


MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke 
Executive Director

DATE: June 18, 1992

SUBJECT: Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish

ACTION REQUIRED

- (c) Comment on Proposed Rule providing for trawl test sites.
- (d) Receive report on status of analyses for preferential gear allocation of Pacific cod and seasonal allocation of Pacific cod.
- (e) Initial review of Pribilof Island trawl closure and salmon bycatch measures if available.

BACKGROUND

Trawl Test Sites

In April the Council approved a plan amendment authorizing trawl test sites in the BS/AI and the GOA. The specific test sites would be established by regulation and changed by regulatory amendment. The three test sites approved are depicted on the map included as Item D-2(c)(1). The Council stated its intent to comment on the proposed rule at this meeting. The proposed rule has been drafted and is currently undergoing review by NOAA GC before being filed. NMFS Region staff will be able to provide the Council a status report on the schedule for this amendment.

Preferential/seasonal Allocation of Pacific cod

In April of 1991 the Council requested an amendment to analyze the seasonal allocation of Pacific cod in the BS/AI. Due to commitment of staff to other projects, this analysis has yet to be undertaken. However, the North Pacific Longline Association has contracted with LGL Alaska Research Associates to perform an initial analysis which could be the basis for further development of a formal EA/RIR/IRFA. LGL representatives are available to report on their analysis, included as Item D-2(d)(1).

Last January the Council requested staff to proceed with an amendment analysis for preferential allocation of Pacific cod to gear types which exhibit low bycatch rates. Staff from the Alaska Fisheries Science Center will report progress on this analysis which is anticipated to be available for Council review in September.

Pribilof Island Trawl Closure and Salmon Bycatch Analyses

These two items originally were a part of Amendment 21. However, the Council, after a preliminary review of these documents in April, requested additional analysis. The analyses are not yet complete, but will be available for Council review at the September meeting. The Council can review the draft amendment package (Amendment 21a) then and release it for public review prior to final action at the December 1992 meeting.

Specific alternatives for the two amendment topics include the following:

Prohibit Trawling in Areas Adjacent to the Pribilof Islands

Alternative 1: status quo - no area closures adjacent to the Pribilof Islands.

Alternative 2: close IPHC Area 4C to bottom trawling.

Alternative 3: close IPHC Area 4C to all trawling.

Alternative 4: close waters within IPHC Area 4C West of 169°W to bottom trawling.

Alternative 5: close waters within IPHC Area 4C West of 169°W to all trawling.

Alternative 6: close waters within a 25-mile zone around the islands to bottom trawling.

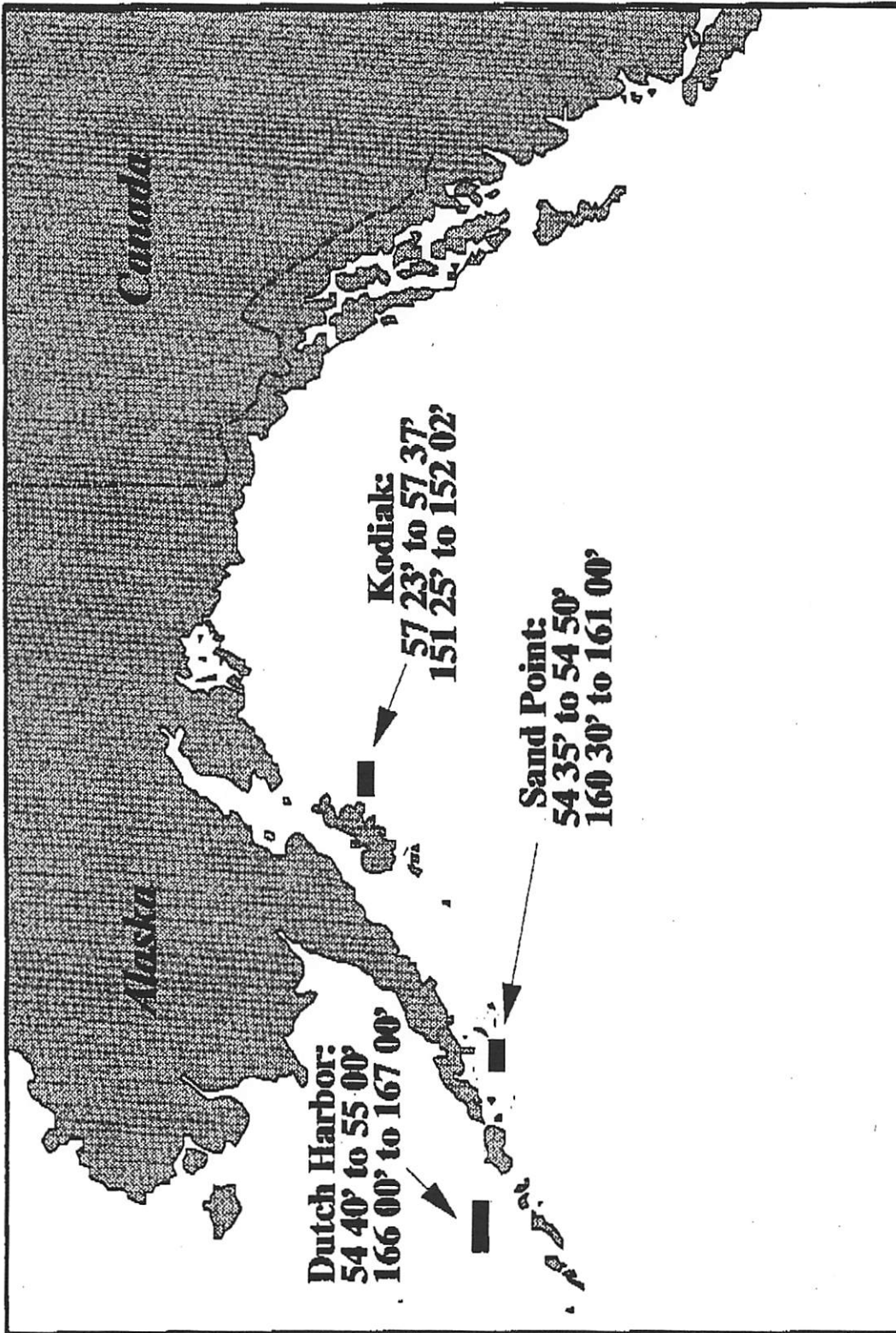
Alternative 7: close waters within a 25-mile zone around the islands to all trawling.

Chinook Salmon Bycatch Management

Alternative 1: status quo - no chinook PSC limit for the groundfish fisheries in the BSAI.

Alternative 2: close the BSAI or selected 3-digit areas based on a PSC cap on chinook salmon. The PSC options would be based on a range of annual chinook salmon bycatch rates (annual rate of 0.004 - 0.024 chinook per metric ton of groundfish). The caps would be apportioned to target fisheries.

Alternative 3: based on historical chinook bycatch patterns, close specific 1/2-by-1-degree blocks to a fishery in a month prior to the start of fishing, selectively applied to those fisheries that account for the vast majority of salmon bycatch (i.e., NW and bottom pollock and possibly P. cod).



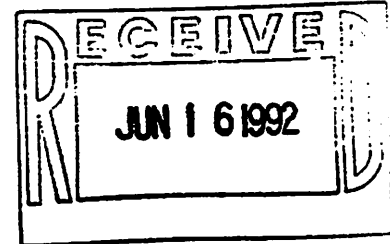
**FIG 1 - LOCATION OF PROPOSED TRAWL TEST AREAS
IN THE GULF OF ALASKA AND BERING SEA**



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June 16, 1992



Clarence Pautzke, Executive Director
North Pacific Fishery Management Council
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Dear Clarence:

Enclosed is a copy of a report entitled, "Seasonal Apportionment of the Pacific Cod TAC in the Bering Sea and Aleutian Islands," prepared by LGL Alaska Research Associates and sponsored by the North Pacific Longline Association (NPLA). Our objective was to produce a document which would aid the plan team in their preparation of an EA/RIR for the seasonal cod allocation proposal. This amendment proposal was approved by the Council for analysis in April 1991 but work has yet to begin due to staff being fully committed to other Council projects. The NPLA contracted with LGL to prepare an unbiased, credible report intended to help "jump-start" the analysis once staff become available.

We have approached the project using the same methods adopted by the Council staff and the plan teams. The report documents the history of the proposal and Council action-to-date. It defines the problem, scopes out a list of reasonable alternatives, assembles fishery data from both NMFS and PacFIN data bases, and begins to explore the issue of whether we should be concerned with excessive harvests on spawning stocks. The document is not a substitute for an EA/RIR. Additional information and analysis is needed. However, it could serve as the starting point for an EA/RIR and the report discusses what is needed to complete a full analysis of the issue.

The Council has tentatively scheduled work to begin on this amendment during the summer. We are hopeful that the plan team can now begin preparing their analysis for the September meeting and LGL is prepared to work with the team as appropriate. Both Sally Bibb and I will be attending the Sitka Council meeting and we will be available to answer any questions you or the Council have on the report.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Davis', written over a horizontal line.

Steven K. Davis
Director
Resource Management Program



Alaska Research Associates

DRAFT REPORT

**SEASONAL APPORTIONMENT OF THE
PACIFIC COD TAC IN THE
BERING SEA AND ALEUTIAN ISLANDS**

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SEASONAL APPORTIONMENT OF THE PACIFIC COD TAC IN THE BERING SEA AND ALEUTIAN ISLANDS

1.0 INTRODUCTION

This document has been prepared for the purpose of stimulating thought and discussion on the concept of providing the North Pacific Fishery Management Council (NPFMC) with the framework authority to seasonally apportion the Pacific cod TAC in the Bering Sea and Aleutian Islands areas. A formal amendment proposal to develop and analyze this framework has been approved by the Council and is awaiting the availability of staff to perform the work necessary to bring this issue to Council and public review. In an attempt to accelerate an amendment, which for a variety of reasons has been delayed, the North Pacific Longline Association (NPLA) commissioned LGL Alaska Research Associates to prepare a document which could serve as a valuable aid to the staff and plan team which will ultimately be tasked with preparing the amendment documentation. LGL analysts, familiar with the Council and Magnuson Act processes, have attempted to document the problem, scope out reasonable alternatives, and assemble fisheries data in a manner identical to procedures followed by the plan teams. This document is not an advocacy paper. It provides an unbiased review of the issue, and presents information in a neutral manner. Neither is this document a complete environmental assessment/regulatory impact review (EA/RIR). Rather, it provides information and documentation that is time-consuming to collect but accessible to Council and agency researchers, utilizes data sets obtained from the Alaska Fisheries Science Center and PacFIN, identifies additional data requirements and potential sources for that information, all of which should aid the plan team in their preparation of the EA/RIR in a more timely manner. LGL's resource management analysts welcome Council and plan team review of this report and will gladly expand or clarify any information it contains. It is the intent of the NPLA and LGL to provide this document to the Council as a service to federal management of fisheries off Alaska.

1.1 Need for Action and History of the Proposal¹

In November 1990 the North Pacific Fishery Management Council was presented with a request for emergency rule-making to seasonally apportion the Bering Sea and Aleutian Islands (BSAI) Pacific cod TAC and associated halibut PSC. Submitted by several fishing industry associations, the proposed action was in response to actions taken by the Council in managing the BSAI pollock and flatfish fisheries which could have produced unintended, adverse impacts on the Pacific cod fishery. Problems intended to be addressed by the emergency action included the desire to maintain market supply for Pacific cod steadily throughout the year; to prevent a disproportional harvest of cod during the spawning season; and to prevent an influx of pollock and flatfish fishing vessels resulting from changes in the management regime (e.g., establishing roe/non-roe pollock seasons and delaying the opening of the flatfish season) from de-stabilizing the Pacific cod fishery.

¹ Compiled from NPFMC minutes.

During the December 1990 Council meeting the proposal was reviewed and acted upon. At that time, the authors were specifically requesting a split of the fishing year into three fishing periods (1st quarter, 2nd quarter, and the remainder of the year) with a suggested TAC apportionment of 35%, 25%, and 40%, respectively. The Scientific and Statistical Committee commented that they could not identify any biological problems with harvesting Pacific cod during the spawning season given current harvest levels and fishing patterns. The Advisory Panel did not recommend approval of the action by emergency rule, but recommended it be considered following the regular plan amendment process. However, the Council did approve the emergency rule, citing the need to provide a steady supply of product to the market and that any allocative impacts should be minimal since the measure applied to all gear groups.

At the January 1991 meeting the NMFS Regional Director requested additional discussion and rationale for the emergency rule request. For the record, the Council reaffirmed their earlier request for the emergency rule. In February 1991 the Council was notified that NMFS had disapproved the emergency rule citing several reasons: (1) that there was insufficient evidence to support that an "emergency" existed; (2) that the proposal did have allocative impacts between user groups and that these should be analyzed and reviewed through the normal amendment process. NMFS noted that this fishery had only just become fully-utilized by U.S. fishermen and that neither the trawl or the fixed-gear groups had established much of a historical use record; (3) it was unlikely that the Pacific cod TAC could be taken in the first part of the year given existing halibut PSC measures controlling trawl fisheries; and (4) Pacific cod stocks are not reduced to a level that would justify concern about harvesting spawning stocks.

In the aftermath of this decision, the Council's next opportunity to review the proposal and the NMFS decision was in April 1991. It was clear that for this issue to advance further, that it must be developed and analyzed following the normal plan amendment procedure. During this meeting the Council tasked the staff with analyzing an amendment that would "provide the Council the authority to seasonally allocate Pacific cod in the BSAI". The Council took no further action but noted that the amendment should be "kept alive pending staff availability to do analysis". At its June 1991 meeting the Council again voted to proceed with analysis of seasonal Pacific cod allocations.

Since then, there has been no progress made on developing a seasonal apportionment amendment. The Council has prioritized numerous tasks assigned to the staff and this amendment was not viewed as being a top priority when compared with such topics as inshore/offshore, the sablefish/halibut IFQ plan, and the moratorium. In each of these occasions when prioritization of assignments has been undertaken, the Council has stated that the remaining assignments would be worked on when staff completes the top priority projects. Tentative work schedules prepared by the staff for the Council have indicated that work on the seasonal apportionment amendment would commence during the summer of 1992.

2.0 THE PROBLEM

A review of the original problem statement presented to the Council in November 1990 (Appendix 1) and restated numerous times in oral and written testimony by a variety of users indicate that there are actually five concerns of the fishermen:

- (1) The apparent economic advantage of a steady supply of high quality Pacific cod to the market.
- (2) The economic dependence by a fleet of vessels requiring that the Pacific cod TAC be managed in a manner that would spread the harvest over the year. This fleet is comprised of trawlers, longline vessels, and pot vessels. Some vessels and equipment are configured solely to harvest and process cod for an established market. Their economic survival is tied to the management of cod TAC and other fisheries as they effect the cod fishery.
- (3) The concern that uncontrolled effort during the spawning season increases the risk that TACs or PSC limits may be exceeded.
- (4) Uncertainties associated with halibut bycatch and the PSC limit. In almost every fishery, managers and fishermen are learning more about bycatch; the variability in bycatch rates associated with changes in the ocean or regulatory environment. Concerns exist over whether the existing halibut PSC limit is appropriate for any gear type and whether bycatch management can be improved to allow fuller achievement of the groundfish TACs.
- (5) The biological concern with harvesting on spawning stocks. This issue continues to be debated by fishery managers and scientists, both here in the Alaska region and elsewhere around the world. To many, the desire to maximize harvests of fish in the short term is tempered by the critical dependence on the resource for the long term. Conservative management of the resource is needed given the lack of scientific information and to increase the probability that the resource and fishery can be maintained at healthy levels.

3.0 THE ALTERNATIVES

The National Environmental Policy Act (NEPA) requires that all reasonable alternatives be considered when making a decision. This list of alternatives must include the "status quo" or the "do nothing" alternative. Given the described problem and history of the proposal, the alternatives listed for this amendment could also include a set of suggested fishing periods and a range of associated TAC percentages, all of which could be implemented by plan amendment. The disadvantage of this approach is that it requires a time-consuming process which the Council has found unacceptable in addressing other types of problems.

Another alternative, and one that offers more benefits, is to establish a framework procedure for the Council to follow which would allow them to implement Pacific cod TAC apportionments in a timely fashion. Such a management tool already exists for BSAI pollock (Amendment 14). One advantage of this alternative is that no decision need be made now on what the fishing periods should be or how the TAC should be distributed among those periods; that analysis and discussion would come later when the Council decides that the measure is needed to meet management goals. What is required for this amendment is to develop the process to be followed by the Council and the public, and to analyze a range of management decision scenarios.

This document identifies several alternatives which appear reasonable and would likely be a part of any alternative list developed by the Council and the plan team. The authors of this report recognize that other valid alternatives may exist and that the presented list and discussion is not intended to discourage the development of other reasonable alternatives.

3.1 Alternative 1: No action

Under this alternative, Pacific cod TAC would continue to be set by the Council for the entire fishing year. No regulations distributing the TAC over time would exist. The full TAC would be available to all gear groups beginning January 1 and the fishery would close whenever the TAC is reached. Closures of fisheries utilizing bottom trawl or fixed-gear could occur prior to the TAC being achieved if gear-specific bycatch (PSC) limits were reached. Recently, trawl vessels targeting on cod have been closed relatively early in the year because of their bycatch of halibut. For 1992 the fixed-gear fleet (i.e., longline and pot vessels) for the first time have been assigned a specific halibut PSC limit to control their bycatch. It remains to be seen whether the fixed-gear fleet will be able to operate under this bycatch limit throughout the year.

It should be noted that the Council could specify a different fishing season for Pacific cod by utilizing measures already approved in the BSAI Fishery Management Plan (FMP). While the authority does not exist to distribute TAC among specific fishing seasons, the Council could delay the opening date or establish a series of openings in an attempt to spread the harvest over the year.

3.2 Alternative 2: Establish fishing periods and apportion Pacific cod TAC.

Under this alternative, the Council would specify the fishing periods for BSAI Pacific cod fisheries and distribute the cod TAC among the periods. Implementation of this alternative would require a plan amendment and full EA/RIR analysis. Future modification to either the dates or the distribution of TAC and PSC would also require a plan amendment. The Council/Secretarial amendment process customarily requires approximately 9 months.

3.2.1 Option 1: Seasonal apportionment of the Pacific cod TAC as was suggested in the Emergency Rule request of November 1990:

Quarter 1 (Jan 1 - Mar 30):	35%
Quarter 2 (Apr 1 - June 30):	25%
Remainder of the year (July 1 - Dec 31):	40%

The details of this alternative have already been discussed to a certain degree in Sections 1.1 and 2.0. Authors of the emergency rule request recommended that the fishing year be divided into three fishing periods and they recommended a TAC apportionment plan. Under this alternative, about 60% of the TAC would be available during the "roe-season", which has been loosely defined by NMFS scientists as occurring during the February through April period.

For the cod apportionment plan to be effective will require some similar apportionment of the halibut PSC limit. The second quarter or later fishery would not be possible if all the halibut allocated to bycatch were taken in the first quarter. Possibly there are steps which can be taken utilizing the Council's bycatch management measures which would assure that the later Pacific cod fisheries could indeed be prosecuted. However, the authors of the original proposal suggested that the halibut PSC limit be distributed in the same percentages as the TAC. (NOTE: In 1990 there was only a limit set for the bottom trawl fisheries; there were no limitations on fixed-gear bycatch. The recommended percentages for the halibut PSC limit were to assure that trawl operations could target cod at various times throughout the year. With the Council's bycatch management plan continuing to evolve, and with fixed-gear fisheries now managed under a bycatch limit, it is likely that different industry recommendations for PSC apportionments would now be made.)

3.2.2 Option 2: Seasonal apportionment of the Pacific cod TAC fishing periods:

- A: January
- B: February - April
- C: May - October
- D: November - December

This option suggests a different set of fishing periods which corresponds more closely with the spawning season for BSAI Pacific cod stocks. It is widely recognized that the quality of cod (as with other gadoids, e.g., pollock) is highest during the "winter months", November through January. This option presents four fishing periods which fall within the BSAI Groundfish FMP's defined fishing year, which recognizes this characteristic. Spawning occurs during the February through April period. During May through October, the fish first enter a post-spawning condition and eventually quality improves. These four fishing periods reflect a series of openings whereby both cod TAC and bycatch objectives can be realized.

At present, no new TAC apportionment schedule has been recommended by industry. Several TAC distributions are feasible. They range from allocating all of the TAC to the first period with rollover of unused TAC to the subsequent periods, to distributing the

TAC based on historical percentages. Lack of history of the domestic Pacific cod fishery in the BSAI for any gear group may make the historical approach undesirable in this particular case. Further review of both catch history and bycatch data is necessary before alternative TAC apportionments can be formulated. We would encourage that the Council, plan team, and representatives of the fishing industry be requested to work together in developing possible TAC scenarios for analysis.

3.3 Alternative 3: Establish a framework procedure which would allow the Council to specify fishing periods and apportion TAC for BSAI Pacific cod fisheries.

Under this alternative the Council would establish a process that they would follow should they determine, in the future, that season apportionment of BSAI Pacific cod TAC is necessary to meet their management objectives. A customary part of the framework would be a specification of criteria that would be used to determine whether splitting the fishing year and apportioning the TAC was an appropriate action to address a particular problem. Such a framework measure was developed for the purposes of managing the pollock fishery (Amendment 14) and the Council has elected to use the framework every year since 1991.

To understand how the season apportionment framework would operate, it is best to use the pollock framework approach as a model. The concept of determining whether to distribute pollock TAC among several fishing periods has been blended with the Council's annual framework process in specifying groundfish quotas. The process can be summarized as starting in September, when the Council is presented with preliminary information on the status of stocks. Based on this data and on information pertaining to the status of fisheries to date, the Council determines its initial TACs for the coming year and releases these quotas for public review. At the same time, the Council alerts the public to any other potential management actions which are being considered for the next year's fishery. Season date adjustments, PSC limit modification, and apportionment of pollock TAC are all examples of frameworked actions that would be reviewed by the public. Later in December, the Council receives final status of stock estimates, finalizes the TACs and PSCs, and determines whether other noticed actions are necessary to assure an orderly groundfish fishery and to meet their management goals for the upcoming year. Considerable testimony is provided by the industry and the public at-large on many aspects of fisheries management during the December Council meeting.

Frameworked criteria specified in the FMP are used by both the Council and the public in determining, what, if any action is necessary. In the case of pollock, the FMP states that there will be two fishing periods: a roe and a non-roe season. The framework authority provides the Council with the opportunity to specify a percentage of the TAC for each season. Amendment 14 to the BSAI Groundfish FMP establishes the following criteria (with suggested modifications to include Pacific cod, underlined):

Utilization and Seasonal Allowances of the Pollock (and Pacific cod) TAC

When specifying seasonal allowances for the pollock and Pacific cod TAC, the Council will consider the following factors:

1. Estimated monthly pollock and Pacific cod catch and effort in prior years.
2. Expected changes in harvesting and processing capacity and associated pollock and Pacific cod catch.
3. Current estimates of, and expected changes in, pollock and Pacific cod biomass and stock conditions; conditions of marine mammal stocks, and biomass and stock conditions of species taken as bycatch in directed pollock and Pacific cod fisheries.
4. Potential impacts of expected seasonal fishing for pollock and Pacific cod on pollock and Pacific cod stocks, marine mammals, and stocks and species taken as bycatch in directed pollock and Pacific cod fisheries.
5. The need to obtain fishery data during all or part of the fishing year.
6. Effects on operating costs and gross revenues.
7. The need to spread fishing effort over the year, minimize gear conflicts, and allow participation by various elements of the groundfish fleet and other fisheries.
8. Potential allocative effects among users and indirect effects on coastal communities.
9. Other biological and socioeconomic information that affects the consistency of seasonal pollock and Pacific cod harvests with the goals and objectives of the FMP.

A framework can be as loose or as tight as one desires. The seasonal apportionment authority could allow for the specification of both fishing periods and the TAC percentages at the December meeting; or, like with Amendment 14, firmly establish that there will be a certain number of fishing periods with specified opening dates, and leave only the TAC distribution to the December meeting. While the former approach provides the most flexibility, the fishing industry in general has favored the second approach since they then know well in advance of the beginning of the year, when the pollock fishery periods will begin. This information is important when planning operations. Alternative numbers and dates of fishing periods can be evaluated when preparing the EA/RIR analysis of the framework, and the options described in Section 3.2 serve as a starting point.

4.0 DESCRIPTION OF THE FISHERY

Appendix Table 2.1 summarizes Bering Sea/Aleutian Islands groundfish landed catch by the foreign, joint venture (JV), and domestic fisheries, combined by species and gear type from 1981 through 1991.² Appendix Tables 2.2 through 2.4 summarize groundfish landings by gear type.

Pollock has been the predominant groundfish species (by weight) harvested in the Bering Sea/Aleutian Islands since 1981, representing between 70% and 80% of the landed catch by weight. Second in importance is flatfish, which includes rock sole and yellowfin sole, followed by Pacific cod. In 1991, the first year of fully domestic groundfish fisheries in the Bering Sea/Aleutians, trawl harvests were distributed by weight as 82% pollock, 9% flatfish, and 7% Pacific cod; longline harvests were 92% Pacific cod and 4% sablefish; and pot harvests were nearly 100% Pacific cod.

Total landings of Pacific cod have increased from 62,400 mt in 1981 to about 173,000 mt in 1991, peaking at 197,000 mt in 1988. The distribution of Pacific cod landings between the foreign, JV and domestic fisheries is shown in Figure 1. Foreign harvests of Pacific cod were taken with both trawl and longline gear until 1987. They represented the largest share of harvests until 1985. JV harvests were taken by trawl gear only until 1990, and represented the largest share of Pacific cod landings from 1986 through 1988. JV landings of Pacific cod in 1990 were from bycatch in other directed fisheries. Domestic fishermen always landed at least 20% of the Pacific cod and, in 1985, were equal in importance to foreign landings. However, it wasn't until 1989 that the domestic fishery harvested the largest share of landings, and the fishery was entirely domestic for the first time in 1991.

Figure 2 illustrates the distribution of all Pacific cod harvests between trawl and longline/pot gear. From 1981 through 1983, and again in 1988 and 1989 during the development of the domestic longline fishery, trawl gear harvested over 90% of Pacific cod landings. Trawl landings were 60% foreign in 1981 and this decreased steadily through 1987.

The longline share of landings fluctuated considerably between 1981 and 1991 as the transition was made from the foreign to domestic fishery. Longline vessels represented about 20% of landings from 1984 through 1986, 1% in 1988, about 10% in 1989, about 30% in 1987 and 1990, and nearly 40% in 1991. All longline landings through 1986, and 97% of longline landings in 1987, were taken by foreign fishermen. After 1987 all

² PacFIN is the source for all catch statistics used in this report unless otherwise specified. Landed catch is converted to round weight equivalent but does not include discards. Groundfish fisheries are managed by NMFS on the basis of confidential data collected through the Weekly Processor Reports (WPR), which will differ from PacFIN data by the amount of discarded catch and any discrepancy between fish tickets and WPRs on landings to shore-based processing plants.

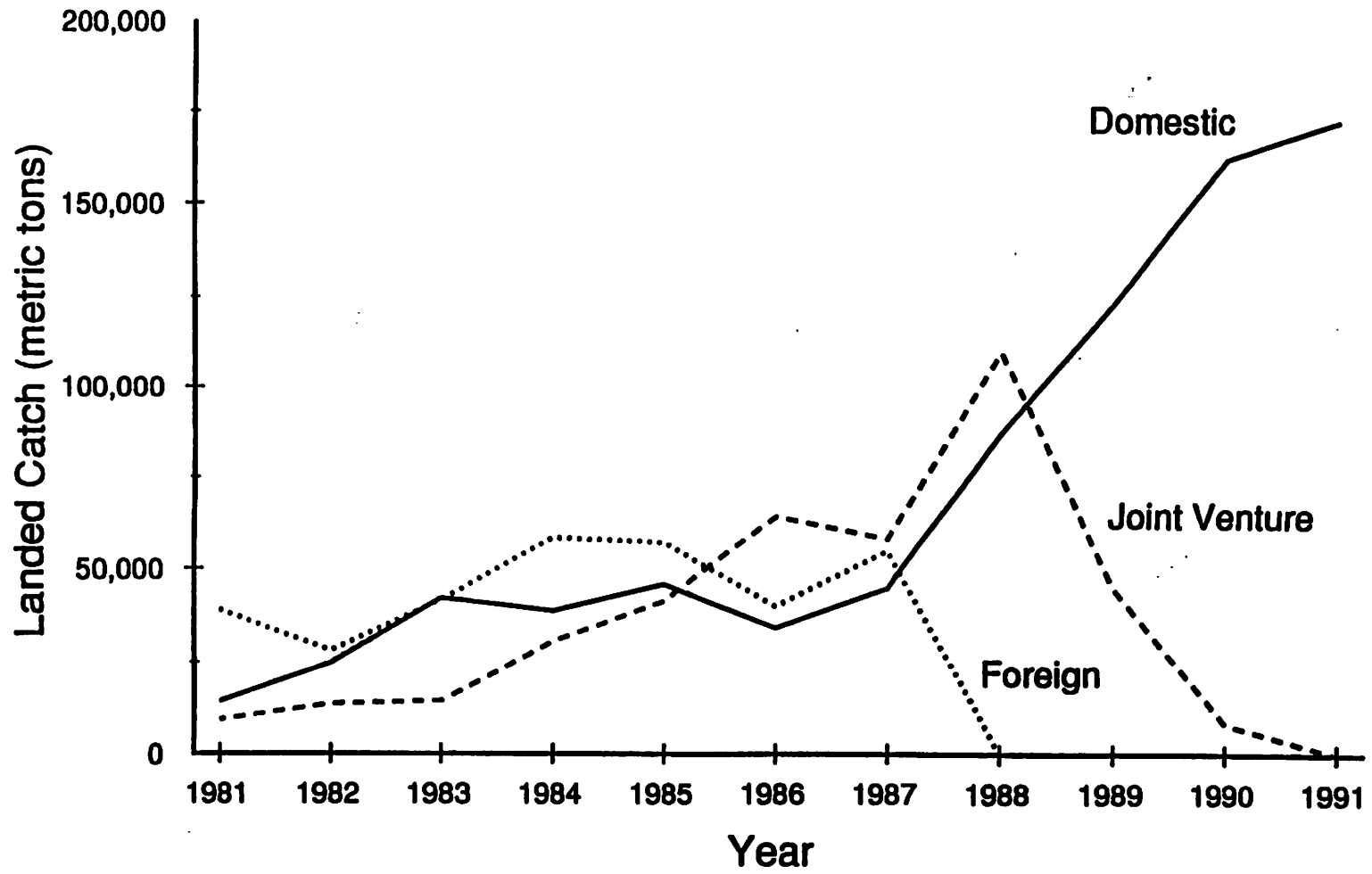


Figure 1. Pacific cod landed catch in the foreign, joint venture, and domestic fisheries in the Bering Sea/Aleutian Islands, 1981-1991.

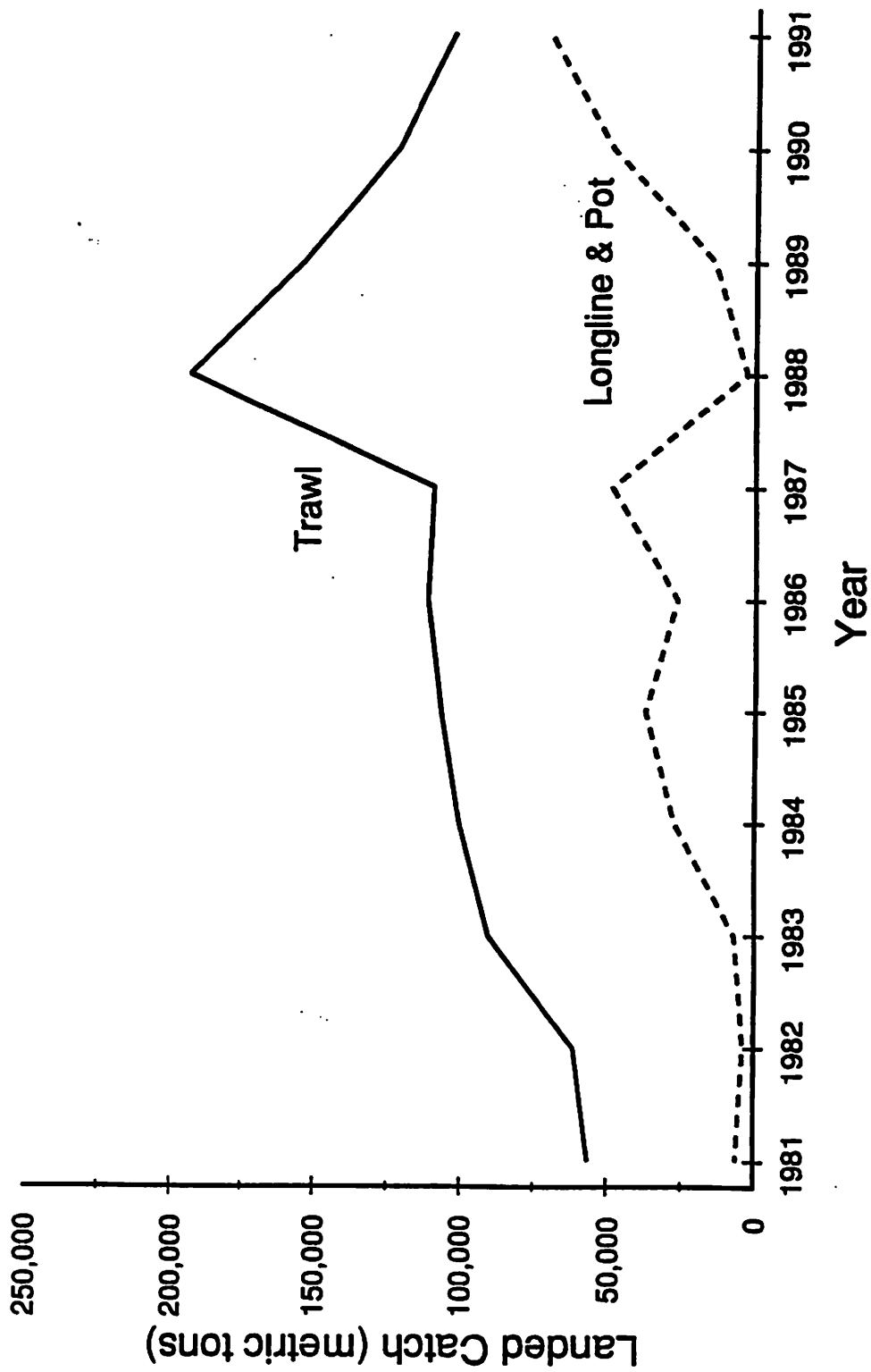


Figure 2. Pacific cod landed catch by gear type in the foreign, joint venture and domestic fisheries combined, in the Bering Sea/Aleutian Islands, 1981-1991.

longline landings were made in the domestic fishery. Landings with pot gear have always been domestic fisheries and represented less than 1% of total landings before 1990, 1% in 1990, and 3% in 1991.

Tables 1 and 2 summarize monthly, quarterly, and seasonal landings of Pacific cod by gear type in the domestic and JV fisheries combined for 1990 and 1991. The quarters are four 3-month periods throughout the year, and the fishing periods are as defined in Alternative 2, Option 2. Fishing period A is January, fishing period B (the spawning season) is from February through April, fishing period C is from May through October, and fishing period D is November and December.

The percentage of total Pacific cod landings in each period by gear type are summarized in the center of the table (Percent of Period's Harvest), and the percentage of annual Pacific cod landings are in the far right columns (Percent of Annual Harvest by Gear). For example, the information in the center columns of Table 1 show that 88% of the January 1990 landings of Pacific cod were taken by trawlers and 12% by longliners. The far right columns of Table 1 show that trawl landings of Pacific cod in January represented 13.5% of total Pacific cod landings by trawlers in 1990. Longline landings in January represented 4.8% of their 1990 landings, and landings by all gears combined in January represented almost 11% of 1990 landings. The monthly information is aggregated to quarters in the middle of each table, and by fishing periods at the bottom of each table.

Comparison of the information presented for 1990 and 1991 show:

- In 1990 longliners harvested 28% of Pacific cod landings. Trawl harvests were concentrated during the February through April spawning season (56%) and longline and pot harvests during the third and fourth quarters (65%).
- Overall, with all gear types combined, 45% of Pacific cod landings in 1990 occurred in the first quarter, 30% in the second quarter, and between 10% and 15% in the third and fourth quarters. Forty-four percent of the landings occurred during the spawning season.
- In 1991 the longline share of Pacific cod landings increased to 38% of total annual Pacific cod landings. Trawl harvests became increasingly concentrated in the first and second quarters (93%) with 69% of landings occurring during the spawning period. Although almost 50% of the longline harvests occurred during the first and second quarters, only 25% of Pacific cod was landed during the spawning season, with 63% of longline harvests occurring from May through October.

Preliminary information from NMFS reports that 1992 harvests of Pacific cod in the Bering Sea/Aleutians through May 31 totaled 113,187 mt.³ Of this, trawlers had harvested 58,646 mt (52%), longliners 51,537 mt (46%), and pots 3,004 mt (2.7%). The

³ These harvest statistics are based on information provided on the NMFS Bulletin Board and include discards.

Table 1. 1990 domestic and joint venture groundfish landed catch (metric tons) and percent of harvest by gear type in the Bering Sea/Aleutian Islands.

Period	Harvest by Gear (metric tons)				Percent of Period's Harvest			Percent of Annual Harvest by Gear			
	Trawl	Longline	Pot	All Gears	Trawl	Longline	Longline + Pot	Trawl	Longline	+ Pot	All Gears
MONTH											
Jan	16,464	2,265	0	18,730	87.9	12.1	12.1	13.5	4.8	4.6	11.0
Feb	25,779	3,419	3	29,201	88.3	11.7	11.7	21.2	7.2	7.0	17.1
Mar	26,176	2,242	3	28,559	91.7	7.8	7.9	21.5	4.7	4.6	16.7
Apr	15,827	1,824	11	17,662	89.6	10.3	10.4	13.0	3.8	3.7	10.3
May	13,565	3,106	11	16,686	81.3	18.6	18.7	11.1	6.5	6.3	9.8
Jun	11,401	4,520	0	15,923	71.6	28.4	28.4	9.4	9.5	9.2	9.3
Jul	1,459	5,921	428	7,809	18.7	75.8	81.3	1.2	12.5	12.9	4.6
Aug	1,545	6,402	799	8,746	17.7	73.2	82.3	1.3	13.5	14.7	5.1
Sep	2,946	5,711	214	8,871	33.2	64.4	66.8	2.4	12.0	12.1	5.2
Oct	1,478	5,388	131	6,996	21.1	77.0	78.9	1.2	11.3	11.2	4.1
Nov	2,768	3,920	6	6,694	41.3	58.6	58.7	2.3	8.3	8.0	3.9
Dec	2,323	2,773	7	5,103	45.5	54.3	54.5	1.9	5.8	5.7	3.0
Total	121,732	47,491	1,613	170,979	71.2	27.8	28.7	100.0	100.0	100.0	100.0
QUARTER											
1: Jan-Mar	68,419	7,926	6	76,489	89.4	10.4	10.4	56.2	16.7	16.2	44.7
2: Apr-Jun	40,794	9,450	23	50,271	81.1	18.8	18.8	33.5	19.9	19.3	29.4
3: Jul-Sep	5,950	18,034	1,441	25,425	23.4	70.9	76.6	4.9	38.0	39.7	14.9
4: Oct-Dec	6,569	12,081	144	18,794	35.0	64.3	65.0	5.4	25.4	24.9	11.0
Total	121,732	47,491	1,613	170,979	71.2	27.8	28.7	100.0	100.0	100.0	100.0
FISHING PERIOD											
A: Jan	16,464	2,265	0	18,730	87.9	12.1	12.1	13.5	4.8	4.6	11.0
B: Feb-Apr	67,782	7,485	17	75,422	89.9	9.9	9.9	55.7	15.8	15.3	44.1
C: May-Oct	32,395	31,048	1,583	65,030	49.8	47.7	50.2	26.6	65.4	66.5	38.0
D: Nov-Dec	5,091	6,693	13	11,797	43.2	56.7	56.8	4.2	14.1	13.7	6.9
Total	121,732	47,491	1,613	170,979	71.2	27.8	28.7	100.0	100.0	100.0	100.0

Table 2. 1991 groundfish landed catch (metric tons) and percent of harvest by gear type in the Bering Sea/Aleutian Islands.

Period	Harvest by Gear (metric tons)				Percent of Period's Harvest			Percent of Annual Harvest by Gear			
	Trawl	Longline	Pot	All Gears	Trawl	Longline	Longline + Pot	Trawl	Longline	Longline + Pot	All Gears
MONTH											
Jan	17,443	2,920	0	20,362	85.7	14.3	14.3	17.0	4.5	4.2	11.8
Feb	17,161	4,805	1	21,968	78.1	21.9	21.9	16.7	7.4	6.8	12.7
Mar	16,616	5,131	33	21,780	76.3	23.6	23.7	16.2	7.9	7.4	12.6
Apr	37,554	6,474	41	44,069	85.2	14.7	14.8	36.6	10.0	9.3	25.5
May	5,065	6,212	45	11,322	44.7	54.9	55.3	4.9	9.6	8.9	6.5
Jun	1,523	6,394	1	7,920	19.2	80.7	80.8	1.5	9.8	9.1	4.6
Jul	2,833	7,489	965	11,288	25.1	66.3	74.9	2.8	11.5	12.0	6.5
Aug	2,630	7,685	1,305	11,619	22.6	66.1	77.4	2.6	11.8	12.8	6.7
Sep	1,411	6,689	1,611	9,715	14.5	68.9	85.4	1.4	10.3	11.8	5.6
Oct	499	6,564	900	7,968	6.3	82.4	93.7	0.5	10.1	10.6	4.6
Nov	11	4,599	315	4,925	0.2	93.4	99.8	0.0	7.1	7.0	2.8
Dec	0	24	50	74	0.0	32.5	100.0	0.0	0.0	0.1	0.0
Total	102,747	64,987	5,266	173,010	59.4	37.6	40.6	100.0	100.0	100.0	100.0
QUARTER											
1: Jan-Mar	51,220	12,856	34	64,110	79.9	20.1	20.1	49.9	19.8	18.3	37.1
2: Apr-Jun	44,142	19,080	87	63,311	69.7	30.1	30.3	43.0	29.4	27.3	36.6
3: Jul-Sep	6,874	21,863	3,880	32,622	21.1	67.0	78.9	6.7	33.6	36.6	18.9
4: Oct-Dec	511	11,187	1,265	12,968	3.9	86.3	96.0	0.5	17.2	17.7	7.5
Total	102,747	64,987	5,266	173,010	59.4	37.6	40.6	100.0	100.0	100.0	100.0
FISHING PERIOD											
A: Jan	17,443	2,920	0	20,362	85.7	14.3	14.3	17.0	4.5	4.2	11.8
B: Feb-Apr	71,331	16,411	75	87,817	81.2	18.7	18.8	69.4	25.3	23.5	50.8
C: May-Oct	13,961	41,033	4,827	59,832	23.3	68.6	76.6	13.6	63.1	65.3	34.6
D: Nov-Dec	11	4,623	365	4,999	0.2	92.5	99.8	0.0	7.1	7.1	2.9
Total	102,747	64,987	5,266	173,010	59.4	37.6	40.6	100.0	100.0	100.0	100.0

distribution of harvest between the gear groups differs significantly from the distribution for the first 4 months of 1991. Trawlers harvested 82% of the Pacific cod harvests from January through April 1991 while longliners harvested 18%. This difference may be even larger considering that 1991 data is based on PacFIN reports which do not include trawl discards. Depending on the amount of Pacific cod discarded by trawlers, they may have harvested even more than 82% of the harvest in this period.

Table 3 summarizes the Pacific cod TAC, total landings, and percent of TAC harvested in the domestic and JV fisheries combined from 1988 through mid-1992. The proportion of the Pacific cod TAC harvested each year is decreasing, primarily due to trawl fishery closures as a result of the halibut PSC limit. In 1988, 98% of the Pacific cod TAC was harvested, but by 1991, this proportion had decreased to 76%.

In addition to influencing the amount of cod harvests, the PSC limits have also resulted in a change in the timing of the harvest, leading to an increasing proportion of the harvest being taken in the early part of the year. Following is a brief summary of in-season closures of the directed fisheries for Pacific cod from 1988 through mid 1992:

- 1988: Directed fishing for Pacific cod in the JV fisheries was closed in November and December.
- 1989: Directed fishing for Pacific cod in the JV fisheries was closed in February for the remainder of the year. The directed domestic trawl fishery closed from September through the end of the year.
- 1990: Directed fishing for Pacific cod in the JV fisheries was closed all year (only bycatch was allowed). The domestic, non-pelagic trawl fisheries were closed for the remainder of the year on May 30 in the primary halibut PSC area and on June 30 in the entire Bering Sea/Aleutians.
- 1991: The directed non-pelagic trawl fisheries for Pacific cod were closed due the halibut PSC limit several times from February through May. All directed trawl fishing in the primary halibut PSC zone was closed for the remainder of the year after May 13, and directed trawl fisheries in the rest of the Bering Sea/Aleutians closed after July 8.
- 1992: All trawling in the Bering Sea/Aleutians was closed from January 1 through January 20 due to sea lion protection measures. The directed trawl fishing for Pacific cod closed on February 16 after the first quarter halibut PSC limit was reached. Directed trawl fishing resumed on March 7 and was closed again on May 6.

Trawl fisheries in the Bering Sea/Aleutian Islands have operated with halibut PSC limits since 1989. Beginning in 1992, both trawl and hook-and-line gear operated under halibut PSC limits. As discussed above, in the past, the proportion of the Pacific cod TAC that has been harvested has been determined, in part, on trawl closures due to the halibut PSC limit. Tables 4 and 5 summarize information about the halibut bycatch in the directed Pacific cod fisheries in 1991 and early 1992. Monthly, quarterly, and seasonal

Table 3. Pacific cod TAC in the Bering Sea/Aleutian Islands, landed catch (metric tons) and percent of TAC landed, 1988-mid 1992.

Year	TAC ¹ (mt)	Landed ² Catch (mt)	Percent of TAC Landed by Trawl	Percent of TAC Landed by Longline	Percent of TAC Landed
1988	200,000	197,020	97%	1%	98%
1989	226,079	168,352	68%	6%	74%
1990	199,975	170,979	61%	24%	86%
1991	229,000	173,010	44%	28%	76%
To 5/31/92	182,000	113,188	32%	28%	62%

¹ TAC limits for 1988-1990 were summarized in the November 1991 SAFE document, and for 1991 and 1992 in the groundfish specifications published by the NPFMC.

² Landed catch statistics are from PacFIN data and do not include discards.

Table 4. Groundfish harvest and halibut bycatch in the Pacific cod target fishery in 1991.

Period	TRAWL					HOOK-AND-LINE				
	Groundfish (mt)	Halibut (mt)	Halibut ^{1/} Mortality (mt)	Bycatch Rate (kg/mt)	Mortality ^{1/} Rate (kg/mt)	Groundfish (mt)	Halibut (mt)	Halibut ^{2/} Mortality (mt)	Bycatch Rate (kg/mt)	Mortality ^{2/} Rate (kg/mt)
MONTH										
Jan	13,424	384.0	288.0	28.60	21.45	2,800	53.2	8.5	19.00	3.04
Feb	13,958	318.5	238.9	22.82	17.11	4,559	83.2	13.3	18.24	2.92
Mar	18,340	415.1	311.4	22.64	16.98	5,804	105.7	16.9	18.21	2.91
Apr	45,464	647.1	485.3	14.23	10.68	6,285	45.5	7.3	7.24	1.16
May	4,159	122.4	91.8	29.42	22.06	5,209	78.7	12.6	15.11	2.42
Jun	51	1.7	1.3	33.69	25.27	7,937	345.6	55.3	43.54	6.97
Jul	274	2.6	2.0	9.52	7.14	5,938	360.0	57.6	60.63	9.70
Aug	0	0.0	0.0	0.00	0.00	6,895	322.6	51.6	46.78	7.49
Sep	0	0.0	0.0	0.00	0.00	8,068	216.2	34.6	26.79	4.29
Oct	0	0.0	0.0	0.00	0.00	5,978	328.3	52.5	54.92	8.79
Nov	0	0.0	0.0	0.00	0.00	5,152	337.1	53.9	65.43	10.47
Dec	0	0.0	0.0	0.00	0.00	3,589	220.9	35.3	61.55	9.85
Total	95,670	1,890.7	1,418.0	19.76	14.82	68,214	2,496.9	399.5	36.60	5.86
QUARTER										
1: Jan-Mar	45,722	1,117.6	838.2	24.44	18.33	13,163	242.1	38.7	18.39	2.94
2: Apr-Jun	49,674	771.2	578.4	15.52	11.64	19,431	469.8	75.2	24.18	3.87
3: Jul-Sep	274	2.6	2.0	9.52	7.14	20,900	898.7	143.8	43.00	6.88
4: Oct-Dec	0	0.0	0.0	0.00	0.00	14,719	886.3	141.8	60.22	9.63
Total	95,671	1,891.4	1,418.6	19.77	14.83	68,214	2,496.9	399.5	36.60	5.86
FISHING PERIOD										
A: Jan	13,424	384.0	288.0	28.60	21.45	2,800	53.2	8.5	19.00	3.04
B: Feb-Apr	77,762	1,380.8	1,035.6	17.76	13.32	16,648	234.3	37.5	14.08	2.25
C: May-Oct	4,484	126.7	95.0	28.25	21.19	40,025	1,651.3	264.2	41.26	6.60
D: Nov-Dec	0	0.0	0.0	0.00	0.00	8,741	558.0	89.3	63.84	10.21
Total	95,671	1,891.4	1,418.6	19.77	14.83	68,214	2,496.9	399.5	36.60	5.86

^{1/} A 75% mortality of halibut bycatch is assumed for the trawl fisheries.

^{2/} A 16% mortality of halibut bycatch is assumed for the hook-and-line fisheries.

Table 5. Preliminary groundfish harvest and halibut bycatch in the Pacific cod target fishery through May 10, 1992.

Period	TRAWL					HOOK-AND-LINE				
	Groundfish (mt)	Halibut (mt)	Halibut ^{1/} Mortality (mt)	Bycatch Rate (kg/mt)	Mortality ^{1/} Rate (kg/mt)	Groundfish (mt)	Halibut (mt)	Halibut ^{2/} Mortality (mt)	Bycatch Rate (kg/mt)	Mortality ^{2/} Rate (kg/mt)
MONTH										
Jan	270	8.5	6.4	31.52	23.64	6,658	197.8	31.7	29.71	4.75
Feb	9,891	245.3	184.0	24.80	18.60	9,320	174.0	27.8	18.66	2.99
Mar	20,193	419.9	314.9	20.80	15.60	13,892	216.4	34.6	15.57	2.49
Apr	26,872	642.5	481.8	23.91	17.93	12,702	479.6	76.7	37.76	6.04
to May 10	8,381	273.8	205.3	32.66	24.50	6,534	210.3	33.6	32.18	5.15
Total YTD*	65,607	1,590.0	1,192.5	24.23	18.18	49,107	1,278.1	204.5	26.03	4.16
QUARTER										
1: Jan-Mar	30,354	673.8	505.3	22.20	16.65	29,870	588.1	94.1	19.69	3.15
2: Apr-Jun	35,253	916.2	687.2	25.99	19.49	19,237	689.9	110.4	35.87	5.74
3: Jul-Sep	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4: Oct-Dec	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total YTD*	65,607	1,590.0	1,192.5	24.23	18.18	49,107	1,278.1	204.5	26.03	4.16
FISHING PERIOD										
A: Jan	270	8.5	6.4	31.52	23.64	6,658	588.1	94.1	88.33	14.13
B: Feb-Apr	56,956	1,307.7	980.8	22.96	17.22	35,914	1,278.1	204.5	35.59	5.69
C: May-Oct	8,381	273.8	205.3	32.66	24.50	6,534	1,278.1	204.5	195.60	31.30
D: Nov-Dec	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total YTD*	65,607	1,590.0	1,192.5	24.23	18.18	49,107	1,278.1	204.5	26.03	4.16

* Year-to-date

^{1/} A 75% mortality of halibut bycatch is assumed for the trawl fisheries.

^{2/} A 16% mortality of halibut bycatch is assumed for the hook-and-line fisheries.

average halibut bycatch and mortality rates were compiled based on information from the NMFS Bulletin Board. Figure 3 compares the halibut bycatch mortality rates for trawl and hook-and-line gear by quarter and by fishing period. Actual halibut bycatch rates are translated into bycatch mortality rates by applying a 75% mortality rate in the trawl fisheries and a 16% mortality rate in the hook-and-line fisheries. Halibut bycatch rates for both gear groups are at their lowest during the Pacific cod spawning season. Longline harvests occurred throughout the year in 1991, and halibut bycatch mortality rates peaked in the last quarter.

5.0 BIOLOGICAL ISSUES

An important biological issue related to this proposal is whether harvesting Pacific cod during the spawning season rather than at other times of the year negatively impacts the fish stock. Although this issue has been debated with respect to many fisheries, no research findings have been published which demonstrate that spawning behavior is negatively impacted by fishing activity. However, limits on harvests during the spawning seasons in Alaska, New England, and Canada have been justified primarily on the need to be conservative in the face of limited information about the stock-recruitment relationship and spawning stock behavior.

National Standard 1 (50 CFR Part 602) requires that a fishery be managed so that the optimum yield may be obtained on a continuing basis without overfishing the stock. This directive places a high priority on fishery managers understanding factors that are important in determining the size of a fish stock and its reproductive needs. There are many factors which influence fish stock sizes, including reproductive success, natural mortality due to predation, spawning stress, environmental factors, and fishing mortality. Many of these factors are outside the control of managers and natural fluctuations in fish stocks are often the reason that consistent optimum yields cannot be predicted or obtained. However, it is very important that harvest levels or fishing patterns not be the sole reason that a fish stock is unable to sustain itself.

The status of the Eastern Bering Sea (EBS) and Aleutian Islands Pacific cod stock is described in the November 1991 SAFE document. Two different population assessment procedures indicate that the EBS Pacific cod biomass has been declining in recent years. The trawl survey abundance estimates indicate a 26% decrease in biomass from 1989 to 1990 and a 25% decrease from 1990 to 1991. Although biomass decreased, the numbers of cod increased 28% from 1989 to 1990 and 14% from 1990 to 1991. This may indicate an increase in the number of younger, smaller fish. The Bering Sea Pacific cod population model, indicates a 6% and 8% decrease in biomass from 1989 to 1990 and 1990 to 1991. Results of the trawl survey abundance estimates and the population model are not directly comparable because they use different methods and data, and they estimate population size at different times in the year. They do, however, generally indicate that the EBS Pacific cod stock has declined since the 1980s. Weak year classes from 1986 to 1988 probably contribute to the decline in biomass. The increasing trend in the number of fish may indicate relatively strong 1989 and 1990 year classes entering the population.

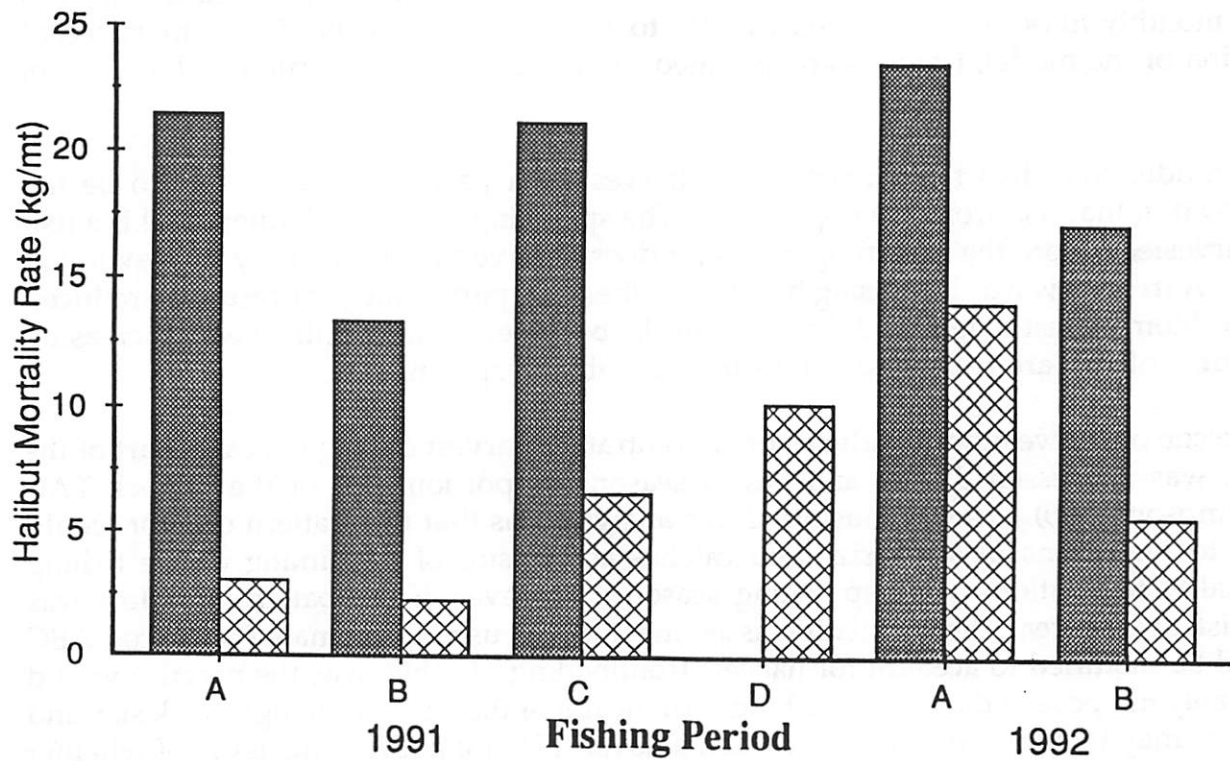
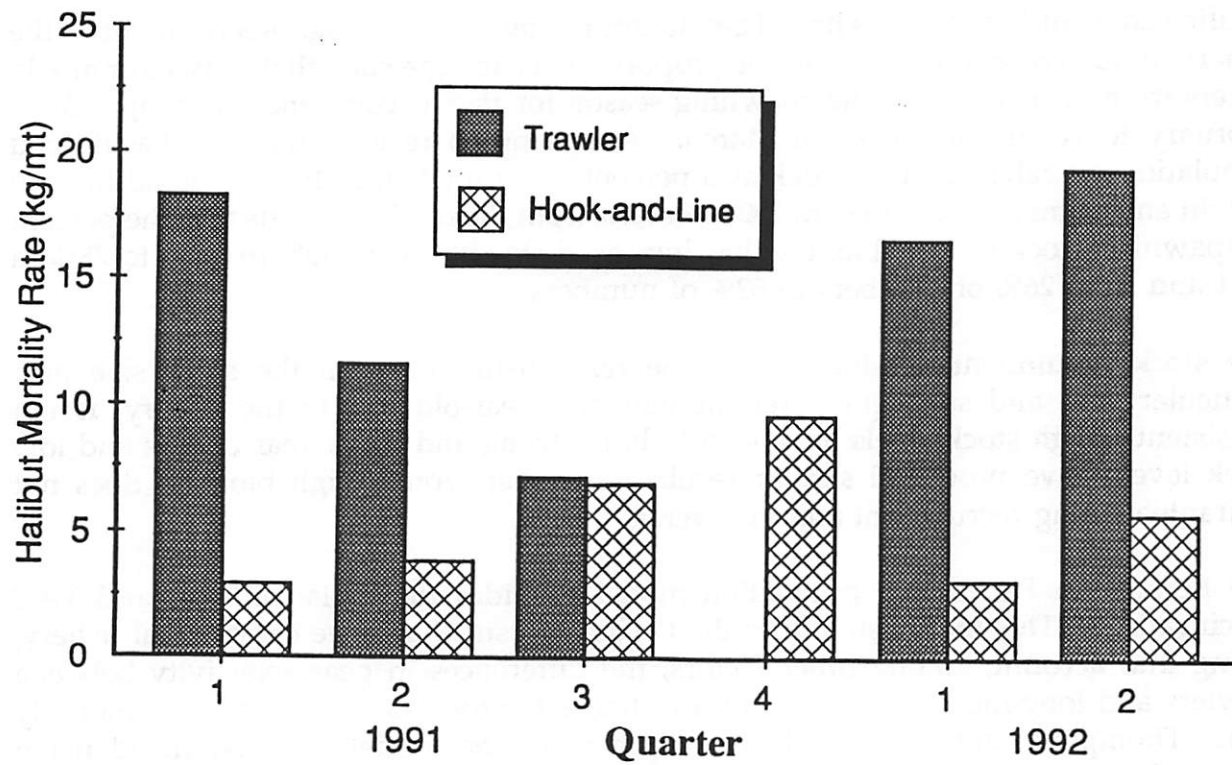


Figure 3. Comparison of halibut bycatch mortality rates in the 1991 Bering Sea/ Aleutian Islands directed Pacific cod fishery (kg halibut/mt groundfish).

Source: NMFS Bulletin Board, 1992

Pacific cod as old as 18 years have been identified by otolith aging. Recruitment to the fishery occurs around 3 years, and the proportion of each age class that spawns annually differs from year to year. The spawning season for Pacific cod generally ranges from February to April and peaks in March. According to results from the Pacific cod population model, spawning stock as a percentage of total stock has increased in both weight and numbers from 1981 to 1991. Results from the model indicate that the percent of spawning stock to total biomass has increased steadily from 50% in 1981 to 78% in 1991 and from 26% of numbers to 52% of numbers.

The stock-recruitment relationship, or the relationship between the stock size in a particular year and subsequent recruitment of 3-year-old cod to the fishery, is not consistent. High stock levels have led to both strong and weak year classes and low stock levels have produced similar results. In other words, high biomass does not guarantee strong recruitment and vice-versa.

The Bering Sea Pacific cod population model provides the basis for ABC and TAC specifications. This model simulates the Pacific cod stock and the commercial fishery, taking into account, among other factors, the differences in gear selectivity between trawlers and longliners, and the pattern of harvest throughout the year on a monthly basis (Thompson and Bakkala, 1990). Each year, the model is re-estimated using historical patterns of effort (catch). PacFIN data is used for the monthly catch statistics and monthly harvests are inflated by 11% to account for discards. In the most recent version of the model, trawlers are assumed to harvest 65% of the catch and longliners 35%.

The model considers the impact of the harvest of a particular Pacific cod to be the removal of that fish from the population. The spawning month is defined, and if a fish is harvested before the spawning month, it doesn't have the opportunity to spawn that year. A trend towards increasing harvests in the early part of the year results in reduced stock biomass estimates and harvest levels because, in a specific year, increasing amounts of fish are harvested before they are able to spawn.

The issue of "harvest frontloading", or concentrating harvest during the early part of the year, was addressed during analysis of seasonal apportionment of the pollock TAC (Thompson, 1990). The conclusion of this analysis was that this pattern of effort could lead to reductions in stock size and catches as a result of the timing of the fishing mortality in relation to the spawning season. However, if the pattern of effort was consistent each year, the population assessment model used to estimate Pacific cod ABC could be modified to account for harvest frontloading. In this case, the practice would probably not pose "a danger to the long-term health of the stock" although stock size and catches may be reduced. The Thompson analysis did not address the issue of whether fishing activity during the spawning season affected spawning behavior or reproductive success. If increased amount of harvest continues to be taken in the early part of the year, and all other factors which influence stock estimates remain the same, ABC and TAC amounts will probably decrease.

The concern about harvesting fish during the spawning season is not just the direct mortality of the fish harvested during that period; this mortality is supposedly accounted

for in the population model. It is the potential impact of disturbance or activity during the spawning period that is of concern: does fishing activity inhibit spawning; reduce reproductive success; or reduce survival of the fertilized eggs? Unfortunately, research on the behavior of spawning stocks and the impact of disturbances during this activity, if it has been done, is not well documented in scientific literature.⁴ Both the NMFS and the Canadian Department of Fisheries and Oceans (CDFO) have observed the behavior of spawning fish during trawl surveys. The primary objective in the NMFS study was to improve understanding of population abundance survey methods (Williamson, pers. com., 6/11/92). Future research efforts may include observation of pollock during spawning using a remote observation vehicle (ROV). The CDFO has begun research on the impacts of trawling on spawning and fish behavior, although no results have been published (CDFO, 1990).⁵

5.1 Measures to Control Harvests During Spawning Season

Various fisheries management agencies have taken action or recommended restrictions on harvests during the spawning season. These actions have been recommended in spite of the difficulty in quantifying a stock-recruitment relationship for many species and the lack of research on the impacts of harvests during the spawning season.

Harvests of pollock are apportioned quarterly in the Gulf of Alaska and divided between a roe and non-roe season in the Bering Sea/Aleutian Islands. In approving these regulations, the North Pacific Fishery Management Council stated concerns about the impacts of trawling on pollock stocks and the value of data gathered from a fishery extending over the course of the year (NPFMC, 1990). NMFS justified the seasonal pollock allocation in part because:

"... the roe season catch limit may help to prevent adverse effects on the ecosystem and on future pollock productivity from intensive fishing mortality during the roe season. Although no clear evidence is available to demonstrate that intensive fishing during a compressed season will have significant negative impacts on the ecosystem, the actual effects of such fishing are uncertain. The complexity of the ecosystem can easily mask any statistical relationship between the abundance of pollock eggs and larvae, and the future abundance of various pollock predators (including the threatened Steller sea lion) and of harvestable stocks of pollock. Given this uncertainty, conservative limitation of the roe season pollock harvest to 442,000 mt is reasonable." (57 CFR 3955)

⁴ A literature search of an international marine publications data base failed to identify any publications which dealt specifically with the impact of harvests during the spawning season.

⁵ CDFO research is being done by Dr. Joann Morgan of the Science Branch in St. Johns, Newfoundland. More detailed information about this research was not available prior to completion of this report.

NMFS further addressed the biological justification for seasonal apportionment of the pollock TAC in response to public comments.

"(3) The potential biological effects of intensive fishing mortality during the roe-bearing season are arguable. NOAA is aware of no marine or fishery biologist who would state categorically that such fishing has no biological effect. Lack of statistically significant evidence of a perturbation within a population of animals is not the same as no effect. This is consistent with SSC reports stating that here is no evidence of biological harm. The EA/RIR discusses some of the hypothetical impacts on stock productivity. Potentially, an intensive roe season harvest could alter the reproductive capacity of the stock by affecting either spawning success or the sex composition of the stock. The effect of fishing mortality on future recruitment of young fish to the harvestable population depends on the relationship between the spawning population and recruits. Another potential impact of concentrated fishing mortality is localized depletion of discrete stocks. Unfortunately, current information on pollock population dynamics is insufficient to define beyond question a stock-recruitment relationship, all the factors affecting recruitment, and specific localized stock boundaries. In view of this uncertainty about the long-term effects of an intensive pollock fishery, limiting the amount of pollock that may be harvested during the roe season to historical levels is a prudent management measure." (56 CFR 6295)

The New England Fishery Management Council has used short-term fishery closures to protect aggregated juvenile or spawning groundfish, particularly haddock. These closures apply to all gear types which target on the species in question. Council staff acknowledge, however, that there is no known relationship between protecting spawning fish and future recruitment to the fishery (Herring, pers. com., 6/8/92).

The 1990 Groundfish Management Plan for Canadian groundfish stocks required that harvests of Northern cod during the peak spawning period by offshore trawl vessels be restricted based on each vessel's prior year harvests (CDFO, 1990). The Canadian government also commissioned a review of Northern cod which was lead by Dr. L. Harris of the CDFO (Harris, 1990). The Harris Commission concluded that Northern cod stocks were declining and that fishing mortality rates had been significantly higher than management had previously estimated. Although they felt that the survival of Northern cod stocks were not in immediate danger, they recommended that catch levels be reduced. They also recommended that reductions in fishing mortality during the spawning period be proportionate to reductions throughout the rest of the year. In other words, harvest levels should be reduced throughout the year to avoid increasing the proportion of harvests during the spawning period. The Commission also recommended that CDFO examine gear selectivity and that the "goal should be to eliminate the harvest of 2-, 3-, 4-, and 5-year-olds and reduce the bycatch of these year classes."

6.0 CONCLUSIONS AND RECOMMENDATIONS

This document is intended to assist the Bering Sea/Aleutian Islands Groundfish Plan Team and other agency staff to prepare a draft EA/RIR for the proposal to seasonally apportion the Bering Sea/Aleutian Islands Pacific cod TAC. The alternatives presented in this report need to be reviewed by the Plan Team to determine whether they adequately address issues raised in the problem statement. In addition, there are several aspects of the analysis which may need to be completed before it can be presented to the Council as a draft EA/RIR ready for public review. They are:

- (1) Prepare a more comprehensive discussion of the bycatch issues related to this proposal. Halibut bycatch was very briefly discussed in this document and there was no discussion of the impact of PSC limits in other species groups.
- (2) Provide more information about historical harvests by target fishery and include more detail about discards. This requires data from NMFS's Processor Weekly Production Report (WPR) database.
- (3) Prepare background economic information on the fishery in recent years. This will include information about the number of participants in the fishery, by gear type and processing mode, the distribution of harvests between on-shore and off-shore processing, market information, average prices, and the distribution of Pacific cod processing by product form.

Much of this information will come from the WPRs, which is confidential at the level necessary to do some of the analysis.

- (4) Discuss the biological and environmental impacts of the alternatives.

The economic impacts of the alternatives should be based, at least in part, on results from the NMFS bycatch model. This model uses information about assumed changes in the distribution of the harvest as a result of each alternative to predict bycatch, fishery closures, total groundfish harvest, value of the harvest, and the foregone value of the bycatch. Although the model is limited in its ability to accurately predict future harvests, it does offer the best available means for predicting harvest and bycatch changes as a result of a regulatory change.

Although some alternatives do not propose a specific allocation of the TAC, various scenarios are necessary in order to specify economic impacts. If the TAC limit is based on the average distribution of the harvests in 1990 and 1991, a quarterly allocation may be:

1st quarter: 40%
2nd quarter: 30%
remainder: 30%

and an allocation by fishing period may be:

January	11%
Feb-Apr	48%
May-Oct	36%
Nov-Dec	5%

However, harvest patterns in the first part of 1992 indicate that trawlers' share of total harvest has declined, which will likely lead to a smaller percent of total harvests being taken in the first two quarters.

In recent years, the Pacific cod TAC has not been reached, nor have longline harvests been limited at any time during the year. However, a seasonal TAC allocation will likely result in limitations on both trawl and longline harvests during the spawning season. For example, if the average 1990-91 distribution of harvests had been applied to the 1992 TAC, the allocation to the February through April spawning season would have been 74,256 mt (48% of the ITAC of 154,700 mt). Approximately 100,000 mt of Pacific cod was harvested between January 1 and May 10, 1992 and trawl fishing was closed for the first three weeks of January. The harvest was distributed nearly evenly between trawlers and longliners. Anything less than a 65% TAC allocation to the first four months of 1992 would have resulted in reduced harvests to at least one gear group, and probably both.

Another important factor in projecting economic impacts is that trawlers will probably change the way they allocate their halibut PSC between fisheries and seasons in an attempt to maximize the proportion of the spawning season TAC they are able to take. It will be difficult to predict exactly the changes in the PSC limits and to assess the impact of this action.

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APPENDIX 1

Original Quarterly Cod Allocation Proposal

NOV 15 1990

ACTION

DECEMBER 1990

November 9, 1990

Dr. Don Collinsworth, Chairman
North Pacific Fishery Management Council
P.O. Box 1031136
Anchorage, AK 99501

RE: Emergency Rule - 1991 Trawl Management

Dear Dr. Collinsworth:

The undersigned associations represent fishermen and processors who are heavily dependent upon the Pacific cod fishery in the Bering Sea.

Recent actions of the North Pacific Fishery Management Council with respect to the 1991 flatfish and pollock fisheries in the Bering Sea, and further actions which will be taken in December, may have severe unintended impacts on the fishery for Pacific cod. These possibilities give rise to serious concerns.

The Council has determined that the flatfish fishery in the Bering Sea should be delayed in 1991, to minimize bycatch of prohibited species. The Council also plans an apportionment of pollock between the roe and non-roe fisheries. It is the potential impact of these actions on the fishery for Pacific cod and the possible PSC bycatch implications of that fishery which prompt us to ask for emergency action.

The harvesting capacity of the trawl fleet is huge. It has been estimated that the fleet will be able to harvest as much as 70,000 mt of pollock weekly at the beginning of 1991. If - as seems likely - only 25 to 40 per cent of the pollock TAC in the Bering Sea is apportioned to the roe season for 1991, the roe fishery will last only four to seven weeks. Pollock fishermen who concentrate on the roe fishery will likely ask for a postponement of the roe season so that the pollock can be harvested when the roe is mature. Since flatfish will not be available, we anticipate that a significant portion of the trawl fleet may concentrate its effort on Pacific cod at the beginning of the year. This unprecedented early effort on the cod stocks could have several undesirable consequences.

First, the markets for Pacific cod pay a considerable premium for high quality product, supplied steadily throughout the year. If there are gluts or variations in supply or quality, returns diminish substantially. Selective markets may even disappear. Trawlers, longliners, pot vessels, factory trawlers, and shoreside processors are all capable of producing high quality cod product if they

are careful - but in order to take advantage of the realities of the marketplace, they must do so at a controlled and steady rate, throughout the year. If there is uncontrolled effort in the cod fishery early in the year there could be a glut of cod product - of varying quality - dumped on the market. The negative market consequences could be serious.

A second concern is that if the TAC for Pacific cod is taken early in the year, the small trawlers, longliners, and pot fishermen who rely on a steady cod fishery would be put out of business.

Bycatch in this fishery could also be a problem. Testimony at the September council meeting suggested that if no preventive measures are taken, displaced vessels inexperienced in trawling for cod could decimate the halibut PSC. The result could be the early closure of bottom trawling to vessels which depend upon it.

It is difficult to accurately monitor any fishery which experiences a sudden surge of effort. Uncontrolled effort on Pacific cod in the first half of 1991 would pose the additional risk of exceeding the cod TAC, and PSC for halibut.

Finally there is the question of the impact of heavy fishing on spawning stocks, which may affect the reproductive capacity of any species (the well-known "bedroom effect"). This was one of the considerations which prompted the Council and the Secretary to split the pollock season. Pacific cod spawn at about the same time as pollock, and biological concerns for one species certainly should apply to the other.

In order to avert the undesirable consequences noted above, we respectfully request that the Council adopt an emergency rule effective January 1, 1990, to implement the following measures:

1. Apportion the Pacific cod TAC in the Bering Sea/Aleutian Islands Area between the first two quarters of 1991, 35% in the first quarter, 25% in the second:

(This would require a renewal of the rule after 90 days, for an effective period of 180 days - the maximum effective period for an emergency rule. Note that fishing is slower in the second half of the year, and quarterly apportionments may not be necessary. Note also that an anticipated increase in pot fishing for Pacific cod will help to assure that TAC [OY] is achieved.)

2. Apportion halibut PSC in the Bering Sea/Aleutian Islands Area between the first two quarters of 1991, 35% in the first quarter, 25% in the second; and

(This would also require a renewal of the rule after 90 days.)

3. Synchronize the opening of all groundfish trawl fisheries in the Bering Sea/Aleutian Islands Area until the opening date of the roe pollock fishery.

These measures would prevent the adverse market impacts of a cod rush, and would assure that the nation maximizes its economic return from the valuable cod resource. They would augment the trawl bycatch incentive program, and help prevent the trawl fleet from putting itself out of the bottom trawl business by taking or exceeding halibut bycatch limits. Possible overfishing of Pacific cod would be avoided. Virtually every sector of the groundfish industry would be able to produce high quality cod products throughout the year, to the benefit of all concerned.

Thank you for your help in this matter.

Yours Very Truly,

R. Barry Paul
Midwater Trawlers' Assoc.

Eric Olsen FIV LORELEI II
President, FVOA

Hennis Peterson
NPFVOA
Thom Smith
Freezer-Longliner Group

APPENDIX 2

Bering Sea/Aleutian Islands Fishery Statistics 1981-1991

Appendix 2 -- Table 2.1. Domestic, joint venture, and foreign groundfish landed catch (metric tons) by gear type in the Bering Sea/Aleutian Islands, 1981-1991.

Species Group	Gear ^{1/}	Year										
		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Pollock	Trawl	1,028,907	1,013,812	1,041,195	1,176,384	1,227,252	1,238,488	1,261,102	1,348,696	1,280,984	1,351,481	1,202,072
	Longline	176	108	188	606	1,114	684	2,013	53	280	1,153	463
	Pot	0	0	5	0	0	114	170	0	0	0	<1
	All Gears	1,029,083	1,013,921	1,041,388	1,177,108	1,228,366	1,245,122	1,263,357	1,348,749	1,281,264	1,352,644	1,202,733
Pacific Cod	Trawl	56,273	61,312	90,391	100,264	106,633	111,177	109,086	194,127	154,238	121,732	102,747
	Longline	6,112	3,621	6,846	27,447	37,614	26,606	48,409	2,564	13,950	47,491	64,987
	Pot	0	0	21	0	0	63	89	329	164	1,613	5,266
	All Gears	62,398	66,648	97,831	127,918	144,247	138,013	157,584	197,020	168,353	170,979	173,010
Flatfish	Trawl	190,940	178,414	197,887	235,202	319,679	300,805	244,326	367,411	229,773	140,825	133,459
	Longline	4,184	3,492	2,681	1,063	738	513	2,864	2,028	964	912	589
	Pot	0	0	0	0	0	15	31	<1	<1	<1	<1
	All Gears	195,124	181,905	200,568	236,266	320,417	301,332	247,221	369,439	230,737	141,738	134,051
Sablefish	Trawl	1,231	1,639	1,166	1,976	448	2,247	2,535	2,522	1,770	1,278	551
	Longline	1,906	2,474	2,216	1,337	1,892	3,010	4,795	3,761	2,721	3,183	2,802
	Pot	0	0	0	<1	1,456	1,293	611	305	8	0	<1
	All Gears	3,137	4,138	3,382	3,326	3,796	6,550	7,941	6,588	4,499	4,461	3,352
Pacific Ocean Perch	Trawl	4,669	1,188	495	2,198	1,051	1,092	2,523	3,655	6,539	23,794	5,850
	Longline	16	9	4	<1	47	1	23	15	102	35	60
	Pot	0	0	0	0	0	0	0	<1	0	14	<1
	All Gears	4,685	1,200	499	2,199	1,098	1,094	2,546	3,670	6,641	23,843	5,910
Other Rockfish	Trawl	4,339	4,775	1,886	1,104	755	764	1,197	1,341	434	1,269	1,045
	Longline	94	131	129	54	38	66	252	263	275	264	527
	Pot	0	0	0	0	0	2	<1	1	0	0	0
	All Gears	4,400	4,904	2,015	1,142	702	832	1,389	1,607	709	1,533	1,572
All Groundfish	Trawl	1,352,574	1,307,940	1,366,872	1,564,822	1,706,397	1,697,887	1,658,525	1,951,311	1,697,295	1,668,330	1,472,359
	Longline	12,971	10,100	12,635	31,714	43,096	31,964	60,217	8,684	18,357	53,899	70,683
	Pot	0	0	26	<1	1,456	1,488	912	636	173	1,628	5,272
	All Gears	1,365,583	1,319,782	1,380,115	1,596,874	1,750,950	1,737,343	1,719,726	1,960,631	1,715,826	1,724,010	1,548,526

^{1/} All Gears is sum of landings by trawl, longline, pot and any other gears not specifically listed.

Appendix 2 -- Table 2.2. Trawl groundfish landed catch (metric tons) by source in the Bering Sea/Aleutian Islands, 1981-1991.

Species Group	Source ^{1/}	Year										
		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Pollock	Domestic	234	155	1,085	7,193	30,693	51,841	214,917	522,425	993,265	1,329,088	1,202,072
	JV	42,076	54,595	148,988	236,967	377,475	834,959	1,044,289	826,271	287,719	22,393	0
	Foreign	986,597	959,063	891,121	932,223	819,084	351,688	1,896	0	0	0	0
	TOTAL	1,028,907	1,013,812	1,041,195	1,176,384	1,227,252	1,238,488	1,261,102	1,348,696	1,280,984	1,351,481	1,202,072
Pacific Cod	Domestic	14,094	23,170	41,378	38,439	45,766	33,951	43,222	84,254	109,828	113,656	102,747
	JV	9,157	13,589	14,360	30,766	41,265	63,931	58,147	109,873	44,610	8,076	0
	Foreign	33,021	24,552	34,654	31,059	19,602	13,295	7,717	0	0	0	0
	TOTAL	56,273	61,312	90,391	100,264	106,633	111,177	109,086	194,127	154,238	121,732	102,747
Flatfish	Domestic	0	5	10	22	54	6,354	21,773	36,441	36,137	41,264	133,459
	JV	22,005	26,627	34,301	50,163	172,716	216,817	215,558	330,970	193,636	99,561	0
	Foreign	168,935	151,782	163,576	185,017	146,909	77,634	6,995	0	0	0	0
	TOTAL	190,940	178,414	197,887	235,202	319,679	300,805	244,326	367,411	229,773	140,825	133,459
Sablefish	Domestic	2	151	90	1,027	210	1,760	2,405	2,507	1,766	1,278	551
	JV	180	124	114	348	110	430	123	14	3	0	0
	Foreign	1,049	1,364	961	600	128	57	6	0	0	0	0
	TOTAL	1,231	1,639	1,166	1,976	448	2,247	2,535	2,522	1,770	1,278	551
Pacific Ocean Perch	Domestic	0	7	8	1,281	763	804	1,968	2,100	6,510	23,794	5,850
	JV	1	6	106	405	248	273	550	1,554	29	0	0
	Foreign	4,668	1,175	382	512	40	15	5	0	0	0	0
	TOTAL	4,669	1,188	495	2,198	1,051	1,092	2,523	3,655	6,539	23,794	5,850
Other Rockfish	Domestic	<1	3	0	61	240	194	519	282	398	1,269	1,045
	JV	7	42	75	430	426	537	612	1,059	37	0	0
	Foreign	4,332	4,731	1,811	612	90	33	7	0	0	0	0
	TOTAL	4,339	4,775	1,886	1,104	755	764	1,137	1,341	434	1,269	1,045
All Groundfish	Domestic	14,331	23,490	45,869	48,009	78,117	95,144	285,848	650,470	1,166,362	1,535,043	1,472,359
	JV	78,521	108,549	210,004	357,482	636,253	1,156,249	1,355,200	1,300,841	530,933	133,287	0
	Foreign	1,259,722	1,175,901	1,110,999	1,159,332	992,028	446,494	17,478	0	0	0	0
	TOTAL	1,352,574	1,307,940	1,366,872	1,564,822	1,706,397	1,697,887	1,658,525	1,951,311	1,697,295	1,668,330	1,472,359

^{1/} JV = joint venture

Appendix 2 -- Table 2.3. Longline groundfish landed catch (metric tons) by source in the Bering Sea/Aleutian Islands, 1981-1991.

Species Group	Source	Year										
		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Pollock	Domestic	0	0	0	0	56	103	273	53	280	1,153	463
	Foreign	176	108	188	606	1,058	580	1,740	0	0	0	0
	TOTAL	176	108	188	606	1,114	684	2,013	53	280	1,153	463
Pacific Cod	Domestic	27	4	0	7	49	48	1,389	2,564	13,950	47,491	64,987
	Foreign	6,085	3,617	6,845	27,441	37,565	26,558	47,020	0	0	0	0
	TOTAL	6,112	3,621	6,846	27,447	37,614	26,606	48,409	2,564	13,950	47,491	64,987
Flatfish	Domestic	0	0	0	<1	27	195	2,358	2,028	964	912	589
	Foreign	4,184	3,492	2,681	1,062	711	318	507	0	0	0	0
	TOTAL	4,184	3,492	2,681	1,062	738	513	2,864	2,028	964	912	589
Sablefish	Domestic	0	0	0	15	1,708	2,958	4,768	3,761	2,721	3,183	2,802
	Foreign	1,906	2,474	2,216	1,322	184	52	27	0	0	0	0
	TOTAL	1,906	2,474	2,216	1,337	1,892	3,010	4,795	3,761	2,721	3,183	2,802
Pacific Ocean Perch	Domestic	0	0	0	<1	46	0	23	15	102	35	60
	Foreign	16	9	4	1	<1	1	<1	0	0	0	0
	TOTAL	16	9	4	1	46	1	23	15	102	35	60
Other Rockfish	Domestic	0	0	0	0	10	63	246	263	275	264	527
	Foreign	94	131	129	54	29	3	6	0	0	0	0
	TOTAL	94	131	129	54	38	66	252	263	275	264	527
All Groundfish	Domestic	27	4	0	23	1,894	3,359	9,006	8,684	18,357	53,899	70,683
	Foreign	12,944	10,095	12,634	31,691	41,202	28,605	51,210	0	0	0	0
	TOTAL	12,971	10,100	12,635	31,714	43,096	31,964	60,217	8,684	18,357	53,899	70,683

Appendix 2 -- Table 2.4. Groundfish landed catch (metric tons) in the Bering Sea/Aleutian Islands, all gears combined, 1981-1991.

Species Group	Source ^{1/}	Year										
		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Pollock	Domestic	234	155	1,090	7,311	30,750	57,894	215,433	522,479	993,545	1,330,251	1,202,733
	JV	42,076	54,595	148,988	236,967	377,475	834,959	1,044,289	826,271	287,719	22,393	0
	Foreign	986,773	959,171	891,310	932,829	820,142	352,269	3,636	0	0	0	0
	TOTAL	1,029,083	1,013,921	1,041,388	1,177,108	1,228,366	1,245,122	1,263,357	1,348,749	1,281,264	1,352,644	1,202,733
Pacific Cod	Domestic	14,135	24,890	41,972	38,652	45,815	34,229	44,700	87,148	123,743	162,903	173,010
	JV	9,157	13,589	14,360	30,766	41,265	63,931	58,147	109,873	44,610	8,076	0
	Foreign	39,106	28,169	41,499	58,500	57,167	39,853	54,737	0	0	0	0
	TOTAL	62,398	66,648	97,831	127,918	144,247	138,013	157,584	197,020	168,353	170,979	173,010
Flatfish	Domestic	0	5	10	23	81	6,564	24,161	38,469	37,101	42,177	134,051
	JV	22,005	26,627	34,301	50,163	172,716	216,817	215,558	330,970	193,636	99,561	0
	Foreign	173,119	155,274	166,257	186,079	147,619	77,952	7,501	0	0	0	0
	TOTAL	195,124	181,905	200,568	236,266	320,417	301,332	247,221	369,439	230,737	141,738	134,051
Sablefish	Domestic	2	176	90	1,055	3,374	6,012	7,784	6,574	4,495	4,461	3,352
	JV	180	124	114	348	110	430	123	14	3	0	0
	Foreign	2,954	3,838	3,177	1,922	312	109	39	0	0	0	0
	TOTAL	3,137	4,138	3,382	3,326	3,796	6,550	7,941	6,588	4,499	4,461	3,352
Pacific Ocean Perch	Domestic	0	9	8	1,281	809	804	1,991	2,116	6,612	23,843	5,910
	JV	1	6	106	405	248	273	550	1,554	29	0	0
	Foreign	4,684	1,184	386	512	41	17	5	0	0	0	0
	TOTAL	4,685	1,200	499	2,199	1,098	1,094	2,546	3,670	6,641	23,843	5,910
Other Rockfish	Domestic	25	3	0	47	158	259	765	546	673	1,533	1,572
	JV	7	42	75	430	426	537	612	1,061	37	0	0
	Foreign	4,368	4,860	1,940	665	118	36	13	0	0	0	0
	TOTAL	4,400	4,904	2,015	1,142	702	832	1,389	1,607	709	1,533	1,572
All Groundfish	Domestic	14,396	25,238	46,477	48,970	81,467	105,994	295,838	659,790	1,184,893	1,590,723	1,548,526
	JV	78,521	108,549	210,004	357,482	636,253	1,156,249	1,355,200	1,300,841	530,933	133,287	0
	Foreign	1,272,667	1,185,996	1,123,634	1,191,023	1,033,230	475,099	68,688	0	0	0	0
	TOTAL	1,365,583	1,319,782	1,380,115	1,596,874	1,750,950	1,737,343	1,719,726	1,960,631	1,715,826	1,724,010	1,548,526

^{1/} JV = joint venture

Testify before the Council on June 26th
in the Centennial Building!

BAN TRAWLING IN SOUTHEAST!!

We support Amendment 26: Prohibit trawling east of 140 W. Longitude

- | Name (please print) | Signature | Address |
|--------------------------|----------------------|-----------------------|
| 1. Barbara Bingham | Barbara Bingham | Box 6112 Sitka |
| 2. Walter | Walter | Box 936 " |
| 3. Cynthia Johnson | Cynthia Johnson | 501 Verstorica Sitka |
| 4. Jane Dee | Jane Dee | 2716 #131 HPR SITKA |
| 5. Joseph Marcello | Joseph Marcello | 801 Lincoln St. Sitka |
| 6. Robert Baines | Robert S. Baines | P.O. Box 821 Sitka |
| 7. Louis Ferve Fren | Louis Ferve Fren | 716 Lake St Sitka |
| 8. Rose Gehring | Rose Gehring | 800 Phersm. |
| 9. Marjorie Foss | MARJORIE FOSS | Box 1805 Sitka |
| 10. Don Foss | Donald G. Foss | P.O. Box 1805 Sitka |
| 11. Amy K Smith | Amy K Smith | 428 Kogswater Sitka |
| 12. Randolph A West | Randolph A West | 4503 HPR Sitka |
| 13. Georgia Kite | 121 Jeff Davis | Sitka |
| 14. TERI ROFKAR | Teri Rofkar | 820 CHARLES SITKA |
| 15. Dennis B. Rofkar | Dennis B Rofkar | 820 Charles Sitka |
| 16. Frank Richards | Frank Richards | Box 1884 Sitka |
| 17. Victor Johnson | Victor Johnson | Box 1702 Sitka |
| 18. Nancy Mortensen | Nancy Mortensen | Box 1016 Sitka |
| 19. Gerald P. Poyten | Gerald P. Poyten | Box 1096 Sitka |
| 20. Chris Bergman | Christina M. Bergman | Box 571 SITKA |
| 21. Frank Shockey | Frank Shockey | Box 603 Pelican AK |
| 22. M.M. Parnasovich, Jr | M.M. Parnasovich, Jr | Box 1246 Sitka AK |
| 23. Daniel Glab | Daniel Glab | Box 6442 Sitka AK |
| Clyde Bondy | Clyde Bondy | Box 211 Wrangell AK |

over

24 Kathy Andresen Kathy Andersen P.O. Box 2266 Wrangell AK

25 John Fowler P.O. Box 2257 Wrangell AK

26 PATRICIA L. Dick Patricia L. Dick 801 Lincoln Sitka AK
99835

27 Edward J Gray P.O. Box 6378 Sitka AK 99805

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Testify before the Council
on June 26 in the
Centennial Building

BAN TRAWLING IN SOUTHEAST!!

We support Amendment 26: Prohibit trawling east of 140 W. Longitude

Name (please print)	Signature	Address
1. PATRICK DUOOD	Patrick Dood	PO Box 2391 SITKA
2. ALAN CLINE	Alan Cline	POB 1466 SITKA
3. LAURANCE C. JOHANSON	LAURANCE C. JOHANSON	Boise Idaho
4. Gordon Ceest	Gordon Ceest	PO Box 1764 Sitka
5. Gordon Hall	Gordon Hall	PO Box 1565 SITKA
6. Calvin Carlson	Calvin Carlson	332 KOGWANTAN
7. CAROLYN EVANS	Carolyn Evans	PO Box 902 Sitka
8. Brady Shafu	Brady Shafu	479 KATHOM
9. M.W. Labaree	M.W. Labaree	Box 6369 S. 74a
10. ROBERT BLAIR	Robert Blair	PO Box 584 Sitka
11. Deb Corso	Deb Corso	Box 6328 Sitka
12. MILE THOMPSON	Mile Thompson	Box 681 Sitka
13. Jim Davenport	Jim Davenport	Box 3193 Sitka
14. Trista Shoemaker	Trista Shoemaker	PO Box 3193
15. Tiffany Davenport	Tiffany Davenport	
16. F.B. Arvin	F.B. Arvin	216 Observatory St
17. VIRGINIA GUSTING	Virginia Gusting	120 Kathleen Street #164
18. Melody M. Owens	Melody M. Owens	232 Lakeview Dr Sitka
19. Linda C. Brown	LINDA C. BROWN	1948 Dodge Circle
20. MARK JACOBINA	Mark John	1011 LAKE ST. "A" SITKA
21. Ian Pounds	Ian Pounds	1321 SMC #0 SITKA
22. Corral Dan		4305 H.P.R.
23. FREDIA SAMUELSON	Fredia C. Samuelson	Box 6049 SITKA
Lynn Wayne	Lynn	Box 6348 SITKA
Henry Pelen	Henry Pelen	Box 6332 Sitka AK

- 24 Kathleen O'Sara Kathleen O'Sara box 3047 Sitka
- 25 Rebecca L. JOHNSON Rebecca L. JOHNSON 809 Charles SITKA AK
- 26 Jerry Matthews Jerry Matthews P.O. box 1018 Sitka
Dec K Hand EV charisma
- 27 Ken HELEN 305 SIRSTAD St
- 28 SCOTT SAGINE 434 KOG, WONDON
- 29 Tom Gussenbickler 326 cascade st Sitka
- 30 Harry Johnson HARRY JOHNSON Box 932, SITKA, AK 99835
- 31 Evelyn Johnson Evelyn E. JOHNSON Box 932/Sitka AK 99835
- 32 William Stortz William Stortz Box 619B Sitka
- 33 Rita Heathman Rita Heathman Box 2095 Sitka AK 99835
- 34 Leg Beam Box 1994 SITKA AK 99835
- 35 Paul B M omm 13245
- 36 Stu Fuller 110 Eberhardt Dr Sitka 99835 Box 7
- 37 David Peurifoy 1805 ENGELMUSE DRIVE SITKA, AK
- 38 Lisa Lang Jones 103 Burkhardt St Sitka
- 39 Dan Evans 611 ETOLIN ST. SITKA
- 40 ~~Mary Davis~~
- 41 ~~Al Jones~~ 507 Katlian st. Sitka
- 42 Ward M. Eldridge Jamestown Bay, Sitka
- 43 Jim Seeland James A. Seeland 312 Cascade St, Sitka
- 44 Thom Cunningham 104 Harbour Mt Rd B Sitka
- 45 Linda Strickland PO Box 1882 Sitka, AK 99835
- 46 Betty Conklin BETTY CONKLIN PO BOX 914 SITKA, AK 99835
- 47 Jo Ann Huf 1507 Edgemont on Sitka AK 99835
- 48 Douglas Takemura 6134, 2103C SMC Rd, Sitka, AK. 99835
- 49 Allen Sukhart Glen hochhart Box 6326 Sitka
- 50 Kimie Sukhart Box 6326 Sitka AK 99835
- Gold Dughey 220 Lakeview Sitka AK 99835

Mary Stotts 615 DeGroot Sitka

NO TRAWLERS!

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!!

signature

name (print)

address

- 1 Douglas Hardcastle DOUGLAS HARDCASTLE 323 Peterson Ave. Sitka
- 2 Sherie Mayo Sherie Mayo 244 Kogwonton, Sitka
- 3 Wan Christian WAREN CHRISTIANSON BA 798 "
- 4 Gary Lang GARY LANG 298 Kogwonton - Sit.
- 5 Alice Johnston ALICE JOHNSTONE 213 SAOTGAN Alley SITKA
- 6 Carelyn M. Ludlow Carolyn M. Ludlow 2220 HPR
- 7 Maria Ragone MARIA RAGONE FV Rosy Alice P.O. 6204
SITKA
- 8 Joan Kilcup JOAN KILCUP 4257 HPR SITKA AK 99835
- 9 Steve Greene STEVE GREENE GY. 3072 3484 HPR SITKA
- 10 Laurie Mastrella Laurie Mastrella POB 6407 Sitka
- 11 Margaret Hughes Margaret Hughes Bx 912 Sitka
- 12 Bob Robert L. Chevalier 333 Kathian Sitka
- 13 Jamie Chevalier Jamie Chevalier 333 Kathian Sitka
- 14 Marcia Eimers Amold Marcia Eimers Amold Box 1111 Sitka
- 15 Mike Turner Mike TURNER 1421 H.P.R. Sitka.
- 16 Tessie Coleman TESSIE COLEMAN 2413 SMC
- 17 Ed Fredrickson 679.
- 18 Donald G. Neros DONALD G. NEROS 712 ETOLIN
- 19 Hope Eldridge Hope Eldridge PO 6245 SITKA
- 20 Kayla Peralta Kayla Peralta Bx 6042 Sitka
- 21 Dan Gagnon DAN GAGNON Gen. Del. Gustavus Ak
- 22 Brian Cridge BRIAN CRIDGE P.O. Box 846 SITKA
- 23 Corrine & Mabelle CORRINE MAILLELLE 909 HPR #39

NO TRAWLERS!

We support Amendment 26: trawling east of 140 degrees west Longitude must be prohibited!!

signature	name (print)	address
1. Alice Zellhuber	Alice W. Zellhuber	616 Monastery Sitka AK 99835
2. MAMAU HAMBUR	MAMAU HAMBUR	206 SHTOWN AVE SITKA AK 99835
Jenny May		
4. J. Warren Williams	J. Warren Williams	500 Lincoln St - whale Is SITKA, AK. 99835.
5. Mill Brenner	3181 HPR	
6. Julie Brown	Julie Brown	1311 SMC COLLEGE SITKA 99835
Laura Schmitt	Laura Schmitt	Bx 1110
8. Amy J Massey	Amy J Massey	PO Box 2324 Sitka
9. Leo Johns	MELISSA Lynn	PO. BOX 48 CRAIG AK
10. Don Huse	Don Huse	Box 1258 Petersburg
11. GEORGE DORRINGTON	GEORGE DORRINGTON	Box 294 PETERSBURG AK 99835
12. Denis Richard	Denis Richard	PO Box 526 Sitka AK 99835
13. Warren C. Vaughn	WARREN C. Vaughn	203 Brady St. Sitka, AK 99835
14. Ted Hahler	Ted Hahler	Box 132 Sitka
15. Maria Tsonis	Maria Tsonis	Box 6046 Sitka
16. Sarah Jordan	Sarah Jordan	103 Gibson Sitka
17. John Tackitt	John Tackitt	P.O. 2441 Sitka
18. Ruth Thomas	Ruth Thomas	1515 Davidoff St.
19. Shirley BUCKHART	SHIRLEY BUCKHART	1613 SMC
20. Jeff C. Wheeler	Jeff C. Wheeler	Sitka
21. Mark D Bradley	Mark D Bradley	218 Lakeview DR SITKA
22. Charles E. Walker	Charles E. Walker	705 E. 6th
23. Paul A. YAWAN	PAUL A. YAWAN	Box 6143
Darlene Garrity	Darlene Garrity	3304 A HPR

24. Steve Fish Spear FPO Box 6448 SITKA AK
25. Bob Younger Mr. Gary 311 Peterson Pl, SITKA
26. Mrs. Annell John P. O'Connell Box 3085 Sitka
27. Capt J.M. Smith P.O. 8115 Port Alexander AK.
28. Sherie Mayo 244 Kogawaton Sitka
29. Alan Naffel P.O. Box 421 SITKA AK.
30. Rox Livingston P.O. Box 21085 Anch AK 99501
31. Will Jones PO Box 72 Klawock AK
32. Christi Jones PO Box 2728 Sitka AK
33. Terry Perensonich ~~Terry Perensonich~~ 506 Baranof Sitka, AK 99835
34. Joseph H Huff ~~Joe Huff~~ 1717 #3 APR SITKA
35. Eric W. Jordan ~~Eric W. Jordan~~ 103 Coibson Place Sitka, AK
36. Jamie R. Chasmod P.O. 2374 SITKA, AK
37. Melane Kalle Josephine Sitka AK
38. Scott Cassidy Box 452 SITKA
39. Michael Kalle Box 7603 Ketchikan
40. Buddy W. Wigg Box 6345 SITKA
41. Kevin W. Mayes P.O. Box 6745 SITKA
42. Charles K. Atkinson PO Box 6205
43. Dennis Starvey 417 MARINE ST SITKA
44. Leah Harvey Leah Harvey 417 Marine St. Sitka
45. Pamela Twohig Pamela Twohig 203 Airport Dr. T-13
46. Daniel Twohig ~~Daniel Twohig~~ 203 Airport Rd Sitka
47. Channing Brenholtz ~~Channing Brenholtz~~ 420 LAWRENCE Rd JACKSON MS, 39206
48. ~~Edwards~~ PO Box 6238 SITKA
49. JAN FAYNE ~~Jan Fayne~~ Box 1208 SITKA
50. JACOB WRIGHT Box 131 Hoonaq Alaska 99819

BAN TRAWLING IN SOUTHEAST!!

We support Amendment 26: Prohibit trawling east of 140 W. Longitude

<u>Name (please print)</u>	<u>Signature</u>	<u>Address</u>
1. Larry Jensen	Larry Jensen	Po Box 323 Sitka AK 99835
2. Brad Kriekhaus	Brad Kriekhaus	418 Geodetic Way #2 Sitka AK 99835
3. Annette X Mrs	Annette X Mrs	Box 323 Sitka, AK 99835
4. Dorinda Ray	DORINDA RAY	505 Vestavia, Sitka
5. Kari Johnson	Kari Johnson	200 Observatory Sitka
6. Jeanette Rutherford	Jeanette M Rutherford	9241 Dible NW Seattle WA 98117
7. Shawna R. Laderach	Shawna R. Laderach	P.O. Box 6316 Sitka
8. CEENA BANKS	CEENA BANKS	22 1/2 Sigiaka Way, Sitka
9. Laura Schmidt	Laura Schmidt	BX 1110 Sitka
10. Bruce Ullrich	Bruce Ullrich	Box 736 Sitka AK
11. SHANNON M'Ree	Shannon M'Ree	Flu Sequoia
12. ROEL JOHNSON	ROEL JOHNSON	BOX 6384 SITKA AK
13. Ebenezer Henderson	Ebenezer Henderson	Box 6472 Sitka, AK
14. TANC CASICK	TANC CASICK	2804 #18 HPR SITKA AK 99835
15. Colin Herforth	COLIN HERFORTH	P.O. Box ²³²⁸ 6384 SITKA, AK
16. Michelle B Casick	Michelle B Casick	2804 #18 HPR Sitka, AK
17. Rebecca Paulson	Rebecca Paulson	206 Seward #3 Sitka
18. Claire Cochran	Claire Cochran	P.O. 6384 SITKA
19. Caroline J. Davis	Caroline J. Davis	PO Box 1697 Sitka
20. Bob Sicard	Bob Sicard	Box 247 Petersburg
21. R ANDY Nichols	R ANDY Nichols	305 ISLANDER DR SITKA
22.		
23.		

NO TRAWLERS!

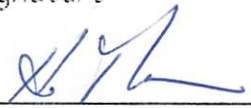





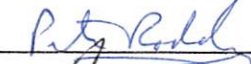

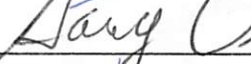

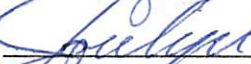

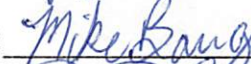

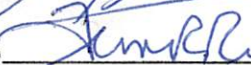






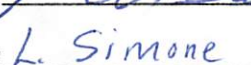
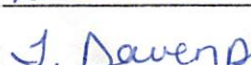
We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!!

signature	name (print)	address
1. Laurie Mastrella	Laurie Mastrella	POB 6407 Sitka
2. Ed Callen	Ed CALLEN	1902 54th St SITKA
3. Robt J Chevi	Robert L Chevalier	Box 6364 Sitka
4. Henry J. Spake	Henry J. Spake	Box 6330 Sitka,
5. Bruce Bawden	Bruce Bawden	113 Jeff Davis Sitka
6. Mik Mehl	Mik Mehl	1219 Miller St Ktn
7. Mark Nugent	Mark Nugent	Box 8141 Tokhikan AK
8. Marc Moats	Marc Moats	Box 3076 Sitka
9. Tom Madsen	Tom MADSEN	Box 681 SIT
10. William E. Morris	William E. Morris	PO Box 1172 Sitka
11. Walter Pasternak	Walter Pasternak	Box 830 Sitka
12. Ron Blake	Ron Blake	Box 6336 Sitka
13. Charlie Z. Bower	Charlie Bower	P.O. 6407
14. Ralph Crace	Ralph Crace	P.O. Box 2675 Sitka
15. Norman J. Pille	Norm Pille	3511 HPR B Sitka
16. Bailey J. Bailey	Bailey J. Bailey	Box 6018 Sitka
17. Mary Durgan	Mary Durgan	Bx 3092 Sitka
18. John Wolford	John Wolford	231 KATHIAN MI-A SITKA
19. Jim Davenport	JIM DAVENTPORT.	Box 3193 SITKA
20. Denis Richard	Denis Richard	PO Box 526 Sitka.
21. James Degett	JAMES DEGETT	125 ASHBIKOE DR SITKA AK
22. Casey Phillips	Casey Phillips	P.O. Box 6452 Sitka AK
23. Forrest Dockson	FORREST DOCKSON	607 Etolin St, SITKA, AK

NO TRAWLERS!

BAN TRAWLING IN FEDERAL WATERS E. OF 140° W.
(SOUTHEAST OUTSIDE)

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!!

signature	name (print)	address
1. 	Harold Thompson	Box 681, Sitka
2. 	RICHARD BOYCE	Box 564 HAINES
3. 	GARY GRAHAM	Box 1067 HAINES
4. 	Linda Behnken	Box 6065 SITKA
5. 	Rich Rockelone	Box 1914 SITKA
6. 	L.D. Barnes	Box 2967 Sitka
7. 	Peter Rodd	Box 6436 Sitka
8. 	JAN PAYNE	Box 1208 Sitka
9. 	GARY OINES	2414 HPR SITKA
10. 	Holly R. Lynch	Box 6263 Sitka
11. 	Jocelyn Webb	Box 21026 Sitka
12. 	RONALD G. SCHANUS	P.O. Box 432 PSG, AK.
13. 	MIKE BANGS	P.O. Box 1733 PSG, AK.
14. 	Jay Letter Filaridae	231 Kathleen M-1 Sitka, Ak.
15. 	TIM R. RYAN	207 CEDAR AVE SITKA, AK
16. 	CHARLES J. HALEY	500 LUCAN ST. #1A SITKA, AK. (504 Ocean St)
17. 	Christine Swanson	P.O. Box 2222 Sitka - AK.
18. 	Robert Lemme	3811 NW 38 th Redmond Or.
19. 	MARK SALDI	Bx 287 SKAGWAY AK
20. 	NANCY C. SALDI	Box 287 SKAGWAY AK
21. 	SPRAY	123 Anna Dr Sitka
22. 	L. Simone Machamer	P.O. Box 1802 Sitka, AK
23. 	T. Davenport	P.O. Box 3193 Sitka

NO TRAWLERS!

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!!

signature

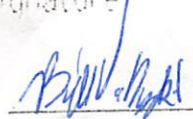
name (print)

address

- 2A
30.67
1. *Michael J Van Note* Michael J. Van Note Box 26 Haines AK
 2. *William Kennedy* William Kennedy 309 Peterson
 3. *Rachel Walker* Rachel Walker Box 6044 Sitka
 4. *Pamela Twohig* Pamela Twohig 203 airport Dr. Sitka
 5. *Stacy Lewis* 330 Wachusetts
 6. *Roger A Thomas* Roger A. Thomas 325 E. Dismal Port Angeles, wa 98362
 7. *Martha Egerton* MARTHA EGERTON #401 HPR SITKA
 8. *Cathy Hanson* CATHY HANSON 602 monastary
 9. *John C Miller* John C Miller Box 856 SITKA AK 99835
 10. *Kathy Miller* Kathy Miller Box 856 Sitka
 11. *Teri Roekar* TERI ROEKAR 820 CHARLES, SITKA
 12. *David R Pahl* DAVID R PAHL Box 702 Haines, AK 99827
 13. *Caroline Creenna* Caroline Creenna 604 O'Cain Sitka
 14. *SE Beare Spencer* SE Beare Spencer POB 95 Sitka
 15. *Eric Peterson* Eric Peterson BOX 2976 SITKA
 16. *James Currier* James Currier 479 ALICE LOOP
 17. *Mark Howey* Mark Howey Box 2786 Sitka AK
 18. *Terry Davenport* TERRY DAVENPORT 5 1/2 mile loop rd Box 157 Wrangell AK 99999
 19. *Wanna Davenport* WANNA DAVENPORT 5 1/2 mile loop rd Box 1200 Wrangell AK 99999
 20. *Peg Shea* Peg Shea Bx 174 Sitka 99835
 21. *Debi Smith* Debi Smith 151 Price St. Sitka AK 99835
 22. *John C Vallie* John C Vallie 313 Islander Dr.
 23. *Gary Moy* Gary Moy 107 Lance Dr.

NO TRAWLERS!

we support Amendment 26: trawling east of 140 degrees west Longitude must be prohibited!!

signature	name (print)	address
1 	Bill Van Dyck Jr.	249 Lokum Dr. Sitka, AK
2 Marilyn & Myron Orr	Marilyn/Myron Orr	4309 HPR
3 Gary Van Hise	Gary Van Hise	Box 6253, SITKA
4 Wade Demment	Wade Demment	316 Workman Loop Sitka
5 Roger Schmidt →	Roger Schmidt	Box 1110 Sitka
6 Jim Penny	Jim PENNY	Box 2013 SMC
7 John W. Lawson	John Lawson	322 Cascade ST.
8 Rod Beebe	Rod Beebe	619 DEGROFF ST
9 Mary M. Shorren-Broschat	Mary M. Shorren-Broschat	215 Kinkham Hikka
10 Dawn & Young	DAWN & YOUNG	Box 2016 Sitka
11 Erin Donohue	Erin Donohue	2309 HPR #27
12 David Hendrickson	David Hendrickson	414 Andrews
13 J.D. Bando	J.D. BANDO	D-17 Sealing Harbor
14 Terry Perensovich	Terry Perensovich	506 Baranof
15 J.L. Perensovich	Joanna Perensovich	506 Baranof St -
16 ELVIS		
17 Russ EAGER	Russ Eager	253 Thomas SW.
18 Leah Hawley	Leah Hawley	Box 6152 Sitka
19 Lorraine Carter	LORRAINE CARTER	POB1491 Sitka
20 Roslyn Bailey	Roslyn Bailey	700 Biorkeg
21 Lynelle Jolley	Lynelle Jolley	Box 282
22 Bonnie Grant	BONNIE GRANT	117 New Arch,
23 M. Harris	B E HARRIS	264 KATHAN

NO TRAWLERS!

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!!

signature

name (print)

address

1. Sherid Boggs Sher Boggs 2309 H.P.R. #3 Sitka AK
2. John Hallum John Hallum 617 Kathleen E-39 Sitka
3. Helen Burns Helen Burns P.O. Box 6145 Sitka
4. Sue Bone Sue Bone P.O. Box 934 Sitka
5. Esther Fish ESTHER FISH 316 B WACHUSETTS SITKA
6. Peggy K Campbell Peggy K Campbell 2604 SML Rd. Sitka
7. Gordon J. Helem GORDON J. HELEM 1107 HPR SITKA
8. James P Phillips JAMES Phillips 1203 S.M.U.
9. Jeri Blomgren JERI Blomgren Box 1974 Sitka
10. Bruce Elgin Bruce Elgin 1105 HPR Sitka
11. ~~Wanda Strang~~
12. Tim W Riley TIM W RILEY 507 PARK STREET
13. Larry Calvin LARRY CALVIN 214 NEVA ST SITKA
14. ~~Pat~~ Pat
15. Maryann Calvin MARYANN CALVIN 214 NEVA ST. SITKA-AK.
16. Fred E Reeder FRED E. REEDER 107 Sheldrake Dr SITKA, AK
17. Libby Stortz LIBBY STORTZ 209 Observatory Sitka AK
18. Evonne Johnson Evonne Johnson 147 Price Letter F.S.K.
19. Toni Collins Toni Collins 204 Cascade Cirk Rd
20. Joan Johnson Joan Johnson 507 804 Lake St.
21. Fred Barclay FRED BARCLAY 701 Bionka
22. Jim King James King P.O. 2363 WRG 99929
23. Tamir Weissberg Tamir Weissberg 309 Cascade St Sitka
- 423 Vermont Sitka
24. John Miller 231 Kathleen M-37 Sitka AK
25. Beckinda Jones 718 MEYSON ST Sitka AK
- Ann Brennan 1006 G ST. ANCHORAGE, AK 99501

AMENDMENT

BAN TRAWLING IN SOUTHEAST!!

We support Amendment 26: Prohibit trawling east of 140 W. Longitude

Name (please print)	Signature	Address
1. Jo Ann W. Huff	Jo Ann W Huff	1507 Edgcombe Dr. Sitka
2. AL CHEESNUT	Al Cheesnut	Box 1094 - Sitka AK 99835
3. Dawn Gillman	Dawn Gillman	231 Katlian St 2-15
4. Jay Gillman	Jay Gillman	231 Katlian St 2-15
5. DEMARIE WOOD	Demarie Wood	Po Box 2391 Sitka
6. Michael Kerrigan	Michael Kerrigan	506 Baranof St Sitka
7. Clara Grutter	Clara Grutter	106 Oceaview Sitka
8. Joann Torgeson	Joann Torgeson	4017 HPR Sitka
9. Roger Hulce	ROGER HULCE	SHELTON, WASH
10. DUANE TORGESON	Duane Torgeson	4017 H.P.A. SITKA
11. KEN GROSS	Ken Gross	6163 SITKA
12. Cyndi Casedy	Cyndi Casedy	POB 452 SITKA
13. Carolyn Nichols	Carolyn Nichols	305 Islander Dr Sitka
14. Annette + Brian Blankenship	Annette + Brian Blankenship	104 Chirikof Dr.
15. Jon Knouse	JON KNOUSE	326 4th St #102 JUNO, AK
16. Joanna Perensovich	J Perensovich	506 Baranof St. Sitka
17. Kerry Chamber	Kerry Chamber	231 KATLIAN ST # 2-11 SITKA
18. PATRICK WOOD	PATRICK WOOD	POB 2391 SITKA
19. Charles W. Weller	Charles Weller	205 Eldon St Sitka
20. Eric Blankenship	Eric Blankenship	104 Chirikof
21. Beverly Chesnut	Beverly Chesnut	606 Merrill St Sitka
22. MARK KIRCHHOFF	MARK KIRCHHOFF	PO BOX 8060 PORT ALEXANDER
23. Neil Huff	Neil Huff	1507 Edgcombe

6-12-88

I would like to bring to the councils Attention the situation my crew and I encountered during the most recent halibut opening (5-2-88). First of all, I would like to state that I've been operating my own halibut boat for 13 seasons. For the last 8 seasons we have fished almost exclusively at one location; the same loran numbers, the same depths, at about the same time of year. This location is about 50 miles west of Yakutat. Each year the catch per effort has increased, as the enclosed logbook information shows. This last halibut opening was a different story.

We arrived at the "grounds" shortly before the opening to find the "American Enterprise" dragging the area. Also nearby was the "Bristol Enterprise". Since the ocean floor in that particular spot is fairly rugged, I felt that some of the bottom may have been untouched, so I set gear anyway.

Last year at this same location, we landed about 13,000 lbs. on the first 10 skate string. This year, on the very same set, we hauled 5 skates before catching a single halibut or any other

species of fish. On 30 skates of gear only two had good results.

I cannot prove that these trawlers or any other trawler wiped out the halibut in this area. Hopefully, many are chased into deeper or shallower water. I have no way of knowing and apparently without an observer program, you do not either. I do know from some experience of my own on a dragger, that very few halibut caught in a trawl are thrown back to the ocean alive.

I realize that the Americanization of the trawl fleet is a blossoming industry and a benefit to the American economy; However, do not ignore the possibility that this industry is beginning to have adverse effects upon the longliners and shore processors of Alaska. Only in the last dozen years have halibut and sablefish stocks rebounded from the devastation of the foreign trawl fleets. No one can deny this! It appears that the devastation has begun again, and only you can do something about it.

Obviously, there are species of fish that are best harvested with trawls (perch, Flounder, etc.). There is a place.

for these fisheries, but not on traditional halibut grounds (Seward gully, Portlock Bank, W grounds, Spencer Spit, etc.) I urge the council to consider closing such areas to bottom trawling, before it's too late. At the very least, bottom trawling these areas should take place after the traditional spring longline seasons. This would give longliners first chance at the halibut, meaning less waste. Also gear conflicts and hard feeling could be eliminated between two gear groups that are not compatible. Thank You

Sincerely,
Bob Sicard
F/V Talon
Box 247
Petersburg, AK.
99833

6-16-83	to	6-21-83*	104	skates	34,000	lbs.
5-21-84	to	5-25-84*	75	skates	38,000	lbs.
4-27-85	to	4-29-85	38	skates	32,000	lbs.
5-27-85	to	5-29-85	49	skates	22,500	lbs.
5-1-86	to	5-3-86	39	skates	32,000	lbs.
5-29-86	to	5-31-86	50	skates	27,000	lbs.
5-4-87	to	5-5-87**	20	skates	22,000	lbs.
5-2-88	to	5-3-88**	30	skates	5,300	lbs.

* Unloaded during trip

** Tough weather

Submitted w/
ALFA
testimony

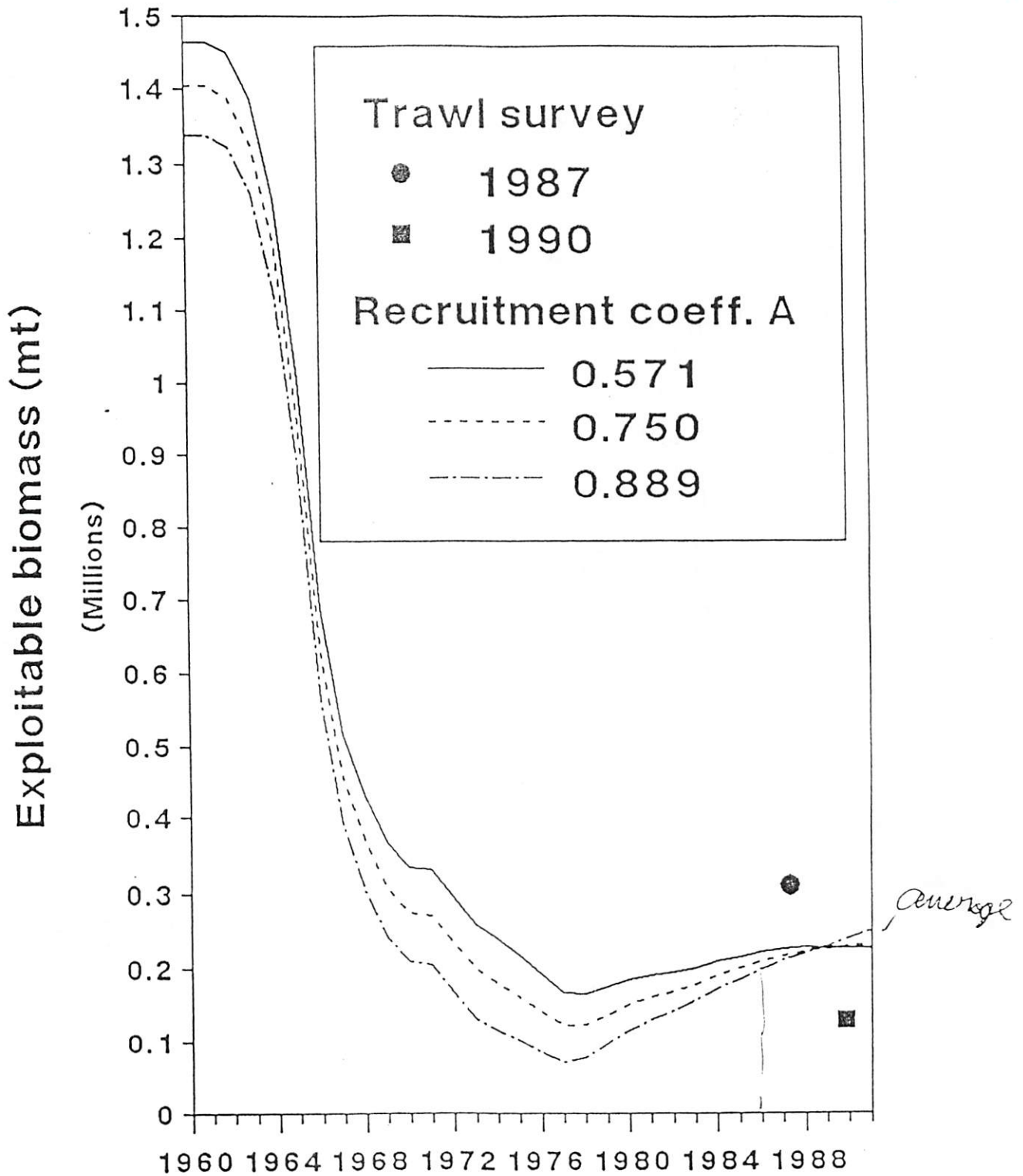


Figure 5-5.--Exploitable biomass of Pacific ocean perch in the Gulf of Alaska, 1960-1991, based on stock reduction analysis (SRA).

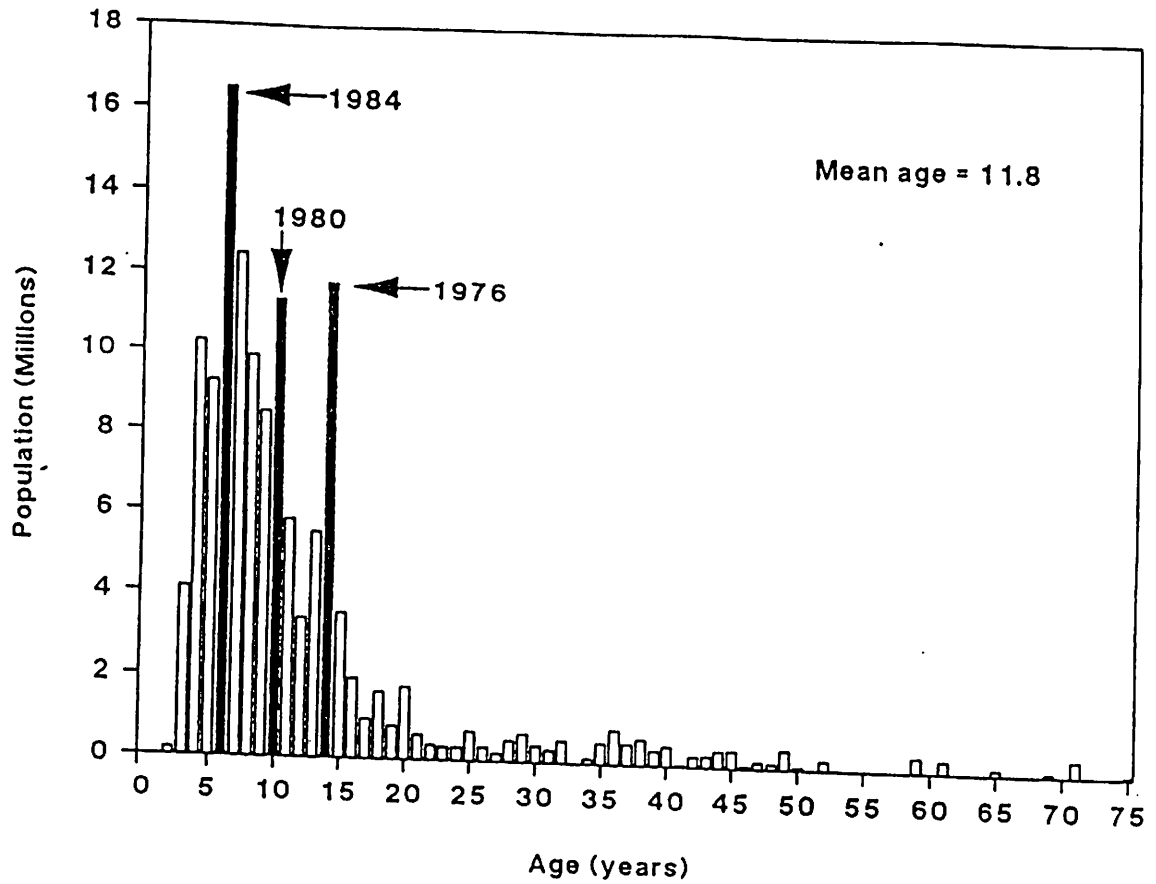


Figure 5-4.--Age composition for the estimated population of Pacific ocean perch in the Eastern Regulatory Area of the Gulf of Alaska, based on results of the 1990 triennial trawl survey.

Review of Tapes/Video from Linda Behnken's testimony on Amendment 26; June 27, 1992

Clarence: I did not transcribe the total testimony and questions; I did listen to them, plus watched the video. There was no mention of anyone actually saying that damage to the bottom by trawls was documented. All that was mentioned were the deep furrows made by the trawl gear.

Beginning of video: [sound was not working]

Lauber: Now, what is that we're looking at?

Behnken: There's some audio that describes it (no audio at this time).

Falvey: About 700 feet down, that'd be about 130 fathoms and some of the smooth-bottom habitat.

Behnken: Trawl tracks. . .(inaudible). . .can you get the volume to go up?

Lauber: And what is that we're looking at there?

* Behnken: Those are trawl tracks that you see from the doors and the audio estimates that they're three to four feet deep digging into the bottom and that there's row after row of them throughout the area. . .that's another door mark there. This is a coral area, southeast, this is also 700 fathoms. As they go through there on the audio they're counting rockfish, there's mostly juvenile POP, there's yelloweye, some other unidentified brown rockfish at the end of it that they estimate that they say 750 red rockfish, many of which were unidentified as they went through this area. Now the big coral tree that's coming up is ???, the red-tree coral that you see in the back, there's another picture of it. Generally that's one of the corals that was piled on the deck of Alaska I and another dragger that was brought in after losing power.

Lauber: How tall are those, do you know?

Falvey: I would estimate that they can get to be three, four, five feet.

Behnken: These were about three feet.

[video sound comes on but can't hear through tapes]

Lauber: Any questions?

Behnken: Can I wrap up? [OK] At the recent UNSED?? Conference participating nations agreed that, quote, . . .[unclear]. . .should commit themselves to conservation and sustainable use of living marine resources, promote the development and use of selective fishing gear, preserve rare or fragile ecosystems as well as habitats and other ecologically sensitive areas." Southeast Alaska's nearly century-long tradition as a productive hook and line area provides evidence that hook and line fishing is an appropriate sustainable means of harvesting the Southeast marine resources. Hook and line gear is selective and low impact; Southeast is geologically and ecologically unsuited to high-volume, non-selective gear such as trawls. The United Nations has served notice that fisheries management must follow a new directive, one which must promote sustainable selective gear that protects critical habitat. Amendment 26 is consistent with this new directive. ALFA has a long history of supporting conservation measures and working to develop management solutions. We've been willing to compromise; we have at times taken the lead in developing middle-ground solutions. In this issue we've reviewed the alternatives; we've considered the compromises, but on this issue we see no workable compromises. If we had asked for a trawl closure east of 147°, then this would be allocative and a resource grab. We're not asking for 147°, we're asking for east of 140°. This is our backyard; this area is distinct. It is the area that supports Southeast's 22 coastal communities. On behalf of

the long list of organizations and individuals that support the Southeast trawl closure, we request that the Council adopt Alternative 2 of Amendment 26. I'll be happy to answer any questions.

Pennoyer: Linda, the video tape is certainly impressive and those coral are beautiful and they certainly are an integral part of the habitat. Can you give us any idea of the distribution of that habitat? As Mr. Pereyra asked earlier, is a total ban a requirement or is there a way for the two gears to operate within selective areas? Generally we've heard that POP being the major target, and putting aside for the moment the question of how we're going to set the TAC for POP because we still have to decide that, being a major species for the trawl fishery is largely on smoother bottom. I don't know if that's differentiable or there are certain areas of Southeastern that are more of a problem than others, I know you've seen coral come in on boats and I know you've seen it come in on longlines, we know it occurs, but how much is occurring? Is it a major problem, is there any way to define that? Or is this just simply to offset a potential problem?

Behnken: Well, let me start with the first part of that question as I understand it. I think there are couple of things to consider here. The first is the shelf is extremely narrow and that all the area here is limited; the smooth bottom habitat is particularly limited and as the analysis notes, that tends to concentrate any trawl effort that occurs here into that area so it's hit repeatedly. David Slater, who was the pilot of that submersible said to me, he said "I'm not a scientist but as I see it, in that smooth-bottom area, there is just furrow after furrow. Whatever benthic community used to be there is probably no longer intact because that area has been plowed through so extensively." [end of "quote" I think] I think all of us who have fished out there are aware that it's very difficult to separate between the smooth bottom and the sticky bottom because the area is so compressed. As you gain experience fishing out here you can selectively fish with a longline, you can stay on a smooth bottom, but as soon as the grounds have gotten crowded, even the longliners have gotten pushed into those coral areas simply because there's such an abundance of them. And the part to your question, I think from what we've heard from Fishing Company of Alaska who have gone to plan team meetings and have pushed for raising TACs for these rockfish species, is that they're no longer staying in those smooth-bottom areas. They're starting to move into the rougher-bottom areas to target the roughey shortraker, that they're capable of fishing those areas, that they feel that the triennial trawl surveys are underestimating the amount of fish out there simply because they're staying. . .they do avoid the rough bottom areas. So, they are going to those rough bottom areas where there are corals and if you think about the fact that in the triennial trawl survey where they try to avoid corals, even they manage to pick up some tows that have pretty significant amounts. I mean, there's one tow that had 4,000 lbs per hour. It is difficult to quantify. I mean, I recognize that we'd all like to have better information than we have now, but looking at the charts, listening to testimony, the two trawlers that have been brought in here where it's been looked at have had . . . that's red tree, on their deck, the observer data notices that there's a lot of invertebrates and corals; the triennial trawl survey provides information that there's corals. I don't think there's really room down here for that kind of non-selective gear.

Falvey: Just one more thing. I think I read in the analysis that one of the studies they cited on the impact of trawl gear concluded that the magnitude of impact is a direct function of the number of times the same area is worked by trawl gear. I think it also noted that there is very limited trawlable area out here, or what they call trawlable area, so those areas are going to be worked very hard so the impacts will increase, and that's something that's very different about this area. And my experience is, as a fisherman working out on the edge, it's rocky from the beach all way out to the break and it goes down; there's a couple of deepwater gullies that come up that have something of a smooth bottom, but they're real narrow and hard to stay in even with longline gear. When you get out around 450 or 500 fathoms out there, then it starts to flatten out a little bit and you kind of get out of that and I don't really know how many vessels are trawling in 500 fathoms.

-----more questions/answers; listened, but didn't transcribe. No statements regarding trawlers actually causing damage to bottom other than the corals brought up in trawl survey-----

NO TRAWLERS!

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!! **BAN TRAWLING OFF SOUTHEAST!!**

signature

name (print)

address

1. Robert L. Hunley Robert L. Hunley Gen. Del. Meyers Chuck AK
2. T. Eldred Ledyard T. Eldred Ledyard Box 8869 Port Alex. 99836
3. Linda Hoven LINDA A. HOVEN Box 826 Port Alexander, AK.
4. Laura Rideout Laura L Rideout BOX 8063 Port Alexander, AK
5. Scott W. Rideout Scott Rideout Box 8063 Port Alexander, AK
6. Marty L. Remund Marty Remund Box 8147 Port Alexander, AK. 99836
7. Jean A. Remund Jean Remund Box 8147 Port Alexander, AK. 99836
8. Barbara A. Geno Barbara A. Geno Box 8081 Port Alexander, AK. 99836
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10. Arth H. Ellis P.O. Box 8022 P.A., AK 99836
11. Sandra S. Lange Sandra S Lange Box 8085 Port Alexander, AK 99836
12. David D. Gifford David D Gifford P.O. Box 8125 POX AK 99836
13. Debra Rose Gifford Debra Rose Gifford P.O. Box 8125 Port Alexander, AK 99836
14. Mary K. Reynolds MARY K. Reynolds P.O. Box 8256 P.A. AK. 99836
15. James Hendricks James HENDRICKS P.O. Box 8756 P.A. AK
Glen Brecher
16. Lorraine Hughes Lorraine HUGHES Port Alexander AK
17. Lorraine Hughes Lorraine HUGHES Box 8056 Port Alexander AK. 99836
18. John C. Hughes John C. Hughes Box 8056 Pt. Alexander AK 99836
Sharon Wilson
19. Sharon Wilson Sharon WILSON BOX 8032 Pt Alexander, AK 99836
20. Billie L. Wilson BILLIE WILSON P.O. Box 8032 P.A. AK 99836
21. Dave Turcott DAVE TURCOTT Box 8145 P.A. 99836
22. Cynthia Turcott Cynthia Turcott Box 8145 P.A., AK 99836
23. John Lee John Lee Box 8143 P.A. AK 99836
- DALE L. ADAMS DALE L. ADAMS P.O. BOX 6021 SITKA 99835
- Ken Bellows KEN BELLOWE Box 204 SITKA 99835



NO TRAWLERS!

PETITION TO PROHIBIT TRAWLING IN FEDERAL WATERS EAST OF 140° W.

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!!

signature

name (print)

address

1. Jaimane Scanlan TAIMANE SCANLAN TKE SPGS
2. Diana Pegues Diana Pegues Tke Spgs AK.
3. Barbara Scanlan Barbara Scanlan Shamrock Apt. TKE
4. Joe Daniels Joe Daniels 71 CORAL Sea - Ketchikan, AK
5. Don Pegues DON PEGUES TKE SPGS AK
6. Ruth Craine Ruth Craine TKE SPGS AK
7. Jim McBean Jim McBean TKE Spgs AK
8. Judy McBean JUDY McBEAN TKE, AK
9. Diane M. Ziel Diane M. Ziel TKE AK
10. John Christenough JOHN CHRISTENOUGH TENAKEE AK
11. Mary Almy MARY Almy TKE, AK 99841
12. Shelly Wilson Shelly Wilson TKE AK 99841
13. Nancie Litterer NANCIE LITTERER TKE 99841
14. Katy White Katy White TKE, AK 99841
15. Robert A. Pevas ROBERT A. PEVAS 1551996 TENAKEE SPRING, AK 99841
16. T.J. Clark T.J. CLARK BOX 14 TENAKEE AK 99841
17. Victor Byrd Victor Byrd BOX 611 Tenakee AK 99841
18. Maude F. Parker MAUDE F. PARKER 333 Redrock Dr
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19. Dale R. Ziel DALE R. ZIEL TKE, AK
20. Gene P. Norton GENE P. NORTON Box 531 TKE, AK
21. Darcie Ziel Darcie Ziel TKE, AK
22. Judy Ziel - TKE, AK.
23. Diane Church Diane Church Tenakee, AK
24. Vicki Wisenbaugh Vicki Wisenbaugh Tenakee AK 99841
25. Frank Davis FRANK DAVIS TENAKEE SPGS AK 99841
26. Patricia Metcalf Patricia Metcalf Box 34 Tenakee Springs AK 99841
27. Edna Paddock EDNA PADDOCK BOX 565 Tenakee Spgs AK 99841
28. Bob Allison

29 30 31 32 33 34 35 36 37 38 39 40
Tosin Rivke Box 506 Tenaka AK

No TRAWLERS!

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!!

signature	name (print)	address
1. <u>Mark Danke</u>	Mark Danielson	PO Box 782 Sitka AK 99835
2. <u>Kirk Wollin</u>	Kirk Wollin	Box 1906 SITKA, AK.
3. <u>Daniel Glaab</u>	Dan Glaab	Box 6442 Sitka AK
4. <u>John Blycraft</u>	John Blycraft	Box 6277 Sitka AK
5. <u>Mike Upcraft</u>	Michael Upcraft	719 S.Mc. Sitka AK.
6. <u>Jay Skordal</u>		
7. <u>Eric Robinson</u>	ERIC ROBINSON	Box 8045 Port Alexander AK
8. <u>Sam Whelan</u>	Sam Whelan	Box 2202 Sitka AK
9. <u>Lynne Messerer</u>	Lynne Messerer	618 Merrill Sitka, AK
10. <u>Mike Knauus</u>	MIKE KNAUSS	PO Box 211 Sitka AK
11. <u>Paul Schreiber</u>	Paul Schreiber	231 Kellan M-G Sitka AK
12. <u>David Coleman</u>	David A. Coleman	PO Box 6082, Sitka, AK.
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14. <u>John H. Littenfield</u>	JOHN H. LITTENFIELD	PO Box 2212 SITKA, AK 99835
15. <u>Phillip A. Jacobs</u>	Phillip A. Jacobs	PO Box 1532 SITKA, AK 99835
16. <u>Tom Gamble</u>	Tom Gamble	Box 2392 Sitka, AK.
17. <u>Asbjorn Bo</u>	ASBJORN BO	Box 650. DOUGLAS, AK.
18. <u>Mim Robinson</u>	Mim Robinson	Box 8045, Port Alexander 99835
19. <u>William Church</u>	William Church	Box 1466 Sitka AK 99835
20. <u>Carl Sangster</u>	Carl Sangster	Box 1954 Sitka AK 99835
21. <u>Dennis Beam</u>	DENNIS BEAM	Box 24 SITKA AK, 99835
22. <u>Joseph K. Donohue</u>	JOSEPH K. DONOHUE	1715 EDGECLIFFE SITKA AK 99835
23. <u>Avery Simmons</u>	AVERY SIMMONS	2025 H.P.R. SITKA, AK.

Please come testify on June 26
in the Centennial Building!

6/27/92

BAN TRAWLING IN SOUTHEAST!!

We support Amendment 26: Prohibit trawling east of 140 W. Longitude

Name (please print)	Signature	Address
1. David Seeley	David Seeley	725 Siginaha Way
2. Frank Meyer	Frank Meyer	1804 701 SMC.
3. Janice M. Donnelly	Janice M. Donnelly	POB 1271 SITKA
4. Ben Mitchell	Ben Mitchell	103 Dawin
5. Stacy Woolsey	Stacy Woolsey	1301 Edgcombe Drive
6. Jane Seese	Jane Seese	114 HMR Sitka AK
7. Debra Dozier	Debra Dozier	1709 NPR SITKA
8. Mark Rawley	Mark Rawley	1709 #29 HPR
9. Mike R. Turner	Mike Turner	1421 H.P.R. Sitka
10. Maria Seese	MARIA SEESE	114 HMR SITKA
11. Charles E. Wilber	Charles E. Wilber	705 #104
12. Cheryl Creek	Cheryl Creek	PO 822 Sitka
13. Joyce Bowen	Joyce Bowen	310 Manning St, Sitka
14. Pat Burwen	Pat Burwen	1302 #10 S.M.C. SITKA
15. Julie Butler Duggott	Julie Butler Duggott	BOX 1816 SITKA AK 99835
16. Kelley M. Whitson	Kelley M. Whitson	Box 1456 Sitka AK 99835
17. Tamara Blood	Tamara Blood	Box 2391 Sitka 99835
18. Nelson D. Frank	Nelson D. Frank	623 De Grotf 99835
19. Karen L. Johnson	Karen L. Johnson	617 Kathleen #A-3 SITKA 99835
20. Kathryn Kyle	Kathryn Kyle	2213 SMC, Sitka 99835
21. John E. Dapcevic	John Dapcevic	1505 HPR SITKA
22. R.A. Self	RA SELF	1101 Shotoun Alley
23. Byron Lesch	Byron Lesch	2026 HPR
Frances Edgcomb		231 Lane Dr.
LINDA GUNN	Linda Gunn	
GARY WULF	Gary Wulf	
		PO 2943 HOMER PO. Box 6342 SITKA

2/27/92

↓
over

24 ~~Janet D. Key~~ 509B O'Leary, Sitka, AK 99835

25 JODIE EDSON PO 2383 SITKA, AK 99835

26 Valerie X Nelson Box 1356 " "

27 NINA PIPER Box 132 SITKA

28 Bann Edenslow Box 607 SITKA

29 JEFF PEARSON 212 OBSERVATORY SITKA, AK 99835

30 KATHLEEN BARNES ~~Boys~~ Lifesaver Dr SITKA AK 99835

31 Natasha Calvin N. Calvin ^{Box} 2966 Sitka

32 Maman Allen 617 Katlian, B-33 Sitka AK 99835

33 Bill Curtin 1604 Davidoff #5 SITKA AK 99835

34 Jill Hanson Jill Hanson 3702 HPR Sitka

35 ROBERTA FLETCHER Roberta Fletcher 508 Andrews

36 Ruth Leonard Box 461 SITKA AK 99835

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