

Apportionment of BSAI Pacific Cod Sector Allocations Between BS and AI Areas

Discussion paper

February 2011

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1.1 Introduction

The proposal to establish separate Pacific cod sector allocations between the Bering Sea (BS) and Aleutian Islands (AI) management areas was originally included as part of BSAI Amendment 85, but was removed from the amendment package prior to final action¹ (see Section 1.2), in order to allow the Council to evaluate this complex action on a separate timeframe. At its December 2008 meeting, the Council received a discussion paper on dividing BSAI Pacific cod sector allocations between the BS and AI, based on the alternatives that were originally evaluated in BSAI Amendment 85. During discussion, it was agreed that the upcoming release of the draft 2010 Steller sea lion Biological Opinion (BiOp) could significantly affect the proposed action; therefore, the Council opted to discuss the direction of the action after the Council received the BiOp and the final reasonable and prudent alternative (RPA). With the draft BiOp released on August 2, 2010, and the final BiOp and formal RPA released in December 2010, the Council scheduled another review of the discussion paper at its February 2011 meeting.

This paper is intended to provide background information for discussion of the management implications of establishing separate Pacific cod sector allocations in the BS and AI. Currently, Pacific cod is managed on a BSAI-wide basis, and there are nine separate industry sector allocations established to divide the ITAC, in addition to the CDQ allocation. The paper begins with a description of the problem statement and existing alternatives followed by an overview of past Council action on apportioning BSAI Pacific cod allocations. The discussion paper also includes an overview of LLP area endorsements by sector, an update on the State water Aleutian Islands Pacific cod fishery, a brief description of the harvest distribution for Pacific cod between BS and AI by sector, a description of halibut PSC mortality in the BSAI Pacific cod fishery, an overview of Steller sea lion issues associated with proposed action, and finally, a description of the effects of the existing alternatives on the sectors. This paper has been updated to include harvest data through 2009.

At the February 2011 meeting, the Council is scheduled to evaluate the BSAI Pacific cod TAC split issue. The Council may determine whether to initiate an analysis to establish separate BS and AI sector allocations, should the BSAI Pacific cod ABC and TAC be split into separate areas in a future specifications process. If the analysis is initiated, the Council should determine whether the current problem statement and alternatives are sufficient for consideration. The Council may also determine not to take action at this time.

1.2 Problem Statement and Alternatives

The original problem statement is provided below. The problem statement addresses the need to establish a methodology by which to maintain the nine existing sector allocations while recognizing that the cod gear sectors have different catch history and dependency on the two areas. The problem statement is premised on the need for the Council to be proactive in determining area-specific allocations by sector, should the BSAI Pacific cod TAC be apportioned between the BS and AI areas during a future specifications process.

Problem Statement: Apportionment of BSAI Pacific cod sector allocations between BS and AI

In the event that the BSAI Pacific cod ABC/TAC is apportioned between the BS and the AI management areas, a protocol needs to be established that would continue to maintain the benefits of sector allocations and minimize competition among gear groups; recognize differences in dependence among gear groups and sectors that fish for Pacific cod in the BS and AI; and ensure

¹Council final action was April 9, 2006. BSAI Amendment 85 was effective starting in 2008.

that the distribution of harvest remains consistent with biomass distribution and associated harvest strategy.

This discussion paper reviews the four alternatives originally proposed for this action. The intent of each alternative is to provide direction to NMFS regarding how to establish sector allocations in the BS and AI management areas prior to separate TACs being issued in the annual specifications process. Absent this direction, there is concern that the time necessary to undergo an analysis and notice and comment rulemaking after the TAC is divided would cause significant disruption of the Pacific cod fisheries for several years. If direction is not provided to NMFS, and the BSAI ABC/TAC is split, the default scenario to establish BS and AI sector allocations is provided as one of the alternatives (Alternative 3). The public and Council have raised concerns about this methodology being the only potential solution by default.

The Council has approved the following alternatives to-date, based on the alternatives that were originally evaluated in BSAI Amendment 85. Options 2.1, 3.1, and 4.5, were added at a later meeting (see Section 1.2).

ALTERNATIVE 1: No action. A methodology to apportion the BSAI Pacific cod allocations to the jig, trawl, and fixed gear sectors between the BS and AI subareas would not be selected.

ALTERNATIVE 2: Sector allocations remain as BSAI (with BS and AI TACs)

No allocation to a sector of a specific percentage of a sub-area. Sectors would have a BSAI allocation to fish in either sub-area (BS and AI) if the sub-area is open for directed fishing and TAC is available.

Option 2.1 Upon splitting the BSAI Pacific cod sector allocations between the Bering Sea and Aleutian Islands, separate BS and AI LLP area endorsements would be converted to BSAI area-wide endorsements for the Pacific cod fishery.

ALTERNATIVE 3: BS and AI sector allocations based on equal percentage from BSAI sector allocations

This alternative provides an allocation to a sector of equal percentage in both sub-areas. The allocation percentage of BSAI TAC a sector receives would result in that same percentage being applied to both the BS and AI sub-areas so that a sector would have the same percentage in both sub-areas.

Option 3.1 Upon splitting the BSAI Pacific cod sector allocations between the Bering Sea and Aleutian Islands, separate BS and AI LLP area endorsements would be converted to BSAI area-wide endorsements for the Pacific cod fishery.

ALTERNATIVE 4: BS and AI sector allocations based on a sector's historic harvest in the AI with remainder of sector's overall BSAI allocation to be caught in the BS. Sector's BSAI allocation is maintained and used in annual calculation.

Option 4.1 1995–2002
Option 4.2 1997–2003
Option 4.3 2000–2003
Option 4.4 2002–2003

- Option 4.5 Upon splitting the BSAI Pacific cod sector allocations between the Bering Sea and Aleutian Islands, separate BS and AI LLP area endorsements would be converted to BSAI area-wide endorsements for the Pacific cod fishery.

Note that methods to apportion the BSAI Pacific cod CDQ reserve between the BS and AI areas are not included in this discussion paper, as the alternatives only apply to the non-CDQ fisheries. The regulations for the current CDQ reserves are at 50 CFR 679.20(b)(1)(iii). Paragraph (C)(1) addresses the apportionment of the overall CDQ groundfish reserves by TAC category, and (C)(2) addresses how to modify the CDQ reserves if overall TACs are split or combined during the final harvest specifications. NMFS has operated such that if a new TAC is established, the CDQ Program receives a 10.7% allocation, unless a species is explicitly allocated at a different percentage (e.g., pollock under the AFA) or explicitly not allocated to the program (e.g., squid). Thus, if the BSAI Pacific cod TAC is split into BS and AI area TACs, under the status quo allocations, the CDQ Program would receive 10.7% of the BS TAC and 10.7% of the AI TAC.

1.3 History of the Pacific cod area apportionment action

As stated previously, apportionment of BSAI Pacific cod sector allocations between the BS and AI was originally included as part of BSAI Amendment 85. However, at final action in April 2006, the Council removed the apportionment of BSAI Pacific cod sector allocations from Amendment 85. The primary reason for this decision was the considerable concern and/or complexity associated with all of the existing alternatives. The Council received extensive public testimony on this issue, almost all of which recommended that additional or new alternatives were needed, and that the development of new alternatives should not delay establishing the overall BSAI Pacific cod sector allocations under Amendment 85. However, no new alternatives were suggested by the public or proposed by the Council. Recognizing the importance of the issue, the Council removed this action from Amendment 85 and tasked staff to prepare a discussion paper on the issue for the October 2006 meeting, in order to develop new alternatives or variations of the existing alternatives.

In October 2006, the Council requested staff continue refining the discussion paper on apportionment of the BSAI Pacific cod sector allocations for review in February 2007, by incorporating: (1) 2004 - 2005 catch history in the background section, (2) a new option to each of the alternatives that would convert separate Bering Sea and Aleutian Island LLP area endorsements into single BSAI area-wide endorsements for the Pacific cod fishery, in the case there is a Bering Sea and Aleutian Island split, and (3) fishmeal production data.

In February 2007, the updated discussion paper was presented to the Council. At that meeting, the Council voted to postpone any further action on apportioning BSAI Pacific cod sector allocations between the BS and AI areas until February 2008, pending additional information from the trawl latent license action (BSAI Amendment 92) and ongoing BSAI Pacific cod biological research.

At the February 2008 meeting, the discussion paper was scheduled to be presented to the Council. However, the Council postponed a review of the issue due to time constraints. The SSC and AP reviewed new biological research conducted in the past year and recommended that a comprehensive summary of relevant information related to stock structure be prepared for review by the BSAI Groundfish Plan Team in September and reviewed by the SSC in October 2008.

In response to this request from the SSC in February 2008, staff at the Alaska Fisheries Science Center compiled all available evidence for separate Pacific cod stocks in the AI and BS for presentation at the October 2008 meeting. After review of this information, the SSC noted there was sufficient justification for a split in BSAI Pacific cod between the BS and AI areas. The SSC recommended that a precautionary

approach should be taken by specifying separate ABCs for BSAI Pacific cod. The Council, in response to the SSC’s recommendation and in anticipation of further recommendations during the final specifications at this December 2008 Council meeting, tasked staff to bring back this discussion paper reviewing the problem statement and effects of the alternatives for apportioning each sector’s BSAI Pacific cod allocation between the two areas.

In February 2009, the Council approved the creation of a committee to begin looking at the issues involved. Since that time, review of the issue has been delayed due to the anticipation of the potential effects of the Steller sea lion Biological Opinion on the Pacific cod fisheries in the BSAI. In December 2008 and February 2009, the Council was aware of the complications that might be created if the FMP BiOp, then under development, included an RPA that modified the management of BSAI Pacific cod, and it believed it necessary to see the BiOp, before making decisions about Pacific cod.

The draft BiOp was released by NMFS in August 2010, and concludes that the status quo BSAI and GOA Pacific cod and Atka mackerel fisheries jeopardize the continued existence of the endangered western population of Steller sea lions and adversely modify its critical habitat. The Council reviewed the draft BiOp and the proposed RPA in August, and did not support the proposed RPA, which would close the Atka mackerel and Pacific cod fisheries in the Western Aleutian Islands (Area 543), restrict the Atka mackerel and Pacific cod fisheries in the Central Aleutian Islands (Area 542), and restrict the Pacific cod fishery in the Eastern Aleutian Islands (Area 541). In October, NMFS provided the Council with an update on the BiOp and presented a revised draft RPA. The Council received a report on the final BiOp and final RPA, for implementation in January 2011, at the December Council meeting. Refer to Section 1.7 for more details.

1.4 Stock assessment data for BS and AI Pacific cod

Previous Pacific cod stock assessments for the BSAI estimated the biomass at about 84% in the EBS (Eastern Bering Sea) and 16% in the AI. However, more recent estimates have revised that distribution. The most recent AI bottom trawl survey, reported in the 2010 Pacific cod stock assessment chapter of the 2010 BSAI SAFE states the following (p. 253):

Biomass estimates for the Aleutian Islands region were derived from U.S. - Japan cooperative bottom trawl surveys conducted during the summers of 1980, 1983, and 1986, and by U.S. bottom trawl surveys of the same area in 1991, 1994, 1997, 2000, 2002, 2004, 2006, and 2010. These surveys covered both the Aleutian management area (170 degrees east to 170 degrees west) and a portion of the Bering Sea management area (“Southern Bering Sea”) not covered by the EBS shelf bottom trawl surveys. The time series of biomass estimates from the overall Aleutian survey area are shown together with their sum below (all estimates are in t):

| Year | Survey Type | Aleutian Survey Area |
|------|--------------|----------------------|
| 1980 | U.S – Japan | 148,272 |
| 1983 | U.S. – Japan | 215,755 |
| 1986 | U.S. – Japan | 255,072 |
| 1991 | U.S. | 191,049 |
| 1994 | U.S. | 184,068 |
| 1997 | U.S. | 83,416 |
| 2000 | U.S. | 136,028 |
| 2002 | U.S. | 82,970 |
| 2004 | U.S. | 114,161 |
| 2006 | U.S. | 92,526 |
| 2010 | U.S. | 68,161 |

The stock assessment continues to state (p. 253):

The 2010 estimate is the lowest in the time series. For many years, the assessments of Pacific cod in the BSAI have used a weighted average formed from EBS and AI survey biomass estimates to provide a conversion factor which is used to translate model projections of EBS catch and biomass into BSAI equivalents. Prior to the 2004 assessment, the weighted average was based on the sums of the biomass estimates from the EBS shelf and AI survey biomass time series. However, in December of 2003 the SSC requested that alternative methods of estimating relative biomass between the EBS and AI be explored. Following a presentation of some possible alternatives (Thompson and Dorn 2004), the SSC recommended that an approach based on a simple Kalman filter be used. **Applying this approach to the updated (through 2010) time series indicates that the best estimate of the current biomass distribution is 91% EBS and 9% AI, replacing the previous proportions of 84% and 16% respectively.** [emphasis added]

The 2011 BSAI Pacific cod ABC and TAC are substantially higher compared to recent years, and the 2012 ABC is estimated to be even higher. The 2011 ABC is 235,000 mt, which is 35% higher than 2010; the 2012 ABC is estimated to be 281,000 mt, which is 61% higher than 2010. The 2011 TAC is 227,950 mt, meaning the 2011 ITAC is 203,559 mt.

Using the biomass distribution estimates above, if the split was in place for 2011, one could assume that the BS ABC would be 213,850 mt, and the AI ABC would be 21,150 mt. If the State water AI Pacific cod fishery continues to be calculated as 3% of the BSAI ABC (7,050 mt), but taken wholly off the AI ABC, this means the AI TAC would be 14,100 mt (21,150 – 7,050), and the BS TAC would be 213,850 mt. Accounting for the 10.7% CDQ allocation in each area, the AI ITAC would be 12,591 mt and the BS ITAC would be 190,968 mt. These projected ITACs are used throughout the tables in this paper.

Note, however, that the BSAI Plan Team minutes (November 2010) report that the stock assessment author informed the team of his plans to develop a separate AI Pacific cod assessment in the near future. As a result of a separate assessment, the allocation could be different than either the past or current proportions (i.e., it would no longer be a split of a combined number, but would be its own specification based on the separate assessment).

1.5 LLP area endorsements by sector

Groundfish licenses are currently required to participate in the BSAI groundfish fisheries in Federal waters. Groundfish licenses contain endorsements that define what the vessel using the license is allowed to do. An area endorsement defines the geographic location the license allows a vessel to fish. Under the groundfish LLP, separate BS and AI area endorsements were earned and issued based on historic fishing patterns. Licenses may contain endorsements for both areas (BS and AI), or one of the two areas. Gear endorsements define what type of gear may be used: non-trawl, trawl, or both. Further, cod gear endorsements are required for non-trawl vessels $\geq 60'$ to participate in the BSAI fixed gear Pacific cod fishery: hook-and-line catcher processors, pot catcher processors, hook-and-line catcher vessels, and pot catcher vessels. Vessels fishing with jig gear in the BSAI are exempt from the LLP, provided they comply with size and gear limitations.²

Table 1 shows the number of groundfish LLPs with a Bering Sea and/or Aleutian Islands endorsement by sector, as of November 2010. Generally, this table shows the number of licenses associated with each eligible sector that may currently fish in the Federal BS and AI management areas for Pacific cod.

²Vessels that do not exceed 60 feet LOA and that are using jig gear (but no more than 5 jig machines, one line per machine, and 15 hooks per line) are exempt from the LLP requirements in the BSAI.

Regardless of whether the BSAI TAC is split into separate area TACs, only those vessels with an AI endorsement may fish in Federal waters in the AI, and only those vessels with a BS endorsement may fish in Federal waters in the BS. **Overall, about 46% of the licenses are endorsed to fish in the AI, and about 98% are endorsed to fish in the BS. More than half of the licenses (54%) are endorsed for the BS area only.**

Table 1 Number of BS, AI and BSAI LLPs in the BSAI Pacific cod sectors

| Sector | Permit required and/or eligibility criteria per statute | BS only LLP | AI only LLP | BSAI LLP | Total # of valid LLPs |
|---------------------------|---|-------------|-------------|------------|-----------------------|
| AFA Trawl CP | AFA CP permit/listed in 208(e)(1)-(20); trawl LLP (CP/BSAI) | 1 | 0 | 19 | 20 |
| Non-AFA Trawl CP | CP; must have harvested with trawl gear and processed no less than 150 mt of non-pollock groundfish during 1997 through 2002. | 7 | 0 | 19 | 26 ¹ |
| AFA Trawl CV | AFA CV permit; trawl LLP (CV/BSAI) ² | 60 | 0 | 53 | 113 |
| Non-AFA Trawl CV | trawl LLP (CV/BSAI) | 5 | 6 | 8 | 19 |
| Hook-and-line CP | non-trawl LLP (BSAI/H&L CP cod endorsement) | 2 | 0 | 35 | 37 |
| Hook-and-line CV >60' | non-trawl LLP (BSAI/H&L CV cod endorsement) | 1 | 0 | 7 | 8 |
| Pot CP | non-trawl LLP (BSAI/pot CP cod endorsement) | 3 | 0 | 4 | 7 |
| Pot CV >60' | non-trawl LLP (BSAI/pot CV cod endorsement) | 47 | 1 | 4 | 52 |
| Hook-and-line/Pot <60' | non-trawl LLP (CV/BSAI) | 87 | 2 | 21 | 110 |
| Jig CV | LLP is not required for <60' jig CV in the BSAI | N/A | N/A | N/A | N/A |
| Total Endorsements | | 213 | 9 | 170 | 392 |

Source: LLP file, RAM Division, NMFS. November 2010. Note that a vessel is not limited to participating in one sector if it has the appropriate license and/or permit, thus, the sum of the number of licenses does not represent the number of unique vessels. Note also that the number of licenses is higher than the number of unique vessels, as one vessel may carry more than license or a vessel may not yet have been designated on the license.

¹59 BSAI trawl CP licenses exist: 20 of which are associated with AFA CPs and 26 are associated with Am. 80 CPs. The remaining 13 trawl CP licenses currently are primarily used on AFA CVs.

²Of the 113 LLPs used on the 110 vessels with AFA permits held by this sector (in 2010), there are 101 trawl CV LLPs and 12 trawl CP LLPs.

In the trawl CP sectors, the majority of licenses are endorsed for the BSAI, with few vessels endorsed only for the BS, and no vessels endorsed only for the AI. In the Amendment 80 (non-AFA trawl CP) sector, 7 licenses are endorsed only for the BS, and the remaining 19 licenses are endorsed for BSAI. The AFA trawl CP sector has only 1 license endorsed only for the BS, while the remaining 19 are endorsed for the BSAI.³ The remaining 3 CP licenses (non-Am. 80, non-AFA) are all endorsed for BSAI. These 3 LLPs are not Am. 80 or AFA qualified; therefore, these LLPs can only be used to participate in the trawl CV fishery or for groundfish species not otherwise allocated to the Am. 80 and AFA sectors.

In the trawl CV sectors, about half of the licenses are endorsed for the BS only. In the AFA trawl CV sector, more than half of the total LLPs (60) are endorsed only for the BS; the remaining licenses (53) are endorsed for the BSAI. None are endorsed only for the AI only. In the non-AFA trawl CV sector, 5 licenses are endorsed only for the BS, 6 are endorsed only for the AI, and 8 are endorsed for the BSAI. **In sum, about 56% of the trawl licenses are endorsed to fish Pacific cod in both the BS and AI; 41% are endorsed to fish Pacific cod in the BS only.**

³Note that 12 trawl CP licenses are also used on AFA catcher vessels; those licenses were accounted for in the AFA CV row of Table 1.

Recall that in order to participate in the BSAI Pacific cod fishery on a vessel $\geq 60'$ with fixed gear, the license must also carry a cod endorsement. In the hook-and-line sectors, the vast majority (42 of 45) of eligible licenses (CP and $\geq 60'$ CV) are endorsed for the BSAI, with only 3 licenses endorsed only in the BS, and no licenses endorsed for the AI only. In the pot CP sector, there are only 7 licenses eligible to fish BSAI Pacific cod, 4 of which are endorsed for the BSAI and 3 for the BS only. In the $\geq 60'$ pot CV sector, the great majority (47 of 52) of licenses are endorsed only for the BS, with 4 licenses endorsed for the BSAI, and one for the AI only. In the $< 60'$ fixed gear sector, of the 110 total licenses, 87 are endorsed only for the BS, 2 only for the AI, and 21 for the BSAI. **In sum, about 33% of the fixed gear licenses are endorsed to fish Pacific cod in both the BS and AI; 65% are endorsed to fish Pacific cod in the BS only.**

For those sectors with a majority of participants that hold only a BS endorsement, a relatively small proportion of the fleet would be allowed to harvest a potential AI sector cod allocation. This appears to be a significant issue for the trawl CV sectors, both pot sectors, and the $< 60'$ fixed gear sector. Of these sectors, only the trawl CV sectors and the pot CP sector have had a high percentage of their overall Pacific cod catch in the AI in recent years compared to other sectors (refer to Section 1.9). Thus, the possibility that a substantial portion of a sector's overall BSAI allocation is attributed to the AI allocation but only about half of the eligible vessels in the sector have AI endorsements may be a significant issue for these sectors.

Recall also that the existing AI endorsements are based on an individual's history in the AI. Thus, if the BS and AI sector allocations are based on actual harvest history (as proposed under Alternative 4), this alternative should serve to mirror actual harvest history by sector in the AI. However, it would also 'fix' the percentage of each sector's allocation that must be harvested in the AI based on past harvests, regardless of the capability of the vessels to operate in the AI in the future due to the transfer of endorsed licenses or Steller sea lion restrictions. Recall that LLPs are not required to fish within State waters, thus, all eligible vessels would continue to be allowed to fish in the BS or AI in the parallel Pacific cod fishery within 3 nm and/or in the State water AI Pacific cod fishery using specific gear types and vessel sizes.

Note also that in April 2008, the Council took final action on BSAI FMP Amendment 92 to remove latent trawl CV and CP licenses from the BSAI groundfish fisheries, which reduced the number of eligible licenses compared to the previous discussion paper. Another component of Amendment 92 created new AI endorsements for use on existing non-AFA trawl CV licenses in the Aleutian Islands that met specified criteria. Upon implementation, 8 new AI endorsements were added to 8 $< 60'$ non-AFA trawl CV licenses that met the participation criteria. These endorsements are severable from the overall license, such that they could be transferred to other $< 60'$ non-AFA trawl CV licenses. (Note that the existing LLP program does not allow an endorsement to be severed from the overall license.) In addition, 4 new AI endorsements were added to 4 licenses used on $\geq 60'$ non-AFA trawl CV licenses. These endorsements are not severable and transferable. The intent was to allow recent participants in the AI parallel or State waters cod fishery to qualify for an AI endorsement in order to participate in the new trawl limited access Atka mackerel and POP fisheries, as well as the Pacific cod fishery. The intent is to help facilitate economic development in Adak, recognizing that vessels are more likely to fish in the AI if they have a suite of Federal fisheries in which to participate. These licenses are included in Table 1 above.

Note that because a vessel is not limited to participating in one sector if it has the appropriate license and/or permit, the number of LLPs in Table 1 is higher than the number of unique vessels, as one vessel may carry more than one license or a vessel may not yet have been designated for use on a license. Regardless of the resulting BS and AI sector allocations established under the proposed action, only vessels with AI endorsements are, and would continue to be, allowed to fish in the AI.

1.6 State water Aleutian Islands Pacific cod fishery

Prior to 2006, the BSAI Pacific cod fishery in State waters was managed as a parallel fishery to the Federal fishery; the Federal government managed all harvests (inside or outside State waters) against the Federal BSAI Pacific cod TAC and allocations, opened and closed seasons, and established gear restrictions. However, in February 2006, the Alaska Board of Fisheries (Board) created a new regulation establishing a State waters Pacific cod fishery in the Aleutian Islands. The management plan governs the harvest of Pacific cod in the AI west of 170° W. longitude, and it established the guideline harvest level (GHL) for the state waters fishery as 3% of the Federal BSAI Pacific cod ABC. It also specified that the future calculation (the ‘source’ of the GHL) will be the Council’s decision should the BSAI ABC be split into separate AI and BS ABCs in a future TAC specifications process. The State water fishery, however, would remain the equivalent of 3% of the combined BS and AI ABC.

The plan establishes a parallel Pacific cod season within State waters in the AI, which coincides with the Federal A season in the BSAI. The commissioner of ADF&G opens and closes, by emergency order, the parallel season during which the use of the same gear allowed in the Federal BSAI Pacific cod season is permitted, unless that gear is prohibited under State regulations. ADF&G then opens the State waters AI Pacific cod season four days after the Federal A season for the BSAI trawl CV fishery is closed. All parallel seasons are closed during the state waters season. The State regulations authorizing the State water AI fishery and its primary elements are included in **Appendix 1**.

The overall effect of a State waters Pacific cod fishery in the Aleutian Islands is that all sectors, including the CDQ fishery, realized a proportional reduction of 3% of their current Federal BSAI allocations starting in 2006. Table 2 shows catch of AI Pacific cod during 2006 – 2010. The guideline harvest level for this fishery has ranged from about 11.5 million to 12.8 million pounds since the inception of the fishery, with the majority of the harvest taken in the A season (70% is allocated prior to June 10). With the exception of 2009, the fleet has harvested almost the entire A season GHL, with the remainder reallocated to the B season. The number of participating vessels declined in 2009 and 2010 compared to previous years, possibly due to limited shoreside processing opportunities in those years, as the processor in Adak was not operating. Overall, the majority of the GHL has been harvested by vessels using trawl and pot gear (see Table 3).

The intent of the State action was to allow additional harvests by the identified sectors in AI State waters, which also results in a redistribution of cod harvests and associated revenues from vessels of all gear types that fish in Federal waters in the AI or in the Bering Sea, and from ports east of 170° W to those vessels that fish in the State water AI fishery. Thus, there may be a disproportionate negative effect on those participants that do not desire to fish in State waters in the Aleutian Islands, compared to those participants that have harvested and want to continue to harvest Pacific cod in the Aleutians and within State waters. In general, the fixed gear and jig gear sectors have reduced the AI share of their total BSAI Pacific cod harvest in recent years, while the trawl sectors have generally increased the AI share of their total BSAI Pacific cod harvest.

Since the fishery was initiated, Pacific cod harvested in the fishery has been delivered to shore-based plants, floating processors, and catcher processors. While the majority of the processing data are confidential due to a low number of processors, a few general trends can be discussed. A much higher percentage of the fishery was delivered shoreside in 2007 compared to the other processing sectors. After 2007, the percentage dropped off and was the lowest in 2010. On average, deliveries to shore-based processors account for more than a quarter of the total harvest (average 2006 - 2010).

The share of deliveries to floating processors was highest in 2006, with very little activity in 2009, but increased significantly in 2010. On average, floating processor activity accounts for over one-third of the

processing activity in the fishery overall (average 2006 – 2010). The first years of the fishery had low levels of catcher processor activity compared to more recent years. Catcher processor activity was highest in 2009 when CPs accounted for the majority of the processing activity, and lowest in 2007, when it accounted for less than 20% of the total harvest. Catcher processor activity comprises over one-third of the processing activity overall (average 2006 - 2010).⁴

Table 2 Aleutian Islands Pacific cod harvest from State-water fishery by season, 2006 – 2010

| Year | Season | Initial GHL ^b | Season Dates | | Season Length ^a | Harvest ^b | Number of | |
|-------|------------|-----------------------------|--------------|----------|-------------------------------|----------------------|-----------------|------------|
| | | | Opened | Closed | | | Vessels | Deliveries |
| 2006 | A season | 8,981,540 | 15-March | 24-March | 9 | conf. | 26 | 68 |
| | B season | 3,849,232 ^c | 10-June | 1-Sep | 83 | conf. | 5 | 24 |
| | TOTAL | 12,830,772 | | | 92 | 8,860,665 | 29 ^g | 92 |
| 2007 | A season | 8,148,202 | 16-March | 23-March | 7 | 8,229,931 | 29 | 97 |
| | B season | 3,492,086 ^d | 10-June | 1-Sep | 83 | 2,143,310 | 10 | 92 |
| | | | 1-Oct | 3-Dec | 63 | 1,265,760 | 5 | 14 |
| TOTAL | 11,640,288 | | | 153 | 11,639,001 | 41 ^g | 203 | |
| 2008 | A season | 8,148,202 | 10-March | 18-March | 8 | 7,477,507 | 30 | 116 |
| | B season | 3,492,086 ^e | 10-June | 9-July | 29 | 4,241,692 | 18 | 77 |
| | TOTAL | 11,640,288 | | | 37 | 11,719,199 | 45 ^g | 193 |
| 2009 | A season | 8,425,981 | 25-March | 1-April | 7 | 1,737,434 | 19 ^g | 35 |
| | | | 7-April | 9-June | 64 | 4,032,415 | 8 | 15 |
| | B season | 3,611,135 ^f | 10-June | 1-Sep | 83 | conf. | 5 | conf. |
| TOTAL | 12,037,116 | | | | | | | |
| 2010 | A season | 8,055,608 | 3-March | 4-June | 93 | 7,959,515 | 16 ^g | 84 |
| | B season | 3,452,404 ^h | 10-June | 1-Sep | 83 | conf. | 2 | conf. |
| | | | 15-Nov | | | | | |
| TOTAL | 11,508,012 | | | | | | | |

^aIn days.

^bIn whole pounds.

^cADF&G made 3.5 million pounds of the GHL available to National Marine Fisheries effective on September 1.

^d81,729 pounds were deducted from the B season due to an overage during the A season. As a result the GHL at the opening of the B season was 3,410,357 pounds.

^e669,288 pounds remained from the A season and was rolled into the B season. As a result the GHL at the opening of the B season was 4,161,374 pounds.

^f2,656,132 pounds rolled over into the B season, for a GHL of 6,267,267 pounds.

^gSome vessels participated in both seasons.

^h96,094 pounds rolled over into the B season for a GHL of 3,548,498 pounds.

Source: Alaska Department of Fish and Game, November 2010. Conf = confidential data.

The 2011 BSAI Pacific cod ABC is 235,000 mt, thus, the State water AI Pacific cod fishery GHL is 7,050 mt. If the BSAI Pacific cod ABC/TAC is split between the BS and AI, the Council will need to determine the ‘source’ of the GHL for the State water fishery, specifically, whether it should be taken off the new AI ABC. The State management plan specified that this is a Council decision but that it would remain the equivalent of 3% of the combined BS and AI ABC. If the split had been in place in 2011 and the GHL continued to be calculated as 3% of the BSAI Pacific cod ABC, the GHL would equal one-third of the entire AI ABC (7,050 mt/21,150 mt).

The Council will need to determine the source of the GHL, should the TAC split occur. This decision clearly impacts the amount allocated to the State water AI Pacific cod fishery as well as how much quota remains in the AI for Federal fishery participants. The remainder of the paper assumes that the AI State water Pacific cod fishery continues to be calculated as 3% of the BSAI Pacific cod ABC (which is

⁴Personal communication between H. Fitch, ADF&G and N. Kimball, NPFMC, 11/19/10.

projected to equate to one-third of the estimated AI Pacific cod ABC), but the amount is taken wholly off the allowable harvest in the AI. Note that this calculation could result in a situation in which the AI State water Pacific cod GHL exceeds the amount allocated to the AI as a whole (e.g. in the case that the AI ABC is equal to less than 3% of the BSAI ABC). The only way to prevent such potential is to either: 1) revise the calculation of the AI State water Pacific cod GHL to a *percentage of the AI ABC*, or 2) set the GHL equal to the AI ABC if the AI ABC is less than 3% of the BSAI ABC.

Table 3 State AI Pacific Cod Fishery by Gear Type, 2006 - 2010

| 2006 Total | Gear Type | Round lbs | Percent | Number of Vessels | Number of landings |
|-----------------------|-----------|------------|---------|-------------------|--------------------|
| | Trawl | 7,053,035 | 80% | 20 | 58 |
| | Longline | ** | ** | 11 | 19 |
| | Pot | conf. | conf. | 2 | 14 |
| | | 8,860,665 | 100% | | |
| 2007 Total | Trawl | 6,998,224 | 60% | 20 | 78 |
| | Jig | conf. | conf. | 1 | 2 |
| | Longline | ** | ** | 7 | 80 |
| | Pot | 3,614,870 | 31% | 12 | 43 |
| | | 11,639,000 | 100% | | |
| 2008 Total | Trawl | 6,130,284 | 52% | 22 | 94 |
| | Jig | 92,572 | 1% | 5 | 18 |
| | Longline | 509,296 | 4% | 9 | 25 |
| | Pot | 4,980,784 | 43% | 11 | 56 |
| | | 11,712,936 | 100% | | |
| 2009 Total | Trawl | 1,295,595 | 22% | 16 | 35 |
| | Jig | conf. | conf. | 2 | conf. |
| | Longline | conf. | conf. | 6 | conf. |
| | Pot | 4,111,699 | 71% | 3 | 9 |
| | | conf. | 100% | | |
| 2010 A season* | Trawl | 4,899,783 | 62% | 13 | 76 |
| | Jig | 0 | 0% | 0 | 0 |
| | Longline | 0 | 0% | 0 | 0 |
| | Pot | 3,059,732 | 38% | 3 | 8 |
| | | 7,959,515 | 100% | | |

Source: ADF&G, November 2010. Conf = confidential data. ** = masked to protect confidential data.

1.7 Overview of the Steller sea lion measures for the BSAI Pacific cod fishery

Following the 2000 FMP-level Biological Opinion, a new biological opinion specifically on the newly-adopted Steller sea lion protection measures was issued in 2001. The 2001 Biological Opinion found that groundfish fisheries, including the Pacific cod fisheries, conducted in accordance with the Steller sea lion protection measures were unlikely to cause jeopardy of extinction or adverse modification or destruction of critical habitat for Steller sea lions. The protection measures include fishery-specific closed areas around rookeries and haulouts, and season and gear apportionments. Pacific cod is one of the four most important prey items of Steller sea lions in terms of frequency of occurrence, averaged over years, seasons, and sites, and was especially important in winter (Sinclair and Zeppelin 2002). Since 2001, in order to limit the amount of total cod harvest that could be taken in the first half of the year, for the benefit of foraging Steller sea lions, the protection measures established a seasonal dispersion target for the BSAI Pacific cod fishery of 70% in the first season (January 1–June 10) and 30% in the second season (June 10–December 31).⁵ Note that Amendment 85 modified the seasonal apportionments by gear sector

⁵ Table 5.4, p. 153 of the 2001 Biological Opinion, NMFS. October 2001.

that were established in the Biological Opinion, but retained the overall target of 70% in the first half of the year, and 30% in the second half.⁶ The spatial and temporal dispersion measures applied to the BSAI Pacific cod fishery as a result of the 2001 BiOp are outlined in Table 4.

Table 4 Spatial and temporal dispersion measures for the protection of Steller sea lions which apply to the Pacific cod fishery (2001 – 2010)

| Gear Type | Seasonal and TAC apportionments | Pacific cod rollover in the BSAI | Area restrictions |
|-------------------------|---|---|---|
| Pot | Jan 1 – June 10 (51%), Sept 1 – Dec 31 (49%) Pot catcher vessels <60' do not have seasonal apportionments. | Unharvested cod TAC can be rolled over from one season to the next. | <u>Aleutian Islands</u> - No fishing in critical habitat east of 173° W. to western boundary of Area 9, 0-10 nm closures at Buldir, 0-20 nm closure at Agligadak. <u>Bering Sea</u> - 0-3 nm closures around all rookeries and haulouts. 0-7 nm closure around Amak rookeries |
| Hook and Line (and Jig) | Jan 1 – June 10 (51%), June 10 – Dec 31 (49%) Hook-and-line catcher vessels <60' do not have seasonal apportionments. | Unharvested cod TAC can be rolled over from one season to the next. | <u>Aleutian Islands</u> – Same as for pot gear above. <u>Bering Sea</u> – Same as for pot gear above, plus 0-10 nm closure around Bishop Point and Reef Lava haulouts in Area 8 for hook-and-line vessels ≥60'. The 0-3 nm closures around haulouts does not apply for jig gear. |
| Trawl | CV Vessels Jan 20 – April 1 (74%), April 1 – June 10 (11%); June 10 – Nov 1 (15%) CP Vessels Jan 20 – April 1 (75%), April 1 – June 10 (25%); June 10 – Nov 1 (0%) | Unharvested cod TAC can be rolled over from one season to the next. | <u>Aleutian Islands – East of 178° W.:</u> 0-10 nm closures around rookeries, except 0-20 nm at Agligadak; 0-3 nm closures around haulouts. <u>Aleutian Islands – West of 178° W.:</u> 0-20 nm closures around haulouts and rookeries until the Atka mackerel fishery inside critical habitat A or B season, respectively, is completed, at which time trawling for cod can occur outside 3 nm of haulouts and 10 nm of rookeries. <u>Bering Sea</u> – 0-10 nm closure around all rookeries and haulouts (except Pribilof haulouts that are closed 0-3 nm). |

The anticipation of a new BiOp has warranted delaying consideration of the BS/AI Pacific cod split issue, since it was recognized that the agency may come to different conclusions in terms of jeopardy or necessary mitigation measures in order to prevent jeopardy, than the existing (2001 and 2003 Supplement) Biological Opinion. This made it very difficult to simultaneously propose changes to the way in which Pacific cod is managed, especially considering that the seasonal distribution of Pacific cod catch in the AI may be a primary issue.

The new draft BiOp was released by NMFS in August 2010, and concludes that the status quo BSAI and GOA Pacific cod and Atka mackerel fisheries jeopardize the continued existence of the endangered western population of Steller sea lions and adversely modify its critical habitat. The Council reviewed the draft BiOp and the proposed RPA in August, and did not support the proposed RPA, which would close the Atka mackerel and Pacific cod fisheries in the Western Aleutian Islands (Area 543), restrict the Atka mackerel and Pacific cod fisheries in the Central Aleutian Islands (Area 542), and restrict the Pacific cod fishery in the Eastern Aleutian Islands (Area 541). In October, NMFS provided the Council with an update on the BiOp and presented a revised draft RPA. The Council received a report on the final BiOp and final RPA, for implementation in January 2011, at the December Council meeting.

The spatial and temporal dispersion measures in place for the BSAI Pacific cod fishery in January 2011, as a result of the 2010 BiOp, are outlined in Figure 1 and are graphically represented in **Appendix 3**. In effect,

⁶ NMFS Protected Resources informally consulted on the revisions to the seasonal apportionments and found that they met the target provided in the Biological Opinion.

the new mitigation measures significantly restrict Pacific cod fishing the Aleutian Islands, closing the western Aleutian Islands area (Area 543) to directed cod fishing altogether. The measures also limit the amount of Pacific cod that can be harvested in Area 541 and 542 by trawl and non-trawl gear, without reinitiating another Endangered Species Act consultation.

The RPA implemented in 2011 clearly has implications for the Pacific cod fishery in the AI. The BiOp estimates that the trawl CP sectors' Pacific cod production in the AI is estimated to drop to about 50 percent of its status quo level. The EA/RIR supporting the BiOp states that: "The sector is expected to respond by shifting fishing activity into the rock sole, yellowfin sole, and Pacific cod fisheries in the Bering Sea. Its success in those fisheries is expected to be mixed. Halibut PSC rates are much higher in the Bering Sea than they are in the Aleutian Islands, and this is likely to constrain the sector's ability to increase its harvests of those species."⁷ In addition, additional vessels shifting from the Aleutian Islands to the Bering Sea would compete with vessels already active in the Bering Sea for the share of the TAC available there, reducing average harvests (i.e., effectively, the status quo condition). Pacific cod fishing operations may also become more highly concentrated in the eastern Aleutian Islands, if fishing operations attempt to harvest the full Aleutian Islands share of their allocations in this more limited area (pp. 10-64 – 10-65).

The EA/RIR also estimates that the fixed gear CP sectors will shift harvest of Pacific cod to the Bering Sea. The BiOp estimates that the fixed gear CP sectors' Pacific cod production in the AI is estimated to drop to about 44 percent of its status quo level. The analysis states (p. xii): "While this sector is more likely than the trawler fleets to be able to fully offset its Aleutian Islands losses in volume terms, industry sources indicate that Bering Sea Pacific cod are smaller, have a lower product recovery rate, and enter different market channels. These factors make them less valuable, and as a result, the revenues from any given volume of production are likely to be less." The analysis also notes that fixed gear catcher/processors that are active in the AI also have a history of activity in the Bering Sea. Pacific cod fixed gear catcher/processors could also shift fishing effort to places and periods in Aleutian Islands Areas 541 and 542, which are still open to fishing for Pacific cod. However, due to the footprint that fixed gear catcher/processors require to effectively fish an area, and due to the limited amount of Pacific cod habitat available in the AI under the BiOp, increased effort in those areas would be limited. The prime Pacific cod fishing locations are found within critical habitat (p.10-73).

⁷EA/RIR for Revisions to the Steller Sea Lion Protection Measures for the BSAI Management Area Groundfish Fisheries, NMFS, November 2010. p. xii.

Figure 1 Spatial and temporal dispersion measures for the protection of Steller sea lions which apply to the Pacific cod fishery (as of January 2011)

Area 543:

- Prohibit retention of Atka mackerel and Pacific cod by all federally permitted vessels.

Area 542:

Groundfish

- Close waters from 0–3 nm around Kanaga Island/Ship Rock to directed fishing for groundfish by federally permitted vessels.

Non-trawl Pacific cod

- Close 0–6 nm zone of critical habitat year round to directed fishing for Pacific cod by federally permitted vessels using nontrawl gear. For vessels 60 ft or greater, close critical habitat from 6–20 nm January 1 to March 1, to directed fishing for Pacific cod using nontrawl gear by federally permitted vessels.

Trawl Pacific cod

- Between 177° E to 178° W longitude, close critical habitat from 0–20 nm year round to directed fishing for Pacific cod by federally permitted vessels using trawl gear.
- Between 178° W to 177° W longitude: 1) close critical habitat from 0–10 nm year round to directed fishing by federally permitted vessels using trawl gear; and 2) close critical habitat 10–20 nm June 10 to November 1, to directed fishing for Pacific cod using trawl gear by federally permitted vessels.

Non-trawl & Trawl Pacific cod

- Prohibit directed fishing for Pacific cod by all federally permitted vessels from November 1 to January 1. (This extends the existing trawl gear restriction to non-trawl gear.)
- Reinitiate ESA consultation if the non-trawl harvest of Pacific cod exceeds 1.5 percent of the BSAI Pacific cod ABC (equivalent to the Area 542 maximum annual harvest amount from 2007 through 2009). Similarly, reinitiate ESA consultation if the trawl harvest of Pacific cod exceeds 2 percent of the BSAI Pacific cod ABC (equivalent to the Area 542 maximum annual harvest amount from 2007 through 2009).

Area 541:

- Close 0–10 nm of critical habitat year round to directed fishing for Pacific cod by all federally permitted vessels.
- Limit the amount of catch that can be taken in the 10 nm–20 nm area of critical habitat based on gear type used:
 - Non-trawl - Close critical habitat 10–20 nm January 1 to March 1, to directed fishing for Pacific cod using nontrawl gear by federally permitted vessels.
 - Trawl - Close critical habitat 10–20 nm June 10 to November 1, to directed fishing by for Pacific cod using trawl gear by federally permitted vessels.

Non-trawl & Trawl Pacific cod

- Prohibit directed fishing for Pacific cod by all federally permitted vessels from November 1 to January 1. (This extends the existing trawl gear restriction to non-trawl gear.)
- Reinitiate ESA consultation if the nontrawl harvest of Pacific cod exceeds 1.5 percent of the BSAI Pacific cod ABC (equivalent to the Area 541 maximum annual harvest amount from 2007 through 2009). Similarly, reinitiate ESA consultation if the trawl harvest of Pacific cod exceeds 11.5 percent of the BSAI Pacific cod ABC (equivalent to the Area 541 maximum annual harvest amount from 2007 through 2009).

All catcher vessel sectors operate in the AI: trawl, hook-and-line, pot, and jig, although the majority of the catcher vessel harvest is by trawl gear. The RIR supporting the BiOp estimates that the catcher vessel sectors that deliver shoreside or to motherships will reduce their Pacific cod production in the AI to 60% of status quo levels. Based on the average harvest, the median decline in catch would have been about 5,600 metric tons if the RPA had been in place during 2004 - 2009. The catcher vessel fleet is also expected to shift towards more Pacific cod production in the Bering Sea, however, it is also recognized that these sectors may not be able to fully offset their lost harvest. Halibut PSC rates for these fleets are also higher in the BS compared to the AI. The analysis recognizes that as operations shift more effort into the Bering Sea in order to make up for foregone revenues in the AI, they may impact other vessels that are already operating in the Bering Sea fisheries. Interactions may be complex, and may include increased congestion, reduced market prices for some species, and competition for PSC allowances. It is also possible that trawl catcher vessels from the Aleutian Islands could shift to the GOA and increase catcher vessel effort devoted to flatfish fishing; there has not been significant activity by these vessels in the GOA flatfish fishery in the past.

Note that analysis of some slight modifications to the proposed RPA, made after the RIR was completed, are not incorporated into the RIR. These modifications allow fixed gear vessels, both catcher vessels and catcher processors, to (a) fish for Pacific cod in critical habitat in Area 541 from 10 to 20 miles from March 1 through June 10, and (b), for non-trawl vessels including both catcher vessels and catcher processors $\geq 60'$, to fish in critical habitat in Area 542 between 6 and 20 miles, from March 1 through June 10. Hook-and-line catcher vessels and catcher processors took an estimated average of about 11 percent of their Area 541 harvests, and little or none of their Area 542 harvests, from the critical habitat zones between these dates, during the period evaluated (2004 – 2009). (Confidentiality provisions prevent the RIR from reporting of specific volumes.) Thus, the reductions in harvest cited above for both fixed gear CPs and CVs should be slightly reduced as a result of these modifications to the RPA.⁸

In addition, while the RPA does not include a limit on the amount of the BSAI Pacific cod TAC that can be harvested in the AI, it sets a maximum harvest level that can be taken in Area 541 and 542 by trawl and non-trawl gear *without* reinitiating an ESA consultation. Essentially, the harvest by non-trawl vessels cannot exceed 1.5% of the BSAI Pacific cod ABC in Area 541 or 542; the trawl harvest cannot exceed 11.5% of the BSAI Pacific cod ABC in Area 541 or 2% in Area 542. These limits are based on maximum annual harvest by each gear group in 2007 – 2009. If any of these limits are exceeded, the BiOp requires that a consultation must be reinitiated. Thus, consideration of these limits is important when evaluating an action that apportions a percentage of the BSAI TAC to the Aleutian Islands, most importantly when considering alternatives that apportion a percentage of a sector's overall BSAI Pacific cod allocation to the AI (Alternatives 3 and 4). For example, a sector could receive an AI allocation under the alternatives that is greater than the maximum amount that would reinitiate a consultation. The implication is either that the sector foregoes a portion of its Pacific cod allocation, or an ESA consultation would be reinitiated upon harvesting the total of its allocation. The impacts of this provision of the RPA are noted within the preliminary analysis of the alternatives in Section 1.11.

Note that the proposed change to the current management regime would require consultation with PR, since a split in the BSAI Pacific cod sector allocations between BS and AI areas would be considered a change in the action upon which PR, the Council, and NMFS previously consulted. Recall that under Amendment 85, PR required informal consultation in order to change the seasonality of BSAI Pacific cod allocations from status quo. Should the TAC be split between the BS and AI, it is likely that PR would, at a minimum, need to provide guidance as to the seasonal allocations of Pacific cod by gear type and individual (BS and AI) area, in order to ensure that the current seasonal allocations by gear type for the BSAI combined would satisfy the conditions in the new Biological Opinion.

⁸EA/RIR errata, updated 12/8/10, p.1.

Initially, any consultation process on a Council preferred alternative could be conducted informally. PR would require sufficient information on the proposed action to evaluate whether that action would not likely adversely affect the western population of SSL or its designated critical habitat. Several alternative actions could be provided to PR for the consultation. The determination of 'not likely to adversely affect' is reached if PR can conclude that the proposed action's effects on the SSL would be expected to be discountable, or insignificant, or completely beneficial. This determination is generally a "soft trigger", and for many actions, PR is not able to make such a conclusion. If PR cannot conclude that the proposed Pacific cod sector allocations split would not likely adversely affect the SSL and/or its designated critical habitat, then the consultation would continue under a formal process.

Formal consultation would require more time to complete, depending on the level of detail and analysis required. The timeline would be determined once detailed information on the proposed action is provided. The formal consultation process could parallel the biological or socioeconomic analyses. The culmination of the formal consultation process would be preparation of a BiOp in which PR would conclude that the proposed action would or would not jeopardize the continued existence of the western SSL or destroy or adversely modify its designated critical habitat. If either jeopardy or adverse modification conclusion is reached, PR would provide an RPA, or the Council may decide to develop an alternative RPA, which would remove either of those conclusions.

1.8 Data used in discussion paper

The background data in this discussion paper are retained harvests from 1995 through 2009, with and without meal. Retained harvest data for CPs are from NMFS Weekly Production Reports; retained harvest data for CVs are from ADF&G electronic fish tickets.

The Council's intent in Amendment 85 was to allocate Pacific cod based upon retained harvest, as its retention is required in both the directed fishery and up to the maximum retainable allowance when the directed cod fishery is closed. However, the 100% retention requirement did not begin until January 3, 1998, so during 1995 - 1997 Pacific cod could be (and were) legally discarded. What has occurred after the 100% retention standard for Pacific cod went into effect is less clear. For example, some catcher vessel deliveries contained fish in poor condition which could not be processed for human consumption. Often, these fish were processed into fish meal, as the fish could not legally be discarded.

Among the CP sectors, the inclusion/exclusion of Pacific cod meal products affects the AFA trawl CP sector, as a large portion of the Pacific cod harvested by this sector is taken incidentally in the BSAI pollock fishery. Only a portion of the AFA CP sector processes meal, as the processing infrastructure (and space on board) required for this type of product is substantial. None of the non-AFA trawl CPs have meal plants onboard. Of the existing alternatives, only options under Alternative 4 that use catch history from 1995 - 1997 would be impacted by the inclusion of fish meal in the catch data. The impact of including fish meal in the calculations could result in the AFA CP sector receiving a slightly higher portion of its current Pacific cod allocation in the AI (<0.5% higher). It could also result in the trawl CV sector receiving a slightly higher portion of its current cod allocation in the BS (~1%). Separate tables with and without cod meal have been included in the background data and under Alternative 4, Option 1, to demonstrate the impact of including meal in the sector allocation calculations.

1.9 Harvest distribution between BS and AI by sector

In considering the division of the BSAI Pacific cod sector allocations between BS and AI management areas upon a TAC split, it is necessary to consider the historic harvests from those areas. Currently, each of nine sectors receives a direct allocation of the BSAI Pacific cod (non-CDQ) TAC. These allocations are as follows:

Table 5 Current BSAI Pacific cod sector allocations

| Sector | % of BSAI ITAC |
|------------------------|----------------|
| Longline CP | 48.7% |
| Longline CV >60' | 0.2% |
| Pot CP | 1.5% |
| Pot CV >60' | 8.4% |
| Hook-and-line/pot <60' | 2.0% |
| AFA trawl CP | 2.3% |
| Am. 80 | 13.4% |
| Trawl CV | 22.1% |
| Jig | 1.4% |

Note: These allocations have been in place since 2008 under BSAI Amendment 85.

Generally, in the past several years, the Pacific cod TAC has ranged from about 170,000 mt to over 200,000 mt. The 2010 TAC was 168,780 mt, and accounting for the 10.7% CDQ allocation, the amount of the TAC remaining for the non-CDQ sectors (ITAC) was 150,721 mt. However, as described in Section 1.4, the 2011 BSAI Pacific cod ABC and TAC are substantially higher compared to recent years, and the 2012 ABC is estimated to be even higher. The 2011 ABC is 235,000 mt, which is 35% higher than 2010; the 2012 ABC is estimated to be 281,000 mt, which is 61% higher than 2010. The 2011 TAC was set at 227,950 mt, meaning the 2011 ITAC is 203,559 mt.

This section provides a general description of historic harvests from 1995 to 2009. Table 6 shows the amount and proportion of retained catch between the BS and AI areas during 1995–2009 excluding cod destined for meal production, and Table 7 shows the same information with cod meal included. The data show that retained catch from the AI fluctuated from 1995 through 1997, and stabilized from 1999 through 2004 at between 15% and 20% of the combined BSAI retained catch. In 2005 and 2006, catch from the AI declined to about 11% each year. During the 2007 to 2009 period, catch in the AI relative to the total BSAI increased to a high of almost 18% in 2009. The effect of including meal in the catch statistics increases the overall BS history by up to a half of percent in some years, while decreasing the overall AI history by the same half a percentage point.

Note that in previous assessments, the AI biomass was projected to be about 16% of the BSAI biomass, but the most recent assessment estimates the AI biomass as 9% of the BSAI (see Section 1.4). Overall during 1995 – 2009, harvests from the AI have averaged about 14% of the total BSAI Pacific cod harvest. Most recently (2007 – 2009), harvests from the AI have accounted for about 17% of the total BSAI Pacific cod harvest.

Table 6 Pacific cod retained catch in the Aleutian Islands and Bering Sea from 1995 to 2009 excluding meal (in metric tons and percent of total)

| Area | | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Aleutian Islands | Retained catch | 10,115 | 21,607 | 13,169 | 25,310 | 24,322 | 29,802 | 30,419 | 27,435 |
| | Percent of BSAI | 5.6% | 11.2% | 6.2% | 15.1% | 16.8% | 18.4% | 20.1% | 16.5% |
| Bering Sea | Retained catch | 170,797 | 171,999 | 200,551 | 142,349 | 120,409 | 131,773 | 121,127 | 139,198 |
| | Percent of BSAI | 94.4% | 88.8% | 93.8% | 84.9% | 83.2% | 81.6% | 79.9% | 83.5% |
| BSAI | Retained catch | 180,912 | 193,607 | 213,720 | 167,658 | 144,731 | 161,575 | 151,546 | 166,634 |

| Area | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 1995 - 09 |
|------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|-----------|
| Aleutian Islands | Retained catch | 29,389 | 26,644 | 19,822 | 18,708 | 24,385 | 24,978 | 26,498 | 352,604 |
| | Percent of BSAI | 16.2% | 14.2% | 11.2% | 11.4% | 16.6% | 17.9% | 18.0% | 14.0% |
| Bering Sea | Retained catch | 151,864 | 161,639 | 157,102 | 145,100 | 122,647 | 114,708 | 120,704 | 2,171,968 |
| | Percent of BSAI | 83.8% | 85.8% | 88.8% | 88.6% | 83.4% | 82.1% | 82.0% | 86.0% |
| BSAI | Retained catch | 181,253 | 188,283 | 176,925 | 163,807 | 147,032 | 139,687 | 147,202 | 2,524,572 |

Source: WPR and fish ticket data, 1995 – 2009.

Table 7 Pacific cod retained catch in the Aleutian Islands and Bering Sea from 1995 to 2009 including meal (in metric tons and percent of total)

| Area | | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Aleutian Islands | Retained catch | 10,120 | 21,607 | 13,169 | 25,349 | 24,356 | 29,841 | 30,422 | 27,439 |
| | Percent of BSAI | 5.6% | 11.1% | 6.2% | 14.9% | 16.6% | 18.2% | 19.8% | 16.2% |
| Bering Sea | Retained catch | 171,342 | 172,543 | 200,670 | 144,297 | 122,679 | 133,929 | 122,955 | 142,424 |
| | Percent of BSAI | 94.4% | 88.9% | 93.8% | 85.1% | 83.4% | 81.8% | 80.2% | 83.8% |
| BSAI | Retained catch | 181,461 | 194,150 | 213,840 | 169,646 | 147,035 | 163,770 | 153,377 | 169,862 |

| Area | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 1995 - 09 |
|------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|-----------|
| Aleutian Islands | Retained catch | 29,392 | 26,654 | 19,823 | 18,708 | 24,391 | 24,979 | 26,498 | 352,748 |
| | Percent of BSAI | 16.0% | 13.9% | 11.0% | 11.2% | 16.3% | 17.5% | 17.5% | 13.8% |
| Bering Sea | Retained catch | 154,401 | 164,460 | 160,746 | 148,186 | 125,436 | 118,020 | 124,595 | 2,206,682 |
| | Percent of BSAI | 84.0% | 86.1% | 89.0% | 88.8% | 83.7% | 82.5% | 82.5% | 86.2% |
| BSAI | Retained catch | 183,793 | 191,113 | 180,568 | 166,894 | 149,827 | 142,999 | 151,094 | 2,559,430 |

Source: WPR and fish ticket data, 1995 – 2009.

Table 8 shows, for each sector, the average annual retained catch, without meal, in each area and the BSAI as a whole, the percent of the sector's catch from each area, and the number of unique vessels with Pacific cod catch in each area and in the BSAI as a whole for two time periods, 1995–1999 and 2000–2009. Table 9 shows the same type of data with meal included. In general, all sectors for which allocations are being considered under this action have some Pacific cod history in both the Aleutian Islands and Bering Sea management areas. For the AFA trawl CP sector, retained catch data is not shown for the period 2000 - 2009 because of confidentiality limitations.

Table 8 Average retained Pacific cod catch (excluding meal) in the Bering Sea and Aleutian Islands by sector and percent of each sector's catch by area, 1995–1999 and 2000–2009

| Sector | Area | 1995-1999 | | | 2000-2009 | | |
|--------------------------------|------|---------------------------|------------------------------|----------------|---------------------------|------------------------------|----------------|
| | | Average annual catch (mt) | Percent of sector BSAI catch | Unique vessels | Average annual catch (mt) | Percent of sector BSAI catch | Unique vessels |
| Hook and line and Pot CVs <60' | AI | 24 | 8.2% | 18 | 53 | 1.9% | 43 |
| | BS | 269 | 91.8% | 71 | 2,733 | 98.1% | 154 |
| | BSAI | 293 | | 80 | 2,785 | | 164 |
| Longline CVs >60' | AI | 10 | 5.9% | 13 | 22 | 11.1% | 23 |
| | BS | 159 | 94.1% | 27 | 175 | 88.9% | 38 |
| | BSAI | 169 | | 34 | 197 | | 45 |
| Jig CVs | AI | 15 | 4.7% | 6 | 26 | 21.9% | 22 |
| | BS | 304 | 95.3% | 70 | 93 | 78.1% | 64 |
| | BSAI | 319 | | 76 | 119 | | 83 |
| Pot CPs | AI | 1,283 | 26.9% | 12 | 652 | 21.1% | 13 |
| | BS | 3,491 | 73.1% | 22 | 2,432 | 78.9% | 11 |
| | BSAI | 4,774 | | 24 | 3,084 | | 17 |
| Pot CVs >60' | AI | 833 | 5.7% | 42 | 298 | 2.4% | 36 |
| | BS | 13,676 | 94.3% | 183 | 12,159 | 97.6% | 126 |
| | BSAI | 14,509 | | 189 | 12,457 | | 140 |
| Trawl CVs | AI | 2,623 | 5.7% | 41 | 11,818 | 35.3% | 74 |
| | BS | 43,644 | 94.3% | 139 | 21,623 | 64.7% | 137 |
| | BSAI | 46,267 | | 140 | 33,441 | | 148 |
| Hook and Line CPs | AI | 5,955 | 6.9% | 33 | 4,584 | 5.6% | 35 |
| | BS | 80,329 | 93.1% | 55 | 77,017 | 94.4% | 51 |
| | BSAI | 86,285 | | 56 | 81,601 | | 53 |
| Non-AFA Trawl CPs | AI | 3,527 | 18.8% | 18 | 7,375 | 27.3% | 16 |
| | BS | 15,194 | 81.2% | 28 | 19,653 | 72.7% | 24 |
| | BSAI | 18,721 | | 28 | 27,029 | | 24 |
| AFA Trawl CPs | AI | 2,596 | 58.4% | 10 | * | * | 2 |
| | BS | 1,852 | 41.6% | 23 | * | * | 15 |
| | BSAI | 4,448 | | 24 | 1,656 | | 15 |

Source: WPR and fish ticket data. *Not shown due to confidential data.

Table 9 Average retained Pacific cod catch (including meal) in the Bering Sea and Aleutian Islands by sector and percent of each sector's catch by area, 1995–1999 and 2000–2009

| Sector | Area | 1995-1999 | | | 2000-2009 | | |
|--------------------------------|------|---------------------------|------------------------------|----------------|---------------------------|------------------------------|----------------|
| | | Average annual catch (mt) | Percent of sector BSAI catch | Unique vessels | Average annual catch (mt) | Percent of sector BSAI catch | Unique vessels |
| Hook and line and Pot CVs <60' | AI | 24 | 8.2% | 18 | 54 | 1.9% | 44 |
| | BS | 269 | 91.8% | 71 | 2,759 | 98.1% | 157 |
| | BSAI | 293 | | 80 | 2,813 | | 166 |
| Longline CVs >60' | AI | 10 | 5.9% | 13 | 22 | 11.1% | 24 |
| | BS | 159 | 94.1% | 27 | 176 | 88.9% | 40 |
| | BSAI | 169 | | 34 | 198 | | 48 |
| Jig CVs | AI | 15 | 4.7% | 6 | 26 | 21.7% | 22 |
| | BS | 304 | 95.3% | 70 | 94 | 78.3% | 64 |
| | BSAI | 319 | | 76 | 120 | | 83 |
| Pot CPs | AI | 1,283 | 26.9% | 12 | 652 | 21.1% | 13 |
| | BS | 3,491 | 73.1% | 22 | 2,432 | 78.9% | 11 |
| | BSAI | 4,774 | | 24 | 3,084 | | 17 |
| Pot CVs >60' | AI | 833 | 5.7% | 42 | 298 | 2.4% | 37 |
| | BS | 13,721 | 94.3% | 183 | 12,297 | 97.6% | 127 |
| | BSAI | 14,555 | | 189 | 12,596 | | 141 |
| Trawl CVs | AI | 2,627 | 5.6% | 42 | 11,823 | 33.9% | 76 |
| | BS | 44,004 | 94.4% | 139 | 23,063 | 66.1% | 140 |
| | BSAI | 46,632 | | 140 | 34,886 | | 151 |
| Hook and Line CPs | AI | 5,955 | 6.9% | 33 | 4,584 | 5.6% | 35 |
| | BS | 80,329 | 93.1% | 55 | 77,017 | 94.4% | 51 |
| | BSAI | 86,285 | | 56 | 81,601 | | 53 |
| Non-AFA Trawl CPs | AI | 3,527 | 18.8% | 18 | 7,375 | 27.3% | 16 |
| | BS | 15,194 | 81.2% | 28 | 19,653 | 72.7% | 24 |
| | BSAI | 18,721 | | 28 | 27,029 | | 24 |
| AFA Trawl CPs | AI | 2,607 | 51.2% | 10 | * | * | 2 |
| | BS | 2,486 | 48.8% | 25 | * | * | 17 |
| | BSAI | 5,093 | | 25 | 2,977 | | 17 |

Source: WPR and fish ticket data.

*Not shown due to confidential data.

Table 8 and Table 9 show overall Pacific cod harvest by the AFA trawl CP and trawl CV sectors has decreased since 1999, but the trawl CV sector substantially increased its Aleutian Islands Pacific cod catch during 2000 to 2009. Annual Pacific cod harvest by the hook-and-line CP sector and the $\geq 60'$ pot CV sector are stable and largely from the BS in both time periods. Pacific cod harvest by the jig CV sector and $\geq 60'$ hook-and-line CV sector are relatively small in both areas, with most of the catch coming from the BS.

Harvest by fixed gear vessels $<60'$ has increased substantially across the two periods (likely due to the separate allocation established for this sector in 2000), but are predominantly from the Bering Sea in both periods. Finally, including Pacific cod destined for meal production slightly changes the catch distribution for the AFA trawl CP sector. During 2000 – 2009, excluding meal, the distribution of catch was higher in the BS; when meal is included, the distribution of catch is more even between the two areas.

1.10 Halibut PSC by sector

The prohibited species allowances are currently shared among the BSAI trawl and non-trawl fisheries, according to the guidelines outlined in 50 CFR 679.21(e). The Federal regulations provide a sequential process for allocating halibut PSC in the BSAI fisheries. The trawl fishery's overall limit of halibut PSC is 3,675 mt, but Amendment 80 effectively reduces the PSC limit by 150 mt between 2008 (3,675 mt) and 2012 (3,526 mt). The 2011 total trawl halibut PSC apportionment is 3,576 mt. From this total, 326 mt of the trawl halibut mortality limit is set aside as the PSQ reserve for use by the groundfish CDQ Program. The remaining BSAI halibut PSC is allocated between the Amendment 80 sector and BSAI trawl limited

access fishery. In 2011, the amount of halibut PSC apportioned to the Amendment 80 sector is 2,375 mt, and in 2012 and future years, it will be 2,325 mt. The amount of halibut PSC allocated to the BSAI trawl limited access fishery is 875 mt.

The BSAI halibut PSC limit for non-trawl fisheries is set at 900 mt, less the 7.5 percent CDQ reserve, leaving 832 mt as the PSC halibut allowance for all BSAI hook-and-line fisheries (groundfish jig and pot gear are exempt). The non-trawl Pacific cod fishery is typically allocated about 775 mt, with separate allocations to the hook-and-line CP sector (760 mt in 2011) and hook-and-line CV sector (15 mt in 2011).

Table 10 Average halibut mortality in the Bering Sea and Aleutian Islands by sector and percent of each sector's halibut mortality by area, 1995 – 2009

| Sector | Area | Average annual halibut mortality (mt) | Percent of sector BSAI halibut mortality | Average Pcod harvest ¹ (%) |
|--------------------------------|------|---------------------------------------|--|---------------------------------------|
| Hook and line and Pot CVs <60' | AI | 1.09 | 31.1% | 1.1% |
| | BS | 2.42 | 68.9% | 98.9% |
| | BSAI | 3.51 | | |
| Longline CVs >60' | AI | 0.30 | 45.5% | 7.2% |
| | BS | 0.36 | 54.5% | 92.8% |
| | BSAI | 0.66 | | |
| Pot CPs | AI | 0.27 | 22.5% | 23.3% |
| | BS | 0.93 | 77.5% | 76.7% |
| | BSAI | 1.20 | | |
| Pot CVs >60' | AI | 0.07 | 7.2% | 2.5% |
| | BS | 0.92 | 92.8% | 97.5% |
| | BSAI | 1.00 | | |
| Trawl CVs | AI | 13.46 | 2.0% | 19.1% |
| | BS | 654.52 | 98.0% | 80.9% |
| | BSAI | 667.97 | | |
| Longline CPs | AI | 50.91 | 8.3% | 6.0% |
| | BS | 565.35 | 91.7% | 94.0% |
| | BSAI | 616.26 | | |
| AM-80 Trawl CPs | AI | 25.75 | 4.5% | 23.2% |
| | BS | 541.82 | 95.5% | 76.8% |
| | BSAI | 567.57 | | |
| AFA Trawl CPs | AI | 6.99 | 25.6% | * |
| | BS | 20.33 | 74.4% | * |
| | BSAI | 27.32 | | |

¹Retained Pacific cod harvest from Table 8.

Table 10 provides average halibut mortality by sector and area, as well as the percentage of the sector's halibut mortality by area, from 1995 to 2009. The last column in Table 10 shows the relative amount of Pacific cod harvested by sector in each area. Overall, roughly 95% of the halibut mortality in the Pacific cod fishery was in the Bering Sea. Recall that during that same time period, an average of 86% of the BSAI Pacific cod harvest was harvested in the Bering Sea (refer to Table 6 and Table 7.) The majority of each sector's halibut mortality was in the BS, which correlates with the majority of their retained cod harvest. For those sectors that have relatively higher halibut mortality and higher Pacific cod sector allocations (trawl CV, trawl CP, and longline CP), the trawl sectors appear to have a lower percentage of halibut mortality in the AI compared to their percentage of cod harvested in the AI during 1995 - 2009. In

the longline CP sector, it is the opposite case: this sector has a slightly lower percentage of halibut mortality in the BS compared to the percentage of cod harvested in the BS.

At its February 2006 meeting, the Council requested staff include available data on annual halibut PSC harvest rates for the Pacific cod fishery in the BS and AI areas as background information. The data to address this request was provided by an updated (March 2006) PSC data file developed jointly by the Council and the Pacific States Marine Fisheries Commission (PSMFC). These data were sorted by target (Pacific cod), PSC sector, area (Bering Sea or Aleutian Islands) and year. Due to confidentiality issues, the sectors were combined into the following four groups: (1) AFA and non-AFA trawl CVs, (2) AFA and non-AFA trawl CPs, (3) hook-and-line CVs and CPs, and (4) pot CVs and CPs. Data for the <60' hook-and-line and pot CV sector and jig sector are not provided due to confidentiality concerns.

The results are shown in Table 11 for the four combined sector groups described above, during 1995 - 2004. Unlike Table 10, these data have not been updated through 2009 due to time constraints. The PSC data file is based on weekly production reports for each period during the year. For each record of landings by week-ending date, a ratio was calculated by dividing the halibut mortality by the corresponding groundfish harvest. The overall groundfish harvests reported in the PSC file are almost entirely Pacific cod. For example, the relative proportions of retained Pacific cod harvests compared with total groundfish harvests were calculated using other data, and found to vary between 96 percent and 99 percent, depending on the year. It was therefore determined that the total groundfish category in the PSC data file was appropriate for calculating the PSC ratios for the Bering Sea and Aleutian Islands.

Table 11 Halibut mortality as a percent of groundfish mortality in the targeted Pacific cod fishery in the BS and AI, 1995 - 2004

| Sector/year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Trawl CV | | | | | | | | | | |
| Aleutian Islands | 0.1521 | 0.7629 | 0.1842 | 0.5267 | 0.2795 | 0.1824 | 0.0941 | 0.0864 | 0.1766 | 0.1418 |
| Bering Sea | 1.5962 | 2.0070 | 1.1866 | 2.0852 | 1.6528 | 1.5405 | 1.5614 | 1.9660 | 2.7491 | 1.8143 |
| Trawl CP | | | | | | | | | | |
| Aleutian Islands | 0.2529 | 1.5161 | 0.1662 | 1.2007 | 1.0487 | 0.6497 | 1.4332 | 0.3293 | 0.5217 | 0.2618 |
| Bering Sea | 1.7474 | 2.2099 | 1.3489 | 2.9010 | 3.4204 | 2.2095 | 3.1561 | 3.1131 | 2.9147 | 2.8025 |
| Hook-and-line CV & CP | | | | | | | | | | |
| Aleutian Islands | 1.2281 | 1.0302 | 0.8758 | 0.7539 | 0.7307 | 0.6782 | 1.0151 | 1.0041 | 0.5217 | 0.9440 |
| Bering Sea | 0.8863 | 0.9319 | 0.7981 | 0.8676 | 0.7161 | 0.9098 | 0.7966 | 0.6668 | 2.9147 | 0.4263 |
| Pot CV & CP | | | | | | | | | | |
| Aleutian Islands | 0.0323 | 0.0793 | 0.0022 | 0.0181 | 0.0252 | 0.0002 | 0.0115 | 0.0000 | 0.0000 | 0.0000 |
| Bering Sea | 0.0672 | 0.0983 | 0.1012 | 0.0101 | 0.0256 | 0.0166 | 0.0149 | 0.0399 | 0.0115 | 0.0234 |

Source: NPFMC PSC data files, March 2006.

The following average (1995 – 2004) annual halibut PSC rates were calculated from Table 11:

Table 12 Average halibut mortality rate (per metric ton of Pacific cod) by sector and area, 1995 – 2004

| | Halibut mortality rate | | Halibut mortality rate |
|------------------|-------------------------------|----------------------------------|-------------------------------|
| Trawl CV | | Hook-and-line CV & CP | |
| Aleutian Islands | 0.2587 | Aleutian Islands | 0.8782 |
| Bering Sea | 1.8159 | Bering Sea | 0.9914 |
| Trawl CP | | Pot CV & CP | |
| Aleutian Islands | 0.7380 | Aleutian Islands | 0.0169 |
| Bering Sea | 2.5824 | Bering Sea | 0.0409 |

The data indicate that the average (1995 – 2004) halibut PSC rates associated with the Pacific cod fishery in the Bering Sea are higher than in the Aleutians Islands for all sectors. Only the hook-and-line sector realized higher halibut mortality rates in the AI than in the BS in an individual year. While the *average* halibut mortality rate during 1995 – 2004 in the hook-and-line Pacific cod fishery is slightly greater in the

BS than in the AI, the rate in the AI is greater in seven of the ten years considered. The average halibut mortality rate (1995 – 2004) in the pot sector is about 2.4 times higher in the Bering Sea than in the Aleutian Islands. Note that the hook-and-line and pot sector Pacific cod harvest share in the AI has substantially declined as a percentage of the sectors' overall BSAI Pacific cod harvest in recent years.

The largest difference in halibut mortality rates between the two areas is in the trawl CV sector, in which the average (1995 – 2004) Bering Sea halibut mortality rate is over 7 times higher than in the Aleutian Islands. There is a much greater difference in rates between the two areas in several of the individual years during the time period considered. Overall, halibut mortality rates are higher in the trawl CP sector than in the trawl CV sector, but the trawl CP sector also exhibits a lower rate in the Aleutian Islands. In the trawl CP sector, the average (1995 – 2004) halibut mortality rate is 3.5 times higher in the Bering Sea than in the Aleutian Islands. In sum, the halibut PSC in the Bering Sea Pacific cod trawl fishery is high, compared to halibut PSC in the Aleutian Islands.

Note that the Steller sea lion BiOp (November 2010) provides updated information (average 2003 – 2009) on the estimated rates of halibut PSC for the trawl sectors. The estimated halibut PSC rate in the trawl CP Aleutian Island Pacific cod fishery is 0.0018 metric tons of halibut mortality per metric ton of groundfish; however, it is 0.0182 metric tons (ten times as much) of halibut mortality per metric ton of groundfish in the Bering Sea. Moreover, the rates are per metric ton of groundfish associated with harvesting a Pacific cod target; estimated incidental catch rates of groundfish in a Pacific cod target fishery, are somewhat higher in the Bering Sea than in the Aleutian Islands. The estimated halibut PSC when taking 10,000 metric tons of Pacific cod in the Aleutian Islands is 18 metric tons, but the estimated halibut PSC required to take the same 10,000 metric tons of Pacific cod in the Bering Sea is 182 metric tons. In 2008 and 2009, the years after fishing began under the Amendment 80 program, the difference between the Amendment 80 halibut PSC allowance and the fleet's actual halibut PSC was about 300 metric tons (NMFS 2010, pp. 10-62 – 10-63). The BiOp addresses halibut bycatch in terms of the estimated changes in halibut PSC by sector due to the RPA, given that halibut PSC limits could be a limiting factor to realizing all of the Pacific cod historically harvested by each sector.

Because the halibut mortality rate for all sectors is lower in the AI than in the BS on average, this may be interpreted as favorable to split the BSAI TAC into BS and AI area TACs in a future specifications process. However, a positive impact on halibut mortality is dependent on whether the AI TAC would be constraining to the fishing industry's desired harvest level in the AI. For instance, if established, the AI TAC is projected to be set at less than 9% of the BSAI TAC (accounting for the AI State water fishery).⁹ In almost all years, harvests from the AI have exceeded 9% of the BSAI Pacific cod harvest, averaging 14% in 1995 – 2009, and about 17% in 2007 – 2009, as currently there is no limit on how much of the total BSAI Pacific cod TAC can be harvested in the AI. Thus, based on the harvest distribution in almost every year since 1995, one could assert that without a TAC split, a higher share of the BSAI Pacific cod harvest would be harvested in the AI than with a TAC split. In this case, a TAC split would constrain the fishery and halibut mortality overall would likely be higher than if a TAC split had not occurred.

While the decision of whether to split the BSAI ABC/TAC into separate area ABCs/TACs is not part of this discussion paper, the data provide a limited analysis of the possible effects of such a future decision. In sum, overall halibut mortality rates may be negatively affected if the specified AI ABC/TAC would constrain the fishing industry's AI harvests compared to status quo. Based on the historical data series, it appears that the projected AI ABC (9%) would be constraining compared to the current situation in which

⁹This assumes the AI State water Pacific cod GHL fishery would continue to be allocated 3% of the BSAI Pacific cod ABC, but the metric tons would be taken off the AI ABC to establish the AI TAC remaining for the Federal fisheries. Thus, the Federal fisheries AI TAC would be 6% of the BSAI ABC. However, the Council may determine a different methodology to calculate the State GHL upon a split.

there is no limit on the amount of the total BSAI Pacific cod TAC that can be harvested in the AI. In addition, a TAC split would likely require sectors that often exhibit a higher halibut mortality rate in the AI compared to the BS, such as the hook-and-line sectors, to fish a portion of their overall allocation in the AI when they might not otherwise choose to do so.

1.11 Preliminary analysis of the alternatives

1.11.1 Alternative 1: No action

Under Alternative 1, a methodology to apportion the BSAI Pacific cod allocations to the jig, trawl, and fixed gear sectors between the BS and AI areas would not be selected. However, the only approach that could be implemented absent Council direction should a TAC split occur (in effect, under Alternative 1) is an equal percentage of both the BS and AI area TAC by sector. This is the same methodology as proposed under Alternative 3; thus, the implications of Alternative 1 are described under Alternative 3 in Section 1.11.3.

Alternative 1 means that the Council would not explicitly select a method of apportioning by area the nine sector allocations determined under Amendment 85 that were established for the entire BSAI area. In the event the BSAI TAC is split by area in the harvest specifications process, it is likely that NMFS would need to implement equal percentages of each sector's BSAI allocation in each area (e.g., if a sector receives a 40% BSAI allocation, it would receive 40% of the BS ITAC and 40% of the AI ITAC) under the current regulations. (The CDQ Program would receive 10.7% of the BS TAC and 10.7% of the AI TAC.) It is likely that this management system would not be satisfactory to most participants, as it would not reflect each sector's recent harvest history by area (see Table 8 above). In general, the trawl sectors have increased the percentage of their total harvest taken from the AI in recent years, and the fixed gear sectors have reduced their share in the AI.

Thus, Alternative 1 may effectively mean that the Council would see it necessary to initiate a new regulatory amendment following the TAC split, in order to allocate each sector's BSAI allocation by area in a manner that reflects recent harvest patterns. The primary intent of the proposed action is provide direction in the regulations prior to separate TACs being issued in the annual specifications process, in order to avoid expediting an analysis to mitigate these circumstances. As the action would require notice and comment rulemaking under the current amendment process, it would likely require a minimum of a year to implement new BS and AI sector allocations.

1.11.2 Alternative 2: Sector allocations remain BSAI

Under Alternative 2, sectors would not be allocated a specific percentage of the individual AI TAC or BS TAC.¹⁰ Instead, sectors would continue to receive their current BSAI Pacific cod allocation (determined under Amendment 85, see Section 1.9), and that allocation could be harvested anywhere in the BSAI. In effect, a sector's allocation could be fished in either the BS or AI, as long as TAC was available in that area and the area was open to directed Pacific cod fishing. Once the Pacific cod TAC for either the BS or AI was reached, NMFS would issue a closure notice and all sectors would be required to stop directed Pacific cod fishing in the closed area. The sectors would then only be permitted to continue directed fishing in the open area.

This alternative provides the greatest flexibility for sectors and may be the simplest alternative for inseason management to monitor. NMFS would not be required to manage two separate area allocations

¹⁰Staff needs to explore whether the CDQ Program would receive separate BS and AI allocations under Alternative 2, or whether Alternative 2 only applies to the non-CDQ sectors.

for each of the nine sectors. They would instead be required only to monitor each sector's overall BSAI allocation and a single harvest limit for each area, using the existing tools to open and close fisheries. Alternative 2 would also appear to provide maximum flexibility to the fleet since the sectors would be able to fish in an area as long as it remains open. Thus, regardless of historical harvest patterns, a vessel could move in and out of an area during the open season as desired on an inseason or annual basis, focusing its effort in the area in which it believes it can optimize its returns. Thus, while some sectors have not had substantial participation in the AI in the past, if that area becomes more advantageous due to changes in stocks or stock compositions or availability of markets, these sectors would be able to shift more of their fishing to the AI during the open season. Note, however, that only vessels with an AI endorsement on their LLP would be eligible to fish in the AI under any of the alternatives.

Under Alternative 2, each sector would attempt to fish in its preferred area first, especially if that area is likely to be constrained by TAC, which appears to be the case currently in the Aleutian Islands (understanding that this may change in response to Steller sea lion mitigation measures). A possible disadvantage of this alternative is that it could cause participants (both within sectors and among sectors) to race for Pacific cod if racing could increase returns. This could disadvantage certain sectors and could affect a sector's ability to obtain reasonable returns from its allocation, especially if some members of the sector would realize greater returns from fishing in an area that closes due to the effort of another sector. In addition, sectors that operate under a cooperative structure (e.g., the AFA sectors, the Am. 80 sector, and potentially the hook-and-line CP sector) manage their Pacific cod harvests through internal agreements, which may allow them to strategize directing effort to in the area they expect to close first (the AI).

In recent years, the trawl sectors have increased their share of AI harvest as a percentage of their overall BSAI harvest, while the fixed gear sectors have decreased their share. As stated above, because three of the four trawl sectors (AFA CP and CV, and non-AFA CP sectors) operate under a cooperative structure, these sectors should be better positioned to manage their harvest between areas within their respective sectors. If a sector believes it can gain an advantage from increasing effort in AI, Alternative 2 may allow that sector to do so, to the detriment of other sectors. Since the trawl sectors generally have been increasing their harvest in the AI, this could initiate a race for fish in the AI among those sectors, which could also have consequences for fixed gear vessels that may fish in the AI later in the year. At the same time, with the exception of the non-AFA trawl CV sector, the trawl sectors are better able to plan their fishing year and react to closures than the sectors operating under a limited access regime.

The risk of creating a race for fish in the AI under Alternative 2 is difficult to characterize; it is speculative and dynamic, depending on each sector's participation in the AI each year and the changing characteristics of the fishery. As stated previously, the best estimate of long-term average biomass distribution is 91% in the BS and 9% in the AI. During the past fifteen years for which data is available (1995–2009), the AI share of BSAI Pacific cod retained harvest was about 14%, and the BS share was 86%. More recently (2007 – 2009), the harvest distribution has averaged 17% in the AI and 83% in the BS. Under this long-term (and short-term) average, one may expect that a race for fish in the AI would be inevitable. However, other factors will impact whether sectors continue this harvest distribution between areas, including the Steller sea lion mitigation measures that were effective starting in January 2011. The Steller sea lion RPA significantly reduces the area in the AI that is open to Pacific cod fishing for all gear types; it also modifies the seasons in which SSL critical habitat is open to Pacific cod fishing in the AI. It is not possible to speculate how different fishing operations will react to the changes in the near term or over time.

Note that previously, NMFS expressed some concern with Alternative 2 relative to the 2001 Biological Opinion, and the same concerns may apply under the 2010 Biological Opinion. Alternative 2 does not establish sector allocations in each area, and there are currently *no gear specific seasonal apportionments*

by individual area. While the overall guideline for the BSAI Pacific cod fishery continues to be a 70%–30% seasonal split, the seasonal apportionments vary by gear type (from Table 4):

| | | | |
|----------------------------|--|----------|--|
| Pot | Jan 1 – June 10 (51%), Sept 1 – Dec 31* (49%) Pot catcher vessels <60' do not have seasonal apportionments. | Trawl CV | Jan 20 – April 1 (74%), April 1 – June 10 (11%); June 10 – Nov 1 (15%) |
| Hook and Line (and Jig) | Jan 1 – June 10 (51%), June 10 – Dec 31* (49%) Hook-and-line catcher vessels <60' do not have seasonal apportionments. | Trawl CP | Jan 20 – April 1 (75%), April 1 – June 10 (25%); June 10 – Nov 1 (0%) |

*Note: The 2010 RPA creates a closure for all gear types fishing Pacific cod in Area 543 of the AI and from Nov. 1 – Dec. 31 in Areas 541 and 542.

Thus, absent specific sector allocations in the AI, if any gear type was allowed to fish in the AI until the TAC was taken, this approach risks harvesting all of the AI TAC in the first half of the year. No guidelines currently exist for establishing AI seasonal apportionments by gear type or overall, and while the 2010 BiOp establishes different seasons by gear type within critical habitat areas, it does not provide seasonal apportionments by gear type overall in the AI. The Council would need to confirm with NMFS whether the existing gear-specific seasonal apportionments could continue to be applicable to the BSAI as a whole, or whether they would need to be applied to the BS and AI areas separately. If separately, NMFS would need to determine whether the apportionments above are sufficient for both the BS and the AI. This issue is necessary to address under any of the action alternatives, but under Alternative 2, has important implications for which sectors would first be allowed to fish in the AI.

Recall also that the 2010 RPA sets limits on the percentage of the *BSAI Pacific cod ABC* that can be harvested by non-trawl and trawl vessels in the Federal fisheries in Area 541 and 542. The harvest for non-trawl vessels cannot exceed 1.5% of the BSAI Pacific cod ABC in Area 541 or 542; the trawl harvest cannot exceed 11.5% of the BSAI Pacific cod ABC in Area 541 or 2% in Area 542. If any of these limits are exceeded, the BiOp requires that an ESA consultation must be reinitiated. If separate sector allocations are not established in the BS and AI, it is possible, like status quo, that one or both sectors could exceed the established ‘limits’. This issue is discussed in more detail under the impacts of Alternative 3 (Section 1.11.3).

Overall, Alternative 2 allows sectors to change their fishing patterns in reaction to a shifting stock, preferable fishing location, or market conditions. Yet, this flexibility could work to the detriment of some sectors, particularly those less able to compete with another gear type that chooses to increase effort in an area. Alternative 2 would not provide any sector with a separate allocation in either the BS or AI; it would only retain each sector’s overall BSAI allocation. Because Alternative 2 does not establish sector-specific allocations in the AI, it also does not risk that a sector would receive a higher allocation than it may be allowed to harvest without reinitiating an ESA consultation on Steller sea lions (see Section 1.7). For the same reason, however, it may create a potential ‘race for fish’ in the more desired area.

1.11.3 Alternative 3: Equal percentages in BS and AI

Alternative 3 would allocate sectors the same percentage of each BS and AI TAC that the sector currently receives in the BSAI under the current regulations. For example, the hook-and-line CP sector is allocated 48.7% of the BSAI Pacific cod ITAC; this sector would be allocated 48.7% of the BS ITAC and 48.7% of

the AI ITAC. Note that this alternative also reflects the default scenario under the current regulations, should the Council choose to take no action (Alternative 1).

Table 13 shows the range of existing BSAI allocations for each sector, and the annual average of each sector's BSAI harvest that was taken in the BS and AI during 2000–2009, assuming the current stock assessment projections of 91% (BS) and 9% (AI). In effect, under Alternative 3, each sector would be allowed to harvest the same percentage of the ITAC in the BS and AI that it is allocated in the BSAI, which results in **each sector receiving 94% of its BSAI Pacific cod allocation in the Bering Sea and 6% in the AI**. While the projected split of the biomass is 91% (BS) and 9% (AI), the State water AI fishery GHF currently is 3% of the BSAI Pacific cod ABC. If the GHF continues to be calculated this way, and the GHF is taken off the top of the AI ABC to establish the AI TAC, then the AI TAC will equal about 6% of the BSAI TAC. Similarly, the AI ITAC will equal about 6% of the BSAI ITAC. Thus, under Alternative 3, the Federal fishery sectors would receive about 6% of their total BSAI allocation in the AI and 94% in the BS. Refer to the last two columns in Table 13 to compare the proposed split and each sector's historical split as a percentage of its annual average BSAI Pacific cod harvest.

Table 13 Percentage of BSAI Pacific cod harvest taken in BS and AI by sector, average 2000–2009

| Sector | BSAI allocations under Am. 85 (% of P. cod ITAC) | % of sector's BSAI cod allocation allocated to BS under Alt 3 | % of sector's BSAI cod allocation allocated to AI under Alt 3 | % BSAI cod harvest in BS, Avg. 2000–09 | % BSAI cod harvest in AI, Avg. 2000–09 |
|------------------|--|---|---|--|--|
| AFA trawl CP | 2.3% | 94% | 6% | * | * |
| Non-AFA trawl CP | 13.4% | 94% | 6% | 73% | 27% |
| Longline CP | 48.7% | 94% | 6% | 94% | 6% |
| Pot CP | 1.5% | 94% | 6% | 79% | 21% |
| Trawl CV | 22.1% | 94% | 6% | 66% | 34% |
| Longline CV ≥60' | 0.2% | 94% | 6% | 89% | 11% |
| Pot CV ≥60' | 8.4% | 94% | 6% | 98% | 2% |
| <60' fixed gear | 2.0% | 94% | 6% | 98% | 2% |
| Jig gear | 1.4% | 94% | 6% | 78% | 22% |

Source: NPFMC Database (table 4&5.xls). Retained Pacific cod harvest, including meal, 2000 – 2009.

*Not shown due to restrictions on confidential data.

Note: The 2011 BSAI Pacific cod ABC = 235,000 mt. The projected biomass distribution is 91% BS and 9% AI, which means the BS ABC = 213,850 mt, and the AI ABC = 21,150 mt. Accounting for the AI State water GHF Pcod fishery (3% of BSAI ABC = 7,050 mt), the resulting AI TAC = 14,100 mt and the BS TAC = 213,850 mt. Applying a 10.7% CDQ allocation in each area results in an AI ITAC of 12,591 mt and a BS ITAC of 190,968 mt. This means that the AI ITAC is 6% of the combined BS ITAC and AI ITAC, which is what is allocated to each sector.

Table 13 shows that most sectors' recent harvest patterns in the BS and AI do not mirror a 94% (BS) and 6% (AI) split. With the exception of the pot CP sector, all of the fixed gear sectors (hook-and-line and pot) harvested 89% to 98% of their harvest in the BS during 2000 – 2009. Thus, some of the fixed gear sectors would be forced to harvest more of their allocations in the AI than they have on average in the past ten years under Alternative 3.

The trawl sectors harvested much less than 94% of their total harvest in the BS during this time period: non-AFA trawl CP sector – 73%; trawl CV sector – 66%. Thus, the trawl sectors would be forced to harvest more of their allocations in the BS than they have on average in the past ten years under Alternative 3. In general, the individual trawl sectors have increased the percentage of their total retained BSAI cod catch harvested in the AI during 2000 – 2009, and the fixed gear sectors have taken less of their total retained BSAI cod catch from the AI during this same period.

Table 14 provides the potential BS and AI allocations by sector under Alternative 3, by converting percentage allocations to metric tons. This table is based on the 2011 BSAI Pacific cod ITAC of 203,559 mt, with a projected BS ITAC of 190,968 mt and an AI ITAC of 12,591 mt. The first data column in Table 14 shows the BSAI allocations to each sector from Amendment 85. These represent percentage shares of the BSAI Pacific cod ITAC. The next columns provide the projected BS allocation to that sector under Alternative 3 using the 2011 TAC, followed by the average annual BS Pacific cod harvest by that sector in 2000–2009. The last two columns show the same information by sector for the AI.

With the exception of the pot CP sector, all other fixed gear sectors would be allocated much more than their annual average harvest in the AI. The hook-and-line CP sector allocations in the AI would be over 30% higher than the annual average harvest in the area. For the $\geq 60'$ pot CV sector, $< 60'$ fixed gear sector, and jig sector, the AI allocations would be several times higher than their annual average harvest in the AI. The pot CP sector would realize an AI allocation that is about 70% lower than its recent annual harvest in the AI. In the trawl sectors, generally, the AI allocation to each sector is more than 75% lower than the annual average harvest in the AI.

Table 14 Projected BS and AI allocations by sector under Alternative 3, using the 2011 BSAI Pacific cod ITAC and the current BSAI allocations

| Sector | Allocation under Am. 85 (% of BSAI Pcod ITAC) | Estimation of BS allocation using 2011 ITAC (mt) | Average annual BS cod retained harvest (mt) 2000-2009 | Estimation of AI allocation using 2011 ITAC (mt) | Average annual AI cod retained harvest (mt) 2000-2009 |
|------------------------|---|--|---|--|---|
| AFA trawl CP | 2.3% | 4,392 | * | 290 | * |
| Non-AFA trawl CP | 13.4% | 25,590 | 19,653 | 1,687 | 7,375 |
| Hook & line CP | 48.7% | 93,001 | 77,017 | 6,132 | 4,584 |
| Pot CP | 1.5% | 2,865 | 2,432 | 189 | 652 |
| Trawl CV | 22.1% | 42,204 | 23,063 | 2,783 | 11,823 |
| Hook & line CV $> 60'$ | 0.2% | 382 | 176 | 25 | 22 |
| Pot CV $> 60'$ | 8.4% | 16,041 | 12,297 | 1,058 | 298 |
| $< 60'$ fixed gear | 2.0% | 3,819 | 2,759 | 252 | 54 |
| Jig | 1.4% | 2,674 | 94 | 176 | 26 |

Source: NPFMC Database (Table 15_Feb 2011.xls). *Not shown due to restrictions on confidential data.

Note: The 2011 BSAI Pacific cod ABC = 235,000 mt. The projected biomass distribution is 91% BS and 9% AI, which means the BS ABC = 213,850 mt, and the AI ABC = 21,150 mt. Accounting for the AI State water GHL Pcod fishery (3% of BSAI ABC = 7,050 mt), the resulting AI TAC = 14,100 mt and the BS TAC = 213,850 mt. Applying a 10.7% CDQ allocation in each area results in an AI ITAC of 12,591 mt and a BS ITAC of 190,968 mt.

The problem statement for the proposed action references the need to recognize differences in dependence among gear groups and sectors that harvest Pacific cod in the BS and AI management areas. While Alternative 3 would mitigate the problem of disproportionate impacts that result from TAC fluctuations, it may force vessels to fish in areas they have very limited historical participation and do not want to fish. This issue impacts all sectors, but would likely be most onerous on the sectors comprised of smaller vessels, as they would be required to travel greater distances to fish in conditions that may not be well suited for their vessels. These sectors are often not able to harvest their entire allocation under the status quo, requiring reallocations of quota to other sectors throughout the year. The proposed action would likely make it more difficult for them to prosecute the Pacific cod fishery under Alternative 3.

Note that the table above assumes that the State water AI Pacific cod fishery continues to be allocated 3% of the BSAI Pacific cod ABC, which, using the estimated biomass distribution between the two areas, equals 33.3% of the projected AI ABC. The Federal fisheries in the AI would then be allocated the equivalent of 66.6% of the AI ABC. The State fishery plan notes that upon a TAC split, the Council can decide the 'source' of the calculation for the GHL for the State water fishery, with the intent that it remains equivalent to 3% of the BSAI Pacific cod ABC.

There is no certainty, however, that a future stock assessment would result in the AI ABC equaling 9% of the BSAI ABC. The stock assessment author has noted he is going to undertake a separate AI Pacific cod assessment in the near future. As a result of a separate assessment, the allocation could be different than either the past or current proportions (i.e., it would no longer be a split of a combined number, but would be its own specification based on the separate assessment).

Table 15 shows the corresponding amount of the AI TAC and ABC that would be allocated to the trawl and non-trawl sectors under Alternative 3, along with their existing allocations under Amendment 85. The table below is important when considering the 2010 Steller sea lion BiOp restrictions. The RPA sets limits on the percentage of the *BSAI Pacific cod ABC* that can be harvested by non-trawl and trawl vessels in the Federal fisheries in Area 541 and 542. Essentially, the harvest for non-trawl vessels cannot exceed 1.5% of the BSAI Pacific cod ABC in Area 541 or 542; the trawl harvest cannot exceed 11.5% of the BSAI Pacific cod ABC in Area 541 or 2% in Area 542. If any of these limits are exceeded, the BiOp requires that an ESA consultation must be reinitiated.

Table 15 Amount of AI TAC/ABC allocated to CDQ, non-trawl, and trawl sectors under Alternative 3, with 3% of the BSAI ABC allocated to the AI State water Pacific cod fishery

| Sectors | Current BSAI allocations under Am. 85 | | Allocations of the AI TAC/ABC under Alt. 3 | |
|----------------|--|--------------|---|------------------|
| CDQ | 10.7% of TAC | 10.4% of ABC | 10.7% of AI TAC | 7.1% of AI ABC |
| Non-trawl | 55.6% of TAC | 53.9% of ABC | 55.6% of AI TAC | 37.0% of AI ABC |
| Trawl | 33.8% of TAC | 32.7% of ABC | 33.8% of AI TAC | 22.5% of AI ABC |
| TOTAL | 100% of TAC | 97% of ABC* | 100% of AI TAC | 66.6% of AI ABC* |

*This table assumes that the State water AI Pacific cod fishery continues to be calculated as 3% of the BSAI ABC but the amount is taken off the AI ABC to determine the AI TAC. (Note that 3% of the BSAI ABC = 33.3% of the AI ABC under the current biomass distribution, which means AI TAC = 66.6% of the AI ABC.) The Council may determine a different method, but this method corresponds to the current GHLL equivalent.

Using the table above, Alternative 3 would allocate an estimated 44.1% of the AI ABC to the non-trawl sectors, if one assumes that the entire Pacific cod CDQ allocation would continue to be harvested using non-trawl gear: 7.1% (CDQ) + 37.0% (non-trawl) = 44.1%. Assuming the projected biomass distribution would result in a 9% (AI ABC) and 91% (BS ABC) split, the non-trawl sectors could essentially be allocated 4.0% of the BSAI ABC in the Aleutian Islands: 44.1% * 9.0% = 4.0%. Under the existing RPA, no more than 3% of the entire BSAI Pacific cod ABC can be harvested by non-trawl gear in the AI (1.5% in Area 541 and 1.5% in Area 542). Thus, under Alternative 3 and the current projections, the non-trawl sectors combined would be allocated a higher allocation in the AI than they could harvest, without initiating a new ESA consultation. This risks either the non-trawl sectors foregoing a portion of their allocation in the AI, or initiating a new ESA consultation.

Either way, it has the potential to create a further ‘race for fish’ among the non-trawl sectors in the AI, if each sector wants to, and is capable of, harvesting its entire allocation. Recent harvest history suggests (Table 14) that, with the exception of the pot CP sector, the non-trawl sectors would receive higher allocations of Pacific cod in the AI than they have historically harvested. Thus, there may be a high risk of foregoing a portion of their allocation regardless under Alternative 3.

Using the table above, Alternative 3 would allocate an estimated 22.5% of the AI ABC to the trawl sectors, which, using the projected biomass distribution, equates to 2% of the BSAI Pacific cod ABC. As the RPA limits the trawl sectors to harvesting up to 13.25% of the BSAI Pacific cod ABC in the AI without reinitiating a consultation, the same risk does not apply to the trawl sectors under Alternative 3.

In general, Alternative 3 is likely to be the most disruptive to the BSAI Pacific cod fleet of the alternatives considered in this action. The alternative would apportion Pacific cod into area and seasonal bins, thus reducing the flexibility of the fleet. Alternative 3 does not result in an allocation scheme between the two

areas that reflects current harvest patterns by sector. In general, Alternative 3 would allocate a lower share of the trawl sectors' BSAI allocations to the AI than has been harvested in the AI in the recent past. In contrast, Alternative 3 would allocate a higher share of the fixed gear sectors' BSAI allocations to the AI than has been harvested in the AI in recent years. In addition, Alternative 3 appears to establish a higher allocation to the non-trawl sectors than they are allowed under the Steller sea lion RPA, without reinitiating an ESA consultation. In sum, Alternative 3 does not appear to meet the concerns described in the problem statement.

1.11.4 Alternative 4: AI allocation based on historic harvest

In February 2006, while this action was still part of Amendment 85, the Council identified Alternative 4 as the preliminary preferred alternative for how to apportion the various BSAI Pacific cod allocations between the BS and the AI. Alternative 4 would define the sector allocations for each area based on the relative percentages of Pacific cod that were harvested by the sectors during a specified series of years. The overall sector splits determined at the combined BSAI level in Amendment 85 remain in place, and the sector allocations are then calculated at the individual BS and AI level. Alternative 4 divides the Aleutian Islands ITAC among the sectors based upon each sector's relative historic harvest in the Aleutian Islands. The remainder of each sector's overall BSAI allocation is allocated in the Bering Sea, after accounting for the respective allocation for the Aleutian Islands.

Options 1 – 4

This alternative allows the BSAI sector allocations to be maintained, but sectors would be allocated different percentages of each area based on their historic harvest patterns in the AI. It also allows the overall BSAI allocations to each sector to be based on a different series of years than the years on which the AI allocations are based. The Council may want to base the AI sector allocations on more recent years than the overall BSAI sector allocations, in order to reflect each sector's most recent dependency on the AI. The existing options for determining AI allocations by sector are as follows:

| | |
|----------|-----------|
| Option 1 | 1995–2002 |
| Option 2 | 1997–2003 |
| Option 3 | 2000–2003 |
| Option 4 | 2002–2003 |

As stated in earlier sections, the trawl sectors have generally increased their share of AI harvest as a percentage of their overall BSAI harvest in the past several years. By contrast, the fixed gear sectors have generally decreased their share of AI harvest as a percentage of their overall BSAI harvest in the past several years. Because of this variation in AI harvest by sectors, the time period selected for the allocations largely determines whether certain fixed gear sectors, primarily the pot sectors and the hook-and-line CV sector, will be significant participants in the AI Pacific cod fishery in the future. Other sectors would also be impacted by the years selected as the historic base period, but in most cases would be less likely to be effectively excluded from the AI fishery. The Council may want to consider whether options reflecting more recent time periods should be included for analysis.

The first step in evaluating the Aleutian Islands and Bering Sea allocations resulting from the options under Alternative 4 was to calculate each sector's AI retained Pacific cod harvest share, as a percentage of the total historical AI harvest of all sectors, during the years identified. These estimates are shown in Table 16. Table 17 shows the same data but includes cod destined for fish meal production. The first column for each option shows the retained catch of Pacific cod in the Aleutian Islands by each sector during the years specified in the options, while the second column shows the percent of the total Aleutian Islands retained catch by the sector during that period.

It was necessary to combine the <60' hook-and-line and pot catcher vessel sector with the jig sector in order to overcome issues with confidential data. It was also necessary to combine the AFA and non-AFA trawl catcher vessel sectors.

Table 16 Aleutian Islands retained Pacific cod harvest (mt and %) by sector under Alternative 4, Options 1-4 (meal excluded)

| Sector | Option 1: 1995-2002 | | Option 2: 1997-2003 | | Option 3: 2000-2003 | | Option 4: 2002-2003 | |
|-------------------------|------------------------|---------|------------------------|---------|------------------------|---------|------------------------|---------|
| | mt | percent | mt | percent | mt | percent | mt | percent |
| <60 HAL/Pot CVs and Jig | 456 | 0.3% | 468 | 0.3% | * | * | 64 | 0.1% |
| AFA Trawl CPs | 15,704 | 9.1% | 12,063 | 6.9% | conf. | conf. | conf. | conf. |
| Trawl CVs | 45,158 | 26.2% | 60,986 | 35.1% | 49,029 | 41.9% | 32,122 | 56.5% |
| Longline CPs | 56,230 | 32.6% | 49,059 | 28.2% | 27,072 | 23.1% | 2,515 | 4.4% |
| Longline CVs | 261 | 0.2% | 245 | 0.1% | 218 | 0.2% | conf. | conf. |
| Non-AFA Trawl CPs | 39,979 | 23.2% | 41,956 | 24.1% | 32,275 | 27.6% | 20,253 | 35.6% |
| Pot CPs | 7,912 | 4.6% | 3,753 | 2.2% | 1,500 | 1.3% | conf. | conf. |
| Pot CVs | 6,825 | 4.0% | 5,226 | 3.0% | 2,585 | 2.2% | conf. | conf. |
| Denominator | 172,526 | | 173,757 | | 117,028 | | 56,825 | |

Source: NPFMC database (Pcod tables revised for Feb 2011.xls and catch data-1.xls)
Conf. = confidential data. *Not shown due to restrictions on confidential data.

Table 17 Aleutian Islands retained Pacific cod harvest (mt and %) by sector under Alternative 4, Options 1-4 (meal included)

| Sector | Option 1: 1995-2002 | | Option 2: 1997-2003 | | Option 3: 2000-2003 | | Option 4: 2002-2003 | |
|-------------------------|------------------------|---------|------------------------|---------|------------------------|---------|------------------------|---------|
| | mt | percent | mt | percent | mt | percent | mt | percent |
| <60 HAL/Pot CVs and Jig | 456 | 0.3% | 471 | 0.3% | * | * | 66 | 0.1% |
| AFA Trawl CPs | 15,756 | 9.1% | 12,115 | 7.0% | conf. | conf. | conf. | conf. |
| Trawl CVs | 45,224 | 26.2% | 61,051 | 35.1% | 49,072 | 41.9% | 32,126 | 56.5% |
| Longline CPs | 56,230 | 32.6% | 49,059 | 28.2% | 27,072 | 23.1% | 2,515 | 4.4% |
| Longline CVs | 264 | 0.2% | 247 | 0.1% | 221 | 0.2% | conf. | conf. |
| Non-AFA Trawl CPs | 39,979 | 23.2% | 41,956 | 24.1% | 32,275 | 27.6% | 20,253 | 35.6% |
| Pot CPs | 7,912 | 4.6% | 3,753 | 2.2% | 1,500 | 1.3% | conf. | conf. |
| Pot CVs | 6,825 | 4.0% | 5,226 | 3.0% | 2,585 | 2.2% | conf. | conf. |
| Denominator | 172,643 | 100% | 173,878 | | 117,076 | | 56,832 | |

Source: NPFMC database (Pcod tables revised for Feb 2011.xls and catch data-1.xls)
Conf. = confidential data. *Not shown due to restrictions on confidential data

Recall that each sector's overall BSAI allocation is maintained under Alternative 4. Thus, to represent the AI percentage estimates above as a potential allocation to each sector in the following tables requires the use of the existing BSAI allocations.

Table 18 and Table 19 show estimated allocations, including and excluding meal, under Option 1. The remaining options are shown only without meal (Table 20 - Table 22). (See **Appendix 2** for graphics representing the BS and AI allocations resulting from Alternatives 3 and 4 compared to historical catch.) Only options that include 1995 - 1997 catch history (Option 1 and Option 2) would be impacted by the inclusion of fish meal in the catch data. The inclusion of fish meal in the calculation results in an AI allocation to the AFA CP sector that is about 0.1% higher under Option 2 than the allocation if meal is excluded. Note that the overall BSAI allocations stay the same, but the inclusion of meal negligibly affects how much the trawl sectors would receive in the AI versus the BS.

Table 18 depicts the results under Alternative 4, Option 1. The first column shows the BSAI allocation to each sector, as a percent of the BSAI ITAC. The second column shows the estimated allocation to each sector in metric tons, based on the 2011 BSAI ITAC of 203,559 mt. The third column shows the Aleutian Islands allocation to each sector, as a percent of the Aleutian Islands ITAC, based on Option 1. The third column shows each sector's Aleutian Islands allocation in metric tons, based on a projected Aleutian Islands ITAC of 12,591 mt. The fourth column shows each sector's remaining Bering Sea allocation in metric tons (i.e., each sector's overall BSAI allocation minus its AI allocation). The last two columns show the respective percentages of each sector's total BSAI allocation that is from the BS and the AI, based on the previous estimates. In reviewing this table, it is important to consider that the division of a sector's allocation between the BS and AI will vary annually with the respective ITACs. Recall also that these tables assume that the AI State water Pacific cod fishery continues to be allocated 3% of the BSAI Pacific cod ABC, but the amount is taken off the top of the AI ABC in order to calculate the AI TAC and ITAC.

Table 18 Alternative 4, Option 1: BSAI, AI, and BS Pacific cod allocations by sector using 1995–2002 AI catch history and the 2011 ITAC (includes meal)

| Sector | BSAI allocation (as percent of ITAC) | BSAI allocation (mt) | AI allocation (as percent of ITAC - 1995-2002) | AI allocation (mt) | BS allocation (mt) (remaining portion of sector's allocation) | BS allocation (as percent of sector BSAI allocation) | AI allocation (as percent of sector BSAI allocation) |
|-------------------------|--------------------------------------|----------------------|--|--------------------|---|--|--|
| <60 HAL/Pot CVs and Jig | 3.4% | 6,921 | 0.3% | 33 | 6,888 | 99.5% | 0.5% |
| AFA Trawl CPs | 2.3% | 4,682 | 9.1% | 1,149 | 3,533 | 75.5% | 24.5% |
| Trawl CVs | 22.1% | 44,987 | 26.2% | 3,298 | 41,688 | 92.7% | 7.3% |
| Longline CPs | 48.7% | 99,133 | 32.6% | 4,101 | 95,032 | 95.9% | 4.1% |
| Longline CVs | 0.2% | 407 | 0.2% | 19 | 388 | 95.3% | 4.7% |
| Non-AFA Trawl CPs | 13.4% | 27,277 | 23.2% | 2,916 | 24,361 | 89.3% | 10.7% |
| Pot CPs | 1.5% | 3,053 | 4.6% | 577 | 2,476 | 81.1% | 18.9% |
| Pot CVs | 8.4% | 17,099 | 4.0% | 498 | 16,601 | 97.1% | 2.9% |

Source: NPFMC database (Pcod tables revised Feb 2011.xls)

Example assumes the BSAI ABC (235,000 mt) is split 91% BS ABC and 9% AI ABC. The AI State water Pcod GH (7,050 mt) is taken off the top of the AI ABC in order to determine the AI TAC. Accounting for the CDQ allocation, the 2011 BSAI ITAC = 203,559 mt. The BS ITAC = 190,968 mt, and the AI ITAC = 12,591 mt.

Table 19 Alternative 4, Option 1: BSAI, AI, and BS Pacific cod allocations by sector using 1995–2002 AI catch history and the 2011 ITAC (excludes meal)

| Sector | BSAI allocation (as percent of ITAC) | BSAI allocation (mt) | AI allocation (as percent of ITAC -1995-2002) | AI allocation (mt) | BS allocation (mt) (remaining portion of sector's allocation) | BS allocation (as percent of sector BSAI allocation) | AI allocation (as percent of sector BSAI allocation) |
|-------------------------|--------------------------------------|----------------------|---|--------------------|---|--|--|
| <60 HAL/Pot CVs and Jig | 3.4% | 6,921 | 0.3% | 33 | 6,888 | 99.5% | 0.5% |
| AFA Trawl CPs | 2.3% | 4,682 | 9.1% | 1,146 | 3,536 | 75.5% | 24.5% |
| Trawl CVs | 22.1% | 44,987 | 26.2% | 3,296 | 41,691 | 92.7% | 7.3% |
| Longline CPs | 48.7% | 99,133 | 32.6% | 4,104 | 95,030 | 95.9% | 4.1% |
| Longline CVs | 0.2% | 407 | 0.2% | 19 | 388 | 95.3% | 4.7% |
| Non-AFA Trawl CPs | 13.4% | 27,277 | 23.2% | 2,918 | 24,359 | 89.3% | 10.7% |
| Pot CPs | 1.5% | 3,053 | 4.6% | 577 | 2,476 | 81.1% | 18.9% |
| Pot CVs | 8.4% | 17,099 | 4.0% | 498 | 16,601 | 97.1% | 2.9% |

Source: NPFMC database (Pcod tables revised Feb 2011.xls)

Example assumes the BSAI ABC (235,000 mt) is split 91% BS ABC and 9% AI ABC. The AI State water Pcod GH (7,050 mt) is taken off the top of the AI ABC in order to determine the AI TAC. Accounting for the CDQ allocation, the 2011 BSAI ITAC = 203,559 mt. The BS ITAC = 190,968 mt, and the AI ITAC = 12,591 mt.

Table 20 Alternative 4, Option 2: BSAI, AI, and BS Pacific cod allocations by sector using 1997–2003 AI catch history and the 2011 ITAC (excludes meal)

| Sector | BSAI allocation (as percent of ITAC) | BSAI allocation (mt) | AI allocation (as percent of ITAC -1997-2003) | AI allocation (mt) | BS allocation (mt) (remaining portion of sector's allocation) | BS allocation (as percent of sector BSAI allocation) | AI allocation (as percent of sector BSAI allocation) |
|-------------------------|--------------------------------------|----------------------|---|--------------------|---|--|--|
| <60 HAL/Pot CVs and Jig | 3.4% | 6,921 | 0.3% | 34 | 6,887 | 99.5% | 0.5% |
| AFA Trawl CPs | 2.3% | 4,682 | 6.9% | 874 | 3,808 | 81.3% | 18.7% |
| Trawl CVs | 22.1% | 44,987 | 35.1% | 4,419 | 40,567 | 90.2% | 9.8% |
| Longline CPs | 48.7% | 99,133 | 28.2% | 3,555 | 95,578 | 96.4% | 3.6% |
| Longline CVs | 0.2% | 407 | 0.1% | 18 | 389 | 95.6% | 4.4% |
| Non-AFA Trawl CPs | 13.4% | 27,277 | 24.1% | 3,040 | 24,237 | 88.9% | 11.1% |
| Pot CPs | 1.5% | 3,053 | 2.2% | 272 | 2,781 | 91.1% | 8.9% |
| Pot CVs | 8.4% | 17,099 | 3.0% | 379 | 16,720 | 97.8% | 2.2% |

Source: NPFMC database (Pcod tables revised Feb 2011.xls)

Example assumes the BSAI ABC (235,000 mt) is split 91% BS ABC and 9% AI ABC. The AI State water Pcod GH (7,050 mt) is taken off the top of the AI ABC in order to determine the AI TAC. Accounting for the CDQ allocation, the 2011 BSAI ITAC = 203,559 mt. The BS ITAC = 190,968 mt, and the AI ITAC = 12,591 mt.

Table 21 Alternative 4, Option 3: BSAI, AI, and BS Pacific cod allocations by sector using 2000–2003 AI catch history and the 2011 ITAC (excludes meal)

| Sector | BSAI allocation (as percent of ITAC) | BSAI allocation (mt) | AI allocation (as percent of ITAC 2000-2003) | AI allocation (mt) | BS allocation (mt) (remaining portion of sector's allocation) | BS allocation (as percent of sector BSAI allocation) | AI allocation (as percent of sector BSAI allocation) |
|-------------------------|--------------------------------------|----------------------|--|--------------------|---|--|--|
| <60 HAL/Pot CVs and Jig | 3.4% | 6,921 | * | * | * | * | * |
| AFA Trawl CPs | 2.3% | 4,682 | conf. | conf. | conf. | conf. | conf. |
| Trawl CVs | 22.1% | 44,987 | 41.9% | 5,275 | 39,712 | 88.3% | 11.7% |
| Longline CPs | 48.7% | 99,133 | 23.1% | 2,913 | 96,221 | 97.1% | 2.9% |
| Longline CVs | 0.2% | 407 | 0.2% | 23 | 384 | 94.2% | 5.8% |
| Non-AFA Trawl CPs | 13.4% | 27,277 | 27.6% | 3,472 | 23,804 | 87.3% | 12.7% |
| Pot CPs | 1.5% | 3,053 | 1.3% | 161 | 2,892 | 94.7% | 5.3% |
| Pot CVs | 8.4% | 17,099 | 2.2% | 278 | 16,821 | 98.4% | 1.6% |

Source: NPFMC database (Pcod tables revised Feb 2011.xls)

Conf. = confidential data. *Not shown due to restrictions on confidential data.

Example assumes the BSAI ABC (235,000 mt) is split 91% BS ABC and 9% AI ABC. The AI State water Pcod GH (7,050 mt) is taken off the top of the AI ABC in order to determine the AI TAC. Accounting for the CDQ allocation, the 2011 BSAI ITAC = 203,559 mt. The BS ITAC = 190,968 mt, and the AI ITAC = 12,591 mt.

Table 22 Alternative 4, Option 4: BSAI, AI, and BS Pacific cod allocations by sector using 2002–2003 AI catch history and the 2011 ITAC (excludes meal)

| Sector | BSAI allocation (as percent of ITAC) | BSAI allocation (mt) | AI allocation (as percent of ITAC 2002-2003) | AI allocation (mt) | BS allocation (mt) (remaining portion of sector's allocation) | BS allocation (as percent of sector BSAI allocation) | AI allocation (as percent of sector BSAI allocation) |
|-------------------------|--------------------------------------|----------------------|--|--------------------|---|--|--|
| <60 HAL/Pot CVs and Jig | 3.4% | 6,921 | 0.1% | 14 | 6,907 | 99.8% | 0.2% |
| AFA Trawl CPs | 2.3% | 4,682 | conf. | conf. | conf. | conf. | conf. |
| Trawl CVs | 22.1% | 44,987 | 56.5% | 7,117 | 37,869 | 84.2% | 15.8% |
| Longline CPs | 48.7% | 99,133 | 4.4% | 557 | 98,576 | 99.4% | 0.6% |
| Longline CVs | 0.2% | 407 | conf. | conf. | conf. | conf. | conf. |
| Non-AFA Trawl CPs | 13.4% | 27,277 | 35.6% | 4,487 | 22,789 | 83.5% | 16.5% |
| Pot CPs | 1.5% | 3,053 | conf. | conf. | conf. | conf. | conf. |
| Pot CVs | 8.4% | 17,099 | conf. | conf. | conf. | conf. | conf. |

Source: NPFMC database (Pcod tables revised Feb 2011.xls)

Conf. = confidential data.

Example assumes the BSAI ABC (235,000 mt) is split 91% BS ABC and 9% AI ABC. The AI State water Pcod GH (7,050 mt) is taken off the top of the AI ABC in order to determine the AI TAC. Accounting for the CDQ allocation, the 2011 BSAI ITAC = 203,559 mt. The BS ITAC = 190,968 mt, and the AI ITAC = 12,591 mt.

Because the fixed gear sectors have been taking less of their total Pacific cod harvest in the AI in the most recent years, and because all of the fixed gear sectors except for the hook-and-line CP sector receive a relatively small percentage of the overall BSAI ITAC, using the most recent years proposed (2002–2003) to determine the AI allocations will result in extremely small allocations to these sectors under every allocation scenario. This result may not represent a concern to these sectors, unless and until they desire to increase their Pacific cod share in the AI in the future. However, there is also a concern that these allocations may be too small for NMFS to manage, effectively resulting in a reduction in their overall allocation of Pacific cod. Under this alternative, the Council could consider allowing small AI allocation(s) to shift to the Bering Sea, should it fail to meet some minimum amount, and proportionately distribute the unallocated piece in the AI to sectors that have allocations there that are of sufficient size to fish.

If the Council wants to mirror the most recent sector shares of the AI Pacific cod harvest, it may want to 1) include series of years that are more recent than 2003; and/or 2) select percentages that fall within the range provided under Options 1–4. Note also that, as pointed out at the April 2006 Council meeting, because 1) the BSAI TAC split has not yet occurred, 2) it is uncertain how TACs in the BS and AI would fluctuate relative to one another in the future, and 3) the BS and AI allocations under Alternative 4 are dependent first on maintaining the overall BSAI allocation to each sector, it is theoretically possible that Alternative 4 could result in negative allocations in the BS for one or more sectors. This is because the BSAI allocation by sector is established in Federal regulation, and does not vary each year (unless a new regulatory amendment is approved). Each sector's percentage share of the AI ITAC also would be established in regulation. The actual allocation (in metric tons) would vary annually depending on the AI ITAC. Thus, while unlikely, it is possible, depending on TAC fluctuations, that a sector could have an AI allocation that is greater (in mt) than its overall BSAI allocation. If the Council wants to provide for this potential outcome, the following language could be added under Alternative 4:

If, in a particular year, the AI allocation to a sector is greater than the BSAI allocation to that sector, NMFS would set the sector's AI allocation equal to the sector's BSAI allocation and set the BS allocation equal to zero. All other sector AI allocations would be adjusted (increased) proportionately to allocate the full AI ITAC.

The language above ensures that a sector does not receive a negative allocation in the BS. Recall from Table 1 that participants in many sectors hold an LLP that is only endorsed for the Bering Sea. This is a significant issue in the trawl CV, pot CV, and <60' fixed gear sectors, in which more than half of the eligible licenses carry only a BS endorsement. Thus, selecting an allocation option that would result in no allocation in the Bering Sea could severely affect the ability of eligible vessels to continue participating in the Federal Pacific cod fishery. While the tables indicate that the smaller fixed gear sectors could receive a relatively small BS allocation, there is less likely the possibility for a negative or zero BS allocation as a result of Alternative 4, Option 4, since these sectors have taken very little of their overall harvest in the AI in 2002 and 2003. It is likely a greater concern that some of the smallest AI allocations to the fixed gear sectors either would not be worth fishing, or not be sufficiently large for NMFS to open a directed AI fishery.

In addition, it is assumed that the AI allocations would be seasonally apportioned, either the same as the existing BSAI seasonal allocations, or under a new regime. Seasonal apportionments would result in extremely small AI seasonal allocations to some sectors. Thus, implementing BS and AI allocations for each of nine sectors of the Pacific cod fishery may be much more difficult to manage than it appears on an aggregate gear level. In such case that: (1) there exist relatively small allocations to most of the fixed gear sectors with the exception of the hook-and-line CP sector; and (2) seasonal apportionments of the AI allocations are implemented, the result is very small allocations to particular, non-rationalized sectors (e.g., non-AFA trawl CV, <60' fixed gear, jig, hook-and-line CV, and pot CP sectors). This effect is

exacerbated if the overall TAC declines. It is thus possible that some sector AI (or BS) allocations will be so small that inseason management could not open a directed fishery, particularly for sectors that operate under a limited access system, as opposed to a catch share system. Another possibility is that these allocations are reallocated to another sector at the end of the year.

Overall, Alternative 4 is likely to be more disruptive to, and less flexible for, the BSAI Pacific cod fleet compared to Alternative 2. However, all options under Alternative 4 are based on a sector's actual AI harvest, so Alternative 4 is assumed to be less disruptive to the fleet than Alternative 3. The current options under Alternative 4 also do not appear to risk exceeding the limits set forth in the Steller sea lion RPA to reinitiate a consultation for non-trawl or trawl gear, based on the current projected biomass distribution between the two areas.

Option 5

In October 2006, the Council added a new option to each of the action alternatives that would change separate BS and AI LLP area endorsements into a single BSAI area-wide endorsement for the Pacific cod fishery:

Upon splitting the BSAI Pacific cod sector allocations between the Bering Sea and Aleutian Islands, separate BS and AI LLP area endorsements would be converted to BSAI area-wide endorsements for the Pacific cod fishery.

This option would give an AI endorsement to all groundfish vessels that have historically operated in, and are only eligible for, the Bering Sea. This would also give a BS endorsement to all groundfish vessels that have historically operated in, and are only eligible for, the Aleutian Islands. The purpose of this option is to allow sectors to fish in either area, in the event a portion of the BSAI Pacific cod TAC is relegated to the BS and AI. Industry was concerned with the inability to prosecute a portion of the allocation for which they do not carry the proper area endorsement. Industry participants are also concerned that with separate BS and AI TACs, the BS Pacific cod fishery could potentially close earlier than it would under a combined TAC. For Bering Sea participants that historically fish Pacific cod later in the year (B season), an early closure could potentially result in some participants foregoing a share of their historical catch.

The most obvious effect of this option would be increase the number of AI endorsements by 213 and the number of BS endorsements by 9 (see Table 1). The sectors estimated to receive the most new AI endorsements are the: AFA trawl CV sector with 60 new AI endorsements; pot CV $\geq 60'$ with 47 new AI endorsements, and the $<60'$ hook-and-line/pot CV sector with 87 new endorsements.

As noted above, the primary reason the Council added the new option was because of concerns that some sectors could be constrained in their ability to harvest their AI sector cod allocation. However, the new option may only be necessary to address the Council's concern if Alternative 3 is selected. Alternative 2 would have separate TACs for the BS and AI, but apportionments at the sector level would remain BSAI-wide, thus, creating new endorsements should not be necessary. Those that have historically fished Pacific cod in the AI are assumed to have an AI endorsement, and could continue to fish in the AI until the TAC is reached. Under Alternative 4, the apportionment of Pacific cod would be based on historic catch patterns in each of the areas, reducing the probability of a sector getting an unreasonable portion of their sector allocation in one area without the ability to harvest the allocation. Thus, if more recent years are included under Alternative 4, creating new area endorsements should not be necessary. Under Alternative 3, however, sector allocations of Pacific cod would not be apportioned based on historic fishing in the AI or BS, but instead would be based on an equal percentage in both the BS and AI of the sector's combined BSAI Pacific cod allocation. For example, since the pot CV sector allocation of BSAI

Pacific cod is 8.4%, the sector would be apportioned 8.4% of the AI ITAC and 8.4% of the BS ITAC, despite the sector having very limited catch history in the AI.

A potential effect of Option 5 could be an increase in the number of vessels fishing in the AI. An action that could increase the intensity of effort in the Aleutian Islands could be considered a departure from the fishing conditions that existed at the time of the 2010 Steller sea lion BiOp. Since the status quo Pacific cod fishery was part of a jeopardy determination, and significant restrictions in the AI were deemed necessary by NMFS to mitigate jeopardy, it is likely that any action that provides the potential for increased effort in the AI could be considered a significant change in the action that was considered in the BiOp, which may trigger a new consultation.

In addition, the new AI endorsements could create latent trawl AI endorsements, which is inconsistent with the Council's 2008 action to remove latent trawl gear endorsements from licenses in the BSAI and GOA unless the license met minimum landing requirements¹¹ with trawl gear (BSAI FMP Am. 92/82). This amendment was effective in 2009 (74 FR 41080, August 14, 2009), and the intent was to increase stability in the trawl sectors and protect existing participants from the possible future use of latent licenses, and thus a potential reduction in their gross revenue share due to this participation. With the Council removing trawl latent licenses from the AI as part of the BSAI and GOA trawl LLP recency action, the addition of new trawl AI endorsements under this proposed action could once again result in latent licenses in the AI Pacific cod fishery.

1.11.5 Summary of alternatives

At the February 2011 meeting, the Council may determine whether to initiate an analysis to establish separate BS and AI sector allocations, should the BSAI Pacific cod ABC and TAC be split into separate areas in a future specifications process. If the analysis is initiated, the Council should determine whether the current problem statement and alternatives are sufficient for consideration. The Council may also determine not to take action at this time.

In summary, in the past, none of the existing alternatives appeared to provide a satisfactory solution to the problem, given public testimony and deliberations at several Council meetings. The primary concern with the default allocation scenario under Alternative 1 (no action) is that it does not reflect recent historical catch by sector in the Aleutian Islands. In addition, under the current projected biomass distribution between the two areas, the default allocations under Alternative 1 appear to risk exceeding the amount of Pacific cod that can be harvested by non-trawl gear without triggering a new ESA consultation.

Alternative 2 provides the greatest flexibility for sectors and may be the easiest for NMFS inseason management to monitor. No sector allocations would be established for each area, but each area would stay open until the TAC was harvested. Thus, regardless of historical harvest patterns, sectors could move in and out of the BS and AI as desired on an inseason or annual basis, and focus their efforts in the area in which they can optimize their harvest at that point in time. However, the alternative risks creating a race for fish because there are no sector allocations for the separate areas. Under both the long-term and short-term average harvest distribution, one may expect that a race for fish in the AI would be inevitable. However, other factors will impact whether sectors would continue the current harvest distribution between areas, including the Steller sea lion mitigation measures effective in January 2011. The Steller sea lion RPA significantly reduces the area in the AI that is open to Pacific cod fishing for all gear types; it also modifies the seasons in which SSL critical habitat is open to Pacific cod fishing in the AI. It is not

¹¹ Under the Council's preferred alternative, area endorsements (BS and AI) were removed from trawl CV and CP licenses unless the license had at least two trawl groundfish landings during 2000 – 2006 in the endorsement area. As part of this action, the Council also approved adding 12 AI endorsements to qualifying non-AFA trawl CV licenses. The 8 AI endorsements earned by <60' non-AFA trawl CVs are only transferable to other <60' non-AFA trawl CV licenses.

possible to know with certainty how different fishing operations will react to the changes in the near term or over time.

The same concerns under Alternative 1 exist for Alternative 3, as they are effectively the same alternative. Finally, Alternative 4, identified as the preliminary preferred alternative in February 2006, also creates concerns. One concern is that TAC fluctuations will have disproportionate impacts on sectors that are allocated the greatest percentage of the area with the declining TAC. A related concern is that some of the resulting AI sector allocations may not be large enough to open a directed fishery in the AI, or would not be worthwhile to fish, thus resulting in a de facto reallocation to another sector, or foregone TAC. Another concern is that, depending upon TAC fluctuations between the two areas, some sectors could potentially receive a BS allocation that is zero or negative in a given year. While unlikely, language has been suggested to mitigate the potential for a negative BS allocation.

Additional issues pertaining to all action alternatives

One issue to note is that there are no gear-specific seasonal apportionments established separately for the BS or AI, which is necessary in order to implement the alternatives and may factor into a decision as to whether an alternative complies with the 2010 Steller sea lion Biological Opinion. NMFS would have to confirm whether the existing BSAI-wide Pacific cod gear specific seasonal allocations could be applied separately to the BS and AI, under any of the action alternatives. At a minimum, NMFS would have to be informally consulted on any action alternative, since a split in the BSAI Pacific cod sector allocations between the BS and AI areas would be considered a change in the action upon which NMFS, Protected Resources, and the Council previously consulted in 2010.

The Council would also need to specify how the existing AI State water Pacific cod GHL would be determined in the event of a BSAI Pacific cod ABC/TAC split. Currently, the GHL is calculated as 3% of the BSAI Pacific cod ABC. The State fishery plan indicates that upon a split, the Council would determine the 'source' of the GHL (e.g., the AI ABC), with the intent that the GHL remain the equivalent of 3% of the BSAI Pacific cod ABC. Two approaches are discussed in this paper. The first is that the Council could consider calculating the GHL as a direct percentage of the AI ABC or TAC, in order to mitigate the potential for the GHL to exceed the AI ABC due to fluctuations in biomass. However, that method does not guarantee that the GHL would equate to 3% of the BSAI Pacific cod ABC each year. (Under the most current projections of biomass distribution between the BS (91%) and AI (9%), the AI State water Pacific cod GHL would equate to one-third of the projected AI ABC.) Alternatively, the Council could continue to calculate the GHL as 3% of the BSAI Pacific cod ABC, but deduct the GHL wholly from the AI ABC in order to set the AI TAC. Under this method, the Council may consider also establishing a condition that sets the GHL equal to the AI ABC if, in a given year, the AI ABC is less than 3% of the BSAI ABC.

Appendix 1 AI Pacific cod State water fishery provisions

5 AAC 28.647. Aleutian Islands District Pacific Cod Management Plan

(a) This management plan governs the harvest of Pacific cod in the Aleutian Islands District west of 170° W. long.

(b) Each year, the commissioner shall open and close, by emergency order, a parallel season in the Aleutian Islands District west of 170° W. long., to coincide with the initial federal season in the Bering Sea-Aleutian Islands Area. The commissioner shall open and close, by emergency order, the parallel season during which the use of the same gear allowed in the federal Bering Sea-Aleutian Islands Area Pacific cod season is permitted, unless that gear is prohibited under 5 AAC 28.050 or 5 AAC 28.629.

(c) The commissioner shall open, by emergency order, a state waters season in the Aleutian Islands District west of 170° W. long. four days after the initial Bering Sea-Aleutian Islands parallel season for the catcher-vessel trawl fishery is closed. The commissioner shall close, by emergency order, the state waters season opened under this subsection when the guideline harvest level is taken or on December 31, whichever occurs first. All parallel seasons are closed during the state waters season.

(d) During a state waters season,

(1) the guideline harvest level for Pacific cod in the Aleutian Islands District west of 170° W. long. is three percent of the estimated total allowable harvest of Pacific cod for the federal Bering Sea-Aleutian Islands Area; the guideline harvest level will be available for harvest as follows:

(A) a maximum of 70 percent of the guideline harvest level will be available for harvest in the state waters A season before June 10 as follows:

(i) if the state waters A season guideline harvest level has not been taken by April 1, when the federal catcher-vessel trawl fishery season opens, the commissioner will close, by emergency order, the state waters A season and immediately reopen a parallel season;

(ii) if the commissioner determines that an adequate state waters season A guideline harvest level is available after the federal catcher-vessel trawl fishery season closes, and before June 10, the commissioner may reopen, by emergency order, the state waters A season;

(B) a total of 30 percent of the guideline harvest level plus any unharvested amount from the state waters A season under (1)(A) of this subsection, up to a maximum of 70 percent, will be rolled over on June 10 and available for harvest in the state waters B season; the guideline harvest level will be available as follows:

(i) if the state waters B season guideline harvest level has not been taken by September 1, when the federal catcher-vessel pot fishery season for vessels over 60 feet in overall length opens, the commissioner will close, by emergency order, the state waters B season and immediately reopen a parallel season;

(ii) if the commissioner determines that an adequate state waters season B guideline harvest level is available after the federal catcher-vessel pot fishery season for vessels over 60 feet in overall length closes, the commissioner may reopen, by emergency order the state waters B season;

(2) Pacific cod may be taken only with groundfish pots, mechanical jigging machines, longline, non-pelagic trawl, and hand troll gear; groundfish pots may be longlined; each end of the groundfish pot longline must have a buoy attached and each buoy must be marked with the permanent ADF&G vessel plate number of the vessel operating the groundfish longlined pot gear and the letters "GFL" to designate the gear as longlined groundfish pot gear; the numbers and letters must be marked on the top one-half of the buoy in numbers and letters that are at least four inches high, one-half inch wide, and in a color that contrasts with the color of the buoy; the buoy markings must be visible on the buoy above the water surface when the buoy is attached to the longlined pot gear; for the purposes of this paragraph, "longlined" means more than one groundfish pot is attached to a stationary, buoyed, and anchored line;

(3) a vessel used to harvest Pacific cod during the

(A) state waters 'A' season with

(i) non-pelagic trawl gear may not be more than 100 feet in overall length;

(ii) mechanical jigging machines and longline gear may not be more than 58 feet in overall length;

(iii) pot gear may not be more than 125 feet in overall length;

(B) state waters 'B' season, from

(i) June 10 through July 31, may not be more than 60 feet in overall length for any gear type;

(ii) August 1 through December 31, may not be more than 125 feet in overall length if operating pot gear and not more than 60 feet in overall length for all other allowable gear types;

(4) a vessel operator may be concurrently registered to harvest Pacific cod with mechanical jigging machines and longline gear, but may not be concurrently registered to harvest Pacific cod with any other gear types;

(5) a vessel's gear registration may be changed during a state waters season to a different gear registration if the owner, or owner's agent, submits a written request for a change in registration by mail, facsimile, or in person, to the department office in Dutch Harbor, or other locations specified by the department for validation, and that registration has been validated by the department; a vessel may not fish outside of the designated registration area; a vessel may not change registration while unprocessed fish are on board the vessel;

(6) the provisions of 5 AAC 28.629(d) and (e) and 5 AAC 28.690 do not apply;

(7) a vessel may harvest up to 150,000 pounds of Pacific cod per day and may not have more than 150,000 pounds of unprocessed Pacific cod on board the vessel at any time; a vessel may not have on board the vessel more processed fish than the round weight equivalent of the fish reported on ADF&G fish tickets during the seasons specified in (1)(A) and (B) of this section; a validly registered vessel must report daily to the department the pounds of Pacific cod taken and on board the vessel;

(8) all Pacific cod taken must be retained; any overage of a limit specified in (7) of this subsection must be immediately reported to the department by the vessel operator; all proceeds from the sale of Pacific cod in excess of a limit specified in (7) of this subsection shall be immediately surrendered to the state.

(e) The Aleutian Islands District is a nonexclusive registration area for Pacific cod during a state waters season.

(f) The commissioner may, by emergency order, impose bycatch limitations and retention requirements based on conservation of the resource, to avoid waste of a bycatch species, to prevent over harvest of bycatch species, or to facilitate consistency of the regulations in an area where state and federal jurisdictions overlap.

(g) In the state waters season, all closure areas specified in the parallel season shall apply as specified by gear group in 50 C.F.R. 679, revised as of October 1, 2005, as modified by 71 Federal Register 36,694-36,714 (July 28, 2006).

(h) For the purposes of this section,

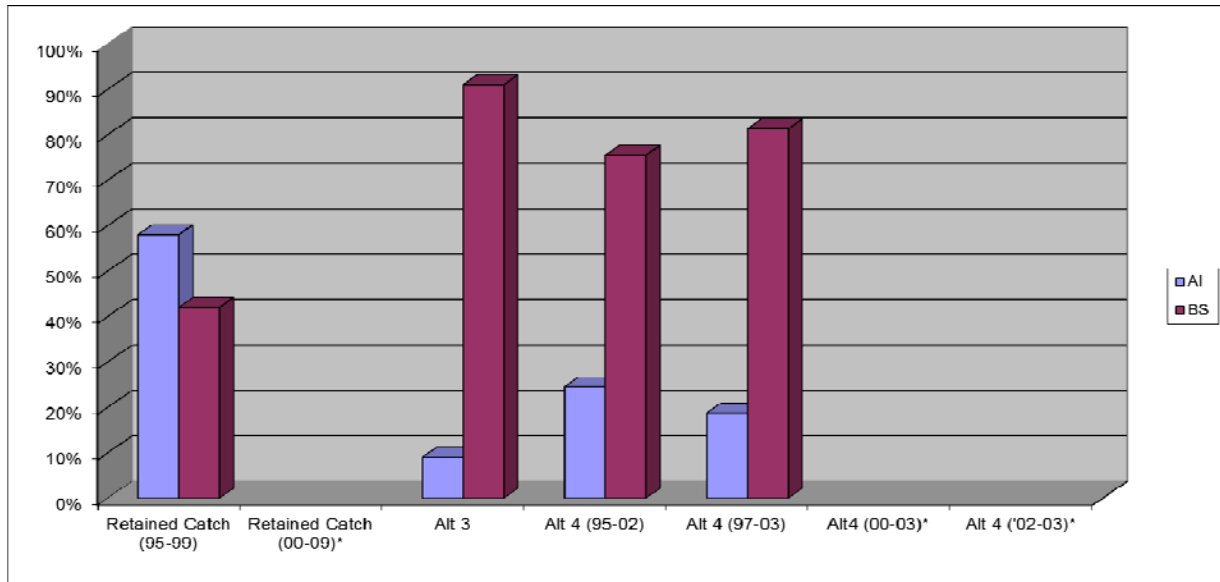
(1) "overall length" means the straight line length between the extremities of the vessel, excluding anchor rollers;

(2) "state waters A season" means the state waters season conducted from January 1 through June 9;

(3) "state waters B season" means the state waters season conducted from June 10 through December 31.

(i) The board intends that a vessel operator generally harvest less than the vessel's allowable harvest limit, possess less than the vessel's allowable possession limit, and limit the vessel's fishing activities if there is a possibility of exceeding those limits. A vessel operator of a vessel harvesting more than an allowable harvest limit or that is in possession of more than the allowable possession limit is considered to have engaged in improper operation of gear. Nothing in this section is intended to preclude or discourage additional enforcement action under AS 16.05.722 , AS 16.05.723 , or any other applicable law for any violation of this section.

Appendix 2 AI and BS Pacific cod catch by sector, and allocations under Alternatives 3 and 4



* Not shown due to confidential data

Figure A2-1 AI and BS Pacific cod catch and allocations for **AFA trawl CP** sector under Alternatives 3 and 4

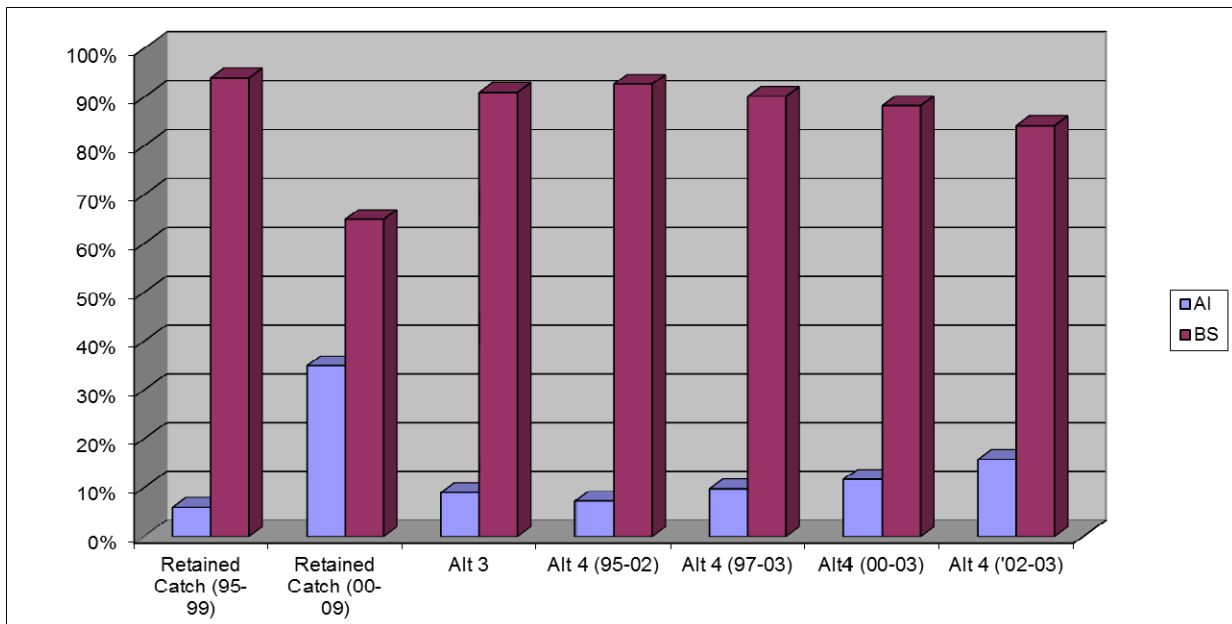


Figure A2-2 AI and BS Pacific cod catch and allocations for **trawl CV** sector under Alternatives 3 and 4

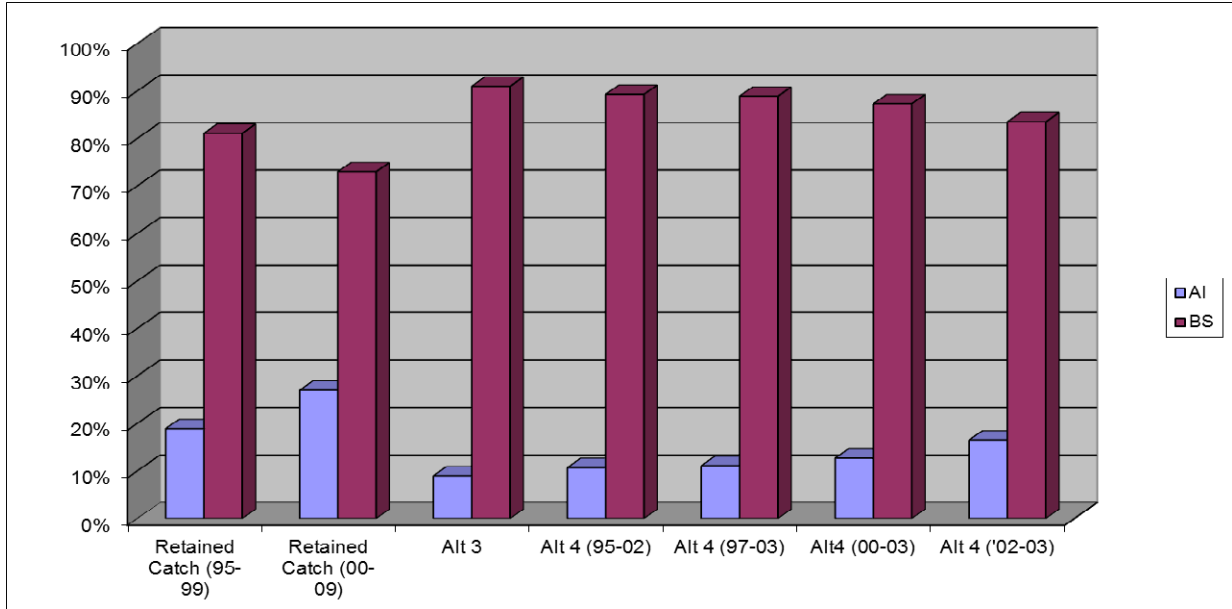
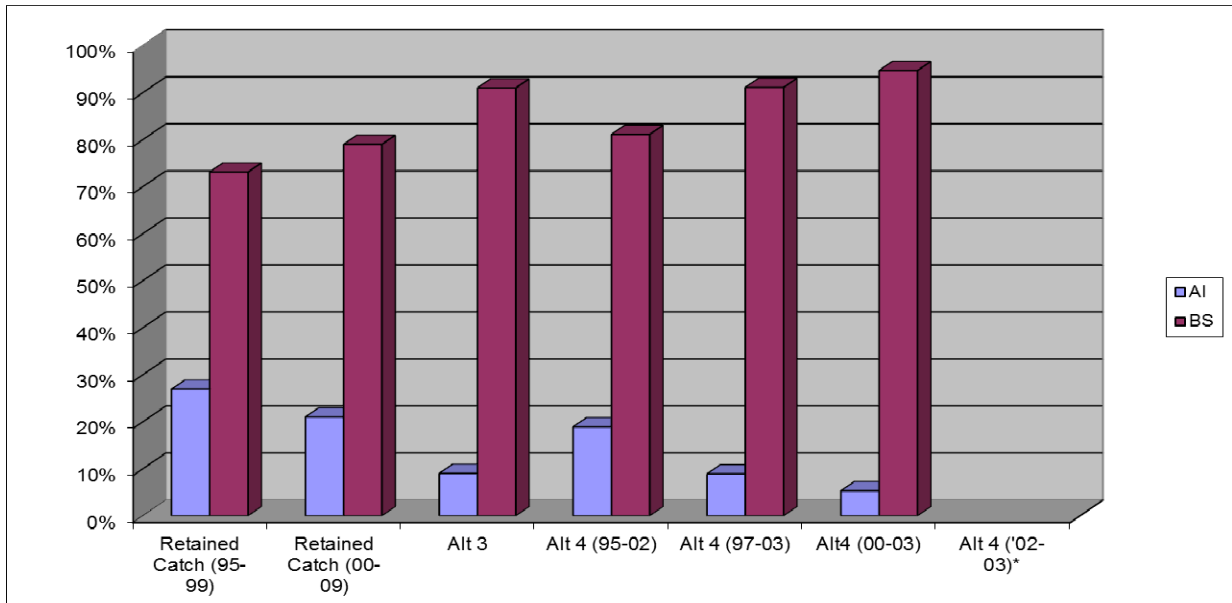
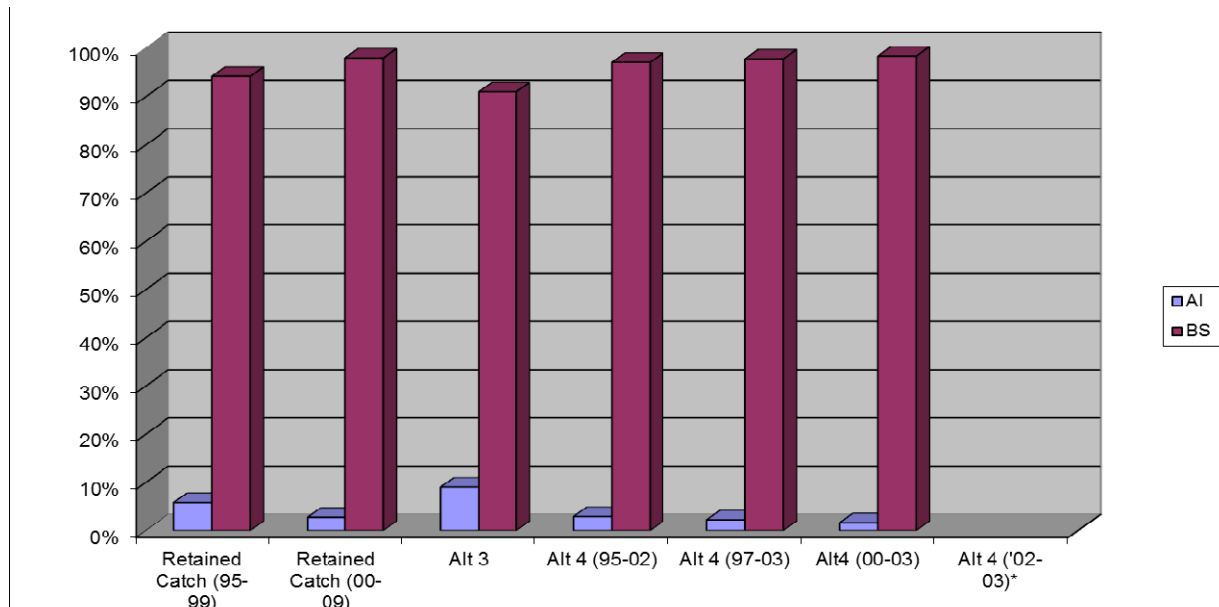


Figure A2-3 AI and BS Pacific cod catch and allocations for **non-AFA trawl CP** sector under Alternatives 3 and 4



* Not shown due to confidential data

Figure A2-4 AI and BS Pacific cod catch and allocations for **pot CP** sector under Alternatives 3 and 4



* Not shown due to confidential data

Figure A2-5 AI and BS Pacific cod catch and allocations for **pot CV** sector under Alternatives 3 and 4

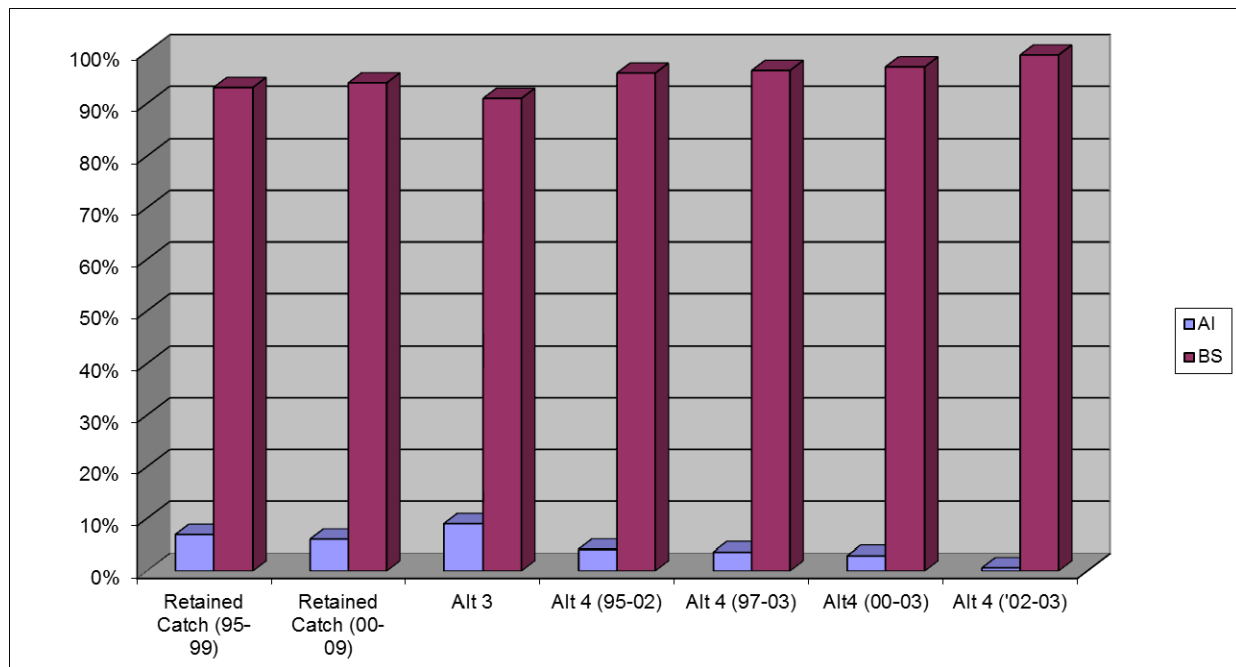


Figure A2-6 AI and BS Pacific cod catch and allocations for **longline CP** sector under Alternatives 3 and 4

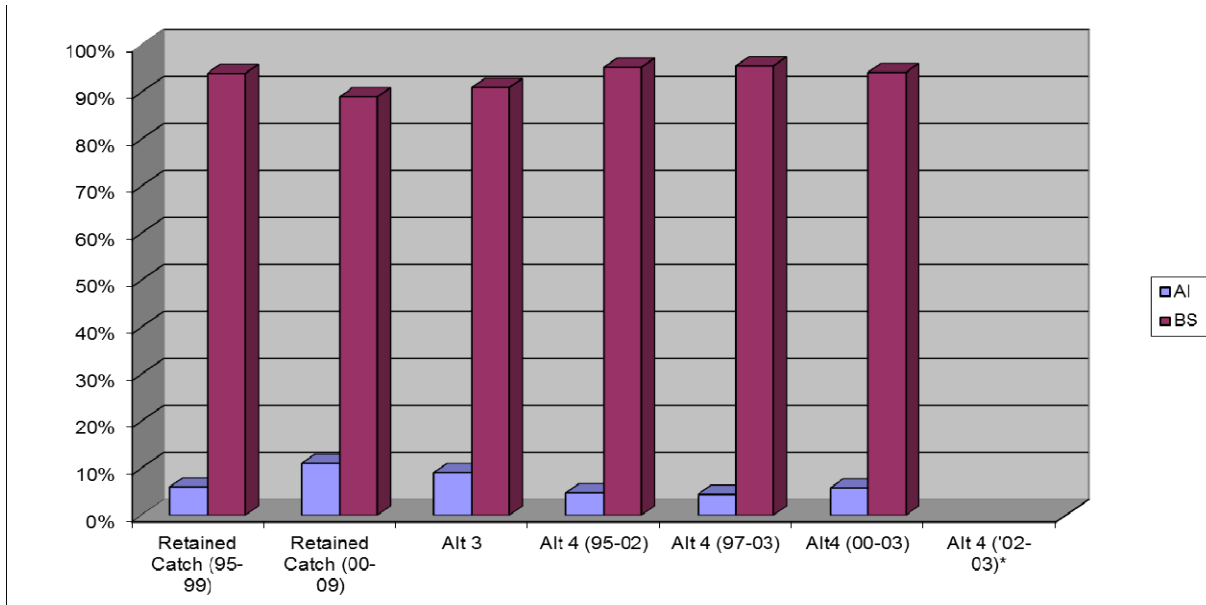


Figure A2-7 AI and BS Pacific cod catch and allocations for **longline CV** sector under Alternatives 3 and 4

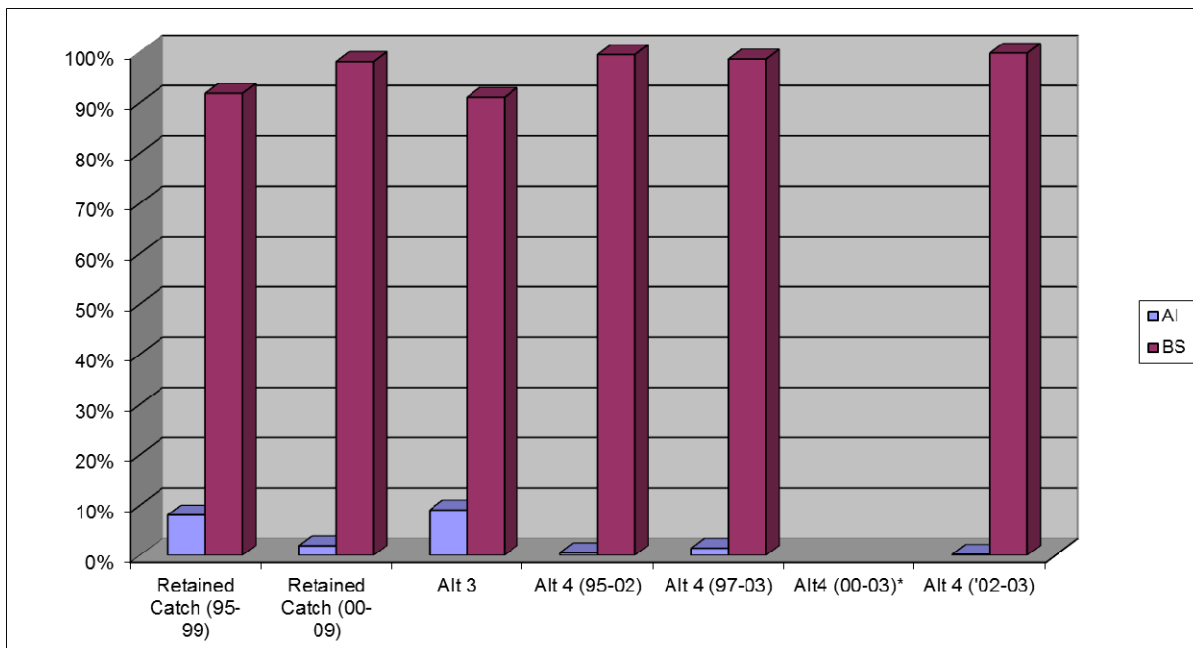


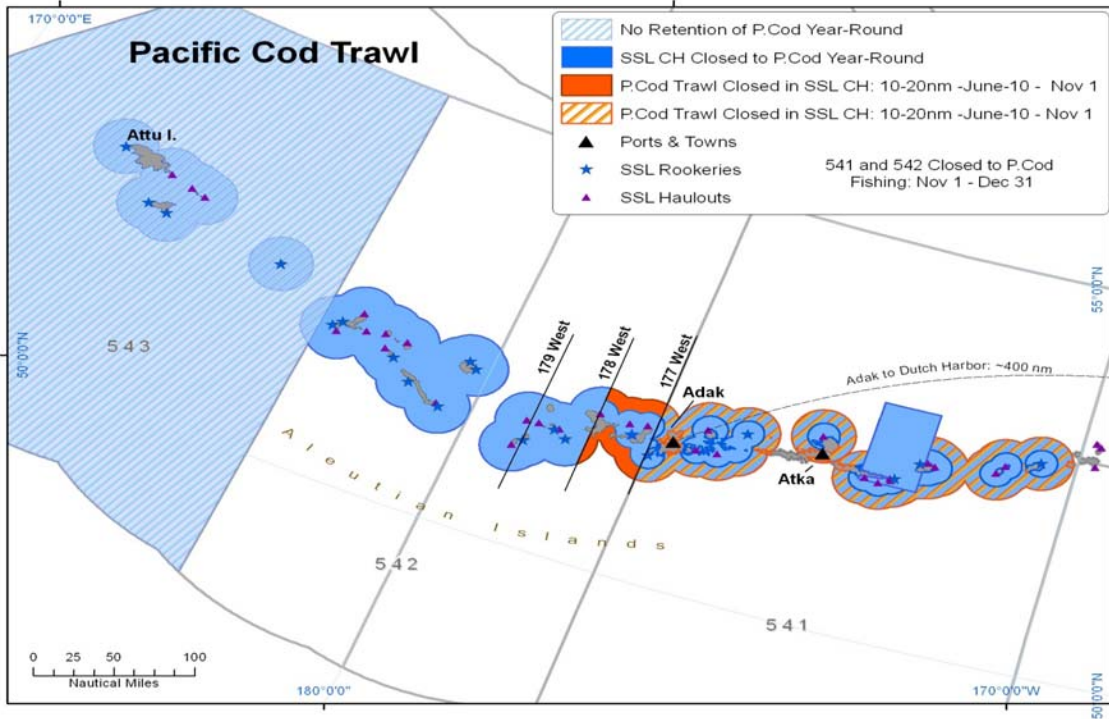
Figure A2-8 AI and BS Pacific cod catch and allocations for **<60' fixed gear** sector under Alternatives 3 and 4

Appendix 3 2010 Steller sea lion mitigation measures

| | 543 | 542 | | | | 541 | |
|---------------|------------|--|--|--|--|--|--|
| Atka mackerel | | Limit TAC to 47% of ABC, Change A season to Jan. 20-Jun. 10; change B season to Jun. 10-Nov. 1. | | Change A season to Jan. 20-Jun. 10. Change B season to Jun. 10-Nov 1. | | | |
| | | 177°E - 179°W | 179°W - 178°W Harvest Co-op. & CDQ Open Access | 178°W - 177°W | | ← Outside CH ← 0 - 3 nm CH ← 0 - 10 nm CH ← 10 - 20 nm CH | |
| P. Cod | | Non-trawl Vessels < 60' Vessels ≥ 60' | | Trawl 177°E - 178°W 178°W - 177°W | | Non-trawl Trawl | Trawl: Jan 20 – Jun 10; Nontrawl Jan 1 – Mar 1 Trawl: Jun 10 – Jan 20; Nontrawl: Mar 1 – Nov 1 |
| | | All Gear: P. Cod closure Nov. 1 – Dec. 31 Reinitiate consult if catch exceeds 1.5% BSAI P. cod ABC. | | All Gear: P. Cod closure Nov. 1 – Dec. 31 Reinitiate consult if catch exceeds 2% BSAI P. cod ABC. | | All Gear: P. Cod closure Nov. 1 – Dec. 31 Reinitiate consult if catch exceeds 1.5% BSAI P. cod ABC. | All Gear: P. Cod closure Nov. 1 – Dec. 31 Reinitiate consult if catch exceeds 11.25% BSAI P. cod ABC. |
| Other | Status Quo | Close groundfish fishing from 0-3 nm around Kanaga/Ship Rock Rookery | | | | Close the EBS subarea to directed fishing for Atka mackerel year-round. | |

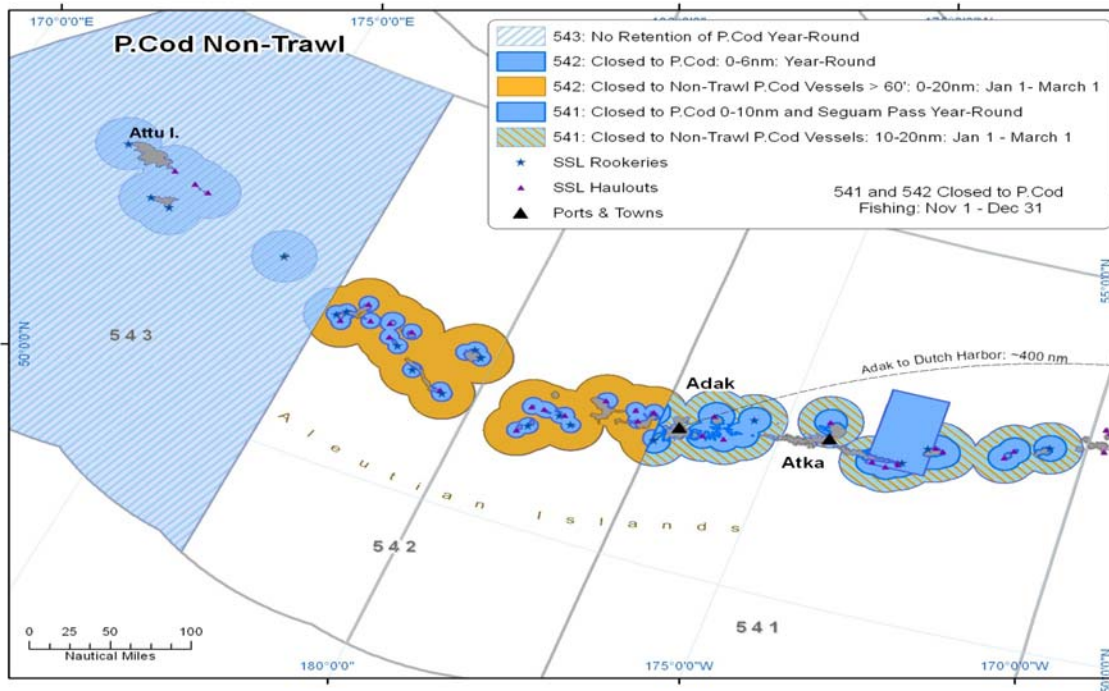
Summary of the Reasonable and Prudent Alternative (RPA) for Areas 543, 542, and 541

Source: Figure 8.1 of the Final Bering Sea and Aleutian Islands and Gulf of Alaska Groundfish Fisheries Section 7 Consultation – Biological Opinion, December 2010.



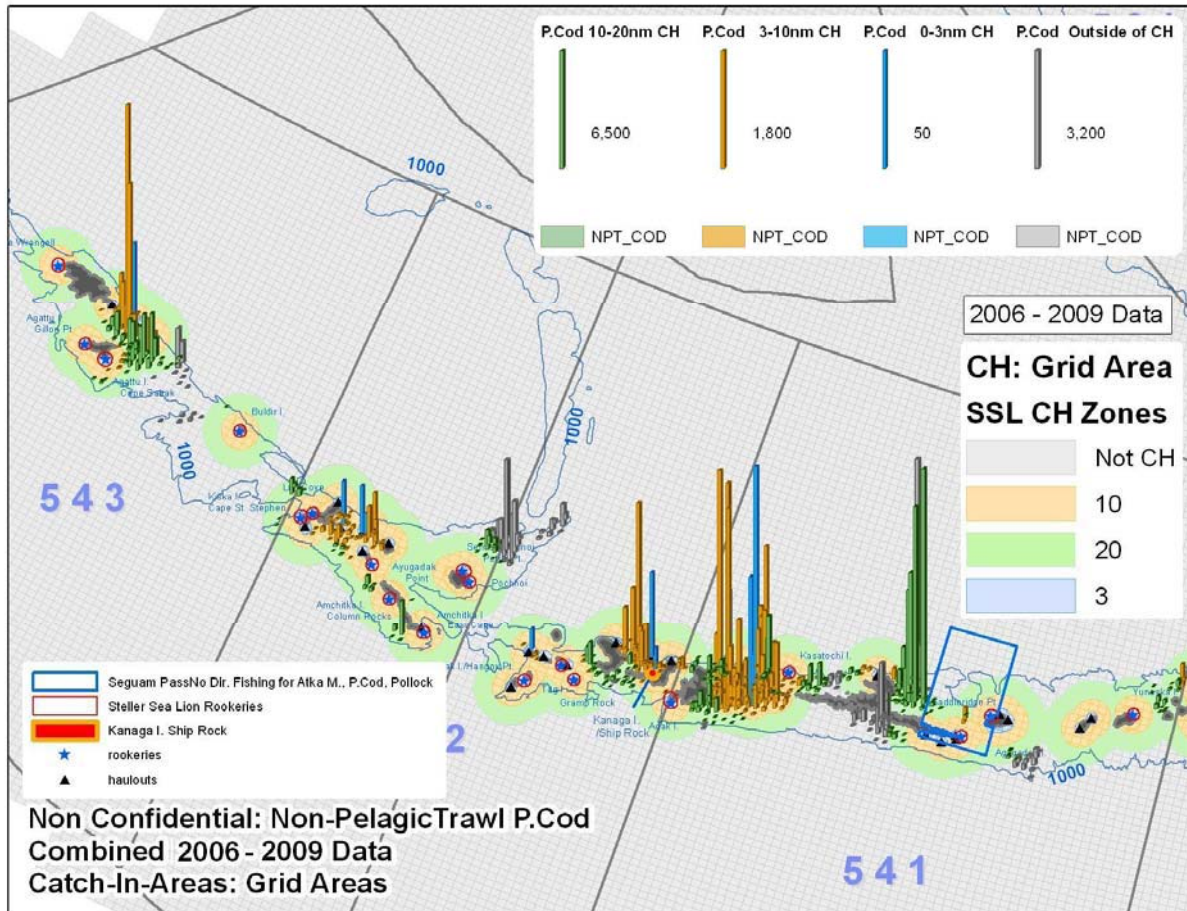
Map of the RPA for the Pacific cod trawl fisheries in Areas 543, 542, and 541

Source: Figure 8.4 of the Final Bering Sea and Aleutian Islands and Gulf of Alaska Groundfish Fisheries Section 7 Consultation – Biological Opinion, December 2010.



Map of the RPA for the Pacific cod non-trawl fisheries in Areas 543, 542, and 541

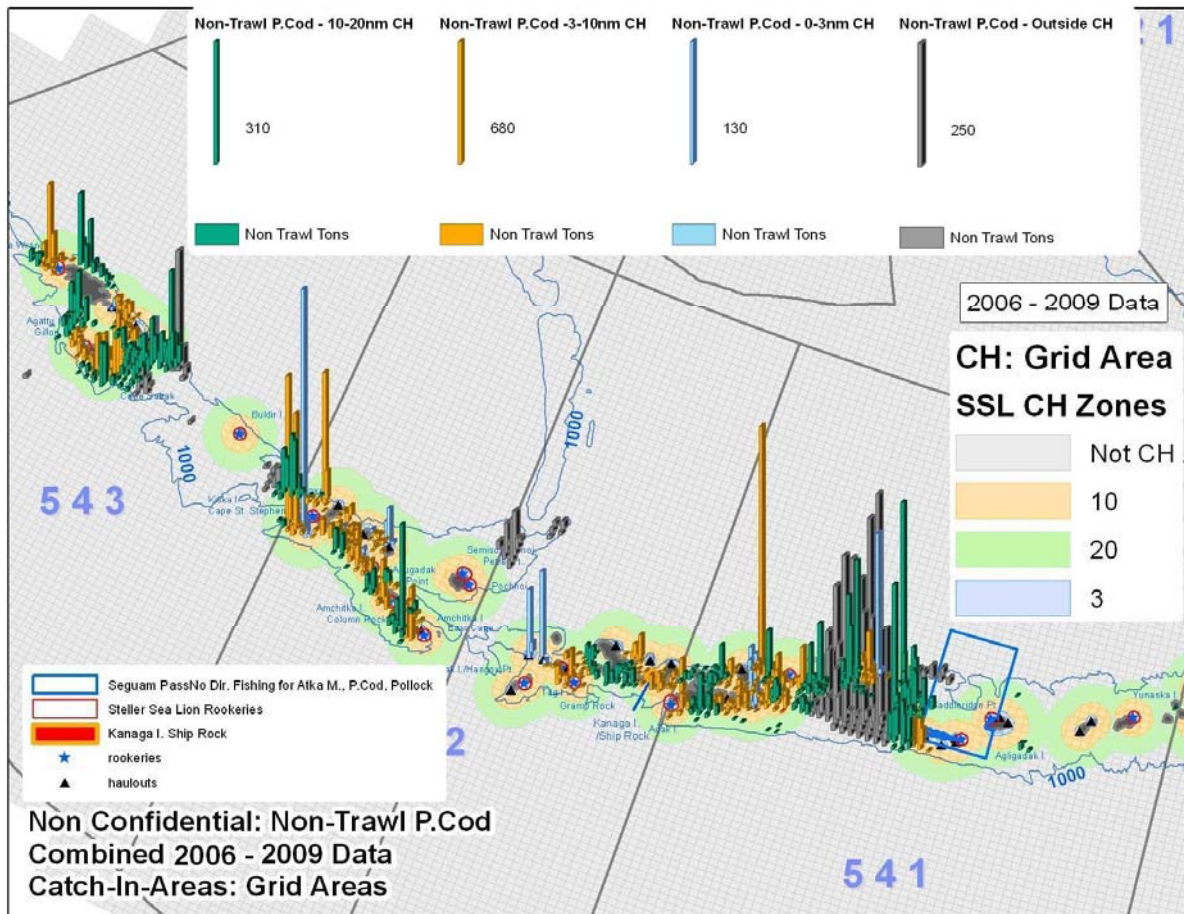
Source: Figure 8.5 of the Final Bering Sea and Aleutian Islands and Gulf of Alaska Groundfish Fisheries Section 7 Consultation – Biological Opinion, December 2010.



2006–2009 Pacific cod nonpelagic trawl locations in the Aleutian Islands subarea

Note: The lengths of the bars shown in the upper right corner represent the amount of harvest within each critical habitat zone listed. The number next to each bar provides the metric tons represented by the length of the bar.

Source: Figure 5-2 of the Revisions to the Steller Sea Lion Protection Measures for the Bering Sea and Aleutian Islands Management Area Groundfish Fisheries, Environmental Assessment/Regulatory Impact Review, November 2010. Steve Lewis, NMFS Analytical Team.



2006–2009 Pacific cod non-trawl locations in the Aleutian Islands subarea

Note: The lengths of the bars shown in the upper right corner represent the amount of harvest within each critical habitat zone listed. The number next to each bar provides the metric tons represented by the length of the bar.

Source: Figure 5-4 of the Revisions to the Steller Sea Lion Protection Measures for the Bering Sea and Aleutian Islands Management Area Groundfish Fisheries, Environmental Assessment/Regulatory Impact Review, November 2010. Steve Lewis, NMFS Analytical Team.