2766	3950	Y	1979	
Katie Ann	518441	55301	267.4	298	1593	4497	N	1969	
Kodiak Enterprise	579450	59170	253.2	275	1584	5830	Y	1977	
Legacy	664882	*	117.2	132	194	1240	Y	1983	
Northern Glacier	663457	48075	175.6	201	1109	3000	Y	1983	
Northern Eagle	506694	56618	310.5	341	4437	6590	Y [?]	1988	Abroad
Northern Jaeger	521069	60202	308.4	*	3732	6322	N	1969	[ABROAD]
Northern Hawk	643771	60795	310.1	341	3582	8790	Y [?]	1981	[ABROAD]
Ocean Peace	677389	55767	199.5	*	1144	2250	N	1984	
Ocean Rover	552100	56987	223	*	4345	7080	N	1973	Abroad

[NOTE MISTAKES]

[NOTE]

ENCLOSURE 2

Factory Trawlers/Trawlers Targetting Alaska Pollock

Vsl Name	CG #	ADF&G	Reg. Len	LOA	GRT	HP	75%	Yr Built	Last Rebuild	
	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(COD)	(COD)	
Pacific Explorer	942592	57629	213.7	236	1389	4000	Y	1982		
Pacific Glacier	933627	56981	253.5	276	2241	6600	Y	1974	ABROAD	NOTE
Pacific Navigator	592204	54859	195	*	1097	3600	Y	1978	Abroad	
Pacific Scout	934772	67438	213.7	236	1389	4000	Y	1982		
Rebecca Ann	592205	56197	200.2	217	1166	3300	Y	1978	Abroad	
Rebecca Irene	697637	*	115.3	140	191	1800	Y	1981		
Seafisher	575587	56964	211.4	230	1463	3000	N	1976	Abroad	
Seattle Enterprise	904767	56789	247	270.1	1519	3900	Y	1973		
Starbound	944658	57621	205.8	240	1533	5000	Y	1989		
U.S. Intrepid	604439	54392	173.2	185	1027	4800	Y	1979		
Victoria Ann	592207	56198	192.5	217	1112	3360	N	1978	Abroad	
Former U.S. Vessels, Now Foreign Flagged										
Claymore Sea	L7391288		244		3072	*	N	1974	Abroad	
Heather Sea	L7391317		264.4	282	3200	*	N	1975	Abroad	
Saga Sea	L7390416		271		4848	*	N	1974	Abroad	

Legend

(COD) *Information copied from CG Certificate of Documentation
(F/V. . .) *Information copied from 4th Edition of Fishing Vessels of the United States
CG # CG official documentation number
ADF&G State number
Reg Len - Registered Length
LOA Length Overall
GRT - Gross Registered Tonnage
HP - Horsepower
75% - 75% U.S. Ownership
Yr. Built Year Built
Last Rebuild Location of last rebuild
* - I Information unavailable

8.0 CONSISTENCY WITH OTHER APPLICABLE LAWS

Findings for the following sections are based upon the 'Preferred Alternative' selected by the Council. While earlier drafts of this document attempted to cover the range of alternatives being considered, a more focused treatment is presented here, now that a preferred alternative has been chosen.

8.1 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.

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

Pollock fisheries will be managed as they currently are, regardless of the specific allocations between sectors, to achieve the TAC without overfishing. Pollock 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.

Increased allocations to the inshore sector, based on utilization rates documented in this analysis, would increase the total amount of food production; however, this is offset at least to some degree by the fact that the offshore sector produces relatively greater amounts of product for the U.S. market (primarily deep skin fillet products). Overall benefits to the Nation may be affected by these trade-offs, though our ability to quantify those effects, particularly for changes in the BS/AI allocation, 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.

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

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

<u>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.</u>

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

<u>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,</u>

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, and where catch is delivered for processing. 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 or 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 (See Chapter 7.4.2 for further discussions of the excessive share issue).

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). As discussed in Chapters 4 and 7, efficiency in utilization can be viewed in the context of absolute rates of utilization, but should take into account product prices, production costs, and market issues in determining overall 'efficiency'. The analysis presents information relative to these perspectives on utilization and economic efficiency, 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.

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

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.

Appendices II and III to this document contain information regarding potential social and community impacts from the alternatives. Appendix II is focused on the major pollock industry sectors, the linkages between those sectors and major fishing communities in both Alaska and the Pacific Northwest, and the possible impacts to those communities from a change in the sector allocations. That analysis determines that the No Action alternative (allowing the allocations to expire) would most likely result in negative community impacts, particularly to community stability in Alaskan communities such as Dutch Harbor, King Cove, Sand Point, and Akutan which are significantly involved in pollock processing. Changes in the allocations between sectors are more difficult to quantify in terms of impacts, due to significant involvement of all major sectors in those communities. For example, Dutch Harbor is home to major inshore processing plants, as well as home to significant infrastructure and support services for the harvesting and catcher/processor (offshore) fleets. Both major sectors contribute significantly to the community's overall economy.

Appendix III is specifically focused on linkages and impacts between the pollock industry sectors and the Community Development Quota (CDQ) program. While that analysis does not address specific CDQ community-level impacts, it does contain detailed information on the linkages to the CDQ organizations, and possible impacts to those groups, from which inferences may be drawn with regard to community-level impacts. Both Appendix II and Appendix III were commissioned by the Council to provide information to the decision makers relative to National Standard 8.

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 3 presented information on historical bycatch patterns in the pollock target fisheries, while Chapter 4 contains projections of bycatch of various PSC species associated with the alternatives. In summary, bycatch rates in the pollock fisheries are very low overall, perhaps the lowest of any major fishery in the world, and these rates are very similar across the major sectors involved with slight variations among PSC species, by pollock fishing sector. For example in 1996, the inshore sector had lower bycatch rates for halibut, herring, and crab, while the offshore sector shows lower bycatch rates for chinook salmon, indicating a trade-off between PSC species in terms of the alternatives. Increased fishing opportunity for one sector (and increased bycatch by that sector) would be offset by decreased fishing opportunity for the other sector (and decreased bycatch by that sector). Given the low bycatch rates for all species in the pollock fisheries, the Council's preferred alternative would appear to be consistent with this standard, catch and bycatch mortality would remain largely unaffected overall.

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

The Council's preferred alternative appears to be consistent with this standard. Nothing within the actual allocation percentages would change the way in which fisheries are managed nor would they change safety requirements for fishing vessels. However, the Council's preferred alternative does exclude catcher vessels delivering to the offshore sector from operating inside the CVOA during the B-season. Excluding offshore catcher vessels from the CVOA during this time of the year should not have a significant impact on vessel safety. The weather is usually better in the Bering Sea during the fall months (compared to the winter A-season fishery). But should the weather turn bad during the B-season, the smaller catcher vessels delivering offshore will likely need to run further when seeking shelter.

8.2 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 inshore/offshore allocations, as vessels which may be disadvantaged by a lower pollock allocation move into other fisheries to attempt to make up lost revenues. The SSC and Council requested that staff provide information to shed light on the extent to which this may occur. The following section compiles information which may provide insights into potential 'spillover' effects.

8.2.1 Operational Capacity/Capability

The first step in assessing the capacity and capability of the BS/AI pollock target fishing sectors is to tabulate the operations which constitute each element of that industry. The first measure enumerates the 'unique'[19] operations in each of the four primary sectors of interest, for 'pollock target fisheries', in the base-year (i.e., 1996).

Catcher/Processors -37
Catcher boats -119
"True" motherships - 3
Inshore -10

Catcher/Processors

When the sectors are further subdivided (on the bases cited above), the following results emerge. The composition of the 1996 pollock target C/P fleet may be described on the basis of vessel length over all (LOA) and net tons. The data reveal that eight C/Ps are greater than 300' LOA; 14 are between 230' and 300' LOA; and 15 are less than 230' LOA.

On the basis of net tons, the smallest category of C/Ps (i.e., less than 500 net tons) included five vessels; 11 vessels were registered in the 500-999 net ton category; 14 were in the 1,000-2,000 net ton class; and seven were greater than 2,000 net tons.

Catcher boats

The catcher boat sub-sector was enumerated on the basis of vessel length over all (LOA) and horsepower. Given the relatively limited data available on fleet physical-plant, these two measures (for which relatively complete data are available) were judged to be indicative of fishing capacity for the catcher boat sector. LOA measurements suggest that there are 92 catcher boat operations in the less than 125' category; in the 125' to 155' category the count is 18 vessels; and nine in the greater than 155' LOA class. There are 31 boats with greater than 1,500 hp; 32 with 1,000 hp to 1,500 hp; and, 46 in the less than 1,000 hp class.[20]

"True" Motherships

The three "true" motherships identified in the base-year sector enumeration were sufficiently different in size and configuration that no useful categorization on the basis of physical characteristics seems appropriate.

Inshore plants

As for the inshore sector, no systematic capacity, configuration, or size data are available to the analysts with which to categorize this sector, except to note that three of the inshore processing plants are actually onboard vessels, although these vessels are permanently moored (i.e., they are effectively immobile, fixed facilities).

[19] The 'unique' total assures no double-counting of operations, e.g., a vessel which participated in more than a single operational mode during a given fishing year would be counted only once. Note that judgements about participation are confined to 'pollock target' fisheries.

[20] Two boats appear without horsepower listings in these data, for each of 1994 and 1996. Only a single vessel was so listed in 1991.

Estimating the probable response of any given element of the domestic pollock fishery (much less that of any individual operations) to a significant change in allocated share of the TAC is difficult. This is so, at least in part, because the ability to accommodate a significant increase in total share of the pollock TAC would be substantially dependent upon the existing effective production capacity and latent potential in the affected sectors, at least in the short run. Likewise, the probable adjustment to a significant decrease in TAC-share would be highly dependent upon the nature, relative cost efficiency, profitability, and operational flexibility of existing capacity in the affected component of the industry.

Empirical data on capacity within sectors of the domestic pollock industry now are very limited. As a result, so too is our ability to quantify probable industry response to other than marginal changes in TAC-share.

The data which are available pertain more appropriately to capability. One way to distinguish the difference between these two measures is that capacity is a quantitative measure of the effective production potential and/or limits of an operation or sector, while capability is a simple presence or absence indicator of the ability to produce a given output form. Beyond tabulating the presence or absence of a particular production ability within a sector or sub-sector (e.g., surimi capability), the analysis will not be able to quantitatively address the issue of capacity investment and disinvestment, by sector, in response to alternative non-marginal changes in TAC allocations.

8.2.2 Entry and Exit Patterns

The subject of entry/exit patterns does not readily lend itself to examination of a single year's data, since very often, given the way catch and participation are tracked in BS/AI groundfish fisheries, it is only by comparing one year's records to the next that patterns emerge. Therefore, this section examines a series of years, rather than focusing on the base-year, in an effort to discern relevant patterns. Data on participant's entry into, and exit from, BS/AI pollock target fisheries are incomplete. No reliable data, for example, on 'inshore' processing participant's are available for inclusion. However, entry/exit patterns for "true" mothership operations, C/Ps, and catcher boats in these fisheries can be characterized, in general terms.

The data on the C/P sector, on the other hand, suggests a relatively active pattern of movement into and out of these pollock target fisheries, as well as between sub-sector categories. Table 8.1 describes the vessel count and percent of sub-fleet of each C/P sub-sector on the basis of duration-of-participation in the BS/AI pollock target fishery. For example, if one compares the three operational modes (i.e., surimi, surimi & fillet, and non-surimi), this table reveals that, of the current fleet, two surimi operations have been continuously active in this fishery and mode over the six year period 1991-1996, while eight surimi & fillet vessels, and 15 non-surimi vessels meet this criterion. On the other end of the spectrum, one operation in the current C/P fleet in the surimi sub-sector and two in the surimi & fillet mode operated only a single year of the six in this fishery. Eighteen vessels in the non-surimi sub-sector recorded only a single year's activity over this period.

Table 8.2 permits one to track the pattern of exit and entry from year-to-year, by C/P operational sub-sector. Taking the surimi category for 1991, as an example, six vessels operated in this mode, in this year. At the end of the year, one operator had exited (representing just under 17% of the sub-fleet by number). In 1992, three vessels entered this sub-sector, resulting in a total of eight surimi operations that year in the BS/AI pollock target fishery. By year's end, four vessels had exited the sub-sector. The three entrants represented a change of 38% in the sub-fleet, in that year, while the four that exited reduced the sub-sector by 50%. The balance of the table can be interpreted in the same manner.

For the catcher boat sector (which includes operations delivering at-sea and/or inshore), these data similarly present a clear pattern of active movement into and out of the pollock target fisheries, over the period of analysis. Table 8.3 describes the size and share of the fleet (by vessel count and percent of sub-fleet) of each catcher boat length category, on the basis of duration-of-participation in the BS/AI pollock target fishery. For example, if one compares the three LOA-groups, this table reveals that of the current fleet, 42 operations less than 125' have been continuously active in this fishery over the six year period 1991-1996, while only four vessels each, in the 125'-155' and >155' categories meet this criterion.

At the lower end of the range, 35 operations in the 1996 catcher boat fleet in the <125' sub-sector, 12 in the 125'-155' LOA category, and two operations in the >155' group, fished only a single year of the six, in this fishery.

Table 8.4 presents exit and entry patterns from year-to-year, by catcher boat LOA sub-sector. Taking the <125' category for 1991, for example, 70 vessels operated in this year. At the end of the year, six boats had exited (representing just over 8.5% of the vessels in this sub-fleet). In 1992, 26 vessels entered this sub-sector, resulting in a total of 90 operations in the <125' class, that year, in the BS/AI pollock target fishery (representing 29% of the 1992 fleet in this vessel category). By year's end in 1992, 19 vessels in this class had exited the fishery, which reduced the sub-sector by 21%. The remainder of Table 8.4 can be interpreted in the same manner.

In Tables 8.1 through 8.4, exit numbers indicate that a vessel operated in a processing mode or *'LOA'* vessel category in the indicated year, but did not operate in that category in the next year. The source data for these entry-exit profiles are from ADF&G fish tickets, Norpac files, and the Alaska Region blend files.

While, due to the way targets are assigned in the blend data, it was neither possible to track where entrants were coming from, nor where those exiting operations were going to, it is highly probably that most simply shifted effort between pollock target fisheries and other groundfish fisheries in the BS/AI (and perhaps to a lesser extent GOA).

Table 8.1 Number of Catcher/Processors, by Years of Participation, in a Processor Category in the BS/AI Pollock Target Fishery (1991-96)

	Vessel Count	Percent of Vessels	Cumulative Vessel Count	Cumulative % of Vessels
Surimi				
6 years	2	15%	2	15%
5 years	3	23%	5	38%
4 years	2	15%	7	54%
3 years	2	15%	9	69%
2 years	3	23%	12	92%
1 year	1	8%	13	100%
Surimi & Fillet				
6 years	8	47%	8	47%
4 years	3	18%	11	65%
3 years	2	12%	13	76%
2 years	2	12%	15	88%
1 year	2	12%	17	100%
Non-surimi				
6 years	15	31%	15	31%
5 years	3	6%	18	37%
4 years	3	6%	21	43%
3 years	7	14%	28	57%
2 years	3	6%	31	63%
1 year	18	37%	49	100%

Table 8.2 Entry and Exit of Catcher/Processors by Processor Category, BS/AI Pollock Target Fishery

	Vessel Count	Vessel Entries	Vessel Exits	Percent Entry	Percent Exit
Surimi					
1991	6	.	1	.	17%
1992	8	3	4	38%	50%
1993	5	1	0	20%	0%
1994	9	4	1	44%	11%
1995	11	3	3	27%	27%
1996	9	1	.	11%	.
Surimi & Fillet					
1991	15	.	3	.	20%
1992	12	0	1	0%	8%
1993	15	4	4	27%	27%
1994	11	0	3	0%	27%
1995	10	2	2	20%	20%
1996	9	1	.	11%	.
Non surimi					
1991	33	.	10	.	30%
1992	29	6	6	21%	21%
1993	30	7	8	23%	27%
1994	24	2	5	8%	21%
1995	25	6	6	24%	24%
1996	21	2	.	10%	.

Table 8.3 Number of Catcher Boats, by Years of Participation in the BS/AI Pollock Target Fishery (by LOA category - 1991-96)

	Vessel Count	Percent of Vessels	Cumulative Vessel Count	Cumulative % of Vessels
<125'				
6 years	42	32%	42	32%
5 years	18	14%	60	45%
4 years	13	10%	73	55%
3 years	13	10%	86	65%
2 years	11	8%	97	73%
1 year	35	27%	132	100%
125' - 155'				
6 years	4	15%	4	15%
5 years	2	8%	6	23%
4 years	4	15%	10	38%
3 years	1	4%	11	42%
2 years	3	12%	14	54%
1 year	12	46%	26	100%
>155'				
6 years	4	25%	4	25%
5 years	2	13%	6	38%
4 years	3	19%	9	56%
3 years	1	6%	10	63%
2 years	4	25%	14	88%
1 year	2	13%	16	100%

Table 8.4 Entry and Exit of Catcher Boats by LOA Category in the BS/AI Pollock Target Fishery

	Vessel Count	Vessel Entries	Vessel Exits	Percent Entry	Percent Exit
<125'					
1991	70	.	6	.	9%
1992	90	26	19	29%	21%
1993	83	12	23	14%	28%
1994	67	7	3	10%	4%
1995	92	28	15	30%	16%
1996	88	11	.	13%	.
125' - 155'					
1991	6	.	0	.	0%
1992	10	4	2	40%	20%
1993	11	3	1	27%	9%
1994	14	4	5	29%	36%
1995	10	1	0	10%	0%
1996	20	10	.	50%	.
>155'					
1991	7	.	0	.	0%
1992	13	6	4	46%	31%
1993	9	0	1	0%	11%
1994	10	2	2	20%	20%
1995	11	3	3	27%	27%
1996	9	1	.	11%	.

8.2.3 Alternative Fishing Options for BS/AI Pollock Target Operations

One consideration in assessing the probable impact of the range of proposed changes in pollock TAC share, by sector, is the alternatives or options available to potentially displaced or idled capacity. For example, some of the inshore processing operations have diverse production patterns which include processing of both other groundfish and non-groundfish species. This may reveal the existence of opportunities for these operations to shift effort into other fisheries, should the Council choose to apportion TAC away from this sector, under I/O3. Likewise, some at-sea processors (both C/Ps and true MS) have participated in target fisheries other than pollock, suggesting opportunities which they may exploit, if the Council allocates TAC away from their respective sectors.

This line of reasoning has two direct implications for I/O3. First, to the extent that opportunities exist which may allow an operator to, at least in part, recoup losses attributable to a sectoral reallocation of pollock TAC, the adverse economic impact of the proposed action would be reduced.[21] The second implication extends logically from the first. That is, to the extent that displaced capacity/effort in the BS/AI pollock target fisheries is employed (in whole or in part) in an alternative fishing activity (offsetting some of its losses in pollock-related earnings), it will simultaneously compete with existing participants in the alternative fishery. This suggests that the impacts imposed by any of the pollock TAC reapportionment alternatives under consideration will likely extend beyond the BS/AI pollock target fisheries, and those operations currently involved in them.

One possible indicator of the existence of such opportunities, for any given operation, may be found in the record of participation in alternative target fisheries and areas/regions, during recent fishing years. When catch and production records, by individual operation, by sector, are consulted, a profile of historical activity can be constructed. However, the ability to predict with certainty how any individual operation may actually respond to a given change in sector TAC-share is very limited. Indeed, to borrow liberally from a well-known standard disclaimer, "... past performance is no guarantee of future results." Changes in (among other factors) an individual operation's physical plant, its ownership or management, or technology, domestic and world markets, and governing regulations, may impact the ability of an operator to shift effort into another fishery or area in the future, even though they may have exercised that option at some time in the past. Furthermore, the following statistics summarize only catch and production activity. These numbers do not purport to measure revenue from, nor economic dependence upon, a given target fishery. They are simply indicative of historic fishing patterns, which might reveal capabilities within a given operation to participate in alternative target fisheries.

With these caveats clearly in mind, if one assumes that past activity is indicative of the range of potential opportunities available to displaced or idled capacity in the pollock target fisheries of the BS/AI, the following conclusions emerge.

<u>Inshore Processors</u>

A review of Alaska fishticket and NMFS blend data for this sector of the pollock target fishery suggests that all of the inshore processors have historically been active in a range of target fisheries. Of the eight operations listed as inshore under I/O3, all were significantly involved in the processing of target Pacific cod. Indeed, for some operations and in some years target Pacific cod was actually a greater percentage of their total groundfish activity than was target pollock. Five of the eight processed target yellowfin sole over this period. Activity in the target fisheries for sablefish, other flatfish, rock sole, and turbot was also recorded by one or more of these operations. Six processed significant amounts of halibut. According to Alaska State Fishticket files, all eight recorded

[21] It would almost certainly not be eliminated, however, since if the earnings potential from the alternative fishery were greater than or equal to that of the pollock fishery, we would have observed this operator undertaking this activity voluntarily.

production of herring. For five operations crab was an important output. Finally, six processed significant quantities of salmon, and a seventh processed a smaller amount. These data seem to suggest that the inshore processing sector is relatively diversified among both alternative groundfish and non-groundfish species. However, in 1996, for example, pollock accounted for over 80% of the total pounds processed for four of eight inshore operators; between 60% and 75% for three others; and just 25% for the final operation.

"True" Motherships

Reviewing NMFS blend records, for the historical period 1991 through 1996 (inclusive), for the "true" mothership category, the participation record indicates that six vessels participated in BS/AI pollock target fisheries. During the years 1991, 1994, and 1996 only three "true" mothership participated in the BS/AI pollock fisheries. These same three vessels participated in each year. During 1991, all three were substantially dependent upon pollock (i.e., none participated in any other BS/AI target fishery in that year). All were, however, active participants in the Washington/Oregon/California [W/O/C] whiting target fishery). In 1992, the same three vessels were active in BS/AI pollock fisheries and, again, were substantially dependent. Their activity levels in the whiting fishery were significantly lower in 1992 than in 1991. Three other "true" motherships also recorded pollock target landings in the BS/AI in 1992, although the amounts were very much smaller than those of the primary three operations. Of this latter group of "true" mothership operations, one reportedly also participated in sablefish and Pacific cod target fisheries, one recorded production from Pacific cod and arrowtooth and yellowfin sole fisheries, and one was active in Pacific cod, rock sole, yellowfin sole, rockfish and Atka mackerel targets.

In 1993, only the three primary "true" mothership operations were present in BS/AI pollock target fisheries and, again, all were dependent on pollock. One recorded 100% of its fishing activity in the BS/AI pollock target fishery, the other two were well over 80%, with whiting accounting for the balance. In 1994, all three of these same MS operations reported approximately 70% of their total activity in BS/AI pollock, with the balance in the W/O/C whiting target. In 1995, all three primary "true" motherships were again present and exhibited the same operational pattern as in 1994, with a split between BS/AI pollock and W/O/C/ whiting targets, although one recorded 2% of its total activity in Pacific cod, and one recorded 4% in the yellowfin sole target fishery. In addition, one of the other "true" mothership operators, active in the BS/AI pollock target fishery only in 1992, re-entered this fishery in 1995. The extent of its pollock activity was very limited, however, both in total tonnage and percent of total fishing activity. Indeed, output from the BS/AI pollock target fishery represented only approximately 1% of this operations total fishing activity, with Pacific cod, rock sole, and yellowfin sole targets accounting for most of its production. In 1996, the three primary "true" mothership operations were again the sole representatives of this sector and, as previously observed, nearly all of their activity was accounted for in BS/AI pollock and W/O/C whiting targets (two recorded roughly 2% of total activity in BS/AI Pacific cod targets in this year).

Catcher/Processors

The picture, with respect to C/Ps, is far more complex. For the following discussion, these C/P operations may be usefully sub-divided into four categories, based upon output mix as reported in the NMFS blend files, for the BS/AI pollock target fishery. These include, 1) surimi-only, 2) surimi & fillets, 3) fillets-only, and 4) neither surimi nor fillets, i.e., presumably H&G.

Surimi-only C/Ps. Over the period 1991 through 1996 (inclusive), there were thirteen surimi-only C/Ps active in the BS/AI pollock target fisheries. In any given year, only a subset of this total actually participated in the pollock target fisheries. For example, in 1991, just six surimi-only C/P operations were active. Among these, three divided their fishing activity exclusively between Alaska pollock and the whiting target fishery off W/O/C (i.e., no other targets were identified), two were substantially dependent upon pollock (i.e., 91% and 81%, respectively) but did target other Alaska groundfish, and one was only marginally dependent on BS/AI pollock target fishing (reportedly, 28%). For this latter operation, the majority of its total fishing/processing activity in this year was associated with flatfish targets (yellowfin, rock sole, and other flatfish in that order), although rockfish accounted for roughly 10%, as well. For the two other C/Ps, not exclusively dependent on pollock and whiting in this year, the activity mix was diverse, including small shares of Pacific cod, rock sole, turbot, rockfish, and Atka mackerel. Only one vessel recorded more than a single-digit percentage dependence on a species other than pollock, and that was a 10% share attributable to the yellowfin sole target.

In 1992, eight surimi-only C/Ps were active in the BS/AI pollock target fisheries. Six were virtually exclusively dependent upon pollock target activity in the EEZ off Alaska, although they also fished whiting off W/O/C[22]; one was active in two other targets (11% of total in the whiting fishery, 13% in the yellowfin sole target), and one was significantly diversified (29% in yellowfin sole, 8% in Atka mackerel, <1% each in Pacific cod and rockfish, although the latter two records may be an aberration attributable to the way targets are assigned).

In 1993, just five surimi-only C/Ps were active. Two of these were 100% dependent on BS/AI pollock target fisheries. One other targeted only pollock and whiting (84% and 16%, respectively). Two were more diversified, targeting pollock for approximately two-thirds of their total catch; targeting yellowfin sole and (in one case) whiting, and recording lesser participation in Pacific cod, rock sole, Atka mackerel, and other flatfish targets.

In 1994, nine operations in this category were reported. Of these, two were virtually 100% dependent upon the BS/AI pollock target fisheries. Three had significant production from yellowfin; three from rock sole targets; while four reported between 26% and 41% of their total fishing catch derived from the whiting target. In addition, Pacific cod made up a small percentage of the target catch for three vessels, and one had significant catches in the Atka mackerel target fishery.

Eleven C/Ps of this category were active in pollock targets in the BS/AI in 1995. Three were virtually 100% dependent. Four others fished only pollock or whiting targets in this year. The yellowfin target was important for four operations. Rock sole and Atka mackerel were present in only very small numbers, then for only three different operations.

In 1996, nine surimi-only C/Ps were present in the BS/AI pollock target fisheries. Seven were substantially involved in the W/O/C whiting fishery. Atka mackerel, rock sole and yellowfin sole target fisheries were the only others represented.

For surimi-only C/Ps, over this period, the majority were heavily dependent upon the BS/AI pollock target fisheries. W/O/C whiting was the principal alternative fishery exploited by these operations. The pattern of participation among vessels less dependent on target pollock seems to indicate that yellowfin sole, then rock sole, and other flatfish, and for one vessel Atka mackerel, have been the primary opportunities for diversification within this operational category.

Surimi & fillet C/Ps. Over the period 1991 through 1996, a total of 17 different vessels participated in pollock target fisheries, reporting production of surimi and fillets from their pollock catch. There were very few examples of these operations participating in a significant way in alternative target fisheries in the EEZ off Alaska. The notable exceptions were (for a single year in each case), one vessel which did approximately 80% of it total

[22] One of these boats reportedly did 1% in arrowtooth and 2% in yellowfin. Another did 4% in yellowfin. However, these records may be anomalies attributable to the way targets are identified in the blend algorithm.

fishing activity in the Pacific cod target and the remained in pollock[23]; one boat that reported 37% of its activity in the Atka mackerel target fishery, 3% in yellowfin sole, and the remainder in pollock targets; and two operations with catches accounting for approximately 25% of their total fishing activity from the yellowfin target, and the rest from pollock.

The balance of the BS/AI activity of the remaining operations in this sector, over the six years reviewed, was very heavily concentrated on pollock targets. Indeed, there was reportedly relatively minor participation in a very narrow range of other targets, accounting in most instances for single digit percentages. These included Pacific cod, yellowfin sole, rockfish, and Atka mackerel.

Over the period, virtually all had some target activity in the W/O/C whiting fishery. The pattern of participation was variable, with some fishing whiting consistently over the period and others targeting whiting for only one or two seasons.

Fillet C/Ps. This group of pollock target vessels is substantially more numerous, over the period 1991 through 1996. A total of twenty-seven different operations were reported to have targeted pollock in the BS/AI, and produced fillets (but not surimi) over these years. At the extremes, 14 operations participated in the pollock target fisheries in the BS/AI all six years, while four were active only in one of the six years.

The range of diversity within this sub-sector is considerable, making summarization difficult. However, in general, when these operations are ranked on the basis of total tons of pollock harvested, the vessels with the greatest quantities of pollock were those with the highest percentage of their participation in pollock targets. Furthermore, there seems to be a pattern over the latter three years of this six year period which suggests that the degree of (relative) dependency of these specific boats has increased, as a percent of total fishing activity.

For those operators which are more widely diversified, i.e., had a smaller percent of their total catch represented in a pollock target fishery, the range of other targets reported was much more varied, than those observed in the other sub-sectors. While it is difficult to generalize, these operations reportedly participated in a range of targets which included both BS/AI and GOA fisheries. As with the earlier sub-sectors, Pacific cod, yellowfin sole, rockfish, and Atka mackerel were all represented, often as relatively significant percentages of total catch. In addition, however, arrowtooth, deep-flats, rex sole, turbot, rock sole, and other groundfish were present in the target mix. Only five boats from this sub-sector recorded any activity in the W/O/C whiting fishery over the six years examined.

While one may not conclude that any individual operation in this sub-sector is "less economically dependent" on BS/AI pollock target fisheries than participants in the other sub-sectors described above, the aggregate level of diversity observed within this sub-group does suggest that many of these boats have the capability to exploit a number of different stocks, and that they have historically been active across a range of targets, over the course of each season, and over the six year period examined. Why this is so, is not known.

Neither fillets nor surimi C/Ps. When the NMFS blend data were queried as to BS/AI pollock target participation over this period, a total of seventeen different operators were identified as having been pollock target operations, but having produced neither fillets nor surimi. In most cases the quantities of pollock catch were relatively small, participation in pollock fisheries was spotty, and relative activity in pollock as a percent of total fishing activity was also small. These operations may be H&G boats which, for a given week of operation, were targeted pollock within the blend algorithm. Most of these boats reported a range of participation much like those of the fillet-only C/Ps, including both BS/AI and GOA target fisheries. In any case, most of these operations were not

[23] This boat was present only one year in the pollock target fishery, over this period.

consistently, nor substantially involved in BS/AI pollock target fisheries over this period. They are cited here only for completeness.

The analysts intend to further examine the probable entry/exit response in the BS/AI pollock fisheries, based upon several limiting assumptions. Since cost data (and therefore profitability/viability measures) are unavailable at this time, this would be largely hypothetical. The profiles prepared for the Council strongly suggest that one result of I/O1 (and perhaps I/O2) has been a realignment within several of the sectors, e.g., C/Ps have exhibited a marked decline in numbers and somewhat of a shift in size, while catcher vessels exhibited sharp growth in overall numbers (although smaller vessels seem to have faired less well than larger ones). The likely response of each sector, in terms of capacity displacement (or for that matter, investment in new capacity) could be a meaningful consideration in an impact analysis of TAC reapportionment.

A quantitative assessment of the likely entry - exit (i.e., investment - disinvestment) patterns for each sector is beyond our capabilities, given the data (or lack thereof) on cost structure, profitability, operational diversification, etc.

8.2.4 Summary of 1997 Fishing Activities by Sector

Understanding the flow of fishing effort in the BS/AI groundfish fisheries throughout the year is important when talking about potential spillover impacts. To help the reader visualize these flows, five tables are presented in this section. These tables represent the inshore, "true" mothership, surimi catcher processor, fillet catcher processor, and head and gut industry sectors discussed earlier.

Table 8.5 shows the BS/AI catch delivered to the inshore pollock processors in 1997. These data are broken down by BS/AI target fishery, as assigned using the Blend algorithm, and report the total catch of all species in that target fishery during the week. The Inshore table indicates that most of the catch is assigned to the midwater pollock target with much smaller amounts in the Pacific cod fishery, during the weeks in January and February. When the pollock fishery closes in March, the catcher vessels shift more effort into the Pacific cod fishery and enter the yellowfin sole fishery. This general pattern continues until these fisheries are closed around the first of May. There is little activity again until the pollock B-season opens in September, and no activity reported after the B-season closed in October.

The three "true" motherships were taking deliveries of pollock harvested in the midwater fishery during both the A and B seasons (Table 8.6). After the pollock A-season closed, some effort moved into the Pacific cod fishery until early April. From April until the start of the B-season there was no activity in the BS/AI groundfish fishery.

Catcher processors in the Surimi (Table 8.7), sectors focused solely on the pollock fisheries when they were open. After the A-season closed, some of the vessels switched their attention to the Atka Mackerel fishery while others went into yellowfin sole. Lesser amounts of catch were reported in the Pacific cod and other flatfish fisheries. All of the Surimi C/P effort had left the Atka mackerel fishery by April 19, and only small amounts of catch were taken in the yellowfin, rockfish, and Pacific cod fisheries after that date. From the middle of June until the beginning of September no BS/AI groundfish fishing activity was reported for this sector. Once the pollock B-season opened, this sector focused on that fishery for five weeks. After the B-season closed, a small amount of catch was reported in the yellowfin fishery.

Vessels in the pollock fillet fleet (Table 8.8) participated in the bottom and midwater pollock target fisheries during the A-season. Catches in the Pacific cod target fishery during the A-season were small and sporadic. After the pollock A-season closed these vessels' catch was greatest in the Pacific cod target fishery. However, some members of this fleet made harvests in the yellowfin sole target through the middle of June. From the middle of June until the pollock B-season opened there were small amounts of catch reported in the Pacific cod, flathead sole, rock sole, and yellowfin sole targets. This fleet targeted only pollock during the B-season. Catches were consistently in the 10,000 to 25,000 mt range per week in the midwater target, and 1,000 to 5,000 mt in the bottom target fishery. By the second week in October, only participation in the yellowfin sole fishery was reported.

The Head and Gut fleet operated in several target fisheries throughout 1997 (Table 8.9). They began the year fishing in the Atka mackerel, rock sole, and Pacific cod. When the rock sole roe fishery reached its peak, during mid February, effort switched from the Atka mackerel target fishery into rock sole. This additional effort then moved back into Atka mackerel after the peak of the rock sole roe fishery. Effort in the Atka mackerel fishery then remained fairly constant until the fishery closed in April. After the Atka mackerel fishery closed, those vessels appeared to move into the yellowfin sole target fishery. Yellowfin sole remained the primary target of the fleet until it closed, due to reaching the halibut cap, around the middle of June. Target fisheries for the Head and Gut fleet during July included flathead sole, rock sole, and turbot. Between the middle of August and the end of November most of the catch was in the yellowfin sole target fishery.

Tables 8.10-8.14 report the number of processors that operated in a target fishery by week. These are basically sister tables to Tables 8.5-8.9 discussed above.

Table 8.5 Catch Delivered to Inshore Pollock Processors By Bering Sea and Aleutian Islands Target Fisheries

Week	The Range of Metric Tons of Catch by Target Fishery			
	Bottom Pollock	Pacific Cod	Midwater Pollock	Yellowfin Sole
01/25/97	-	710	27,231	-
02/01/97	-	1,061	35,967	-
02/08/97	-	2,308	39,960	-
02/15/97	cf	2,264	33,119	-
02/22/97	cf	2,847	30,753	-
03/01/97	cf	7,739	4,665	-
03/08/97	-	6,757	3,109	-
03/15/97	-	5,630	cf	cf
03/22/97	-	4,689	cf	cf
03/29/97	-	7,708	-	cf
04/05/97	-	4,848	-	cf
04/12/97	-	5,934	-	cf
04/19/97	-	7,826	-	cf
04/26/97	-	4,825	-	cf
05/03/97	-	2,623	-	cf
05/10/97	-	-	-	-
05/17/97	-	-	-	cf
05/24/97	-	-	-	cf
05/31/97	-	-	cf	-
06/07/97	-	-	-	-
06/14/97	-	-	-	-
06/21/97	-	-	-	-
06/28/97	-	-	-	-
07/05/97	-	-	-	-
07/12/97	-	-	-	-
07/19/97	-	-	-	-
07/26/97	-	-	-	-
08/02/97	-	-	-	-
08/09/97	-	-	-	-
08/16/97	-	-	-	-
08/23/97	-	-	cf	-
08/30/97	-	-	-	-
09/06/97	cf	-	19,049	-
09/13/97	-	-	30,540	-
09/20/97	cf	-	21,392	-
09/27/97	cf	-	15,986	-
10/04/97	cf	-	26,900	-
10/11/97	cf	-	32,064	-
10/18/97	cf	cf	26,604	-
10/25/97	-	-	-	-
11/01/97	-	-	-	-
11/08/97	-	-	-	-
11/15/97	-	-	-	-
11/22/97	-	-	-	-
11/29/97	-	-	-	-
12/06/97	-	-	-	-
12/13/97	-	-	-	-
12/20/97	-	-	-	-
12/27/97	-	-	-	-
Total	5,208	68,229	347,339	20,579

Source: National Marine Fisheries Service 1997 Blend Data

Note: cf indicates that less than three vessels (plants) participated in the fishery

Table 8.6 Catch Delivered to True Motherships by Bering Sea and Aleutian Islands Target Fisheries

Week	The Range of Catch (mt) by Target Fishery		
	Bottom Pollock	Pacific Cod	Midwater Pollock
01/25/97	-	-	-
02/01/97	101	-	13,763
02/08/97	-	-	14,332
02/15/97	-	-	16,661
02/22/97	-	-	11,123
03/01/97	-	cf	cf
03/08/97	-	cf	-
03/15/97	-	cf	-
03/22/97	-	cf	-
03/29/97	-	cf	-
04/05/97	-	cf	-
04/12/97	-	-	-
04/19/97	-	-	-
04/26/97	-	-	-
05/03/97	-	-	-
05/10/97	-	-	-
05/17/97	-	-	-
05/24/97	-	-	-
05/31/97	-	-	-
06/07/97	-	-	-
06/14/97	-	-	-
06/21/97	-	-	-
06/28/97	-	-	-
07/05/97	-	-	-
07/12/97	-	-	-
07/19/97	-	-	-
07/26/97	-	-	-
08/02/97	-	-	-
08/09/97	-	-	-
08/16/97	-	-	-
08/23/97	-	-	-
08/30/97	-	-	-
09/06/97	-	-	8,449
09/13/97	-	-	10,686
09/20/97	-	-	10,675
09/27/97	-	-	11,267
10/04/97	-	-	12,624
10/11/97	-	-	cf
10/18/97	-	-	-
10/25/97	-	-	-
11/01/97	-	-	-
11/08/97	-	-	-
11/15/97	-	-	-
11/22/97	-	-	-
11/29/97	-	-	-
12/06/97	-	-	-
12/13/97	-	-	-
12/20/97	-	-	-
12/27/97	-	-	-
Grand Total	101	cf[1]	109,875

Source: National Marine Fisheries Service 1997 Blend Data

[1] Only one "True Mothership" participated in the Pacific cod fishery during 1997

Note: cf indicates that less than three vessels (plants) participated in the fishery that week and the data are confidential

Table 8.7 Pollock Surimi and Surimi & Fillet C/P Fleet's Catch by Bering Sea and Aleutian Islands Target Fisheries (CDQ Harvests are Excluded)

Week	The Range of Catch (mt) by Target Fishery						
	Atka Mackerel	Bottom Pollock	Pacific Cod	Other Flatfish	Midwater Pollock	Rockfish	Yellowfin Sole
01/25/97	-	-	-	-	2,906	-	-
02/01/97	-	2,519	-	-	41,535	-	-
02/08/97	-	4,701	-	-	41,447	-	-
02/15/97	-	3,441	-	-	43,005	-	-
02/22/97	-	6,460	-	-	24,899	-	-
03/01/97	cf.	cf.	-	-	4,625	-	cf.
03/08/97	4,955	-	-	-	-	-	2,901
03/15/97	3,193	-	cf.	cf.	1,901	-	5,433
03/22/97	cf.	cf.	-	cf.	cf.	-	2,906
03/29/97	cf.	-	cf.	-	-	-	cf.
04/05/97	-	-	-	-	-	-	4,454
04/12/97	cf.	-	-	-	-	-	2,251
04/19/97	cf.	-	-	-	-	-	cf.
04/26/97	-	-	-	-	-	-	cf.
05/03/97	-	-	cf.	-	-	-	cf.
05/10/97	-	-	cf.	-	-	cf.	cf.
05/17/97	-	-	-	-	-	-	cf.
05/24/97	-	-	-	-	-	-	cf.
05/31/97	-	-	-	-	-	-	cf.
06/07/97	-	-	-	-	-	-	cf.
06/14/97	-	-	-	-	-	-	cf.
06/21/97	-	-	-	-	-	-	-
06/28/97	-	-	-	-	-	-	-
07/05/97	-	-	-	-	-	-	-
07/12/97	-	-	-	-	-	-	-
07/19/97	-	-	-	-	-	-	-
07/26/97	-	-	-	-	-	-	-
08/02/97	-	-	-	-	-	-	-
08/09/97	-	-	-	-	-	-	-
08/16/97	-	-	-	-	-	-	-
08/23/97	-	-	-	-	-	-	-
08/30/97	-	-	-	-	-	-	-
09/06/97	-	cf.	-	-	26,496	-	-
09/13/97	-	-	-	-	54,325	-	-
09/20/97	-	-	-	-	26,854	-	-
09/27/97	-	-	-	-	48,129	-	-
10/04/97	-	-	-	-	35,997	-	-
10/11/97	-	-	-	-	-	-	cf.
10/18/97	-	-	-	-	-	-	cf.
10/25/97	-	-	-	-	-	-	cf.
11/01/97	-	-	-	-	-	-	cf.
11/08/97	-	-	-	-	-	-	cf.
11/15/97	-	-	-	-	-	-	cf.
11/22/97	-	-	-	-	-	-	cf.
11/29/97	-	-	-	-	-	-	cf.
12/06/97	-	-	-	-	-	-	cf.
12/13/97	-	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-	-
Total	13,011	22,216	993	cf.	353,011	cf.	32,577

Source: National Marine Fisheries Service 1997 Blend Data

Note: cf indicates that less than three vessels (plants) participated in the fishery that week and the data are confidential

Table 8.8 Pollock Fillet C/P Fleet's Catch by Bering Sea and Aleutian Islands Target Fisheries (CDQ Harvests were Excluded)

Week	The Range of Catch (mt) by Target Fishery					
	Bottom Pollock	Pacific Cod	Flathead Sole	Midwater Pollock	Rock Sole	Yellowfin Sole
01/25/97	-	cf	-	cf	-	-
02/01/97	2,205	cf	-	21,989	-	-
02/08/97	-	cf	-	21,931	-	-
02/15/97	1,445	cf	-	22,332	-	-
02/22/97	3,429	148	-	12,564	-	cf
03/01/97	-	2,176	-	873	-	cf
03/08/97	-	1,794	-	-	-	cf
03/15/97	cf	4,858	-	cf	cf	cf
03/22/97	cf	7,231	-	-	-	1,590
03/29/97	-	7,247	-	cf	-	-
04/05/97	-	3,496	-	-	-	cf
04/12/97	-	1,851	-	-	-	cf
04/19/97	-	1,452	-	-	-	1,390
04/26/97	-	cf	-	-	-	cf
05/03/97	-	-	cf	-	-	cf
05/10/97	-	cf	-	-	cf	-
05/17/97	-	-	-	-	-	cf
05/24/97	-	-	-	-	-	cf
05/31/97	-	-	-	-	-	cf
06/07/97	-	-	-	-	-	cf
06/14/97	-	-	-	-	-	cf
06/21/97	-	-	-	-	cf	cf
06/28/97	-	-	-	-	-	-
07/05/97	-	-	cf	-	cf	-
07/12/97	-	-	cf	-	cf	-
07/19/97	-	-	cf	-	cf	-
07/26/97	-	-	cf	-	cf	-
08/02/97	-	-	-	-	-	-
08/09/97	-	cf	-	-	-	-
08/16/97	-	cf	-	-	-	260
08/23/97	-	-	-	-	cf	1,523
08/30/97	-	-	cf	-	cf	cf
09/06/97	3,270	-	cf	6,861	-	cf
09/13/97	2,624	-	-	15,041	cf	cf
09/20/97	cf	-	-	11,515	-	cf
09/27/97	-	-	-	18,519	-	cf
10/04/97	cf	-	-	14,349	-	cf
10/11/97	-	-	-	-	-	cf
10/18/97	-	-	-	-	-	cf
10/25/97	-	-	-	-	-	cf
11/01/97	-	-	-	-	-	cf
11/08/97	-	-	-	-	-	cf
11/15/97	-	-	-	-	cf	cf
11/22/97	-	-	-	-	-	cf
11/29/97	-	-	-	-	-	cf
12/06/97	-	-	-	-	-	-
12/13/97	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-
Total	16,218	30,900	688	147,010	1,971	17,633

Source: National Marine Fisheries Service 1997 Blend Data

Note: cf indicates that less than three vessels (plants) participated in the fishery that week and the data are confidential.

Table 8.9 H&G Fleet's Catch by Bering Sea and Aleutian Islands Target Fisheries

Week	Metric Tons of Catch by Target Fishery											
	Atka Mackerel	Bottom Pollock	Pacific Cod	Other Flatfish	Rockfish	Flathead Sole	Other Groundfish	Midwater Pollock	Rock Sole	Turbot	Arrowtooth	Yellowfin Sole
01/25/97	6,749	-	cf	-	-	-	-	-	6,858	-	-	-
02/01/97	6,387	-	3,374	-	-	-	-	-	4,150	-	-	-
02/08/97	3,603	cf	3,888	-	-	-	-	-	6,764	-	-	-
02/15/97	cf	cf	2,301	-	-	-	-	-	11,715	-	-	-
02/22/97	cf	cf	3,363	-	1,117	-	-	-	8,681	-	-	cf
03/01/97	1,701	-	2,154	-	3,267	cf	-	-	1,304	-	-	2,294
03/08/97	5,701	-	1,210	-	729	cf	-	-	cf	-	-	1,894
03/15/97	5,643	-	cf	-	cf	cf	-	-	cf	-	-	4,084
03/22/97	5,992	-	536	-	cf	-	-	-	-	-	-	4,007
03/29/97	3,076	-	2,504	-	1,377	cf	-	-	cf	-	-	cf
04/05/97	4,776	-	495	-	cf	2,674	-	-	-	-	-	-
04/12/97	6,387	-	cf	-	-	2,747	-	-	-	-	-	cf
04/19/97	5,081	-	cf	-	cf	-	-	-	-	-	-	4,866
04/26/97	1,937	-	-	-	-	cf	-	-	cf	-	-	3,613
05/03/97	-	-	1,914	-	-	cf	cf	-	cf	-	-	2,823
05/10/97	-	cf	1,849	-	cf	cf	-	-	cf	-	cf	1,284
05/17/97	-	-	-	-	-	cf	-	-	cf	-	-	7,695
05/24/97	-	-	cf	-	-	-	-	-	cf	-	-	6,125
05/31/97	-	-	-	-	-	-	-	-	cf	-	-	4,793
06/07/97	-	-	-	-	-	-	-	-	cf	-	-	6,680
06/14/97	-	-	-	cf	-	-	-	-	1,612	-	-	5,658
06/21/97	-	-	839	cf	-	-	-	-	779	-	cf	934
06/28/97	-	-	171	-	-	-	-	-	-	-	-	-
07/05/97	-	-	cf	-	-	1,561	-	-	cf	268	-	-
07/12/97	-	-	-	-	-	2,771	-	-	448	255	-	-
07/19/97	-	-	-	-	-	2,669	-	-	2,994	348	-	-
07/26/97	-	-	69	-	-	3,487	-	-	3,578	256	cf	-
08/02/97	-	cf	778	cf	-	-	-	-	-	-	-	-
08/09/97	-	-	cf	-	-	-	-	-	-	-	-	-
08/16/97	-	-	cf	cf	-	cf	-	-	132	-	-	2,885
08/23/97	-	-	-	cf	-	cf	-	-	923	-	-	12,949
08/30/97	-	-	-	cf	-	cf	-	-	1,283	-	-	7,710
09/06/97	-	cf	-	443	-	cf	-	cf	cf	-	-	11,599
09/13/97	-	cf	-	cf	-	cf	-	1,110	cf	-	-	8,559
09/20/97	-	-	-	-	-	-	-	cf	-	-	-	8,855
09/27/97	-	-	-	-	-	cf	-	cf	-	-	-	8,211
10/04/97	-	cf	cf	-	-	cf	-	-	-	-	-	8,322
10/11/97	-	-	-	-	-	-	-	-	-	-	-	8,848
10/18/97	-	-	-	-	-	cf	-	-	-	-	-	6,277
10/25/97	-	-	-	-	-	-	-	-	-	-	-	7,061
11/01/97	-	-	-	-	-	-	-	-	-	-	-	6,062
11/08/97	-	-	-	-	-	-	-	-	-	-	-	4,996
11/15/97	-	-	-	-	-	-	-	-	cf	-	-	4,617
11/22/97	-	-	-	-	-	-	-	-	-	-	-	3,396
11/29/97	-	-	-	-	-	-	-	-	-	-	-	836
12/06/97	-	-	-	-	-	-	-	-	-	-	-	cf
12/13/97	-	-	-	-	-	-	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-	-	-	-	-	-	-
Total	59,368	2,112	28,599	1,848	10,753	18,982	cf	2,549	55,852	1,126	135	169,283

Source: National Marine Fisheries Service 1997 Blend Data

Note: cf indicates that less than three vessels (plants) participated in the fishery that week and the data are confidential

Table 8.10 1997 Pollock Inshore Processors Deliveries from Bering Sea and Aleutian Islands Target Fisheries

Week	Number of Plants Listed in NMFS Blend Data as Participating in the Target Fishery			
	Bottom Pollock	Pacific Cod	Midwater Pollock	Yellowfin Sole
01/25/97	-	3	6	-
02/01/97	-	3	8	-
02/08/97	-	4	8	-
02/15/97	1	3	8	-
02/22/97	1	4	8	-
03/01/97	2	5	4	-
03/08/97	-	6	3	-
03/15/97	-	6	1	2
03/22/97	-	5	1	2
03/29/97	-	6	-	1
04/05/97	-	5	-	1
04/12/97	-	7	-	2
04/19/97	-	6	-	2
04/26/97	-	4	-	2
05/03/97	-	5	-	2
05/10/97	-	-	-	-
05/17/97	-	-	-	1
05/24/97	-	-	-	1
05/31/97	-	-	1	-
06/07/97	-	-	-	-
06/14/97	-	-	-	-
06/21/97	-	-	-	-
06/28/97	-	-	-	-
07/05/97	-	-	-	-
07/12/97	-	-	-	-
07/19/97	-	-	-	-
07/26/97	-	-	-	-
08/02/97	-	-	-	-
08/09/97	-	-	-	-
08/16/97	-	-	-	-
08/23/97	-	-	1	-
08/30/97	-	-	3	-
09/06/97	1	-	6	-
09/13/97	-	-	7	-
09/20/97	1	-	6	-
09/27/97	2	-	7	-
10/04/97	1	-	8	-
10/11/97	2	-	8	-
10/18/97	1	1	8	-
10/25/97	-	-	-	-
11/01/97	-	-	-	-
11/08/97	-	-	-	-
11/15/97	-	-	-	-
11/22/97	-	-	-	-
11/29/97	-	-	-	-
12/06/97	-	-	-	-
12/13/97	-	-	-	-
12/20/97	-	-	-	-
12/27/97	-	-	-	-
Total	12	73	102	16

Source: National Marine Fisheries Service 1997 Blend Data

Table 8.11 1997 True Mothership Vessel's Processing by Bering Sea and Aleutian Islands Target Fishery

Week	Number of Vessels Listed in NMFS Blend Data as Participating in the Target Fishery		
	Bottom Pollock	Pacific Cod	Midwater Pollock
01/25/97	-	-	-
02/01/97	1	-	3
02/08/97	-	-	3
02/15/97	-	-	3
02/22/97	-	-	3
03/01/97	-	1	1
03/08/97	-	1	-
03/15/97	-	1	-
03/22/97	-	1	-
03/29/97	-	1	-
04/05/97	-	1	-
04/12/97	-	-	-
04/19/97	-	-	-
04/26/97	-	-	-
05/03/97	-	-	-
05/10/97	-	-	-
05/17/97	-	-	-
05/24/97	-	-	-
05/31/97	-	-	-
06/07/97	-	-	-
06/14/97	-	-	-
06/21/97	-	-	-
06/28/97	-	-	-
07/05/97	-	-	-
07/12/97	-	-	-
07/19/97	-	-	-
07/26/97	-	-	-
08/02/97	-	-	-
08/09/97	-	-	-
08/16/97	-	-	-
08/23/97	-	-	-
08/30/97	-	-	-
09/06/97	-	-	3
09/13/97	-	-	3
09/20/97	-	-	3
09/27/97	-	-	3
10/04/97	-	-	3
10/11/97	-	-	1
10/18/97	-	-	-
10/25/97	-	-	-
11/01/97	-	-	-
11/08/97	-	-	-
11/15/97	-	-	-
11/22/97	-	-	-
11/29/97	-	-	-
12/06/97	-	-	-
12/13/97	-	-	-
12/20/97	-	-	-
12/27/97	-	-	-
Total	1	6	29

Source: National Marine Fisheries Service 1997 Blend Data

Table 8.12 1997 Pollock Surimi and Surimi & Fillet C/P Fleet's Catch by Bering Sea and Aleutian Islands Target Fishery (CDQ Harvests are Excluded)

Week	Number of Vessels Listed in NMFS Blend Data as Participating in the Target Fishery						
	Atka Mackerel	Bottom Pollock	Pacific Cod	Other Flatfish	Midwater Pollock	Rockfish	Yellowfin Sole
01/25/97	-	-	-	-	3	-	-
02/01/97	-	3	-	-	16	-	-
02/08/97	-	3	-	-	15	-	-
02/15/97	-	3	-	-	16	-	-
02/22/97	-	5	-	-	14	-	-
03/01/97	2	1	-	-	13	-	1
03/08/97	4	-	-	-	-	-	3
03/15/97	4	-	1	1	3	-	4
03/22/97	2	1	-	1	2	-	4
03/29/97	1	-	2	-	-	-	1
04/05/97	-	-	-	-	-	-	3
04/12/97	1	-	-	-	-	-	3.
04/19/97	1	-	-	-	-	-	2
04/26/97	-	-	-	-	-	-	2
05/03/97	-	-	1	-	-	-	1
05/10/97	-	-	1	-	-	1	1
05/17/97	-	-	-	-	-	-	1
05/24/97	-	-	-	-	-	-	1
05/31/97	-	-	-	-	-	-	1
06/07/97	-	-	-	-	-	-	1
06/14/97	-	-	-	-	-	-	1
06/21/97	-	-	-	-	-	-	-
06/28/97	-	-	-	-	-	-	-
07/05/97	-	-	-	-	-	-	-
07/12/97	-	-	-	-	-	-	-
07/19/97	-	-	-	-	-	-	-
07/26/97	-	-	-	-	-	-	-
08/02/97	-	-	-	-	-	-	-
08/09/97	-	-	-	-	-	-	-
08/16/97	-	-	-	-	-	-	-
08/23/97	-	-	-	-	-	-	-
08/30/97	-	-	-	-	-	-	-
09/06/97	-	2	-	-	15	-	-
09/13/97	-	-	-	-	16	-	-
09/20/97	-	-	-	-	16	-	-
09/27/97	-	-	-	-	16	-	-
10/04/97	-	-	-	-	16	-	-
10/11/97	-	-	-	-	-	-	1
10/18/97	-	-	-	-	-	-	1
10/25/97	-	-	-	-	-	-	1
11/01/97	-	-	-	-	-	-	1
11/08/97	-	-	-	-	-	-	1
11/15/97	-	-	-	-	-	-	1
11/22/97	-	-	-	-	-	-	1
11/29/97	-	-	-	-	-	-	1
12/06/97	-	-	-	-	-	-	1
12/13/97	-	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-	-
Total	15	18	5	2	161	1	39

Source: National Marine Fisheries Service 1997 Blend Data

Table 8.13 1997 Pollock Fillet CP Vessel's Catch by Bering Sea and Aleutian Islands Target Fishery (no CDQ)

Week	Number of Vessels Listed in NMFS Blend Data as Participating in the Target Fishery					
	Bottom Pollock	Pacific Cod	Flathead Sole	Midwater Pollock	Rock Sole	Yellowfin Sole
01/25/97	-	1	-	1	-	-
02/01/97	4	2	-	11	-	-
02/08/97	-	2	-	12	-	-
02/15/97	4	1	-	12	-	-
02/22/97	4	3	-	9	-	1
03/01/97	-	7	-	3	-	1
03/08/97	-	9	-	-	-	1
03/15/97	1	9	-	2	1	1
03/22/97	2	9	-	-	-	3
03/29/97	-	12	-	1	-	-
04/05/97	-	8	-	-	-	2
04/12/97	-	4	-	-	-	2
04/19/97	-	3	-	-	-	3
04/26/97	-	2	-	-	-	2
05/03/97	-	-	1	-	-	2
05/10/97	-	1	-	-	2	-
05/17/97	-	-	-	-	-	2
05/24/97	-	-	-	-	-	2
05/31/97	-	-	-	-	-	2
06/07/97	-	-	-	-	-	2
06/14/97	-	-	-	-	-	2
06/21/97	-	-	-	-	1	1
06/28/97	-	-	-	-	-	-
07/05/97	-	-	1	-	1	-
07/12/97	-	-	1	-	1	-
07/19/97	-	-	2	-	1	-
07/26/97	-	-	2	-	1	-
08/02/97	-	-	-	-	-	-
08/09/97	-	1	-	-	-	-
08/16/97	-	1	-	-	-	3
08/23/97	-	-	-	-	1	3
08/30/97	-	-	1	-	1	1
09/06/97	5	-	1	11	-	1
09/13/97	6	-	-	11	1	1
09/20/97	1	-	-	11	-	1
09/27/97	-	-	-	12	-	1
10/04/97	1	-	-	11	-	1
10/11/97	-	-	-	-	-	2
10/18/97	-	-	-	-	-	2
10/25/97	-	-	-	-	-	2
11/01/97	-	-	-	-	-	2
11/08/97	-	-	-	-	-	2
11/15/97	-	-	-	-	1	1
11/22/97	-	-	-	-	-	2
11/29/97	-	-	-	-	-	1
12/06/97	-	-	-	-	-	-
12/13/97	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-
Grand Total	28	75	9	107	12	55

Source: National Marine Fisheries Service 1997 Blend Data

Table 8.14 1997 H&G Fleet Vessel Count by Bering Sea and Aleutian Islands Target Fishery

Week	Number of Vessels Listed in NMFS Blend Data as Participating in the Target Fishery											
	Atka Mackerel	Bottom Pollock	Pacific Cod	Other Flatfish	Rockfish	Flathead Sole	Other Groundfish	Midwater Pollock	Rock Sole	Turbot	Arrowtooth	Yellowfin Sole
01/25/97	8	-	2	-	-	-	-	-	15	-	-	-
02/01/97	8	-	8	-	-	-	-	-	9	-	-	-
02/08/97	8	1	7	-	-	-	-	-	17	-	-	-
02/15/97	1	1	4	-	-	-	-	-	17	-	-	-
02/22/97	1	1	10	-	4	-	-	-	16	-	-	2
03/01/97	5	-	5	-	7	1	-	-	5	-	-	7
03/08/97	8	-	5	-	3	2	-	-	2	-	-	7
03/15/97	7	-	2	-	1	1	-	-	2	-	-	9
03/22/97	7	-	4	-	2	-	-	-	-	-	-	10
03/29/97	6	-	12	-	3	1	-	-	1	-	-	1
04/05/97	7	-	3	-	2	7	-	-	-	-	-	-
04/12/97	8	-	1	-	-	9	-	-	-	-	-	2
04/19/97	7	-	2	-	2	-	-	-	-	-	-	11
04/26/97	7	-	-	-	-	1	-	-	1	-	-	17
05/03/97	-	-	16	-	-	2	1	-	1	-	-	15
05/10/97	-	1	14	-	1	2	-	-	2	-	2	14
05/17/97	-	-	-	-	-	2	-	-	1	-	-	16
05/24/97	-	-	1	-	-	-	-	-	1	-	-	16
05/31/97	-	-	-	-	-	-	-	-	2	-	-	13
06/07/97	-	-	-	-	-	-	-	-	1	-	-	14
06/14/97	-	-	-	1	-	-	-	-	3	-	-	12
06/21/97	-	-	5	1	-	-	-	-	5	-	1	8
06/28/97	-	-	3	-	-	-	-	-		-	-	-
07/05/97	-	-	1	-	-	7	-	-	1	4	-	-
07/12/97	-	-	-	-	-	9	-	-	3	3	-	-
07/19/97	-	-	-	-	-	12	-	-	7	5	-	-
07/26/97	-	-	3	-	-	12	-	-	8	3	1	-
08/02/97	-	1	4	1	-	-	-	-	-	-	-	-
08/09/97	-	-	2	-	-	-	-	-	-	-	-	-
08/16/97	-	-	1	1	-	1	-	-	3	-	-	19
08/23/97	-	-	-	1	-	2	-	-	5	-	-	23
08/30/97	-	-	-	2	-	2	-	-	5	-	-	19
09/06/97	-	1	-	3	-	2	-	1	1	-	-	22
09/13/97	-	1	-	1	-	2	-	3	1	-	-	23
09/20/97	-	-	-	-	-	-	-	2	-	-	-	22
09/27/97	-	-	-	-	-	1	-	1	-	-	-	22
10/04/97	-	1	1	-	-	1	-	-	-	-	-	19
10/11/97	-	-	-	-	-	-	-	-	-	-	-	18
10/18/97	-	-	-	-	-	1	-	-	-	-	-	15
10/25/97	-	-	-	-	-	-	-	-	-	-	-	14
11/01/97	-	-	-	-	-	-	-	-	-	-	-	14
11/08/97	-	-	-	-	-	-	-	-	-	-	-	13
11/15/97	-	-	-	-	-	-	-	-	1	-	-	11
11/22/97	-	-	-	-	-	-	-	-	-	-	-	9
11/29/97	-	-	-	-	-	-	-	-	-	-	-	4
12/06/97	-	-	-	-	-	-	-	-	-	-	-	1
12/13/97	-	-	-	-	-	-	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-	-	-	-	-	-	-
Total	88	8	116	11	25	80	1	7	136	15	4	442

Source: National Marine Fisheries Service 1997 Blend Data

8.2.4 Prices for Various (non-pollock) Species

Table 8.15 shows the first wholesale prices (FOB Alaska) for products made from various groundfish species during 1996. Prices for pollock were discussed in Chapter 3 and are not presented again here. The purpose of providing these prices is to give the reader an idea of the first wholesale value of other species. This information may be useful if the reader wishes to determine the approximate quantity of other species that would be required to make up lost revenue in the pollock target fishery, if the I/O3 allocation percentages change. Due to the uncertainty surrounding which fisheries vessels might enter in the future, it is left to the reader to use their own judgements about effort flows when making these calculations. The reader should also be aware that some product categories included here are quite broad. For example, the definition of yellowfin kirimi used here could simply be headed and tailed, or a higher valued cut of the prime flesh. These cuts would likely sell in different markets for different prices.

Table 8.15 First Wholesale Quantity, Value, and Price for 1996

	Quantity (1,000 mt)	Value (millions $)	$ / Ton
Pacific cod			
Whole fish	8.1	$ 8.7	$ 1,074
H&G	57.7	$ 98.2	$ 1,702
Salted/split	10.8	$ 23.6	$ 2,185
Fillets	19.3	$ 71.8	$ 3,720
Other products	17.0	$ 22.3	$ 1,312
All products	113.0	$ 224.7	$ 1,988
Sablefish			
H&G	10.7	$ 96.6	$ 9,028
Other products	0.1	$ 0.3	$ 3,000
All products	10.8	$ 96.9	$ 8,972
Other Flatfish			
Wholefish	0.9	$ 1.2	$ 1,304
H&G	9.6	$ 19.9	$ 2,075
H&G w/roe	1.4	$ 4.9	$ 3,539
Other products	0.3	$ 0.2	$ 721
All products	12.2	$26.3	$ 2,144
Rock sole			
Whole fish	0.8	$ 0.55	$ 656
H&G	2.7	$ 3.1	$ 1,141
H&G w/roe	6.3	$ 24.7	$ 3,908
All Products	10.1	$ 28.5	$ 2,840

Table 8.15 continued			
Yellowfin sole			
Whole fish	27.7	$ 15.7	$ 566
H&G	13.1	$ 10.4	$ 789
Kirimi	14.1	$ 21.9	$1 ,549
Other products	2.3	$ 0.5	$ 212
All Products	57.2	$ 48.4	$ 846
Rockfish			
Wholefish	2.5	$ 2.5	$ 1,000
H&G	11.5	$ 20.4	$ 1,774
Other products	1.0	$ 3.4	$ 3,400
All products	15.0	$ 26.2	$ 1,747
Atka mackerel			
Whole fish	16.7	$ 15.1	$ 904
H&G	38.8	$ 52.9	$ 1,363
Other products	0.8	$ 0.8	$ 1,000
All products	54.6	$ 68.7	$ 1,218

Source: Economic Status of the Groundfish Fisheries Off Alaska, 1996 (Table 31, pp 64-65, November 21, 1997.
Quantity data were derived from the 1996 National Marine Fisheries Weekly Production Reports.
Value data were derived from the 1996 ADF&G Commercial Operator Annual Reports.

8.2.5 Summary of Spillover Considerations

Potential preemption of H&G fisheries

It would be extremely speculative to try and predict how vessels might react to a change in the pollock allocations, and whether and to what extent vessels would attempt to make up lost revenues in other fisheries. However, it is clear from the preceding information that many vessels, including large capacity catcher/processors as well as smaller catcher vessels, do have the capability to do so, and have exhibited entry and exit patterns over time among fisheries. Entry/exit patterns have occurred over the past few years in the absence of any change in pollock allocations, and could be due simply to a decreasing pollock TAC overall. While it is difficult to isolate the reasons for business decisions regarding trade-offs among various fisheries, it is apparent that a change in the pollock allocations, combined with generally decreasing TACs, could induce vessels typically concentrated on pollock to enter alternative fisheries, at the 'expense' of existing participants in those fisheries.

The information in the preceding section illustrates that while many of the 'surimi' catcher/processors are heavily concentrated on pollock and whiting, other species, particularly yellowfin sole, have comprised a portion of their annual round of fishing activity. Several of the 'fillet' catcher/processors have also exhibited a mix of fisheries in their annual fishing round. When examining the 1997 fishing activities by sector (Tables 8.5 through 8.14), it is apparent that the majority of effort expended on non-pollock fisheries by these catcher/processors occurred after the close of the pollock fishery, but when alternative fisheries such as yellowfin sole were still open. With a reduced pollock quota available, it is possible that these vessels would move into these alternative fisheries earlier, and take more of the available TAC (or more of the available PSC allocated to those fisheries) than they otherwise would. This scenario assumes a reduce pollock TAC available to those catcher/processors. If catcher vessels realized a reduced TAC, it is possible that they would concentrate more activity on these alternative fisheries as well.

Wholesale price information for processed product of non-pollock species is presented in the preceding section (Table 8.15) in order to derive insights as to the 'replacement' value of these species for lost pollock opportunities. For comparison, we derived a weighted average for pollock products (using the 1996 production and value information), which comes to about $1900 per mt of product. When comparing against the values in Table 8.15, we see that the value for pollock is very similar to that for Pacific cod and other flatfish ($1988/mt and $2144/mt respectively), is less than the value of rock sole ($2840/mt), and is more than twice the value of yellowfin sole products ($846/mt). It is also higher than Atka mackerel which comes in at $1218/mt of product. These latter two species, yellowfin sole and Atka mackerel, are of primary concern to the H&G factory trawl fleet (public comment from Groundfish Forum, April 1998).

In very simplistic terms, this information is indicative of the amounts of harvest of these two species which would be required to make up for revenues lost in the pollock fisheries. Notwithstanding different product recovery rates for these species, the information suggests that for every metric ton of pollock 'lost' in a reallocation, a little over 2 mt of yellowfin sole harvest, or 1.5 mt of Atka mackerel harvest, would be required to make up for that 'lost' pollock. To further illustrate this effect, let's assume an *example* of a 2% loss of pollock share (2 percentage points) by the offshore sector, which would be about 20,000 mt (based on current TAC levels). To make up for that would require anywhere from 30,000 mt of Atka mackerel to 45,000 mt of yellowfin sole, or some combination of these and other species. These numbers represent a significant portion of an already fully utilized groundfish quota.

In public comment submitted by the Groundfish Forum in April 1998, a similar comparison is performed, based on gross revenues per ton of raw fish. This exercise projected a ton of pollock to be worth $624 (1997 prices) and examined the impacts of a major reallocation away from the offshore sector (and presented arguments as to why the inshore sector vessels would be far less likely to make significant incursions into the 'H&G' fisheries). The Groundfish Forum analysis examined Alternative 3D, which was estimated to result in a loss of 148,000 mt of pollock. That analysis estimates that the value per mt of raw fish is $480 for yellowfin sole and $582 for Atka mackerel, such that the total value of this fishery (in this estimation) is roughly equivalent to 90% of the 'lost' pollock revenues in this example.

It is highly unlikely, due to timing of seasons and other factors, that the offshore fleet would be able to recoup all of that loss in the yellowfin sole and Atka mackerel fisheries. The question is to what extent they would do so, and how that would impact the viability of the current H&G fleet. It is incumbent upon the decision-making process to recognize the potential impacts to these non-pollock fisheries.

<u>Other spillover considerations</u>

During public testimony in April 1998, another type of 'spillover' effect was identified, this one relating to processor sector impacts. The example identified by Gulf of Alaska based processors (primarily involved in fisheries other than pollock) was that a reallocation of pollock to the inshore sector would benefit a small group of inshore processors, thereby possibly creating competitive advantages for that group with regard to processing of other species, such as salmon. While no mitigating measures were proposed, it was suggested that this issue be recognized and that possible impacts of this nature be tracked and examined in a future analysis.

8.2.6 Potential Mitigating Measures

There are management measures outside of the current I/O3 package that could be considered by the Council, in the event a change in the pollock allocations is made and the Council feels it is necessary to afford some protection to the existing H&G fleet. For example, the Council has previously developed 'stand-down' provisions, relative to both A and B pollock seasons, to mitigate crossover, fair start and preemption issues among fisheries similar, additional management measures could be developed to address the potential spillover impacts between these fisheries. Stand-down provisions previously have been developed and implemented in relatively short time frames, suggesting the possibility that these could be developed in time for the 1999 fishing seasons, if initiated by the Council in June of 1998.

Other potential measures have previously been identified, such as species endorsements in the Council's LLP, though that specific option has already been considered and rejected by the Council. It is not an option that could be implemented for 1999 in any event, since the LLP will not be implemented until the year 2000.

8.3 Section 303(b)(6) - Limited Entry Considerations

Under Section 303 (b)(6) of the Magnuson Act, the Council and SOC are required to take into account the following factors when developing a limited access system: (A) present participation in the fisheries, (B) historical fishing practices in, and dependence on, the fisheries, (C) the economics of the fisheries, (D) the capability of fishing vessels used in the fisheries to engage in other fisheries, (E) the cultural and social framework of the fisheries, and (F) any other relevant considerations.

Chapter 4 provided a discussion of the "true" mothership alternatives, including the issue of creating an allocation specifically to those operators who "have processed, but never caught" pollock in the BS/AI. This would essentially create a closed class of operations, perhaps limited to only the three existing "true" mothership processors, and perhaps four others who fit the definition above, even though other vessels may have operated in a mothership mode at some point in time, but would not qualify because they have also caught their own fish at some point in time. NOAA GC has opined that this would constitute a limited entry program and would be subject to the provisions of the Act under section 303(b)(6).

This document contains information relevant to all of the factors listed under Section 303(b)(6), including participation patterns, ability to participate in other fisheries, and socio-cultural framework of the fisheries. Limited information is also contained regarding economics of the fisheries and dependence on those fisheries by the participants. Whether that information is sufficient to create a limited entry program for "true" motherships can only be determined by the decision makers (Council and Secretary of Commerce). It is true that the harvest sector, including catcher/processors in the offshore sector, are protected from entry of additional capacity by the Council's license limitation program (LLP), scheduled to take effect in the year 2000. Neither the "true" mothership category nor the inshore plants have any such limited entry protection.

Based on catch and processing data, there are seven operations which "have processed but never caught" pollock between 1991 and 1997, including the three existing "true" mothership operations. No catcher/processors have operated in a "true" mothership capacity over an entire year during this period, though several have taken over-the-side deliveries (i.e., operated in a mothership mode) in addition to catching their own fish. Under the current definition these vessels would be precluded from accessing the "true" mothership allocation. If the Council determines that this definition is to be used, and thereby create a limited entry program for "true" motherships, there are additional issues which will need to be further developed. For example, provisions for transferability of permits, replacement of lost vessels, and other operational restrictions would be necessary.

In April 1998, when the Council reviewed the initial analysis, they added alternatives which would address the "true" mothership allocations by requiring vessels to declare, either each year or for the entire duration of the allocation, which category in which they would operate. This alternative would be similar to the current situation and would eliminate the limited access aspects of creating a "true" mothership allocation, while largely accomplishing the same goal.

When the Council selected their preferred alternative, they opted to leave the "true" motherships in the offshore sector. Because "true" motherships will remain part of the offshore sector, along with the catcher processors, the limited entry concerns discussed above are mooted.

8.4 Regulatory Flexibility Act (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.

8.4.1 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.

8.4.2 What is a Small Entity?

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

8.4.3 What is a Substantial Number of Small Entities?

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. NMFS then determines what number of these directly or indirectly affected entities are small entities. NMFS generally considers that the 'substantial number' criterion has been reached when more than 20% of those small entities affected by the proposed action are likely to be significantly impacted by the proposed action. This percentage is calculated by dividing the number of small entities impacted by the action by the total number of small entities within the universe. The 20% criterion represents a general guide; there may be instances when, in order to satisfy the intent of the RFA, an IRFA should be prepared even though fewer than 20% of the small entities are significantly impacted.

8.4.4 What is a Significant Economic Impact?

NMFS has determined that an economic impact is significant for the purposes of the RFA if a regulation is likely to result in:

- more than a 5% decrease in annual gross revenues,
- annual compliance costs (e.g., annualized capital, operating, reporting) that increase total costs of production by more than 5%,
- compliance costs as a percent of sales that are 10 or more percent higher for small entities than compliance costs for large entities,
- capital costs of compliance that represent a significant portion of capital available to small entities, considering internal cash flow and external financing capabilities, or
- the regulation is likely to result in 2 or more percent of the small entities affected being forced to cease business operations.

Note that these criteria all deal with adverse or negative economic impacts. NMFS and certain other Federal agencies interpret the RFA as requiring the preparation of an IRFA only for proposed actions expected to have significant adverse economic impacts on a substantial number of small entities over the short, middle, or long term. Most regulatory actions are designed to have net benefits over the long term; however, such actions are not shielded from the RFA's requirement to prepare an IRFA if significant adverse economic impacts on a substantial number of small entities are expected in the short or longer term. Thus, if any action has short-term significant adverse impacts on a substantial number of small entities, even though it will benefit small entities in the long term, an IRFA must be prepared.

8.4.5 Small Entities in the BSAI Pollock Fishery

The BS/AI pollock sector industry profiles prepared for the Council's June 1997 meeting and contained in Appendix 1 identify: (1) the number of operations, by size, capacity, mode of processing, and product form; (2) catch, bycatch, discards, and utilization; (3) relative "operational dependence" deriving from BS/AI pollock fisheries; (4) product mix and output quantities of pollock; (5) price, by product form and markets; (6) employment patterns; (7) linkages to CDQ apportionments; and (8) ownership interests and patterns.

To identify the number and type of business concerns participating in the BS/AI pollock fishery that meet the definition "small entities", the operations described in Appendix 1 must be measured against the size and affiliation standards outlined in section 8.4.2. While available data on ownership and affiliation patterns in the BS/AI pollock fishery are not sufficiently detailed to discern whether each individual business concern meets the definition of "small entity," data available in the sector profiles do allow some general conclusions on the number of small entities in each industry component. These general conclusions are displayed in Table 8.16 for the base year 1996.

Table 8.16 Estimated numbers and types of small entities participating in the BS/AI pollock fishery in 1996

Industry component or type of entity	*Small*	*Large*	*Total*
Inshore sector			
Inshore processors	0	8	8
Catcher-boats < 125' LOA	37	15	52
Catcher-boats ≥ 125' LOA	2	15	17
Offshore sector			
"True" motherships	0	3	3
Catcher-processors	0	31	31
Catcher-boats < 125' LOA	21	5	26
Catcher-boats ≥ 125' LOA	2	0	2
Vessels delivering to both sectors			
Catcher-boats < 125' LOA	1	13	14
Catcher-boats ≥ 125' LOA	0	8	8
Small organizations (CDQ groups)	6	0	6
Government jurisdictions (cities)	60	1	61

Inshore processors. Four of the 8 inshore processors operating in the BS/AI pollock fishery are either wholly owned subsidiaries or close affiliates of Japanese multi-national corporations. Due to their affiliation with large foreign entities with more than 500 employees worldwide, none of these processors is a small entity. Of the remaining 4 inshore processors, 3 are owned by US companies that employ more than 500 persons in all their affiliated operations, and therefore cannot be considered small entities. The remaining inshore processor has been identified as closely affiliated with its 5 delivering catcher-boats and the gross annual receipts of the affiliated entities taken together (the processor and its 5 affiliated catcher-boats) exceed the $3 million criterion for fish harvesting operations. Therefore, none of the inshore processors in the BS/AI pollock fishery appear to meet the criteria for small entities.

Inshore catcher-boats. The sector profiles provided in Appendix 1 identify 119 catcher-boats altogether: 69 operate in the inshore sector exclusively, 28 operate in the offshore sector exclusively, and 22 operate in both sectors. Of the 91 catcher boats that operate exclusively or partly in the inshore sector, the ownership data in the sector profiles identify 26 vessels owned in whole or part by inshore processors. These 26 vessels may be considered to be affiliated with their respective inshore processor owners and cannot therefore be considered small entities because none of the inshore processors in the BS/AI pollock fishery themselves are small entities. An additional 5 catcher boats have been identified as closely affiliated with an inshore floating processor and these 5 catcher boats taken together with their affiliated processor exceed the $3 million criterion for fish harvesting operations and are therefore not believed to be small entities. Furthermore, an additional 20 catcher-boats have ownership affiliations with other catcher-boats or catcher processors. The gross annual receipts of each of these groups of affiliated catcher boats is believed to exceed the $3 million criterion for small entities when all their fisheries earnings are taken as a whole. The remaining 40 catcher boats operating exclusively or partly in the inshore sector are believed to qualify as small entities.

Offshore catcher-boats. Twenty eight catcher boats operate in the offshore sector exclusively and 22 operate in both sectors for a total of 50 offshore catcher boats. Of these, 13 have ownership affiliations with large inshore or offshore processors and, therefore, do not meet the $3 million criterion for small entities. An additional 13 catcher-boats have ownership affiliations with other vessels or operations that taken together with their affiliated entities are believed to exceed the $3 million gross receipts criterion for small entities when all their fisheries earnings are taken as a whole. The remaining 24 catcher boats operating exclusively or partly in the offshore sector are believed to qualify as small entities.

"True" motherships. Three "true" motherships operate in the offshore sector. All 3 "true" motherships have ownership or business affiliations with large Japanese-owned processing companies, and are further affiliated with some of their delivering catcher boats. Taken together with their affiliated entities, none of the "true" motherships are believed to meet the criteria for small entities.

Offshore processors. To qualify as a small entity, a catcher processor must be independently owned and operated, have no more than 49% foreign ownership, and have gross annual receipts of less than $3 million. None of the offshore catcher processors operating in the BS/AI pollock fishery appear to meet the criteria for small entities.

Small organizations. The 6 CDQ groups participating in the BSAI pollock fishery are the only small organizations that have been identified as directly affected by the inshore/offshore alternatives under consideration. Impacts to these small organizations are analyzed in detail in Appendix 3.

Small governmental jurisdictions. The governmental jurisdictions with direct involvement in the BS/AI pollock fishery are described in detail in Appendix 2. In Appendix 3, 56 CDQ communities and 4 Alaska non-CDQ communities (Unalaska, Sand Point, King Cove, and Kodiak) are identified as small governmental jurisdictions with direct involvement in the BSAI pollock fishery. The remaining government jurisdiction with direct involvement in the BS/AI pollock fishery, Seattle, does not qualify as a small governmental jurisdiction.

8.4.6 Impacts of the Preferred Alternative on Small Entities

The Council's preferred alternative

After reviewing the alternatives analyzed in earlier drafts of this document, the Council selected their preferred alternative. This alternative would shift 4% of the BS/AI pollock TAC from the offshore sector to the inshore sector relative to the current allocation. The result would be that 39% of the BSAI pollock would be allocated inshore and 61% offshore after subtraction of the 7.5% CDQ reserve. No separate allocation to "true" motherships was included in this alternative. Instead, the true motherships will remain within the offshore sector.

In addition to the basic allocation split, the Council created a set-aside for BS/AI catcher-boats less than 125' LOA delivering to processors in the inshore sector. These small catcher-boats were allocated 2.5% of the combined BS/AI pollock TAC after subtraction of the 7.5% CDQ reserve. Harvest of the set-aside will take place before the Bering Sea pollock B-season, starting on or about August 25. Any overages or underages resulting from the set-aside fishery will be subtracted from/added to the inshore Bering Sea open access B-season quota.

The rules and regulations pertaining to the CVOA will remain the same, except that during the B-season, harvesting operations allowed inside the CVOA will be restricted to catcher boats delivering to the inshore sector. Under the current regulations, catcher boats delivering to any sector are allowed to operate inside the CVOA during both the A and B-seasons. The new regulations will restrict catcher-boats delivering to offshore processors (including motherships) from fishing inside the CVOA during the pollock B-season. Catcher processors will continue to be restricted from harvesting pollock inside the CVOA during the B-season.

As identified above, the only small entities that participate directly in the BS/AI pollock fishery are independent catcher boats, CDQ groups, and coastal communities. The impacts of the alternatives on coastal communities and CDQ groups are examined in detail in Appendices 2 and 3. The impacts of the Council's preferred alternative on independent catcher boats are examined below.

Impacts of the preferred alternative on independent catcher boats.

As identified in the Table 8.1.6, the only small businesses that participate directly in the BS/AI pollock fishery are independent catcher boats. All other business entities (catcher processors, motherships, shoreside processors, and processor-affiliated catcher boats) participating directly in the BS/AI pollock fishery are considered large entities. Independent catcher boats participate in both the inshore and offshore sectors of the BS/AI pollock fishery. Of the 50 independent catcher-boats estimated to be small entities, 46 are under 125' and 4 are 125' or larger. The estimated number of catcher boats that participated in the 1996 pollock fishery by sector, vessel size and small or large entity status are displayed in the following table:

Table 8.17 Estimated number of catcher boats that participated in the 1996 BS/AI pollock fishery by sector, vessel size and small or large entity status.

Catcher-boat size and sector	***Small entities***		***Large entities***	
	< 125'	***≥ 125'***	***< 125'***	***≥ 125'***
Inshore sector	37	2	15	15
Offshore sector	21	2	5	0
Both sectors	1	0	13	8
Total	59	4	33	23

63 56

The Council's preferred alternative will present three types of impacts on independent catcher boats. First, the allocation shift itself will impact catcher-boats participating in both sectors. Second, the small vessel set-aside fishery will have impacts on catcher boats of all sizes. Finally, the exclusion of offshore catcher boats from the CVOA will impact catcher boats delivering to the offshore sector. Each of these impacts is addressed separately below.

Impacts of the allocation shift on season lengths. Because information on gross and net revenues for individual catcher boats is not available, it is impossible to make quantitative predictions about the impacts of the Council's preferred alternative on net revenues. However, using data from 1997, the most recent full year for which data are available, it is possible to estimate how BS/AI pollock fishing season lengths would have been affected under the Council's preferred alternative.

Table 8.18. Estimated changes in BS/AI pollock inshore and offshore season lengths under the Council's preferred alternative using 1997 TAC amounts and season lengths.

	A-season	**B-season**	**< 125' set-aside fishery**	**Total**
1997 TAC	**470,363**	**574,887**	--	**1,045,250**
1997 inshore allocation (35%)	164,627	201,210		365,837
1997 inshore fishing days	**30**	**47**		**77**
1997 catch/day in mt.	5,488	4,281		4,751
1997 offshore allocation (65%)	305,736	373,677		679,413
1997 offshore fishing days	**25**	**31**		**56**
1997 catch/day in mt	12,229	12,054		12,132
Projected changes in numbers of fishing days under the Council's preferred alternative				
Inshore allocation (39%)	183,442	198,075	26,131	407,648
Inshore fishing days	33	46	6	85
Difference from status quo	**+3**	**-1**	**+6**	**+8**
Percent change from status quo	**8.3%**	**-2.2%**	--	**8.6%**
Offshore allocation (61%)	286,921	350,681		637.603
Offshore fishing days	23	29		52
Difference from status quo	**-2**	**-2**		**-4**
Percent change	**-8.0%**	**-6.5%**		**-7.1%**

Table 8.18 displays the estimated differences in the number of fishing days for the various inshore and offshore seasons if the Council's preferred alternative had been in place in 1997. As shown in Table 8.17, 59 of the 63 catcher boat small entities that participated in the BS/AI pollock fishery in 1996 are under 125'. Of the 4 catcher boat small entities longer than 125', two are in the inshore sector and two are in the offshore sector. Clearly, the

set-aside fishery for catcher vessels under 125' will be available to the great majority of catcher boat small entities.

Impacts of the preferred alternative on catcher-boats over 125'. If the Council's preferred alternative had been in place during 1997, inshore catcher-boats over 125' would have gained an additional 3 fishing days during the A-season and would have lost one fishing day during the B-season for a net-gain of 2 fishing days. Two small entities fall into this category. Offshore catcher-boats over 125' would have lost 2 fishing days during both the A and B-seasons for a net loss of 4 fishing days or 7.1 percent compared to the actual 1997 fishery. Two small entities fall into this category. Because the catchability of pollock in the BS/AI is generally greater during the A-season, and fishermen generally receive a roe bonus, the value of a fishing day during the A-season may be marginally greater than the value of a fishing day during B-season. Because existing regulations specify that openings and closures in all groundfish fisheries must occur at 12:00 noon Alaska local time, the BS/AI pollock TACs are not managed down to the last mt of pollock. Rather, the closures are rounded up or down to the nearest whole day which accounts for the differences in percentages displayed in Table 8.18.

Impacts of the preferred alternative on catcher-boats under 125'. If the Council's preferred alternative had been in place during 1997, inshore catcher-boats under 125' would have gained an additional 3 fishing days during the A-season, would have lost 1 fishing day during the B-season and would have gained 6 fishing days during the set-aside fishery for a net gain of 8 fishing days. Thirty-seven small entities fall into this category. All of these small entities will benefit from the Council's preferred alternative. Offshore catcher boats under 125' would have lost 2 fishing days during both the A and B-seasons and would have gained approximately 5 fishing days during the set-aside fishery assuming they were able to secure inshore markets for a net gain of 1 fishing day. Twenty-one small entities fall into this category. Because offshore catcher boats will be excluded from the CVOA during the B-season beginning September 1, these catcher boats will lose at least one fishing day transiting to waters outside the CVOA prior to the start of the B-season and, therefore, will not be able to take advantage of the entire 6-day set-aside fishery.

Estimating the effects of the under 125' set-aside fishery on small entities. A set-aside fishery for catcher-boats under 125' has never been attempted before in Alaska. Consequently, it is difficult to project the costs and benefits of such a fishery on small entities. Anecdotal information from inshore processors indicates that all of the inshore processors in the BS/AI intend to participate in this fishery and that they intend to operate their plants at full capacity. This suggests that the 21 offshore catcher-boats under 125' may be able to secure inshore markets for this 6-day fishery. Although offshore catcher-boats may not be able to participate in the entire 6-day fishery if they intend to be in position to begin fishing for their offshore processors outside the CVOA beginning September 1.

Inshore processors have also stated that they are contemplating using catcher-boats over 125' as tenders to ferry pollock from the fishing grounds to the plants. The use of tenders would enable the under 125' vessels to fish non-stop during the 6-day opening, although they would receive a lower price for fish transferred to large catcher boats at sea than for fish delivered to the plant. At this point, it is impossible to project net revenues to the under 125' catcher-boat fleet as a result of this set-aside fishery because the prices inshore processors are willing to pay for these fish is unknown. Because the any unharvested quota from this fishery will be added to the inshore B-season, inshore processors have little incentive to bargain or insure that the entire set-aside quota is taken. Any fish not caught during the set-aside fishery by catcher-boats under 125' will become immediately available to the larger catcher boat fleet on September 1. Because most of the larger inshore catcher boats are owned by or affiliated with inshore processors, underharvest of the set-aside fishery may actually benefit the inshore processing sector.

Impacts of the exclusion of offshore catcher-boats from the CVOA. An additional element of the Council's preferred alternative is the exclusion of offshore catcher boats from the CVOA during the B-season. This exclusion will impact offshore catcher boats delivering to motherships much more than catcher boats delivering to factory trawlers. All three true motherships have a history of operating within the CVOA during the B-season. Because codends cannot be towed through the water on the surface for significant distances without damaging the pollock, motherships must operate within relatively close proximity to their catcher boats. For this reason, it is not practical for catcher boats delivering to factory trawlers to catch fish within the CVOA and deliver to a factory trawler operating outside the CVOA unless both vessels are operating very close to the boundary of the CVOA. During public testimony, representatives for catcher-boats delivering to motherships expressed concerns about vessel safety if they are required to fish outside the CVOA during the B-season. The extent to which these concerns are justified is difficult to evaluate. The US Coast Guard has indicated that no statistics exist to suggest that fishing outside the CVOA is more dangerous than fishing inside the CVOA. Indeed, crab and longline vessels of similar size frequently fish in remote parts of the Bering Sea throughout the worst winter months. Nevertheless, excluding offshore catcher-boats from the CVOA will force these vessels to operate further offshore during the B-season which may have some unquantifiable impact on vessel safety.

Other small business entities affected indirectly. Support industries are identified in Appendix II, while small independently owned vessels in other fisheries that might encounter spillover effects from significant reallocation alternatives are discussed in Chapter 8.2. Based on the information available, the preferred alternative is not expected to significantly impact a substantial number of these entities.

Small organizations. Impacts to CDQ communities are covered in the "Analysis of Inshore/Offshore Impacts on the CDQ program" contained in Appendix III.

Small governmental jurisdictions. Impacts to small governmental jurisdictions are examined in Appendices II and III.

8.4.7 Final Regulatory Flexibility Analysis (FRFA)

When an agency issues any final rule, it must either prepare an FRFA or certify that the rule will not have a significant economic impact on a substantial number of small entities. The FRFA must discuss the comments received, the alternatives considered and the rationale for the final rule. Each FRFA must contain:

- A succinct statement of the need for, and objectives of, the rule;
- A summary of significant issues raised by the public comments in response to the IRFA, the agency's response to those comments, and a statement of any changes made to the rule as a result of the comments;
- A description and estimate of the number of small entities to which the rule will apply, or an explanation of why no such estimate is available;
- A description of the reporting, recordkeeping, or other compliance requirements of the rule; and
- A description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency that affect the impact on small entities was rejected.

The last item is the most notable change in the requirements for a FRFA under the 1996 amendments to the RFA. Previously, an agency had only to describe each significant alternative it had considered that could minimize the significant economic impact of the rule and provide a statement why each had been rejected. Under the 1996 amendments, an agency must provide an explanation of why it rejected significant alternatives to the chosen course that merely affect the economic impact of the rulemaking on small entities. Further, an agency must describe the steps it has taken to minimize the significant economic impact of the alternative it has chosen, including factual, legal, and policy reasons explaining why the agency selected the preferred alterative.

The FRFA will be completed by NMFS after opportunity for public comment on the proposed rule and IRFA.

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