Draft for Public Review

DRAFT ENVIRONMENTAL ASSESSMENT/ REGULATORY IMPACT REVIEW/ INITIAL REGULATORY FLEXIBILITY ANALYSIS
For Amending the Process by Which Annual Harvest Specifications Are Established for
Alaska Groundfish Fisheries
Implemented Under the Authority of the
Fishery Management Plans
for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and
Groundfish of the Gulf of Alaska

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Abstract: This draft Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) provides an analysis of alternative administrative procedures necessary to support the harvest specifications process for setting total allowable catch (TAC) and other management measures for the Alaska groundfish fisheries in the exclusive economic zones of the Bering Sea and Aleutian Islands management area and the Gulf of Alaska. This Federal action would amend the process by which harvest specifications would be established in future years, eliminate certain TAC reserves, and update the fishery management plan language to current conditions and practices of the groundfish fisheries management. Objectives for the revised process include managing the Alaska groundfish fisheries based on the best available scientific information and providing meaningful opportunity for useful public comment. The action is not expected to have significant environmental, social, or economic impacts. Annual or biennial harvest specifications would continue to be assessed under separate EA/RIR/IRFAs prepared each period prior to agency approval of final harvest specifications.

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EXECUTIVE SUMMARY

Each year, normally in December, proposed groundfish harvest specifications for the Bering Sea and Aleutian Islands Management Area (BSAI) and Gulf of Alaska (GOA) are published in the Federal Register. These proposed specifications are based upon total allowable catch (TAC), acceptable biological catch (ABC) and prohibited species catch (PSC) amounts, and apportionments thereof, which have been recommended by the North Pacific Fishery Management Council (Council) for the current year. Based on public comment on the proposed specifications and information made available at the December Council meeting, final specifications are published in the Federal Register during February or early March. So that fishing may begin January 1, regulations authorize the release of one-fourth of each proposed TAC and apportionment thereof, one-fourth of each PSC and apportionment thereof and the first seasonal allowance of BSAI and GOA pollock and Pacific cod and BSAI Atka mackerel. These interim specifications are based upon the proposed specifications and published in the Federal Register in December and are superceded by the final specifications.

The existing harvest specification process is problematic for several reasons. The public is notified and given opportunity to comment on proposed specifications that often are outdated by the time they are published because stock assessment revisions between approval of the proposed and interim specifications and the final specifications result in changes between the proposed and final specifications. The publication of proposed specifications each year can confuse the public, because incomplete and outdated information is provided due to the need to adhere to a strict time line in order to comply with all relevant regulations. Because the interim specifications are based on the proposed specifications, they do not take into account the recommendations contained in the Groundfish Plan Teams' final stock assessment and fishery evaluation (SAFE) reports, or the recommendations coming from public testimony, the Science and Statistical Committee (SSC), Advisory Panel (AP), and Council at its December meeting. One fourth of the initial TAC and PSC amounts have been found to be an inadequate amount for those fisheries that attract the greatest amount of effort at the beginning of the fishing year. As fisheries are seasonally apportioned to meet other management needs, interim TACs based on one fourth of the annual TAC increasingly compromise other management objectives. Under the current process, administrative inefficiency exists in taking the regulatory actions necessary to set interim, proposed, and final specifications. For these reasons, NMFS seeks to revise the harvest specification process.

The objectives of modifying the harvest specifications process are to manage fisheries based on best scientific information available, provide for adequate prior public review and comment to the Secretary on Council recommendations, provide for additional opportunity for Secretarial review, minimize unnecessary disruption to fisheries and public confusion, and promote administrative efficiency.

The alternatives for amending this process are:

Alternative 1. Status quo. (Publish proposed specifications, followed by interim and final specifications)

Alternative 2: Eliminate publication of interim specifications. Issue proposed and final specifications prior to the start of the fishing year based on projections of TACs.

Alternative 3: Issue proposed and final harvest specifications based on an alternative fishing year schedule (July 1 to June 30).
  Option 1: Set sablefish TAC on a January through December schedule.
  Option 2: Reschedule the December Council meeting to January.

Alternative 4: Use stock assessment projections for biennial harvest specifications. Set the annual harvest specifications based on the most recent stock assessment for Year 1 and set harvest specifications for Year 2 based on projected overfishing level (OFL) and ABC values. Set PSC limits annually

Alternative 5: Establish 18 months harvest specifications (Year 1 and first half of Year 2)
Option: Annually set sablefish harvest specifications for all of Year 2.

Stand Alone Options:
Option A: Abolish certain TAC Reserves
Option B: Update FMPs to reflect current fishing participants and harvest specifications process.
Option C: Set biennial harvest specifications for certain GOA target species/complexes.

Section 4.11 gives the environmental summary and conclusions. The environmental components that may be affected by the proposed action are target groundfish species (including the State groundfish fisheries), prohibited species, Steller sea lions, State fisheries, IFQ fisheries, and AFA fisheries. State and AFA fisheries are potentially affected by the shifting of the fishing year under Alternative 3. Adjustment in the dates of State fisheries management may be needed, and possible difficulties in achieving the B season pollock TAC may be experienced by the AFA fisheries in years of high TAC. It is unknown if these effects may occur because of actions that may be taken by the State and the pollock industry that would mitigate the effects. Option 1 to Alternative 3 to set the sablefish TAC on a January through December schedule would allow the sablefish IFQ program to be managed concurrently with the halibut IFQ program, eliminating any potential effects on these programs from shifting the fishing year.

Table ES-1 provides a summary of the effects of the alternatives on certain environmental components compared to Alternative 1. Alternatives 1 and 5 are expected to have similar potential effects on groundfish and Steller sea lions because the use of information and timing of rulemaking are the similar under each of these alternatives. Results from simulation model and retrospective analysis indicated that under alternatives 2, 3, and 4, groundfish harvests would be less and several target species biomasses would be more than under alternatives 1 and 5. This was primarily due to uncertainty resulting from projecting harvest amounts further into the future than under Alternative 1. Alternative 3 is likely to provides less biomass variability and more likelihood of setting TAC below the OFL compared to alternatives 2 and 4. A number of factors are not part of the retrospective analysis and simulation model, including the full Council process, which can have a substantial effect on the final TAC and has historically been more conservative than the groundfish analysis in section 4.1 predicted. Potential overfishing and excessive seasonal harvest identified in the analysis are likely to be mitigated through the Council process and may also be mitigated by additional regulatory action, if new information becomes available during the current fishing year indicating the level of fishing is inappropriate. The effects on groundfish fishing mortality rates, biomass, and spatial and temporal harvest of groundfish from alternatives 2, 3, 4, and 5 are insignificant based on the results in section 4.1 and the significance criteria in the September 2003 revised draft programmatic supplemental environmental impact statement for the groundfish fisheries management in Alaska (PSEIS).

The only prohibited species that may be affected by the action is salmon under Alternative 3. The shifting of the fishing year provided less time to the pollock industry to harvest their B season apportionment which may result in more fishing during a period of higher salmon bycatch rates. This would be of more concern during years of high pollock TAC. The effect is unknown because of actions that the pollock industry may take to reduce the potential bycatch.

All of the alternatives may have temporal effects on the groundfish fisheries, posing difficulties in complying with Steller sea lion protection measures. These measures include the temporal dispersion of harvest of prey species to reduce the likelihood of competition between the groundfish fisheries and Steller sea lions. If biomass is falling, it is possible that the projected first seasonal apportionment may exceed the Steller sea lion protection measures. Inseason actions or emergency rulemaking may be used to reduce the first seasonal apportionment and possibly mitigate any potential effects on Steller sea lions. Because of the potential to mitigate the effects through conservative setting of TAC and regulatory action exists, the effects on the temporal harvest of prey on Steller sea lions is unknown. Under Alternative 3, current seasons may need to be adjusted for BSAI pollock and Pacific cod trawl fisheries to meet Steller sea lion protection measures and to coincide with the July 1 through June 30 fishing year.

Table ES-1 Effects on Environmental Components Comparison of Alternatives 2, 3, and 4 to Alternative 1 and 5

Environmental Component	Alt. 2	Alt. 3	Alt. 4
Groundfish Target species	Higher potential to set TAC over the OFL for short lived species. Higher biomass amounts over time.	Potential to set TAC over the OFL between Alt. 2 and Alt. 1. Biomass levels between Alt. 2 and Alt. 1. Similar to Alt. 5 if additional proposed rule required.	Potential to set TAC over the OFL higher than Alt. 2 Higher biomass amounts than Alt. 2 over time.
Prohibited Species	Same as Alt. 1 and 5	Possible increase in salmon bycatch in the BSAI pollock fishery	Same as Alt. 1 and 5
Steller sea lions	Unknown indirect effect on temporal dispersion of harvest of prey. Temporal harvest effects similar to Alt. 1 and 5	Less potential for indirect effect from harvest uncertainty than Alt. 2 but more than Alt. 1 and 5. Temporal harvest effects similar to Alt. 1 and 5.	More potential for harvest uncertainty than Alt. 2. Temporal harvest effects likely to be more than Alt. 2

Regulatory Impact Review

The Regulatory Impact Review (RIR) addresses the requirements of Presidential Executive Order (E.O.) 12866 for a benefit-cost analysis of the proposed action and its alternatives. A complete benefit-cost analysis was not possible. The information is not available to estimate dollar values for many of the benefits and costs. Moreover, the proposed action affects the conditions under which the Council and Secretary will make decisions about future TAC specifications. The actual benefits and costs will depend on the decisions made by the Council and Secretary, and those decisions cannot be predicted at this time. The RIR does examine a set of outcomes from this action that may affect the benefits and costs. Three general categories of outcomes are identified: (1) impacts on the TAC setting process itself, (2) changes in the fishing year under Alternative 3, and (3) changes in harvests and biomass size under Alternatives 2, 3, and 4.

Alternatives 2, 3, 4, and 5 provide more time for the process of TAC setting. Each should provide more time for some combination of scientific analysis, peer review of scientific work, public notice and comment on the proposed specifications regulations, and consideration by the Council and the Secretary of Commerce. Since these alternatives will provide for public notice and comment on the specifications actually anticipated for the coming fishing year, comments received from the public will be more useful. Alternatives 2 and 4 provide the most time for this process; Alternative 3 increases the amount of time available, but not to the same extent. It may be difficult, moreover, to complete the entire rulemaking process in the time allotted under Alternative 3, especially with Option 2. Option 2 to Alternative 3 would provide additional time for stock assessment scientists to complete analysis but it may be administratively difficult to reschedule the December Council meeting to January. Alternative 5 provides additional time for notice and comment rulemaking and Secretarial decision, but not for scientific analysis of survey and other data.

Alternative 3 changes the fishing year to begin on July 1. A comparison of fishing seasons for different species with the proposed July 1 start date suggests that a shift from a January 1 to a July 1 start date would cause little disruption to many fisheries. The sablefish IFQ fishery in the GOA and BSAI is an important exception to this. A change in fishing year, and associated change in TAC, would be extremely disruptive in the middle of this fishing season, which currently runs from March 15 to November 15. It might be possible to delay the season, so that it started on July 1 with the start of the new fishing year. However, the administration of the individual quotas in this fishery requires a long closed period between the end of one fishing season and the start of the next. Currently the fishery is closed from November 15 to March 15. This closed period is best in the winter time since fishing conditions aren't as good, and there is less potential for bycatch conflicts with the related halibut fishery. However, a July 1 start for the year would mandate a closed period from March through June. Option 1 to Alternative 3, setting sablefish TAC on a January through December schedule, would eliminate this potential problem.

Alternatives 2, 3, and 4 lengthen the time between biomass surveys and the year in which specifications based on the surveys (specifications year) become effective. Under Alternative 1, the time between the survey information and implementation of the annual fishery based on that information is approximately 7 months, because the first three month of the year are managed under interim specification (which are based on the previous years TACs). Alternative 3 increases the period by three months, Alternative 2 increases the period by nine months, and Alternative 4 increases it by an average of 15 months per year (nine months for the first year of the biennial specifications, and 21 months for the second year). As the length of time between the biomass surveys and the specifications year increases, there is some evidence that biomass levels may vary more, ABCs and harvests may become smaller since lower harvest rates are triggered more often by the harvest control rule, mean spawning biomass levels become larger, and harvest variability increases. These results are extremely tentative.

If the harvest levels do decline as suggested by some modeling results, revenues to industry would also decline. Moreover, an increase in the year-to-year variability of harvest, also suggested by some model results, may impose increased interest and inventory carrying costs on industry.

Initial Regulatory Flexibility Analysis

The Initial Regulatory Flexibility Analysis (IRFA) identifies the numbers of small entities that may be regulated by the action, describes the adverse impacts that may be imposed on these small entities, and describes alternatives to the preferred alternative that may minimize the adverse impacts on the small entities and the reasons they weren't chosen. In this case a preferred action has not yet been identified. This IRFA addresses the statutory requirements imposed under the Regulatory Flexibility Act (RFA) of 1980, as amended by the Small Business Regulatory Fairness Enforcement Act (SBREFA) of1996.

The IRFA used the Small Business Administration (SBA) definitions of small entities. Small fishing entities were those that grossed less than $3.5 million, small shoreside processing entities were those employing fewer than 500 persons. Non-profit entities were also considered small. The SBA also requires that an entity's affiliations be considered in determining its size. Large numbers of small entities may be regulated by this action. These include an estimated 1,211 small groundfish catcher vessel entities, 44 small groundfish catcher/processors, 36 shoreside groundfish processors, and six CDQ groups. The total numbers of entities regulated by this action include 1,228 groundfish catcher vessels, 80 groundfish catcher/processors, three groundfish motherships, 49 shoreside groundfish processors, and six CDQ groups.

There is some evidence that alternatives 2, 3, and 4 would lead to somewhat reduced revenues, cash flow, and profits for the small entities, although this result is uncertain. It was not possible to estimate the size of the impact on the small entities, although it was believed to be greatest for Alternative 4, less for Alternative 2, and least for Alternative 3. Increased year-to-year fluctuations in gross revenues may occur, and these also were expected to be greatest for Alternative 4, less for Alternative 2, and least for Alternative 3. Alternative 5 is not expected to have significant impacts on the level of variability of revenues compared to Alternative 1. The analysis was unable to determine whether or not there would be a disproportionate impact on small entities (compared to large entities). The analysis did identify additional impacts that were not adverse. Alternatives 2, 3, 4, and 5, provide better opportunities for small business input into decision making about specifications since they provide for more informed public notice and comment.

An important component of an IRFA is a review of the alternatives that have not been chosen, but that minimize the burden of the rule on regulated small entities, and an explanation of why each of these has not been chosen. In this case, a preferred alternative has not yet been chosen. Therefore it has not yet been possible to complete this portion of the IRFA.

Environmental impacts and socioeconomic impacts resulting from changing fishing patterns as a result of the preferred alternative would be assessed annually in the EA/RIR/IRFA that accompanies the final harvest specifications.

A preferred alternative has not been selected in this analysis. Table ES-2 compares the alternatives to the objectives of this action. Alternatives 2, 3, 4, and 5 include the projection of ABC to set harvest specifications which may cause increased variability and potentially less harvest of groundfish over time with the effects increasing the further the projections are made. Alternatives 1 and 5 have the least potential for environmental effects because of similar projections for only a few months at the beginning of the following year (interim specs. under Alternative 1 and January-March of year 2 under Alternative 5, if final rule can be issued after proposed rule). All of the alternatives have the problem of new information becoming available after the harvest specifications are in place that may result in emergency or inseason adjustment to ensure harvests levels are appropriate for biomass levels and to ensure Steller sea lion protection measures are met.   Alternatives 1, 2 , 3 and 5 have similar potential for this type of adjustment based on new data and Alternative 4 poses the worst scenario because of the longer projections.

Alternatives 2 through 5 provide for adequate prior public review and comment to the Secretary on Council recommendations. Alternatives 2 through 5 provide for additional opportunity for Secretarial review with Alternatives 3 and 5 providing less opportunity than alternatives 2 and 4. More time is provided under Alternatives 2 and 4 to perform stock assessments, to develop Council recommendations and to allow NMFS to implement proposed and final rule making before the beginning of the fishing year. The shifting of the fishing year under Alternative 3 has the disadvantage of requiring changes to the Sablefish IFQ program to accommodate a new fishing year, potentially affects the State fisheries, and provides less time for the stock assessment and rulemaking processes compared to Alternatives 2 and 4. Option 1 to Alternative 3 would eliminate the potential problems with the sablefish fisheries. Alternatives 2, 3, and 4 provide less disruption to fisheries and public confusion because the proposed rule for the harvest specifications would be based on final Council action. Alternative 5 provides flexibility for implementing the specifications but results in uncertainty in timing and the method of rulemaking that may be used each year. With increased flexibility, the administrative process for implementing the regulations under Alternative 5 is less efficient than alternatives 1, 2, 3, and 4. The most administratively efficient alternatives are those with the proposed specifications based on final Council action, as in alternatives 2, 3, and 4, except Alternative 4with annual PSC limits, requires annual rulemaking, reducing the administrative efficiencies that could have been realized with a biennial harvest specifications process.

Options A to eliminate certain TAC reserves and Option B to update the fishery management plan (FMP) language are housekeeping actions that have no effect on the environment and provide clarity and efficiency in managing the groundfish fisheries. Option C is not expected to have an impact on the environment and meets the objectives of this action. All of these options may be included with the alternative selected, except Option C with Alternative 4 which sets biennial harvest specifications for all species and areas.

Table ES-2 Do the Alternatives Meet the Objectives of the Action?

Objectives	Alternative 1	Alternative 2	Alternative 3 with sablefish option	Alternative 4	Alternative 5 with sablefish option	Option C, GOA Biennial Specs.
Manage fisheries based on best scientific information available	Yes for final specifications. Interim specifications based on previous year's SAFE documents. May be a problem for short lived species.	Yes, at time of decision making. Final specifications based on previous year's SAFE documents. May be a problem for short lived species.	Yes, at time of decision making. Second half of fishing year (Jan-June) projected from previous year's SAFE document. May be a problem for short lived species.	No. Final specifications in second year based on SAFE documents over two years old. Less certainty in ABC projections compares to other alternatives.	Yes for final specifications for the first year. First half of second year based on previous year's SAFE documents. May be a problem for short lived species.	Yes, Projections have no effect on species under this option.
Provide for adequate prior public review and comment to the Secretary on Council recommendations	No, proposed specifications are not an accurate reflection of final specifications.	Yes.	Yes	Yes	Yes	Yes,with alternatives 2,3,4, and 5
Provide for additional opportunity for Secretarial review	No, rulemaking time period is compressed.	Yes	Yes, but less time than Alternative 2 and 4.	Yes	Yes but less time than alternatives 2 and 4 if second proposed rule is not required.	Yes, with alternatives 2,3,4, and 5
Minimize unnecessary disruption to fisheries and public confusion	No. Proposed rulemaking is not an accurate reflection of final rule and not useful for planning purposes.	Yes, except new information after the establishment of specifications may result in adjustments. Proposed rule accurately reflects final rule.	Yes, except new information after the establishment of specifications may result in adjustments. Proposed rule accurately reflects final rule.	Yes, except new information after the establishment of specifications may result in adjustments. Proposed rule accurately reflects final rule.	No. Proposed rule is not based on Council final action and may require additional rulemaking beyond alternatives 2, 3, and 4, increasing uncertainty.	Yes, harvest levels are set for two years.
Promote administrative efficiency.	No, three rule makings required for each year. Adjustment of interim specs. may be required based on new information.	Yes, proposed and final rulemaking follows Council final action. Adjustment of specs. may be required based on new information.	Yes, proposed and final rulemaking follows Council final action. Adjustment of specs. may be required based on new information.	Maybe, proposed and final rulemaking follows Council final action. Frequency for most specs. reduced, but PSC and DSR on annual basis. Adjustment of year 2 specs. are more likely based on new information.	No, Proposed rule is not based on Council final action making rulemaking much more difficult than alternatives 2-4. Decision making will be required each year for method of implementing current specifications and if adjustment of year 2 specs. may be required.	Yes, reduces rulemaking frequency and analytical workload

1.0 PURPOSE AND NEED FOR ACTION

The proposed federal action is (a) change the administrative process used to implement harvest specifications which are used to manage the groundfish fisheries off Alaska and (b) update the fishery management plans for the Bering Sea and Aleutian Islands management area (BSAI) and Gulf of Alaska (GOA) groundfish fisheries. This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) analyzes revisions to the harvest specification administrative process for determining and implementing acceptable biological catches (ABCs), total allowable catches (TACs), and prohibited species catch (PSC) limits and apportionments for the groundfish fisheries of the BSAI and the GOA. The intent of revisions is to reflect current stock assessment and analytical requirements, to provide for the regulatory development and review process, to provide meaningful prior public review and comment to the Secretary on Council recommendations, and to provide for additional Secretarial review of proposed harvest specifications.

Under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1996, the United States has exclusive fishery management authority over all living marine resources, except for marine mammals and birds, found within the exclusive economic zone (EEZ) between 3 and 200 nautical miles (nm) from the baseline used to measure the territorial sea. The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in Regional Fishery Management Councils. In the Alaska region, the North Pacific Fishery Management Council (Council) has the responsibility to prepare fishery management plans (FMPs) for the marine resources it finds require conservation and management. The National Marine Fisheries Service (NMFS) is charged with carrying out the federal mandates of the Department of Commerce with regard to marine fish. The Alaska Regional Office of NMFS and Alaska Fisheries Science Center (AFSC, NMFS' research branch), research, draft, and support the management actions recommended by the Council.

The Magnuson-Stevens Act established that the FMPs must specify the optimum yield from each fishery to provide the greatest benefit to the Nation, and must state how much of that optimum yield may be harvested in U.S. waters. The FMPs must also specify the level of fishing that would constitute overfishing. Using the framework of the FMPs and current information about the marine ecosystem (stock status, natural mortality rates, and oceanographic conditions), the Council annually recommends to the Secretary TAC specifications and PSC limits and/or fishery bycatch allowances based on biological and economic information provided by NMFS. The information includes determinations of ABC and overfishing level (OFL) amounts for each of the FMP established target species or species groups.

An environmental assessment (EA) is prepared pursuant to the National Environmental Policy Act (NEPA) to determine whether a proposed action will result in significant effects to the human environment. If the environmental effects of the action are determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact are the final environmental documents required by NEPA. If it is concluded that the proposal is a major Federal action significantly affecting the human environment, an environmental impact statement must be prepared.

NEPA requires either an environmental assessment with a finding of no significant impact or an environmental impact statement for all federal actions that may have a significant impact on the human environment. EAs are generally done when an action is not anticipated to have a significant impact on the human environment or to provide additional information to support an environmental impact statement (EIS). The harvest specifications process alternatives examined in this EA/RIR/IRFA will continue to require an annual or biennial Federal action that includes further analysis for potential significant impacts from the annual harvest quotas and management measures.

The scope of this analysis does not extend to the setting of any particular TAC or PSC for any of the managed species. The focus of this analysis is the administrative process used to promulgate harvest specifications.[1] The reason is the actual setting of TAC includes discretionary considerations and current information which must be analyzed in advance of each time period they are in effect. The harvest specifications process is an FMP component analyzed in an EIS (NMFS 1998a) and in the recent revised draft programmatic SEIS (PSEIS) (NMFS 2003b).

1.1 Project Area

This proposed action applied to the BSAI and GOA FMPs. Figure 1.1 shows the waters included in Federal groundfish fisheries off Alaska. The groundfish fisheries occur in the North Pacific Ocean and Bering Sea in the EEZ from 50°N latitude to 65°N latitude. The subject waters are divided into two management areas: the BSAI and the GOA. The BSAI groundfish fisheries effectively cover all the Bering Sea under U.S. jurisdiction, extending southward to include the waters south of the Aleutian Islands west of 170° W. longitude to the border of the U.S. EEZ. The GOA FMP applies to the U.S. EEZ of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170° W. longitude and Dixon Entrance at 132°40' W. longitude. These regions encompass those areas directly affected by fishing, and those that are likely affected indirectly by the removal of fish at nearby sites. The area affected by the fisheries necessarily includes adjacent State of Alaska and international waters. Harvest specifications and fishery management measures affect groundfish fishing throughout the BSAI and GOA management areas.

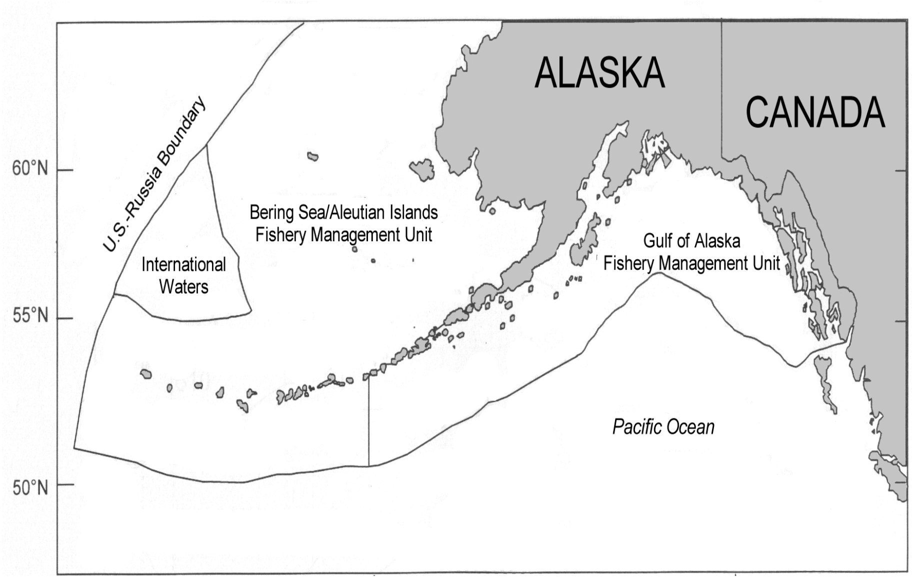


Figure 1.1 Federal Fisheries Off Alaska.

[1]Although, it also addresses some minor issues of updating FMP terminology.

1.2 Current Administrative Procedures for Harvest Specifications

Establishing harvest specifications involves the gathering and analysis of fisheries data. The groups responsible for reviewing stock assessments, recommending OFLs and ABCs, and preparing the SAFE reports for Council consideration are the BSAI and GOA Groundfish Plan Teams (Plan Teams). These teams include NMFS scientists and managers, Alaska, Oregon, and Washington fisheries management agencies scientists, university faculty, and Council staff. Using stock assessments prepared annually by NMFS and by the Alaska Department of Fish and Game (ADF&G), Plan Teams recommend biomass, ABC, and OFL for each species or species group, as appropriate, for specified management areas of the EEZ off Alaska that are open to harvest of groundfish. A Plan Team meeting is held in September to review potential model changes, ecosystem consideration, and other related management issues, and is used for proposed ABC recommendations. The Council meets in October and provides proposed specifications recommendations to NMFS for the next year. In November, the Plan Teams review stock assessment reports and authors' recommendations, and recommend specifications which are documented in annual SAFE reports. The SAFE reports incorporate biological survey work recently completed, any new methodologies applied to obtain these data, and ABC and OFL determinations based on the most recent stock assessments contained in the reports. Periodically, an independent expert panel reviews the assumptions used in the stock assessments for a selected species or species groups and provides recommendations to the AFSC on improving the assessment.

At its December meetings, the Council, its AP, its SSC, and interested members of the public, review the SAFE reports and make recommendations on final harvest specifications based on the information about the condition of groundfish stocks in the BSAI and GOA as analyzed in an annual EA supporting such action. The final harvest specifications recommended by the Council for the upcoming year's harvest quotas are based on the SAFE reports, which along with a separate ecosystem chapter and economic SAFE report, are part of the permanent record on the fisheries.

Specification of the upcoming year's harvest levels currently is a three-step process. First, proposed ABCs, TACs, and PSC limits[2] are recommended by the Council at its October meeting and published by December in the Federal Register for public review and comment. In October, most stock assessments are not yet available, so the proposed specifications were set equal to the current year's specifications before 2002 (rollover). In 2002, the proposed 2003 harvest specifications for a number of target species were based on projections from the 2001 SAFE reports, rather than rollovers of the 2002 harvest specifications. This provided for a more scientifically based proposed harvest level for those species with enough information available to allow for projections.

Second, NMFS annually publishes interim specifications to manage the fisheries from January 1 until they are superceded by the final specifications. The interim specifications are based on the proposed specifications. As specified in 50 CFR 679.20(c)(2), interim specifications are one-fourth of each proposed initial TAC (ITAC) and apportionment thereof, one-fourth of each proposed PSC allowance, and the first seasonal apportionment of GOA and BSAI pollock, Pacific cod, and BSAI Atka mackerel. These interim specifications are in effect on January 1 and remain in effect until superceded by final

[2]BSAI crab, halibut, salmon, and herring limits are established in regulations and the Council recommends target fishery and seasonal apportionments of these PSC limits. The Council recommends the GOA halibut PSC limits, seasonal apportionments, and fishery allocations.

specifications. For most BSAI target species, the ITAC is calculated as 85 percent of the previous year's TACs (50 CFR 679.20(b)). The remaining 15 percent is split evenly between the Western Alaska Community Development Quota (CDQ) program reserve and a non-specified groundfish reserve. It is the nonspecified portion of the BSAI TAC reserves that is proposed to be eliminated in Option A. See section 1.4 for more information. In the GOA, ITACs equal the full TAC except for pollock, Pacific cod, flatfish, and "other species." The ITACs for these four species or species groups equal 80 percent of the TACs. The remaining 20 percent of the TACs are established as a species specific reserve that also is proposed to be eliminated under Option A.

The interim PSC limits are one quarter of the annual PSC limit and PSC reserves. A PSC reserve of 7.5 percent is set aside to establish the prohibited species quota (PSQ) for the CDQ program (50 C FR 679.21(e)(1)(i)). For interim specifications, PSQ reserves are subtracted from the previous year's PSC limit, and 25 percent of the remaining amounts is established as an interim value until final specifications are adopted.

NMFS strives to publish the interim specifications in the Federal Register as soon as practicable after the October Council meeting and prior to the December meeting. Retention of sablefish in the BSAI with fixed gear is not currently authorized under interim specifications. Further, existing regulations do not provide for an interim specification for the CDQ non-trawl sablefish reserve or for an interim specification for sablefish managed under the IFQ program. This means that retention of sablefish in the BSAI taken with hook-and-line or pot gear is prohibited prior to the effective date of the final harvest specifications.

In the third step, final harvest specifications are recommended by the Council at its December meeting following completion of analysis of any new stock status information. These TAC specifications and PSC limits, and apportionments, are recommended to the Secretary for implementation in the upcoming fishing year. With the final specifications, most of the non-CDQ reserves are released and the final TAC is increased by the amount of reserves released. Currently, the final specifications are typically implemented in mid to late February and replace the interim specifications as soon as they are in effect.

Table 1.1 Current FMP timeline for annual harvest specification procedure.

September	Plan Teams review models for ABC recommendations for a number of groundfish species and recommends proposed ABC to Council.
October	Council recommends proposed harvest specifications based on previous year's stock assessment projections for upcoming year.
November	Proposed specifications are published[1]. Interim specifications are published[1]. Plan Teams provide final groundfish ABC recommendations.
December	Council recommends final groundfish specifications to NMFS.
January	Non-trawl groundfish fisheries open January 1 and trawl fisheries open January 20 with interim specifications equal to 25% of proposed specifications or first seasonal apportionment.
February	Non-specific reserves released and final specifications are published[2]

[1]Publication of proposed and interim specifications can occur as late as December.
[2]Publication of final specifications can occur as late as March.

Compliance with the Magnuson-Stevens Act, NEPA, the Endangered Species Act (ESA), Executive Order 12866 (EO 12866), and the Regulatory Flexibility Act (RFA) requires the development of detailed analyses of the potential impacts of the harvest specifications. This process usually involves the development of the SAFE reports, NEPA and RFA analytical documents first, with consultations on ESA listed species and essential fish habitat (EFH) based on the preliminary preferred alternative in the NEPA document. These analyses are drafted to inform decisionmakers within the Council and NMFS.

An EA is normally written each year for the harvest specifications. The draft ESA and EFH consultations may be included in the draft EA as appendices to provide opportunity for public review and comment, and for the decision makers to consider ESA and EFH concerns before making a final decision. The regulatory impact review (RIR) required under EO 12866 usually is incorporated into the EA for regulatory actions. The RFA requires the development of an initial regulatory flexibility analysis (IRFA) for the proposed action and a final regulatory flexibility analysis for the final action analyzing potential impacts of the action on small entities. Development of these analyses requires a number of analysts in the NMFS Alaska Region office and the AFSC. Four to six months are needed to adequately draft these analytical documents, and an additional month may be needed to finalize the documents after the Council makes its final recommendation on harvest specifications. However, currently, only about one week is available to draft the EA/IRFA for Council review in December, based on the final SAFE reports.

The current process used by the Alaska Region to publish most rules involves the Sustainable Fisheries Division drafting the rule package, with review by the Deputy Regional Administrator, Regional Enforcement Division, Protected Resources Division, Habitat Conservation Division, Restricted Access Management Division, and the Regional General Counsel. After Regional review is completed, the rule is forwarded to Headquarters, the NMFS Office of Sustainable Fisheries in Silver Spring, Maryland, where it undergoes a number of reviews within NMFS before forwarding to NOAA General Counsel. After clearing NOAA, the rule is reviewed by Department of Commerce (DOC) and usually the Office of Management and Budget, concerning EO 12866. OMB review has been waived for harvest specifications in the past on the basis that the harvest specifications process was part of a framework process. Because of the amount of discretionary items in the harvest specifications now, OMB review may be required for future harvest specifications rulemaking, increasing review time. After the rule has cleared NOAA, DOC, and OMB, the rule is forwarded to the Office of the Federal Register. This Headquarter’s review process normally takes at least 30 days for a proposed rule, but can take much longer depending on the complexity of the rule, degree of controversy, or other workload priorities within different review tiers. The review process is repeated for the final rule and may or may not include additional OMB review, depending on the nature of the action.

Public involvement may occur at a number of stages during harvest specifications development. Table 1.2 provides an overview of the points of decision making and the opportunity for public comment. Public comments are welcomed and encouraged throughout the Council process. Comments received before and during the December Council meeting are considered in developing the annual specification. Comments received by NMFS on the proposed rule are not likely to have much relation to the annual specifications because the proposed rule contains some of the previous year’s harvest specifications or projections of harvest, and are not likely to mirror the Council’s recommended final specifications. Once the Council makes a recommendation, the Secretary is required by the Administrative Procedure Act (APA) and the Magnuson-Stevens Act to provide opportunity for public review and comment on the proposed action that the Secretary will take, based on the Council’s recommendations. NMFS is the final decisionmaker for approval and implementation of harvest specifications. Although the public is afforded opportunities to comment on the Council's recommended specifications, it is clear that at least in the Ninth Circuit, opportunities to comment to the Council on its development of Council recommendations do not satisfy NMFS' APA notice and comment responsibility in subsequent rulemaking to approve and implement the recommended specifications.

Table 1.2 Current Groundfish Harvest Specifications Setting Process

Time	Activity	Opportunity for Public Involvement	Decision Points
January to August (of year prior to fishing year)	Plan and conduct stock assessment surveys.	Casual (staff and public may interact directly with stock assessment authors)	Cruise Plans finalized. Scientific Research Permits issued. Finalize lists of groundfish biomass and prediction models to be run. Staff assignments and deadlines set.
August - September	Preparation of preliminary SAFE Reports and proposed specifications recommendations. Groundfish Plan Teams meeting.	Open Public Meetings. *Federal Register* Notice of Plan Teams' Meetings.	Stock assessment teams fully scope out work necessary to complete stock chapter, models to run, emerging ecosystem issues
September	Staff draft proposed and interim harvest specifications notices and EA/IRFA based on current year's specifications or current SAFE report projections.	None	Proposed specifications based on current year's specs. or projections. Interim specifications are formula driven based on proposed harvest specifications.
October 1-7 or so	October Council Meeting Presentation of preliminary SAFE report, highlights of differences seen in recent surveys and ecosystem from past years. Council recommends proposed and interim specifications.	Open Public Meeting *Federal Register* Notice of initial action on next year's harvest specifications as an agenda item	Council recommends interim and proposed harvest specifications.
Late October	NMFS submits interim and proposed specifications package to HDQs.	None	Secretarial review of Council recommendation
November	November Plan Team Meetings EA/IRFA for final specs. drafted prior to and during Plan Team meetings. Finalize SAFE Reports. Initiation of informal Section 7 Consultation on final specs.	Open Public Meetings *Federal Register* Notice of Plan Teams' Meetings	Plan Teams make their ABC recommendations. Determination of whether Section 7 Consultation has to be formal or informal.

Time	**Activity**	**Opportunity for Public Involvement**	**Decision Points**
November - December	File interim and proposed specification rule with *Federal Register* Interim specs. EA completed.	Written comments accepted on 15-60 day (usually 30) comment period for proposed and interim rule. Comments welcome on EA/IRFA for proposed specs. Some specifications announced in the proposed rule **are not** the same as the final specifications that will be in the final rule.	Interim specifications effective on publication. Not realistic documents for which to invite public comments; however, by regulation, comments are accepted and are responded to in preamble of the final rule.
December 10-17	December Council Meeting. Release and present Draft EA/IRFA containing Final SAFE Reports, Ecosystem information, Economic SAFE report.	Open Public Meeting *Federal Register* notice of next year's harvest specifications as an agenda item. Last **meaningful** opportunity for comments on the next year's quotas.	Determine amount to nearest mt of next year's TAC and PSC quotas. Determination of no effect to Essential Fish Habitat.
Late December-January	NMFS staff draft final harvest specifications rule. Harvest specifications EA/FRFA finalized.	Comments related to information released prior to and during December Council meeting may still be trickling in. Those comments are given consideration in final edits of the EA/FRFA. No public comment period for EA/FRFA. Notices of intent to sue should be filed within 60 days of FONSI	ESA Section 7 consultation concluded. FONSI determination..
February of **subject fishing year**	Submit final rule to Secretary for filing with Office of Federal Register.	None	Secretarial approval of Council recommendation.
February or March of **subject fishing year**	*Federal Register* publication of Final Rule.	None. Administrative Procedure Act sets up 30 day cooling off period that may be waived for good cause.	Final harvest specifications replace interim specifications on date of publication.

1.3 Problem Statement for Harvest Specifications

The existing harvest specifications process is problematic as NMFS completes rulemaking using the best available scientific information, attempting to meet all the statutory rulemaking requirements, and having the final specifications in place as soon as possible in the new fishing year. The process does not allow for the prior public review of information related to the final Federal action, as required by the APA (see section 1.3.1). The difficulty lies in the insufficient amount of time available for analysis and rulemaking between when the new information is available and when the groundfish fishery is scheduled to start. Six months are usually required to completed analyses and rulemaking. In the normal rulemaking process, the Council is provided analyses regarding an action for initial and final consideration before submitting a final recommendation to NMFS. NMFS then reviews and proposes the Council's final recommendation, taking public comment for consideration before issuing the final rule.

Under the current harvest specifications process the proposed specifications are recommended by the Council in October before the new fishery information is available or analyzed in order to complete the rulemaking as soon as possible. The Council uses the new information available in November to recommend final specifications for the following year. A large difference between some proposed and final TACs can occur which may not be explained in the final rule (see section 1.3.3). The APA requires that the final rule is a logical outgrowth of the proposed rule, otherwise a new proposed rule should be used or waiver of prior notice and public comment may be considered under certain circumstances. The current process also has institutionalized the waiver of prior public notice and comment for the interim specifications which is unacceptable to the district court for the Northern District of California (Pollard 2003a). Interim specifications are also problematic for the management of the fisheries in the first part of the year, as explained further in Section 1.3.4.

1.3.1 Meeting Statutory Requirements

NMFS typically must comply with the following statutes during the harvest specifications process. Two statutes determine the process used for rulemaking (Administrative Procedure Act and the Magnuson-Stevens Act) and four statutes require various types of analysis of the action (Magnuson-Stevens Act, NEPA, ESA, and RFA).

The Administrative Procedure Act (APA):
§ 553 (b) requires NMFS to publish proposed regulations in the Federal Register.
§ 553(c) requires NMFS to provide "interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments with or without opportunity for oral presentation" and NMFS must consider the relevant comments received. Waiver of prior public review and comment are allowed with good cause. (§553(b)(B))
§ 553(d) The rule is effective 30 days after the date of publication of the final rule in the Federal Register, unless the 30 days delay is waived for good cause. (§ 553(d)(3))

Magnuson-Stevens Act:
§ 304(b)(1) The Secretary must immediately evaluate Council transmitted proposed regulations and determine within 15 days if the proposed regulations are consistent with FMPs, and applicable laws.
§ 304(b)(1)(A) Within the 15 days of evaluation and an affirmative determination, the Secretary shall publish proposed regulations in the Federal Register with a 15-60 day public comment period.
§ 304(b)(3) Within 30 days of the end of the comment period, the Secretary must publish final regulations and explain any changes that were made between the proposed and final regulations.
§ 305(b)(2) Any Federal agency must consult with the Secretary on any action that my adversely affect any essential fish habitat (EFH) identified under the act. For purposes of the harvest specifications, the interim and final specifications are analyzed.

National Environmental Policy Act (NEPA)
42 U.S.C.4332(2)(c) A Federal agency must determine if a major federal action may significantly affect the quality of the human environment. An environmental assessment must be prepared, followed by either a finding of no significant impact or further analysis in an environmental impact statement. This analysis is prepared during the proposed recommendation stage and finalized after the December Council recommendation is made.

Endangered Species Act (ESA)
§ 7(a)(2) Each Federal Agency must insure that the proposed action is not likely to result in jeopardy or adverse modification of critical habitat for ESA listed species. A consultation is required to analyze the action. For purposes of the harvest specifications, the interim and final specifications are analyzed.

Regulatory Flexibility Act (RFA)
5 U.S.C 604(a) Federal agencies must review regulations to ensure that the regulations do not unduly inhibit the ability of small entities to compete. This analysis is prepared during the proposed recommendation stage (IRFA) and finalized after the December Council meeting, when the final specifications are recommended (FRFA).

Optimistically, the current NMFS rulemaking process requires approximately six months from the date the final Council recommendation is made to when the final rule is effective. The time period can be significantly longer depending on the complexity of the rule, implementation issues, and level of staff work necessary to finalize any accompanying analysis after Council action. In the current specifications process, final stock assessment information used to develop harvest specifications is available 6 weeks (mid November) before the beginning of the fishing year. At least one month is needed by the Council to review the information and analysis and to develop recommendations. The Council then makes its recommendations in mid December. The new information is analyzed in the November SAFE reports and is further analyzed under NEPA, Magnuson-Stevens Act, the RFA, and the ESA. Ideally, the Council should have these analyses available during its initial consideration of the harvest specifications in October so that its decision making is fully informed from the beginning. Under the current process, these analyses can not be completed until after the November SAFE reports are completed, and the Council makes its final recommendations in December, before the Secretary of Commerce approves the action.

The Magnuson-Stevens Act sets proposed and final rulemaking deadlines. Harvest specifications proposed by the Council must be accompanied by analyses compliant with NEPA and RFA. NMFS staff prepares the Federal Register notice of proposed harvest specifications that describes and justifies the Council's recommendations. Preparation and regional review of these documents typically take three weeks. Once the draft proposed harvest specifications and analyses are submitted to NMFS Headquarters for review and publication in the Federal Register, these additional reviews and clearances currently require three to four weeks, not the 15 days set forth under the Magnuson-Stevens Act. Likewise, preparation, review, and publication of a final rule within 30 days of the end of the comment period is unlikely because of the time necessary to review comments and complete the drafting and review of the final rule package and submittal to the Federal Register. The proposed action analyzed in this EA/RIR/IRFA does not address this difficulty in meeting these statutory deadlines.

The APA requires that the public has the opportunity for review and comment on the proposed rule and supporting analysis that is used for the proposed and final rules. The analyses supporting the final harvest specifications are the November SAFE reports, EA/FRFA, and ESA and EFH consultations that are completed after the December Council meeting. A final rule can not be significantly changed from a proposed rule without an additional proposed rule with opportunity for public review and comment on the changes or good cause waiver of prior public review and comment may be used. Concerns have been raised about the current process of publishing proposed specifications prior to the December Council meeting which contain harvest levels that are not the same that will actually be implemented, establishing interim specifications based on these proposed specifications, and preempting public opportunity to formally review analyses and comment on the Council's December recommendations for the upcoming year's harvest specifications. The public is notified and given opportunity to comment on proposed specifications that are not a true representation of the specifications that will be in the final rule.

1.3.2 Availability of New Information

At the same time that NMFS is meeting requirements for proposed and final rulemaking, the actions must also be consistent with the national standards in the Magnuson-Stevens Act, (§ 301(a)). National Standard 2 requires that conservation and management measure be based on the best scientific information available. For harvest specifications, critical decision making reports (SAFE reports) are completed in November of each year. These reports are based on new data from resource assessment surveys which become available under different schedules for different areas and species. Currently, the anticipated schedule is as follows:

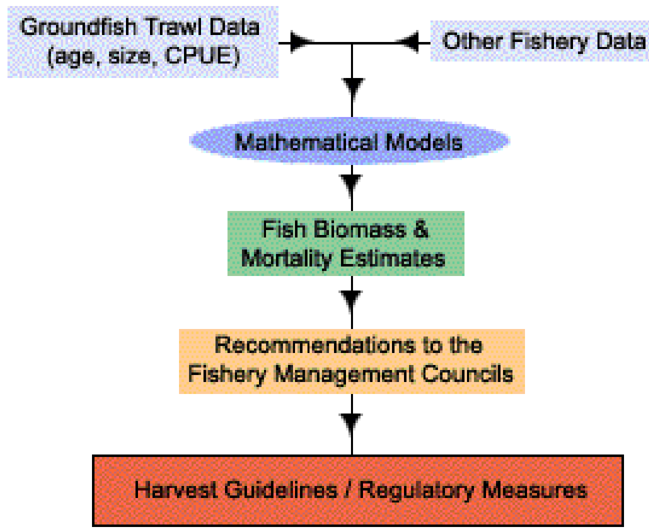
Schedule	**Survey**
Annual	Bering Sea summer bottom trawl survey on EBS shelf
Biennial	Bering Sea summer bottom trawl slope survey (first year is 2000) in the EBS even years
Annual	Winter pollock spawning survey in Shelikof and Bogoslof
Biennial	Aleutian Islands and Gulf of Alaska summer trawl surveys: GOA odd years; AI even years
Biennial	Summer acoustic surveys in Bering Sea and GOA: GOA shelf/slope odd years; EBS shelf/slope even years
Annual	GOA longline sablefish survey
Biennial	BSAI longline sablefish survey, BS odd years, AI even years
Biennial	GOA Demersal shelf rockfish line transect survey

The Resource Assessment and Conservation Engineering Division (RACE) conducts fishery surveys to measure the distribution and abundance of approximately 40 commercially important fish and crab stocks in the eastern Bering Sea, Aleutian Islands, and Gulf of Alaska. Data derived from these surveys are analyzed by AFSC scientists and supplied to fishery management agencies and to the commercial fishing industry.

The Groundfish Assessment Program is responsible for planning, executing, analyzing, and reporting results from surveys to establish time series estimates of the distribution and abundance of Alaska groundfish resources in the North Pacific. The program also investigates biological processes and interactions with the environment to estimate growth, mortality, and recruitment to improve the precision and accuracy of forecasting stock dynamics. The Groundfish Assessment Program in cooperation with the RACE Shellfish Assessment Program annually conducts a bottom trawl assessment survey for groundfish and king and Tanner crabs in the eastern Bering sea. This survey was initiated in 1971 and has been conducted annually since 1979. Major triennial surveys have been conducted for groundfish resources in the Aleutian Islands region, and in portions of the eastern Bering Sea not included in the annual groundfish/crab survey since 1977; these surveys are now conducted biennially (in even numbered years). Biennial surveys (in odd numbered years) also are conducted in the GOA. Annual surveys of sablefish abundance in the BSAI and GOA have been conducted since 1979 in cooperation with the AFSC Auke Bay Laboratory. Additionally, ADF&G uses direct observation to collect density estimates using a manned submersible to conduct line transects to estimate demersal shelf rockfish density (NMFS 2003a, appendix B).

The objectives of these surveys are to:

- Describe the temporal distribution and abundance of commercially and ecologically important groundfish species.
- Examine the changes in the species composition and size and age compositions of species over time and space.
- Examine reproductive biology and food habits of the groundfish community.
- Describe the physical environment of the groundfish habitat.



As the flowchart at right depicts, data collected from trawl surveys and other related sources of information are used in various mathematical models to help researchers analyze biomass and mortality dynamics. Information derived from the computer simulations is then used by fishery management scientists to help predict appropriate harvest guidelines and regulatory measures for commercial groundfish species in upcoming seasons.

Publication of meaningful proposed specifications is currently not practicable, because much of the data necessary for calculating updated ABCs for the GOA and the Aleutian Islands are not available until late October or later. Bering Sea survey data are available in late August or early September. Many assessments are updated after all summer trawl survey data become available in October. As the year progresses, the Plan Team and the Council also acquire updated information on harvest trends. Recommended final OFLs and ABCs are not produced for any BSAI or GOA groundfish species until the November Plan Team meeting. Regardless of the survey schedule for individual stocks, the SAFE reports are not completed and ready for Council consideration until mid November. The Council also needs the EA/IRFA for proposed specifications decision making, which under the current process is based on the SAFE report created for the current fishing year, rather than the SAFE report available in November for the follow fishing year for which the Council is proposing harvest specifications.

1.3.3 Development of Proposed Specifications and the Final Specifications

In 2002, the proposed 2003 harvest specifications were developed based on 2001 SAFE report biomass and ABC projections for 2003. In previous years, the proposed TACs were based on rolling over the previous year's TACs. The intent of this method change was to provide proposed harvest specifications that were a more accurate reflection of the final harvest specifications. The reliability of the projections could be determined by a retrospective analysis, comparing projected amounts with rollover amounts. [3]

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[3] Dr. James Ianelli, Personal Communication, June 25, 2003, AFSC National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

The natural mortality of the species will influence the dependability of the projections. Shorter lived species will be more likely have projections with larger differences in TAC from the previous year's TAC compared to longer lived species. The longer lived species will have more stable amounts of harvest between years. Further explanation of the variability of biomass and the projection differences between short lived and long lived species is in section 4.1.

Table 1.3 shows the difference between the past practice of rolling over the current year's TACs for the following year's proposed TACs and the projections used in 2002 for proposed 2003 TACs in the BSAI. Atka mackerel, yellowfin sole, and northern rockfish were the only species that had rollover values different from the actual proposed TAC. For northern rockfish and yellowfin sole, the rollover values were closer to the final TAC amounts than the proposed TAC. For Atka mackerel, the overall proposed TAC was closer to the final TAC than the rollover amounts. Even with the effort to have more scientifically based proposed TAC amounts for 2003, this effort did not appear to result in a significant improvement in the proposed TAC representing the final TAC over the past practice of rollovers of the previous year's TAC amounts in the BSAI fisheries.

Table 1.3 Comparison of Results for Past and Present Practices in Developing Proposed BSAI TACs

Species	Area	Rollover TAC from 2002	Proposed 2003 TAC	Final TAC	Rollover or Proposed TAC closer to final TAC?
Pollock	**BS**	1,485,000	1,485,000	1,491,760	
	AI	1,000	1,000	1,000	
	Bogoslof District	100	100	50	
Pacific cod	**BSAI**	200,000	200,000	207,500	
Sablefish	**BS**	1,930	1,930	2,900	
	AI	2,550	2,550	3,100	
Atka mackerel	**Total**	49,000	59,600	60,000	proposed
	Western AI	19,700	23,960	19,990	rollover
	Central AI	23,800	28,950	29,360	proposed
	Eastern AI/BS	5,500	6,690	10,650	proposed
Yellowfin sole	**BSAI**	86,000	76,000	83,750	rollover
Rock sole	**BSAI**	54,000	54,000	44,000	
Greenland turbot	**Total**	8,000	8,000	4,000	
	BS	5,360	5,360	2,680	
	AI	2,640	2,640	1,320	
Arrowtooth flounder	**BSAI**	16,000	16,000	12,000	
Flathead sole	**BSAI**	25,000	25,000	20,000	
Other flatfish	**BSAI**	3,000	3,000	3,000	
Alaska plaice	**BSAI**	12,000	12,000	10,000	
Pacific ocean perch	**BS**	14,800	2,620	1,410	
	AI Total		12,180	12,690	
	Western AI	5,660	5,660	5,850	
	Central AI	3,060	3,060	3,340	
	Eastern AI	3,460	3,460	3,500	
Northern rockfish	**BSAI**				
	BS	19	13	121	rollover
	AI	6,741	4,687	5879	rollover
Shortraker/rougheye	**BSAI**				
	BS	116	116	137	
	AI	912	912	830	
Other rockfish	**BS**	361	361	960	
	AI	676	676	634	
Squid	**BSAI**	1,970	1,970	1,970	
Other species	**BSAI**	30,825	30,825	32,309	
TOTAL			1,998,540	2,000,000	

Table 1.4 shows the difference between the rollover of 2002 TAC and the use of projections for proposing TAC for the GOA. Pacific cod, Pacific ocean perch, sablefish, other species, and northern rockfish have rollover amounts that were different than proposed TAC amounts. Compared to the rollover values, the proposed TAC was usually closer to the final TAC, except for the other species and northern rockfish, which were not projected values.

Table 1.4 Comparison of Results for Past and Present Practices in Developing Proposed GOA TACs

SPECIES	Area	2002 TAC rollover	Proposed 2003 TAC	Final TAC	Proposed or rollover closer to final TAC?
Pollock	W (610)	17,730	17,730	16,788	
	C (620)	23,045	23,045	19,685	
	C (630)	9,850	9,850	10,339	
	WYAK(640)	1,165	1,165	1,078	
	EYAK/SEO	6,460	6,460	6,460	
	TOTAL	58,250	58,250	54,350	
Pacific Cod	W	16,849	14,777	15,450	proposed
	C	24,790	21,743	22,690	proposed
	E	2,591	2,273	2,400	proposed
	TOTAL	44,230	38,793	40,540	proposed
Deep water flatfish	W	180	180	180	
	C	2,220	2,220	2,220	
	WYAK	1,330	1,330	1,330	
	EYAK/SEO	1,150	1,150	1,150	
	TOTAL	4,880	4,880	4,880	
Rex sole	W	1,280	1,280	1,280	
	C	5,540	5,540	5,540	
	WYAK	1,600	1,600	1,600	
	EYAK/SEO	1,050	1,050	1,050	
	TOTAL	9,470	9,470	9,470	
Shallow water flatfish	W	4,500	4,500	4,500	
	C	13,000	13,000	13,000	
	WYAK	1,180	1,180	1,160	
	EYAK/SEO	1,740	1,740	2,960	
	TOTAL	20,420	20,420	21,620	
Flathead sole	W	2,000	2,000	2,000	
	C	5,000	5,000	5,000	
	WYAK	1,590	1,590	2,900	
	EYAK/SEO	690	690	1,250	
	TOTAL	9,280	9,280	11,150	
Arrowtooth flounder	W	8,000	8,000	8,000	
	C	25,000	25,000	25,000	
	WYAK	2,500	2,500	2,500	
	EYAK/SEO	2,500	2,500	2,500	
	TOTAL	38,000	38,000	38,000	
Sablefish	W	2,240	2,430	2,570	proposed

SPECIES	Area	2002 TAC rollover	Proposed 2003 TAC	Final TAC	Proposed or rollover closer to final TAC?
	C	5,430	5,900	6,440	proposed
	WYAK	1,940	2,110	2,320	proposed
	SEO	3,210	3,490	3,560	proposed
	TOTAL	12,820	13,930	14,890	proposed
Other Slope rockfish	W	90	90	90	
	C	550	550	550	
	WYAK	150	150	150	
	EYAK/SEO	200	200	200	
	TOTAL	990	990	990	
Northern rockfish	W	810	760	890	rollover
	C	4,170	3,940	4,640	rollover
	E	0	0	0	
	TOTAL	4,980	4,700	5,530	rollover
Pacific ocean perch	W	2,610	2,630	2,700	proposed
	C	8,220	8,290	8,510	proposed
	WYAK	780	780	810	
	SEO	1,580	1,600	1,640	proposed
	TOTAL	13,190	13,300	13,660	proposed
Shortraker/rougheye	W	220	220	220	
	C	840	840	840	
	E	560	560	560	
	TOTAL	1,620	1,620	1,620	
Pelagic shelf rockfish	W	510	510	510	
	C	3,480	3,480	3,480	
	WYAK	640	640	640	
	EYAK/SEO	860	860	860	
	TOTAL	5,490	5,490	5,490	
Demersal Shelf Rockfish	GW	350	350	390	
Atka Mackerel	GW	600	600	600	
Thornyhead rockfish	W	360	360	360	
	C	840	840	840	
	E	790	790	800	
	TOTAL	1,990	1,990	2,000	
Other Species	GW	11,330	11,103	11,260	rollover
GOA TOTAL			233,166	236,440	

In 2003, the absolute difference between proposed and final TACs for the BSAI averaged 24 percent over all species and species groups, except northern rockfish. Northern rockfish was left out of the average because of the very small amount of TAC and the huge change between the proposed and final TAC (830 percent). Individual species TACs ranged from 0-831 percent (Table 1.5). For the GOA the difference averaged 7 percent ranging from 0-82 percent for individual species (Table 1.6). This comparison shows that the proposed specifications were not a good indication of what the final TACs and apportionments would be. Public comments received on the proposed rule could be less than fully informed to the extent these proposed amounts and trends change before the start of the upcoming fishing year, and the proposed values did not incorporate the latest SAFE reports and decision making that is made at the Council level in developing the final harvest specifications recommendations.

Table 1.5 Comparison of Proposed and Final TACs in the BSAI for 2003

Species	Area	Proposed 2003 TAC	Final 2003 TAC	Percent Change
Pollock	BS	1,485,000	1,491,760	0.5
	AI	1,000	1,000	0.0
	Bogoslof District	100	50	-50.0
Pacific cod	BSAI	200,000	207,500	3.75
Sablefish	BS	1,930	2,900	50.3
	AI	2,550	3,100	21.6
Atka mackerel	Total	59,600	60,000	0.7
	Western AI	23,960	19,990	-16.6
	Central AI	28,950	29,360	1.4
	Eastern AI/BS	6,690	10,650	59.2
Yellowfin sole	BSAI	76,000	83,750	10.2
Rock sole	BSAI	54,000	44,000	-18.5
Greenland turbot	Total	8,000	4,000	-50.0
	BS	5,360	2,680	-50.0
	AI	2,640	1,320	-50.0
Arrowtooth flounder	BSAI	16,000	12,000	-25.0
Flathead sole	BSAI	25,000	20,000	-20.0
Other flatfish	BSAI	3,000	3,000	0.0
Alaska plaice	BSAI	12,000	10,000	-16.7
Pacific ocean perch	BS	2,620	1,410	-46.2
	AI Total	12,180	12,690	4.2
	Western AI	5,660	5,850	3.4
	Central AI	3,060	3,340	9.2
	Eastern AI	3,460	3,500	1.2
Northern rockfish	BSAI			
	BS	13	121	830.8
	AI	4,687	5,879	25.4
Shortraker/rougheye	BSAI			
	BS	116	137	18.1
	AI	912	830	-9.0
Other rockfish	BS	361	960	165.9
	AI	676	634	-6.2
Squid	BSAI	1,970	1,970	0.0
Other species	BSAI	30,825	32,309	4.8
TOTAL		1,998,540	2,000,000	0.01

Table 1.6 Comparison of GOA 2003 Proposed and Final TAC

SPECIES	Area	Proposed 2003 TAC	Final 2003 TAC	Percent change
Pollock	W (610)	17,730	16,788	-5.3
	C (620)	23,045	19,685	-14.6
	C (630)	9,850	10,339	5.0
	WYAK(640)	1,165	1,078	-7.5
	EYAK/SEO	6,460	6,460	0.0
	TOTAL	58,250	54,350	-6.7
Pacific Cod	W	14,777	15,450	4.6
	C	21,743	22,690	4.4
	E	2,273	2,400	5.6
	TOTAL	38,793	40,540	4.5
Deep water flatfish	W	180	180	0.0
	C	2,220	2,220	0.0
	WYAK	1,330	1,330	0.0
	EYAK/SEO	1,150	1,150	0.0
	TOTAL	4,880	4,880	0.0
Rex sole	W	1,280	1,280	0.0
	C	5,540	5,540	0.0
	WYAK	1,600	1,600	0.0
	EYAK/SEO	1,050	1,050	0.0
	TOTAL	9,470	9,470	0.0
Shallow water flatfish	W	4,500	4,500	0.0
	C	13,000	13,000	0.0
	WYAK	1,180	1,160	-1.7
	EYAK/SEO	1,740	2,960	70.1
	TOTAL	20,420	21,620	5.9
Flathead sole	W	2,000	2,000	0.0
	C	5,000	5,000	0.0
	WYAK	1,590	2,900	82.4
	EYAK/SEO	690	1,250	81.2
	TOTAL	9,280	11,150	20.2
Arrowtooth flounder	W	8,000	8,000	0.0
	C	25,000	25,000	0.0
	WYAK	2,500	2,500	0.0
	EYAK/SEO	2,500	2,500	0.0
	TOTAL	38,000	38,000	0.0
Sablefish	W	2,430	2,570	5.8
	C	5,900	6,440	9.2

SPECIES	Area	Proposed 2003 TAC	Final 2003 TAC	Percent change
	WYAK	2,110	2,320	10.0
	SEO	3,490	3,560	2.0
	TOTAL	13,930	14,890	6.9
Other Slope rockfish	W	90	90	0.0
	C	550	550	0.0
	WYAK	150	150	0.0
	EYAK/SEO	200	200	0.0
	TOTAL	990	990	0.0
Northern rockfish	W	760	890	17.1
	C	3,940	4,640	17.8
	E	0	0	0.0
	TOTAL	4,700	5,530	17.7
Pacific ocean perch	W	2,630	2,700	2.7
	C	8,290	8,510	2.7
	WYAK	780	810	3.9
	SEO	1,600	1,640	2.5
	TOTAL	13,300	13,660	2.7
Shortraker/rougheye	W	220	220	0.0
	C	840	840	0.0
	E	560	560	0.0
	TOTAL	1,620	1,620	0.0
Pelagic shelf rockfish	W	510	510	0.0
	C	3,480	3,480	0.0
	WYAK	640	640	0.0
	EYAK/SEO	860	860	0.0
	TOTAL	5,490	5,490	0.0
Demersal Shelf Rockfish	GW	350	390	11.4
Atka Mackerel	GW	600	600	0.0
Thornyhead rockfish	W	360	360	0.0
	C	840	840	0.0
	E	790	800	1.3
	TOTAL	1,990	2,000	0.5
Other Species	GW	11,103	11,260	1.4
GOA TOTAL		233,166	236,440	1.4

For 2003 harvest specifications, the difference between the proposed and final TACs for all species is not clearly explained in the final specifications Federal Register notices. The reasons for the differences could vary from additional biological analysis between October and December Council meetings indicating a change is needed, or recommendations from the industry to maximize the harvest of particular species in particular areas. Table 1.7 shows the proposed and final ABCs for GOA species and the amount of change between the proposed and final TACs. In most cases, the amount and direction of change from proposed to final values were similar for ABC and TAC. The exceptions are for shallow water flatfish, flathead sole, arrowtooth flounder, and other slope rockfish. For arrowtooth flounder and other slope rockfish, larger changes were seen between the ABCs than between the TACs. ABC and TAC for shallow water flatfish and flathead sole changed in the same general direction but the amounts of change were different.

Table 1.7 Comparison of GOA 2003 Proposed and Final ABC

SPECIES	Area	Proposed 2003 ABC	Final 2003 ABC	Percent ABC change	Percent TAC change
Pollock	W (610)	17,730	16,788	-5.3	-5.3
	C (620)	23,045	19,685	-14.6	-14.6
	C (630)	9,850	10,339	5.0	5.0
	WYAK(640)	1,165	1,078	-7.5	-7.5
	EYAK/SEO	6,460	6,460	0.0	0.0
	TOTAL	58,250	54,350	-6.7	-6.7
Pacific Cod	W	19,703	20,600	4.4	4.6
	C	27,786	29,000	4.2	4.4
	E	3,031	3,200	5.3	5.6
	TOTAL	50,520	52,800	4.3	4.5
Deep water flatfish	W	180	180	0.0	0.0
	C	2,220	2,220	0.0	0.0
	WYAK	1,330	1,330	0.0	0.0
	EYAK/SEO	1,150	1,150	0.0	0.0
	TOTAL	4,880	4,880	0.0	0.0
Rex sole	W	1,280	1,280	0.0	0.0
	C	5,540	5,540	0.0	0.0
	WYAK	1,600	1,600	0.0	0.0
	EYAK/SEO	1,050	1,050	0.0	0.0
	TOTAL	9,470	9,470	0.0	0.0
Shallow water flatfish	W	23,550	23,480	-0.3	0.0
	C	23,080	21,740	-5.8	0.0
	WYAK	1,180	1,160	-1.7	-1.7
	EYAK/SEO	1,740	2,960	41.2	70.1
	TOTAL	49,550	49,340	-0.4	5.9
Flathead sole	W	9,000	16,420	45.2	0.0
	C	11,410	20,820	45.2	0.0
	WYAK	1,590	2,900	45.1	82.4
	EYAK/SEO	690	1,250	44.8	81.2
	TOTAL	22,690	41,390	45.2	20.2
Arrowtooth flounder	W	16,300	17,990	9.4	0.0
	C	102,390	113,050	9.4	0.0
	WYAK	16,470	18,190	9.4	0.0
	EYAK/SEO	5,250	5,910	11.2	0.0
	TOTAL	140,410	155,140	9.4	0.0
Sablefish	W	2,430	2,570	5.4	5.8
	C	5,900	6,440	8	9.2
	WYAK	2,110	2,320	9	10.0
	SEO	3,490	3,560	2	2.0
	TOTAL	13,930	14,890	6.4	6.9

SPECIES	Area	Proposed 2003 ABC	Final 2003 ABC	Percent ABC change	Percent TAC change
Other Slope rockfish	W	90	90	0.0	0.0
	C	550	550	0.0	0.0
	WYAK	260	270	3.7	0.0
	EYAK/SEO	4,140	4,140	0.0	0.0
	TOTAL	5,040	5,050	0.2	0.0
Northern rockfish	W	760	890	17.1	17.1
	C	3,940	4,640	17.8	17.8
	E	0	0	0.0	0.0
	TOTAL	4,700	5,530	17.7	17.7
Pacific ocean perch	W	2,630	2,700	2.7	2.7
	C	8,290	8,510	2.7	2.7
	WYAK	780	810	3.9	3.9
	SEO	1,600	1,640	2.5	2.5
	TOTAL	13,300	13,660	2.7	2.7
Shortraker/rougheye	W	220	220	0.0	0.0
	C	840	840	0.0	0.0
	E	560	560	0.0	0.0
	TOTAL	1,620	1,620	0.0	0.0
Pelagic shelf rockfish	W	510	510	0.0	0.0
	C	3,480	3,480	0.0	0.0
	WYAK	640	640	0.0	0.0
	EYAK/SEO	860	860	0.0	0.0
	TOTAL	5,490	5,490	0.0	0.0
Demersal Shelf Rockfish	GW	350	390	11.4	11.4
Atka Mackerel	GW	600	600	0.0	0.0
Thornyhead rockfish	W	360	360	0.0	0.0
	C	840	840	0.0	0.0
	E	790	800	1.3	1.3
	TOTAL	1,990	2,000	0.5	0.5

The BSAI ABCs also changed between the proposed and final specifications (Table 1.8). In general the change in TAC mirrored the direction of change for the ABC but these changes do not appear to be as consistent as those seen in Table 1.7 for the GOA. The sablefish TAC in the Bering Sea changed 50 percent from the proposed to the final TAC. This was due to increased abundance and increased number of fish in the 2003 surveys[4]. This information was not analyzed until after the October Council meeting and was not considered in developing the proposed TAC. The change in the sablefish TAC compared to the change in the ABC indicates that the setting of TAC may be influenced by additional considerations, such as the optimal yield (50 CFR 679.20(a)(1)) in the BSAI. Additional considerations appear to influence the difference between proposed and final TAC in the BSAI compared to the GOA.

[4]Dr. Michael Sigler, Mathematical Statistician. Personal communication. May 6. 2003, NMFS, Auke Bay Laboratory, 11305 Glacier Highway , Juneau , AK 99801-8626

Table 1.8 Comparison of Proposed and Final ABCs in the BSAI for 2003

Species	Area	Proposed 2003 ABC	Final 2003 ABC	Percent ABC Change	Percent TAC Change
Pollock	BS	2,088,880	2,330,000	10.3	0.5
	AI	23,800	39,400	39.6	0.0
	Bogoslof District	4,310	4,070	-5.6	-50.0
Pacific cod	BSAI	252,020	223,000	-11.5	3.75
Sablefish	BS	2,100	2,900	27.6	50.3
	AI	2,770	3,100	10.6	21.6
Atka mackerel	Total	59,600	63,000	5.4	0.7
	Western AI	23,960	22,990	-4.0	-16.6
	Central AI	28,950	29,360	1.4	1.4
	Eastern AI/BS	6,690	10,650	37.2	59.2
Yellowfin sole	BSAI	114,370	114,000	-.3	10.2
Rock sole	BSAI	203,870	110,000	-46	-18.5
Greenland turbot	Total	27,590	5,880	-78.7	-50.0
	BS	18,485	3,920	-78.8	-50.0
	AI	9,105	1,960	-78.5	-50.0
Arrowtooth flounder	BSAI	99,285	112,000	11.4	-25.0
Flathead sole	BSAI	74,440	66,000	-11.3	-20.0
Other flatfish	BSAI	18,100	16,000	-11.6	0.0
Alaska plaice	BSAI	142,070	137,000	-3.6	-16.7
Pacific ocean perch	BS	2,666	2,410	-9.6	-46.2
	AI Total	12,394	12,690	2.3	4.2
	Western AI	5,759	5,850	1.6	3.4
	Central AI	3,114	3,340	6.7	9.2
	Eastern AI	3,521	3,500	-0.6	1.2
Northern rockfish	BSAI	4,700	7,101	33.8	
	BS				830.8
	AI				25.4
Shortraker/rougheye	BSAI	1,028	967	-5.9	
	BS				18.1
	AI				-9.0
Other rockfish	BS	361	960	62.4	165.9
	AI	676	634	-6.2	-6.2
Squid	BSAI	1,970	1,970	0.0	0.0

The proposed BSAI harvest specifications notice (67 FR 76362, December 12, 2002) referenced the November 2001 SAFE reports. The ABCs, TACs, and allocations in the proposed specifications were not based on the 2002 SAFE reports. No comparison between the proposed and final specifications were made in the final specifications, and no explanations were provided for most of the changes from proposed specifications for most of the individual TACs (68 FR 9907, March 3, 2003). The APA requires the public to be informed of the agency's reasons for changing final specifications from proposed and why the change is a logical outgrowth of the proposed rule, making an additional proposed rule for the changes unnecessary. Under the current process, the Federal Register publication of proposed specifications, therefore, does not meet the intended purpose of prior public notification and comment under the APA. The publication of proposed specifications each year can confuse the public, because incomplete and possibly erroneous information in relation to the final harvest specifications is provided due to the need to adhere to a strict timeline in order to comply with all relevant rulemaking statutes. Public comment on the proposed specifications rarely occurs due to the fact that most informed, interested parties realize that those numbers will change, sometimes considerably, after release of the final SAFE reports and the December Council meeting.

1.3.4 Problems with Interim Specifications .

Because the interim specifications are based on the proposed specifications, they do not take into account the recommendations contained in the Plan Team's final SAFE reports in November or the recommendations coming from public testimony, the SSC, AP, and the Council at their December meeting. In addition, the interim TAC allocates one fourth of the initial TAC and PSC amounts to the first quarter for a number of species, and this has been found to be an inadequate amount for those fisheries that attract the greatest amount of effort at the beginning of the fishing year [5]. The Bering Sea fixed gear Pacific cod fishery, and the rock sole fishery are often constrained by the halibut PSC limit early in the fishing year. Those fisheries that are allocated their first seasonal allowance based on the previous year's or projected TAC suffer if the new seasonal allowances recommended by the Council increase. That is, they may forego the benefits of that increase until the following year. This is true for the pollock, Pacific cod, and Atka mackerel fisheries because they are high value fisheries that focus fishing effort early in the fishing year. Concern exists that the current interim specifications process does not provide for meaningful public comment and that artificial constraints are placed on the fishery in the interim period which may impact the fishery, as described above. The interim period may also undermine the intent of Steller sea lion protection measures that establish seasonal dispersion of the fisheries (see section 4.5 for further details.)

1.4 Reserve TAC: The Current Process and the Need for Change

Under existing regulations, the TACs are reduced by specified percentages to establish various reserves as follows:

<u>BSAI Groundfish Reserves:</u>

(1) 15 percent of the BSAI TACs for each target species and the "other species" category (except pollock and the hook and line and pot gear allocation for sablefish); This reserve amount is split 7.5 percent to CDQ and 7.5 percent to nonspecified reserves.

(2) BSAI CDQ: 20 percent of the fixed gear allocation of BSAI sablefish; 7.5 percent of each TAC category for which a reserve is established, i.e., half the reserve established under (1) above; 10 percent of pollock; and 7.5 percent of each prohibited species catch limit.

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[5] Harvest amounts of GOA and BSAI pollock, Pacific cod, and BSAI Atka mackerel under the interim TAC are limited to the proposed first seasonal allowance for each species.

GOA Groundfish Reserves:

20 percent of the GOA TACs for pollock, Pacific cod, flatfish, and "other species";

Detailed information regarding apportionments can be found in 50 CFR 679.20 (b) and 50 CFR 679.21 (e).

1.4.1 BSAI Groundfish Reserves

Under the American Fisheries Act (AFA), BSAI pollock is fully allocated to different sectors of the fishing industry, including CDQ. Ten percent of the pollock TAC is allocated to the CDQ program under the AFA, and 7.5 percent of the TAC for the other groundfish species are placed in a reserve assigned to the CDQ program. Part of the pollock TAC is also set aside for an annual incidental catch allowance. Pollock reserves are not required. The reserve for the remaining groundfish species is 7.5 percent of the total allowable catch for target species and other species category (except pollock and hook and line and pot gear allocation for sablefish) which is set aside at the beginning of the fishing (calendar) year for later allocations. This reserve is not designated by species, and any amount of the reserve may be apportioned to a target species (except for the fixed gear allocation for sablefish, or the "other species" category) so long as apportionments do not result in overfishing. Any reserve apportioned to Pacific cod is allocated by gear type as established in the FMP. Reserves are scheduled to be released by the Regional Administrator on or about April 1, June 1, and August 1. In recent years, reserves have not resulted in TAC being reapportioned from one species to another, although nothing precludes this. For 2003, the nonspecified reserves for a number of target species were released with the setting of final TAC for BSAI (68 FR 9907, March 3, 2003).

The nonspecified reserves were developed to provide flexibility to the management when the fishery and processing were performed entirely by foreign fleets or under the joint venture system where American catcher vessels supplied groundfish to the foreign processors. The groundfish catch is now entirely domestic, and the reserve is structured to provide some latitude in the management of individual TACs. Conceptually, the reserves can allow managers to increase a TAC of groundfish up to that species' or species group's ABC, so long as the optimum yield for the entire fishery of 2 million mt is not exceeded. This option has been exercised once in the years since the effort in the groundfish fishery became entirely domestic (1991).

The reserve system is expected to provide a 'buffer' for the in-season management of the fisheries. However, the buffer does not slow the catch as the managers and fishermen know of the reserve and expect to catch the entire TAC. The same effect can be accomplished by establishing a limited directed fishing allowance (50 CFR § 679.20 (d)). Since the reserve system does not provide significant increases in efficiency of the fishery, its effect is to increase confusion regarding which numbers are currently available for harvest and increase the administrative burden on the fishery managers to provide regulatory actions to add the reserve back into the TAC amounts. In addition, the AFA requires that catch limits be set for AFA qualified vessels, based on a proportion of the TAC. Each time a reserve amount is apportioned to the TAC, the AFA catch limits must be adjusted as well.

1.4.2 GOA Groundfish Reserves

In the GOA 20 percent of the total allowable catches of pollock, Pacific cod, flatfish, and other species are set aside as reserves at the beginning of the fishing (calendar) year for later allocations. Reserves of pollock and Pacific cod are apportioned between inshore and offshore sectors. Reserves are scheduled to be released by the Regional Administrator on or about April 1, June 1, and August 1, or when NMFS determines it is appropriate. For 2003, all reserves were released with the setting of the final TAC (68 FR 9924, March 3, 2003).

From 1997 to 2000, reserves were only used for the Pacific cod fishery. This fishery occurs early in the year and incurs high catch rates. The reserves were used to establish a buffer to prevent the fishery from exceeding the directed fishing allowance established by 50 CFR 679.20 (d). This process has been cumbersome and the problem can be solved more easily under existing regulations, by establishing a conservative directed fishing allowance. As in the BSAI, establishing reserves not only requires additional work as the final specifications of groundfish are established, but the catch limits (sideboards) for AFA vessels must be revised as the reserve apportionments are made. This creates confusion not only as to what the “full” TAC is, but requires the AFA vessels to revise their fishing plans for groundfish sideboard amounts mid-season.

1.5 Updating FMP language.

The GOA FMP and the BSAI FMP have not been changed to reflect the nature or extent of current fishing practices (NPFMC 1999a, 1999b). Groundfish fisheries off Alaska initially were exclusively conducted by foreign vessels. Gradually, the ratio of foreign to American fishery participants changed until 1991, when the groundfish fishery participants were limited to American owned vessels and processors. A detailed description of the history of foreign and domestic groundfish fisheries is contained in Section 3.3 of the SEIS for Amendments 61/61/13/8 for AFA provisions (NMFS 2002).

The FMPs have been amended over sixty times since approved in the late 1970s. Each amendment has dealt with a specific aspect of the groundfish fisheries and has not necessarily been used to revise obsolete language. The result is FMPs that continue to describe conservation and management measures for the nonexistent foreign fishery participants. References to foreign fishing under objectives and conservation measures should be removed to make the FMPs more concise and to accurately describe the nature of the current groundfish fisheries, as required by the Magnuson-Stevens Act.

If the proposed action to change the harvest specifications process is adopted, several sections of each FMP will be updated to accurately describe the responsibilities of the Plan Team in providing information to the Council for harvest specifications. During the early development of the FMPs, the Plan Teams provided management assistance to the Council for harvest specification and FMP development. The FMPs are now more fully developed, and the focus of the Plan Teams has shifted to stock assessment activities, including implementation of the processes described in the FMPs to develop ABC and OFL recommendations. Currently, the FMPs require the Plan Teams to provide economic analyses of PSC limits and apportionments. In recent years, this function has been performed by AFSC economists. An annual economic analysis of the groundfish fisheries (Economic SAFE report), including PSC information, is included as an appendix to the NEPA analysis for the Council’s consideration in recommending harvest specifications.

Section 13.4.2.3 in the BSAI FMP and Section 4.2.3.1 in the GOA FMP require the Plan Teams to provide recommended seasonal apportionments and fishery allocations of PSC limits (NPFMC 1999a, 1999b). Currently, the Plan Teams provide a review of the previous year's apportionments and allocations of PSC limits and catches of PSC. Apportionments and allocations of PSC limits are primarily developed and recommended during the Council process and involve fishing industry considerations that are not available to the Plan Teams. If the proposed action is adopted, the FMP language regarding the Plan Teams' role in PSC limits allocations and apportionments would be limited to providing this type of information, if requested by the Council, rather than requiring this information as part of the SAFE reports.

The name of the BSAI FMP (Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area) should also be changed to remove the additional word "fishery" and clarify the area to which the plan applies. The current title is not consistent with the title used for the GOA FMP (Fishery Management Plan for Groundfish of the Gulf of Alaska), which is more concise. The definitions of the BSAI at 50 CFR 679.2 describe the BSAI as the Bering Sea and Aleutian Islands Management Area. The title needs to be changed to remove the redundant term "fishery" and to ensure the area in the title is consistent with the area defined in the regulations. Having the groundfish FMPs with consistent titles will reduce confusion in the citation of these documents. If this option is implemented, the title for the BSAI FMP will be changed to " Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area."

1.6 Using biennial specifications for long-lived GOA groundfish species

Harvest specifications are currently set on an annual basis for all species regardless of the frequency of the collection of data or of the type life cycle. Annual harvest specifications for species that are longer-lived and are surveyed biennially is not likely to be necessary for the effective management of the stocks. As further explained in section 4.1, the longer lived species are likely to have less variability in biomass levels, making projections of harvest less uncertain than shorter lived species. TAC amount in the BSAI for all species are annually adjusted to ensure the total harvest is below the 2 million optimal yield established in regulations. The GOA groundfish management does not require the same type of annual fine tuning in harvest amounts as the GOA annual harvests are usually well below the management area optimal yield. Setting biennial specifications for those long-lived GOA groundfish stocks/complexes using stock assessment projections of harvest specifications for years 1 and 2 would not likely compromise the conservation for these stocks and will streamline the specification process, allowing AFSC scientists to devote additional effort to higher priority management issues.

1.7 Objectives of this Action and Considerations

The proposed action would change the process for establishing harvest specifications, eliminates nonspecified BSAI and GOA groundfish reserves, update the language in the FMPs to match current fishing practices and to make the documents more concise, alters FMP language dealing with Plan Team responsibilities, and sets biennial specifications for some GOA species/complexes. Its objectives are: (1) to manage fisheries based on best scientific information available, (2) to provide for adequate prior public review and comment to the Secretary on Council recommendations, (3) to provide for additional opportunity for Secretarial review, (4) to minimize unnecessary disruption to fisheries and public confusion, and (5) to promote administrative efficiency.

The use of best available scientific information is critical to a successful harvest specifications process. The annual or biennial resource survey results are part of the information used to define the current stock condition of each target species or species group. Catch information is also important in understanding the removals of a species over time and may affect the projected amount of fish available for the following year. Fine tuning the assessment models and updating the projections of fish available for harvest are necessary and time consuming activities that transform raw data into the "best available scientific" information for developing harvest specification, as required by the Magnuson-Stevens Act. At the conclusion of summer surveys, survey data may be available, but it is not considered "best available science" until analyzed and put into a format that can be used for establishing fishery management measures. The SAFE reports, ESA and essential fish habitat (EFH) consultations, and NEPA documents are considered the "best available science" for the harvest specification process. These analyses must be available at the time NMFS makes its decision to establish harvest specifications. The analyses should also be available to the public during the proposed rule comment period to allow review of information that the Secretary uses to make a decision, as required by the APA.

Because of the large number of species managed in the Alaska groundfish fisheries and the complexity of the marine environment, development of the analyses requires the involvement of numerous scientists from the AFSC and NMFS Alaska Region, and is estimated to require four to six months. Approximately four months are needed for the development of the SAFE reports and up to five months are needed for the completion of other analytical documents, such as ESA, NEPA and RFA analyses. Overtime, the management of the Alaska groundfish fisheries has become more complex with additional species and methods for providing stock assessment information. The AFSC scientist are finding it increasingly challenging to complete detailed analysis of data and provide reports in time for the December Council meeting. Additional time for analysis would likely improve the quality of the information that is used for management decisions.

The Magnuson-Stevens Act requires NMFS to provide at least 15 days and no more than 60 days for public review and comment on any proposed rule. For more complex rules, such as harvest specifications, it may be more appropriate to provide more than 15 days for public review and comment. Once the comment period is over, NMFS must develop the final rule, including responses to comments and repeat the agency rule review process for a rule, as described in section 1.2. Once the final rule is published, APA requires a 30 day cooling off period before the rule goes into effect. This time period may be waived for good cause. Approximately, five to six months are required to take the Council's recommended harvest specifications through the proposed and final rulemaking process, depending on other review priorities in NMFS, NOAA General Counsel, OMB, and the Department of Commerce, but under the current process, less than 3 months are available between the Council proposed specifications recommendations and the beginning of the fishery (Oct.-Jan.).

1.8 Related NEPA Documents

The original environmental impact statements (EISs) for the BSAI and GOA FMPs were completed in 1979 and 1978, respectively (NPFMC 1979 and NPFMC 1978). NMFS issued an SEIS on the action of TAC setting in December 1998 (NMFS 1998a) which analyzed the impacts of groundfish fishing over a range of TAC levels.

NMFS notes that in a July 8, 1999 order, amended on July 13, 1999, the Court in Greenpeace, et al., v. NMFS. et al., Civ No. 98-0492 (W.D. Wash.) held that the SEIS did not adequately address aspects of the GOA and BSAI groundfish FMPs other than TAC setting, and therefore, was insufficient in scope under NEPA. In response to the Court's order, NMFS has developed a revised draft PSEIS for the GOA and BSAI groundfish FMPs which became available for public review in September 2003 (NMFS 2003b). The revised draft PSEIS is available through the NMFS web site at http://www.fakr.noaa.gov/.

Because the TAC setting process was determined to be adequately addressed by the 1998 SEIS, NMFS believes that the discussion of impacts and alternatives in the 1998 SEIS is directly applicable to the action analyzed in this EA/RIR/IRFA. Therefore, this EA/RIR/IRFA adopts the discussion and analysis in the SEIS (NMFS 1998a) and adopts by reference the applicable status and effects descriptions in the revised draft PSEIS (NMFS 2003b).

Other NEPA documents that may be referenced in this analysis include the Steller sea lion protection measures SEIS (NMFS 2001), the American Fisheries Act EIS (NMFS 2002) and the EA/FRFA for the 2003 Total Allowable Catch Specifications for the Alaska Groundfish (NMFS 2003a). These documents contain recent analysis of the effects of the groundfish fisheries on Steller sea lions, the effects of implementation of the American Fisheries Act, and the effects of the 2003 groundfish fishery, respectively.

1.9 Public Participation and Issues Identified

Earlier versions of this draft EA/RIR/IRFA, including alternatives similar to 1 through 4, the alternatives not further analyzed, and the TAC reserve option, were reviewed at the June 2000,and February 2001 Council meetings (Agenda item D-1b), and the June 2000 version was reviewed during the joint Plan Team meeting in November 2000; updates were provided at each subsequent Plan Team meeting. The May 2002 version was reviewed during the June Council meeting at which time the Council recommended several revisions and release to the public for review. These meetings were open to the public. A September 2002 version of this document which addressed a number of issues requested by the Council at its June meeting was available to the public at the October 2002 Council meeting. Due to public testimony by the Marine Conservation Alliance regarding alternatives and suggested legal review of such alternatives and pending Court cases, the Council did not review the September 2002 analysis at the October 2002 meeting. This version of the draft EA/RIR/IRFA will be presented to the Plan Teams in September 2003 for consideration of alternatives and the potential effects on the Plan Team activities and to the public, SSC, AP, and Council in October 2003.

Harvest specifications process issues identified during the development of the NEPA analysis and addressed in this EA include:

1) Use of survey data in development of stock assessments and ABC recommendation, (Section 4.1)
2) Ensuring the administrative process complies with all applicable laws and executive orders, (Sections 1.2 and 2.0)
3) Potential impacts on management of target species, (Section 4.1)
4) Interactions with State managed fisheries, (Section 4.8)
5) Provide one set of numbers for the industry to plan fishing activities, (Section 1.0) and
6) Interactions with individual fishing quota (IFQ) and Community Development Quota (CDQ) programs. (Sections 4.9 and 5.11)
7) Implementation of Steller sea lion protection measures (see section 4.5)

8) Comparison of previous methods of setting harvest specifications compared to the process used in 2002. (Section 1.3.3)
9) Expansion of alternatives. (Section 2.1)
10) How determination of ABC is dependent on most recent information opposed to past data.(Section 4.1)
11) Predictability in future population status (Section 1.3.3)

1.10 Recent Court Decision

In August 2001, the district court for the Northern District of California issued an order in favor of the Natural Resources Defense Council (NRDC) in litigation commenced by NRDC, *Natural Resources Defense Council V. Evans*, Case No. C 01-0421 JL (N.D. Cal. August 20, 2001). The NRDC challenged the Pacific Coast groundfish fishery annual harvest specifications process followed by the Pacific Fishery Management Council and authorized by the Secretary of Commerce, as well as the 2001 harvest specifications recommended by the Pacific Council and approved by the Secretary. The court decided in favor of the plaintiff, ruling that harvest specifications are considered rulemaking under the Magnuson-Stevens Act requiring prior notice and comment period of 15 to 60 days, and the proposed annual harvest specifications must be published in the Federal Register for public notice and comment prior to publication of final groundfish specifications, as required by the APA. This case was appealed to the 9th Circuit regarding the Magnuson-Stevens Act and APA findings. In December 2002, the appeals court upheld the decision on the APA but did not provide a decision on the Magnuson-Stevens Act findings.

A similar case on the east coast had the opposite result. The District Court for the District of Massachusetts distinguished between “regulations” and “actions” and held that the notice and comment requirement of section 304(b)(1)(A) of the Magnuson-Stevens Act applies only to regulations, not to actions taken by NMFS pursuant to regulations. *Conservation Law Foundation v. U.S. Department of Commerce*, 229 F. Supp. 2d 29 (D. Mass. 2002) (*on appeal)* (Pollard 2003a).

The harvest specifications process currently used by NMFS for the North Pacific groundfish fisheries would likely be invalidated in a lawsuit under the APA in the 9th Circuit. Regardless, an alternative that met the objectives for this action would likely meet the findings specified in the 9th Circuit case described above.

2.0 ALTERNATIVES CONSIDERED

The Council on Environmental Quality (CEQ) regulations implementing NEPA require a range of alternatives to be analyzed for a federal action. The alternatives analyzed may be limited to a range of alternatives that could reasonably achieve the need that the proposed action is intended to address. Section 1.0 of this document described the purpose and need of the proposed action. Section 1.6 describes the objectives that must be met in order to meet the purpose and need of this action. These objectives are summarized below in Table 2.1.

Table 2.1 Objectives

Objectives
Develop and use best available scientific information
Provide adequate opportunity for prior public comment to the Secretary on proposed action
Provide additional opportunity for Secretarial review of Council recommendations
Minimize disruption to fisheries and minimize public confusion
Promote administrative efficiency

2.1 Reasonable Alternatives

Alternatives 1 through 5 provide a range of actions that are considered to meet the objectives for the proposed action that were listed in Table 2.1. Two alternatives include options. Alternative 3 may be implemented without options or with one or both options. Alternative 5 may be implemented without the sablefish option.

Three separate options, (a) eliminate some TAC reserves, (b) update the FMPs, and (c) set biennial harvest specifications for some GOA species/complexes could be adopted with any alternative, except Option C with Alternative 4. Alternative 4 sets biennial specification for all managed species and areas, making Option C not applicable. Additional alternatives and options that were considered and not further analyzed are presented in section 2.4.

New Information Considerations

Under each of these alternatives, there may be times during the rulemaking process or during the fishing year when new information may warrant changes in the specifications. The mechanism used to change the specifications will depend on the timing and type of new information in relation to the rulemaking process for the fishing year. If the information is reviewed and action is recommended by the Council before the publication of the proposed rule, it is likely that the recommendation could be included in the proposed rule. If the specifications have already been proposed, the recommendation based on new information may be part of the final rule, if the change can be considered a logical outgrowth from the proposed rule. If the change is significant or the rulemaking for the fishing year is in progress or completed, an emergency rule may be used to implement Council recommendations for action on only unforseen, serious conservation or fishery management problems (62 FR 44421, August 21, 1997).

Alternatively, an inseason action could also be issued if new scientific information becomes available during the fishing year that indicates that the established TAC is incorrect. If the new information indicates that a standard may be exceeded such as an OFL limit or a Steller sea lion protection measure seasonal apportionment, the Regional Administrator may issue the inseason action after the November SAFE reports are available. If the new information indicates that more biomass is available than previously projected, the Council will need to be consulted to determine if the level of harvest should be increased, the amount of increase, allocations, and what adjustments in other fisheries may be necessary (especially important in the BSAI when managing the fisheries to stay within the 2 million OY cap). An inseason action that includes consultation with the Council in December reduces the amount of time available to adjust TAC before the beginning of the fishing year. Any efforts to have an inseason action in place will displace resources needed to complete the final rulemaking for the harvest specifications, likrly resulting in the final TACs being in place later in the new year. As with an emergency rule, inseason action will also have to be completed in compliance with all applicable laws, including NEPA, ESA, RFA, and APA. Section 679.25(c) requires a 30 day comment period prior to an inseason action, unless good cause exists to waive the 30 day comment period. This period may be shorter, if the regulations at 50 CFR 679.25(c) are amended.

Regardless of the type of action used to adjust TAC, the action is considered a rulemaking and compliance with analytical requirements of various statutes is required. The type of action must also meet the criteria set out in policy for emergency rules or criteria in regulations for inseason action. In either emergency rulemaking or inseason actions, approximately one to two months will be necessary to complete the administrative process, once a decision is made. Inseason actions to ensure the fisheries do not exceed harvest limits will be more likely to be in place before the beginning of the January fishery compared to actions that would increase the level of harvest because action can be initiated by the Regional Administrator based on the November SAFE reports (50 CFR 679.25).

Alternative 1: Status Quo (NO ACTION ALTERNATIVE).

Descriptive information about the status quo process for setting harvest specifications can be found in Sections 1.2, 1.3, and 1.4. This alternative would continue the existing process for setting harvest specifications for the Alaska groundfish fisheries (proposed specifications, followed by interim and final specifications) and would not amend the process to address the objectives outlined above nor the concerns raised regarding TAC reserves or outdated FMP language.

Alternative 2: Eliminate publication of interim specifications. Issue Proposed and Final Specifications Prior to Start of the Fishing Year.

NMFS would publish proposed harvest specifications based on Council recommendations followed by a comment period and publication of final specifications, prior to the beginning of the fishing year. In order to issue proposed and final harvest specifications prior to the start of the fishing year, scheduling of the “steps” in the current process must be modified.

Under this alternative, NMFS would set proposed and final specifications before the “preliminary” survey data collected during the current year becomes available. All harvest specifications for the following year would be recommended at the beginning of the current year based on the previous year’s survey data and incorporated into stock model biomass and ABC projections reflecting the best available scientific information.

This shift in the specification schedule would leave the stock assessment scientists more time to: (1) assess and incorporate survey data and catch data into stock model projections; (2) adjust current models or explore new modeling techniques; and (3) allow peer review of preliminary results and conclusions. This additional time would allow thorough analysis of survey and research data, providing greater assurance that annual harvest specifications would be based on the best available scientific information. The preliminary SAFE report reviewed in February would be a more complete document than the preliminary SAFE report reviewed in October under Alternative 1. An additional benefit would occur as the preliminary SAFE report presentation, which frequently includes new stock assessment and ecosystem model trials, to the SSC would be rescheduled for when it routinely meets in Seattle (beginning in 2005). The Seattle meeting strengthens the scientific review process by allowing the SSC and AFSC member to interact.

Under this alternative, the Council would recommend proposed harvest specifications in February with final action in April. In June or July, NMFS would publish proposed harvest specifications based on the Council's final recommendations. After the public comment period, NMFS would publish final harvest specifications by December 1, so that the 30 day delayed effective period could be met before the start of the groundfish fishery on January 1. This alternative provides: (1) traditional public input avenues during Council meetings; (2) a public comment period on proposed specifications; (3) adequate time to develop analyses for decision making; (4) adequate time to complete rulemaking before the beginning of the fishing year; and (5) opportunity for the fishery industry to plan operations based on final harvest specifications.

Table 2.2 shows the schedule for different actions and groups involved in the harvest specification process under Alternative 2. In the first year of implementation of this alternative, the harvest specifications would be issued through proposed, interim, and final rulemaking while the Council and NMFS develop recommendations and complete proposed and final rulemaking for the following year. The initial harvest specifications would be based on projections from the latest completed SAFE reports while the new process is put in place. During the first year, the process shown in Table 2.2 for Year 1 would be followed to establish harvest specifications for Year 2. See Section 2.4 for more details.

See Appendices A and B for draft FMP amendment language for this alternative and Options A and B.

Table 2.2 Schedule for setting annual harvest specifications under Alternative 2

	Year 1*									Year 2	
	Jan	**Feb**	**April**	**May**	**June-July**	**Aug.**	**Sept.**	**Oct.-Nov.**	**Dec.**	**Jan.**	**Feb-Dec.**
Data	Catch Data for previous year available				biennial and annual survey age & length data collected					Catch Data for Year 1 available for Year 2 SAFE rreports.	Repeat Year 1 process.
Plan Team	Preliminary SAFE reports completed for February Council meeting		Complete Final SAFE reports for April Council meeting				Data analyses and model review. November Plan Team Meeting			Prepare preliminary SAFE reports for February Council meeting	
Council		Review preliminary SAFE reports and preliminary NEPA/IRFA and announce proposed harvest spec. for YR2 for final action in April	Review revised SAFE, NEPA/RFA/ESA documents. Final action on harvest specifications for YR2								
NMFS	Complete initial Council review drafts of YR 2 specs. NEPA/RFA/ESA analyses	Revise NEPA/ESA/RFA analyses based on Council recommendations and comments		Complete drafting and review of proposed harvest specs and analyses.	Publish proposed YR 2 annual specs. EA/IRFA drafts available	Review and respond to comments. Finalize EA/FRFA. Complete drafting and review of final rule.		Publish final harvest specifications for YR2.	30 day cooling off	Manage Fisheries with YR2 final harvest spec. Complete initial Council review drafts of NEPA/RFA/ESA analyses for YR3.	

	Year 1*									Year 2	
	Jan	**Feb**	**April**	**May**	**June-July**	**Aug.**	**Sept.**	**Oct.-Nov.**	**Dec.**	**Jan.**	**Feb-Dec.**
Public Comment	Welcome at Plan team meeting	Welcome at Council meeting.	Welcome at Council meeting.		30 day comment period on proposed specifications published in Fed. Register			Welcome at Plan team meeting		Welcome at Plan team meeting	

* The initial year harvest specifications are implemented by proposed, interim, and final specification as currently specified in § 679.20(c).

Alternative 3: Issue Proposed and Final Harvest Specifications based on an alternate fishing year schedule (July 1-June 30)

Option 1: Set sablefish TAC separately on a January 1 through December 31 schedule.

Option 2: Reschedule the December Council meeting for January

This alternative would use the same schedule for Council action as under the status quo but without interim specifications (Table 1.1). The Council would make final harvest specifications recommendations in December. NMFS would propose harvest specifications in February and do final rulemaking in May or June. The fishing year would be adjusted to begin July 1 and end June 30. This would allow for adequate public review and comment and would be consistent with APA and Magnuson-Stevens Act rulemaking requirements. The time allowed for developing analytical documents would be constrained in this alternative in the same manner as status quo. Approximately 6 months (January through June) would be available for the rulemaking process compared to 8 months (May through December) under Alternatives 2 and 4.

As an example, the November 2003 SAFE reports prepared by the assessment authors and the Plan Teams would contain recommended ABCs for the period July 1, 2004 to June 30, 2005 (the "quota year"). These ABCs would be based on assessment projections covering this period and accounting for existing TACs. The recommended quota year ABCs in the SAFE reports would equal the sum of: (a) the ABC target for 2004, minus the known amount of TAC currently in regulations for January to June 2004, and (b) half of the 2005 ABC target. Seasonal apportionments of the July 2004 to June 2005 quota year TAC would be based on proportions and dates specified in the regulations.

In the first year of implementation of this alternative, the harvest specification would be implemented by proposed, interim, and final rulemaking for the first six months of the year (January through June 2004), until superceded by final harvest specifications, effective on July 1. See Figure 2.3 for an implementation schedule.

Option 1 to this alternative would have TAC for sablefish set for January 1 through December 31. The purpose of this option is to maintain the management of the sablefish IFQ program on the same annual schedule as the halibut IFQ program. Stock assessment information would be used to project the TAC to the following calendar year. For instance, 2000 stock assessment information would be used to establish TAC for all species, except sablefish, for July 2001 through June 2002. Sablefish TAC would be established with 2000 stock assessment information for January 2002 through December 2002.

The first year of implementation of this option is similar to the process outlined above for the other groundfish species. The sablefish TAC would be established by proposed and final rulemaking for the first calendar year and for the following year. Harvest specification for the other groundfish species would be effective July 1 and the sablefish specifications would be effective for the following January.

New information may become available during the fishing year that indicates a TAC amount for the first part of the calendar year may be inappropriate. Depending on the nature of the new information, the TAC for the first part of the calendar year may be changed using either emergency rulemaking or inseason action. It is unlikely that the adjustment of TAC can be completed before the commencement of the winter fisheries because of the time necessary to complete the rulemaking process.

Option 2 would reschedule the December Council meeting to January. This would allow additional time for stock assessment authors to complete their reports and to deal with unusual data. The extra month for analysis would likely result in better scientific data on which to base fishery management decisions.

See Appendices C and D for draft FMP amendment language for this alternative implementing Option 2, and with Options A and B.

Alternative 4: Use Stock Assessment Projections for biennial harvest specifications. For the BSAI and GOA set the annual harvest specifications based on the most recent stock assessment and set harvest specifications for the following year based on projected OFL and ABC values. Set PSC limits annually.

This alternative would use stock assessment information provided by the Plan Teams and approved by the Council to establish OFL, ABC, and TAC levels for two years based on projections from the current stock assessment. The harvest specifications process would take place every other year. The PSC apportionments would need to be recommended annually by the Council and NMFS would implement the PSC limits with proposed and final rulemaking.

In the first year of implementing this alternative, harvest specifications would need to be issued by proposed, interim and final rulemaking for the following year. While the harvest specifications for the first year are in effect, harvest specifications for the second and third year will be implemented by proposed rulemaking in June or July and final rulemaking in October or November. After the "start-up", harvest specifications for the following years would be implemented by proposed and final rulemaking. See Section 2.4 and Figure 2.2 for more details.

The schedule described under Alternative 2 for OFL, ABC, and TAC recommendations by the Plan Teams and the Council would be used in this alternative. In February, the Plan Team would present the preliminary SAFE report with OFL and ABC levels to the SSC, for the following fishing year and for the second following year. For example, a February 2002 Plan Team recommendation would include OFL and ABC levels for the year 2003 and projected OFL and ABC levels for the year 2004. Public comment would be taken during the proposed harvest specifications comment period and at Plan Team meetings and Council meetings. NMFS would set groundfish harvest specifications for two years at a time for all target species whether on a biennial or annual survey schedule. New information may become available during the biennial fishing year indicating a TAC amount for the remainder of the fishing year may be inappropriate. Depending on the nature of the new information, the TAC for the remainder of the calendar year may be changed using either emergency rulemaking or inseason action. It is unlikely that the adjustment of TAC can be completed before the commencement of the winter fisheries because of the time necessary to complete the rulemaking process and the timing of new information, usually in November.

Each step in the Alternative 4 process for setting harvest specifications is identified in Table 2.3. Annual PSC limits would have to be a separate process from the biennial harvest specifications process following the same schedule as in Table 2.2.

Table 2.3 Schedule for setting annual harvest specifications under Alternative 4

	Year 1*									Year 2	Year 3
	Jan	**Feb**	**April**	**May**	**June-July**	**Aug.**	**Sept.**	**Oct.-Nov.**	**Dec.**	**Jan.-Dec**	**Jan-Dec.**
Data	Catch Data from the previous year available				biennial and annual survey age & length data					biennial and annual survey. age & length data	Repeat Year 1 process
Plan Team	Preliminary SAFE report completed for February Council meeting		Final SAFE report completed for April Council meeting				Data analyses and model review November Plan Team Meeting			Data analyses and model review Sept.-Dec. Plan Team meetings	Repeat Year 1 process
Council		Review preliminary SAFE, EA/IRFA and announce proposed harvest spec. for YR2 and YR3 for final action in April	Review revised, SAFE, NEPA/RFA/ESA documents. Final action on harvest specifications for YR2 and YR3								Repeat Year 1 process

	Year 1*									Year 2	Year 3
	Jan	**Feb**	**April**	**May**	**June-July**	**Aug.**	**Sept.**	**Oct.-Nov.**	**Dec.**	**Jan.-Dec**	**Jan-Dec.**
NMFS	Complete initial Council review drafts of NEPA/RFA analyses	Revise NEPA/RFA/ESA analyses based on Council recommendations and comments		Complete drafting and review of proposed regulation and analyses.	Publish proposed YR 2 and YR3 annual specs. EA/IRFA drafts available	Review and respond to comments. Finalize EA/FRFA. Complete drafting and review of final rule.		Publish final harvest specifications for YR2 and YR3.	30 day cooling off	Manage Fisheries with YR2 final harvest spec.	Manage Fisheries with YR3 final harvest spec. Repeat Year 1 process
Public Comment	Welcome at Plan Team Meeting	Welcome at Council meeting.	Welcome at Council meeting.		30 day comment period on proposed specifications in Fed. Register			Welcome at Plan team meeting		Welcome at Plan Team and Council meetings	Repeat Year 1 process

* The initial year of harvest specifications are implemented by proposed, interim, and final specification as currently specified in § 679.20(c).

Alternative 5: 18 month Harvest specifications with December Rulemaking Decision (Year 1 and first half of Year 2).

Option: Establish TAC for sablefish for following 12 month time period (Year 2).

This alternative was added to this analysis as requested by the Council in April 2003. In the fall of 2002, the Marine Conservation Alliance (MCA) provided two options for consideration as alternatives for the harvest specifications process (Frulla 2002). In February 2003, MCA provided NMFS a third option that was a modified version of one of its original options (Frulla 2003). The 2002 options were reviewed by NOAA General Counsel and were determined to be “legally insufficient under the APA as interpreted and applied by the Ninth Circuit Court of Appeals.” (Pollard 2003b). These options are added to section 2.3, options considered but not subjected to detailed analysis.

NOAA General Counsel found that the February 2003 option could fulfill the requirements of the APA (Pollard 2003b). Therefore, this option is added to this analysis as Alternative 5 with one slight modification. To ensure adequate time is available for rulemaking, the option is changed from an original range of 15 to 18 months effective period for harvest specifications to an 18 months time period. The public comment period will be assumed to be 15 days, allowing for review of the specifications.

Under this alternative Alaska groundfish harvest specifications would authorize fishing in the year in which they are specified and also for the first six months of the next year. As described under status quo, NMFS would prepare the notice of proposed specifications after the October Council meeting based upon the best scientific information then available and in consideration of the Council’s October recommendations. NMFS would publish this notice of proposed specifications in the Federal Register as soon as practicable after the October Council meeting and solicit public comment for 15 days. Given the time required to prepare proposed rule packages, the proposed rule is likely to be published in December.

After closure of the public comment period, in consideration of the recommendations made by the Council at its December meeting and of any new information that has become available after the publication of the notice of proposed specifications, NMFS either may (1) publish a notice of final specifications in the Federal Register; or (2) begin a second cycle of rulemaking to implement the harvest specifications, if the notice of proposed specifications was inadequate to afford the public a meaningful opportunity to comment on the issues involved (for example, if the Council recommendations diverge significantly from the notice of proposed specifications). In the event a second cycle of rulemaking is necessary, NMFS could either (1) publish a second notice of proposed specifications in the Federal Register and solicit public comment, or (2) waive the requirement for notice and comment for “good cause” pursuant to the APA and directly publish final specifications with a post-effectiveness public comment period of 15 days.

Figure 2.1 provides a flowchart of the annual decision making required for this alternative. Each December, NMFS will need to determine if the final recommendations by the Council could be considered a “logical outgrowth” of the proposed specifications. The proposed specifications must provide the public a meaningful opportunity to comment on the issues involved in setting specifications and must provide enough information so that the public could reasonably anticipate the final specifications from the proposed specifications (Pollard 2003a). The proposed specifications will need to be highly informative documents that address each TAC for each species and the information that is used to develop each TAC and how discretionary apportionment and allocation are made. It may be necessary to specify ranges of TAC for each species and develop allocation and apportionment tables for the range of values.

If the new information from the November SAFE reports and December Council meeting expands upon and confirms the data and studies upon which the proposed specifications were based, then final harvest specifications may be completed by March. If the new information contradicts the proposed specifications, the harvest specifications may be proposed again with the new information or issued as a final action waiving prior public review and comment and the 30 day cooling off period. New information may also indicate that a TAC amount for the first part of the year, which was projected in the previous year's rulemaking process, may be inappropriate. Depending on the nature of the new information, the TAC for the first part of the year may be changed using emergency rulemaking or inseason action. It is unlikely that the adjustment of TAC can be completed before the commencement of the fisheries because of the time necessary to complete the rulemaking process.

Because of the interdependence of certain portions of the harvest specifications, if any one or more changes to the harvest specifications are not found to be a logical outgrowth of the proposed specifications, changes may be necessary for other species specifications as well. For instance, if the TAC for pollock in the BSAI is changed from the proposed rule in the final rule for a reason that was not addressed in the proposed rule, the entire harvest specifications may either be proposed a second time or a final rule may be issued waiving public review and comment and the 30 day cooling off period. Other changes that may occur as a result of changing the pollock TAC are the adjustment of other groundfish species TACs to maximize the harvest of pollock and maintain the 2 million mt optimal yield for the BSAI and changes to the allocation of pollock between sectors.

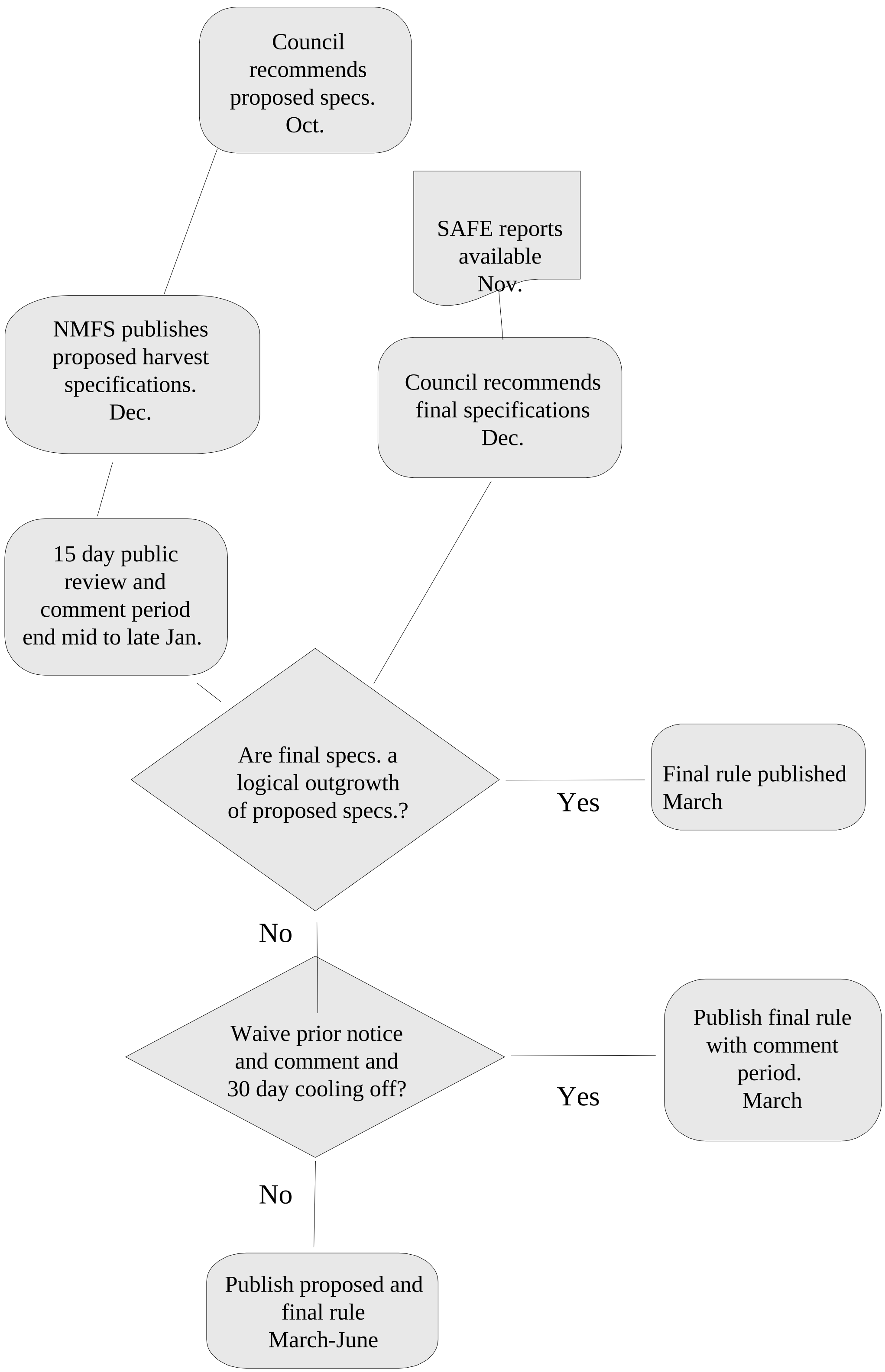

Figure 2.1 **Alternative 5 Flowchart**

An option to Alternative 5 would provide for a method of ensuring that sablefish fishery specifications do not change during the fishing year. Under this option, harvest specifications would include sablefish specifications for all of year 2 (as oppose to the first six months of year 2) (See Table 2.5). This option would ensure the management of sablefish would be parallel to the halibut fishery and that quotas would not have to be recalculated during the calendar year.

See appendices E and F for draft FMP language with options A and B for this alternative.

2.2 Stand Alone Options:

Option A: Abolish TAC Reserves.

Under Option A, NMFS would no longer set aside nonspecified TAC reserves in the BSAI and would no longer set aside TAC for the GOA reserves. CDQ reserves would be established as a set allocation of the total TAC (7.5 percent of each BSAI PSC limit; and 7.5 percent of most BSAI groundfish TACs, except 10 percent of BSAI pollock and 20 percent of the fixed gear sablefish allocation). Option A could be implemented with alternatives 1 through 5 to promote administrative efficiency while minimizing public confusion regarding TAC specifications.

Option B: Updating Portions of the FMPs

The FMPs do not accurately reflect the current condition of the fisheries and the harvest specification process (NPFMC 1999a and 1999b). This option would update language in certain sections of the FMPs to remove references to foreign fishing and allocation to foreign fishing and to update the description of the harvest specification process, including the Plan Teams' responsibilities regarding PSC limits apportionments and allocations and to update fishing participants information. Appendices A through F to this EA/RIR/IRFA contain draft amendment language for the BSAI and GOA FMPs, implementing alternatives 2, 3, and 5 and this option.

The groundfish fisheries in Alaskan waters have shifted from exclusively foreign fisheries to exclusively American fisheries in 1991. At the time the FMPs were developed, much of the descriptive text contained references to foreign fishing, and management measures included provisions for foreign and domestic fisheries. This option will remove obsolete references to foreign fishing in the Introduction, Goals and Objectives, Stock and Area Description, and Management Measures sections of the FMPs and update the description of the current groundfish fisheries.

Section 303(a) of the Magnuson-Stevens Act requires that an FMP address foreign fishing by:
1. Describing the conservation and management measures that apply to foreign fishing,
2. Describing the nature and extent of foreign fishing, and
3. Assessing and specifying the portion of optimal yield made available to foreign fishing.

These requirements will be met by describing that foreign fishing is no longer allowed in Alaskan waters. Therefore, no conservation and management measures are needed, and no portion of optimal yield is made available to foreign fishing. Implementing this option would meet the objectives of promoting administrative efficiency and minimizing public confusion regarding the FMP language.

The BSAI and GOA FMPs contain descriptions of the actions taken by the Plan Teams in providing information to the Council to make harvest specifications recommendations. Each FMP contains a description of the Plan Teams providing recommended PSC limits allocations and apportionments and an economic analysis of these allocations and apportionments. The Plan Teams have not provided this economic analysis for a number of years because there are no economists on the Plan Teams. The Plan Teams normally provide the Council a report on the previous year's PSC limits apportionments and allocations and catches of PSC species for Council consideration. The Council uses the Plan Team information and fishing industry concerns in developing recommended PSC limits apportionments and allocations for the coming year. The fishing industry concerns are a crucial part of the development of the PSC recommendations and are not available to the Plan Teams. Therefore, the Plan Teams do not have all the information needed to make comprehensive recommendations to the Council regarding PSC limit apportionments and allocations for the harvest specifications. However, for several years, economic analysis has been provided by the economists at the AFSC in the annual "Economic SAFE report". If this option is adopted, references to the Plan Teams providing recommended PSC limits apportionments and allocations and economic analyses will be changed to an optional part of the SAFE reports to the Council.

Appendices A through F contain the draft FMP amendment language for implementation of alternatives 2, 3, and 5, and the updates previously described in this section for the BSAI and GOA FMPs. The appendices differ in text only by the alternative and options that are intended to be implemented with the amendment language. Language describing the Council process for developing and recommending harvest specifications would be amended to reflect the schedule specified in alternatives 2, 3, or 5. This option adds the additional amendments of removing references to foreign fishing where appropriate and changing the Plan Teams' responsibility for providing the Council recommended PSC limit apportionments and allocations for harvest specifications to an optional activity.

The name of the BSAI FMP (Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area) is also revised under this option to remove the additional word "fishery" and clarify the area to which the plan applies. The current title is not consistent with the title used for the GOA FMP (Fishery Management Plan for Groundfish of the Gulf of Alaska), which is more concise. The title needs to be changed to remove the redundant term "fishery" and to ensure the area in the title is consistent with the area defined in the regulations. If this option is implemented, the title for the BSAI FMP will be changed to " Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area."

Excluding the draft FMP language for a harvest specifications process (Alternatives 2, 3, and 5), this option is a housekeeping procedure. Updating language in the FMP will not change the management or nature of the groundfish fisheries in Alaskan waters. By not changing the management or nature of the groundfish fisheries, this option will have no effect on the human environment. Because this option is a housekeeping procedure to update the Plan Teams' responsibilities for recommending PSC limit allocations and apportionments, to reflect the current nature of foreign and domestic fisheries in Alaskan waters, and to revise the title of the BSAI FMP,this option is considered a minor correction to the FMP. Minor corrections to an FMP are considered eligible for categorical exclusion from NEPA analysis under NOAA Administrative Order 216-6, section 6.03(a)(3)(b)(2). This option will not have an effect on the human environment and is considered a minor correction. Therefore, it will not be further analyzed in this EA and is categorically excluded from NEPA analysis.

Option C: Set biennial harvest specifications for long-lived GOA target species/complexes.

Under Option C, harvest specifications for most long-lived target species and complexes in the GOA would be set on a biennial basis. The target species considered for biennial specifications are limited to those species on a biennial survey schedule in the GOA and those for which annual stock assessments are not reasonable. In the GOA, these species include: deep water flatfish, rex sole, shallow water flatfish, flathead sole, Arrowtooth flounder, other slope rockfish, northern rockfish, Pacific ocean perch, shortraker/rougheye rockfish, pelagic shelf rockfish, thornyhead rockfish, demersal shelf rockfish, and Atka mackerel.

Those stocks recommended for biennial specifications are in general longer-lived species (such as the rockfish and flatfish stocks) which are surveyed biennially in the GOA trawl survey. Rulemaking would set specifications for two years based on projected OFLs, ABCs, and TACs, for years 1 and 2. For these stocks, the projected specifications for year 2 do not vary appreciably from those established for year 1 (where the ABC was established incorporating recent survey results into the assessment). Table 2.4 shows the 2003 TAC values remained the same or changed little for the species/complexes considered for this option compared to 2002 TAC**.** Though Atka mackerel is considered a short-lived species, no biomass information is available to assess the stock and the only annual data available are catch data. Atka mackerel harvest levels are set to provide for bycatch in other fisheries and have been 600 mt in the GOA since 1998. Thus, in general, full assessments for these stocks are being completed by stock assessment authors in years where there is no measurable change in stock status from the survey year. This is an ineffective use of staff time. Several weeks worth of staff time is involved in preparing these stock assessments, even in years where there is no new survey data to incorporate. Staff time is already over-committed and these weeks could be better utilized working on other research, publications, and attendance at relevant scientific meetings.

Table 2.4 Comparison of 2002 final specifications and proposed and final 2003 specifications

	2003 ABC		2003 TAC		2002 TAC
	proposed	final	proposed	final	final
deep water flatfish	4,880	4,880	4,880	4,880	4,880
rex sole	9,470	9,470	9,470	9,470	9,470
shallow water flatfish	**49,550**	**49,340**	**20,420**	**21,620**	**20,420**
arrowtooth flounder	**140,410**	**155,140**	38,000	38,000	38,000
other slope rockfish	5,040	5,040	990	990	990
northern rockfish	**4,700**	**5,530**	**4,700**	**5,530**	**4,980**
Pacific Ocean Perch	**13,330**	**13,660**	**13,300**	**13,660**	**13,190**
shortraker/rougheye	1,620	1,620	1,620	1,620	1,620
pelagic shelf rockfish	5,490	5,490	5,490	5,490	5,490
thornyhead rockfish	**1,990**	**2,000**	**1,990**	**2,000**	**1,990**
demersal shelf rockfish	**350**	**390**	**350**	**390**	**350**
Atka mackerel	600	600	600	600	600

The following GOA stocks are not recommended for biennial specifications: pollock, Pacific cod, sablefish, and other species. For these stocks it is recommended that annual specifications continue for the reasons outlined below:

For GOA pollock, annual specifications are recommended due to the availability of some annual data and the concern over the vulnerability of this stock given its current low levels of adult biomass. While bottom trawl surveys in the GOA are now conducted biennially, echo integration trawl (EIT) surveys in the Shelikof Strait area have been conducted on an annual basis since 1981. Historically the Shelikof Strait EIT surveys have been considered a primary source of information on overall GOA pollock population trends, although this may be reevaluated in the future based upon results from winter surveying effort in 2002 (NMFS 2003b, Appendix B). Annual nearshore trawl surveys of crab and groundfish by ADF&G are also considered in estimating pollock biomass annually in the GOA. Given the availability of annual data for GOA pollock as well as the current low levels seen in the population, a continuation of annual stock assessment and annual specifications are recommended for this stock.

Pacific cod are a short-lived, fast growing species and while the stock is biennially assessed by the GOA trawl survey, annual specifications are recommended for this stock. Additional information regarding the justification for annual specifications for this and other short-lived, fast growing species may be found under section 4.1.3 of this document.

Sablefish are a relatively long-lived species, however annual assessment data are available for this stock due to the annual longline sablefish survey. This is a very high value fishery, thus small changes in the allowable catch quotas can have an appreciable economic impact. For these reasons this stock is also recommended for annual specifications.

There is limited information on stock status for the GOA “other species” category thus the TAC for this complex is set in regulation as 5 percent of the total TAC for all other stocks. The algorithm requires an annual calculation that would incorporate changes to annual TACs. Until additional information is known about the status of the other species stock complex, no recommendation is being put forward to change the current specification for this complex at this time.

Biennial harvest specifications are not being recommended for the BSAI. Results of annual bottom trawl surveys in the Bering Sea result in revised annual stock assessments for all target stocks. Thus an annual stock assessment and specification process uses the best available science in establishing annual specifications in the Bering Sea. Annual harvest specifications are more complicated in the Aleutian Islands. Many of the assessments are determined for the combined BSAI stocks. Harvest specifications are made for the combined BSAI area for Pacific cod, Atka mackerel, yellowfin sole, rock sole, Arrowtooth flounder, flathead sole, other flatfish, and Alaska plaice. The OFL is set for the combined areas, but separate ABCs and TACs are set for Greenland turbot, Pacific ocean perch, northern rockfish, shortraker/rougheye, squid, and other species. Separate specifications (including OFLs) are set in the Aleutian Islands only for pollock, sablefish, and other rockfish. For pollock and sablefish, the justifications for annual specifications in the GOA are equivalent for the Aleutian Islands area. The importance of changing the assessment frequency and allocation of other rockfish is being addressed in a separate on-going analysis and thus no changes to Aleutian Islands rockfish specifications are being proposed here.

2.3 Alternatives Considered and Eliminated from Detailed Study

Set harvest specifications through a single Federal Register notice

An alternative to set harvest specifications through a single Federal Register notice was also considered and rejected. Under this alternative, the Council would recommend harvest specifications in December based upon SSC and AP recommendations. NMFS would approve and publish the harvest specifications as a notice in the Federal Register by the end of December. Public review and comment on the SAFE reports and EA/RIR/IRFA would be possible at the Plan Team and Council meetings. Three issues make this a nonviable alternative. The first problem is the lack of time to complete the NEPA and RFA analyses between the December Council meeting and before publication of the notice. The second problem is that this alternative does not provide ample opportunity for public review and comment on the proposed federal action, one of the most important goals of revising the harvest specification process. The third possible problem is that the fishery may not open on January 1 if the notice is not issued by then. Because of these problems, this alternative will not be further analyzed in this document.

Issue proposed and final specifications based on current year survey results, but conduct surveys earlier in year

This alternative would maintain the existing fishing year schedule but resource assessment surveys would be conducted earlier in the year, and Council recommendations would be provided earlier in the year to provide completion of the proposed and final specifications process before January 1. Survey work would be required to be conducted in late winter months. This alternative would allow for adequate public review and comment on the proposed federal action, but would constrain time to develop analyses prior to Council recommendation and agency approval for the harvest specifications. Major scientific problems exist with this option because the distribution and abundance of the fish in the winter/spring surveys would be different than in historically timed stock surveys. Further, severe weather may reduce the number of surveys completed and reduce sampling precision, along with jeopardizing the safety of the survey crew. Because of these problems, this option will not be further analyzed in this EA/RIR/IRFA.

Calculate interim specifications from ABC, followed by proposed and final specifications.

Under this alternative, NMFS would issue interim specifications by Federal Register notice after the December Council meeting and prior to January 1, based on the following non-discretionary formula which uses the best available information on status of the stocks. This information comes from the November/December Plan Team, SSC, and Council deliberations.

$[\ ABC_{\text{year } x+1} / ABC_{\text{year } x} * TAC_{\text{year } x}] = \text{Interim } TAC_{\text{year } x+1}$

Under this simple formula, interim TACs would be proportionately adjusted up or down from the previous year's TACs based on changes to ABCs. The interim TACs would be the lower of the calculated TACs or the Council-recommended TACs. The interim TAC would be apportioned into gear, season, and area allocations as specified in regulations. In addition, this alternative would provide for sablefish CDQ and IFQ interim TACs according to the above formula. Interim specifications would be superceded by proposed and final rulemaking with final specifications replacing interim specifications by late spring.

Because this alternative would not allow for a proposed and final rule making process on the interim specifications, this would not comply with the main objective to allow prior notice and public comment on harvest specifications and is therefore not further analyzed in this EA/RIR/IRFA.

Rollover existing specifications until superceded by new specifications

This alternative would set harvest specifications for a 16-month period (Jan-Dec + following year Jan-April). The harvest specifications would effectively "rollover" into the first four months of the following year, until replaced by new final specifications. If final specifications were not in place on or before May 1, the fishery would not be authorized to operate. Public comment would be taken at Plan Team meetings and Council meetings. No changes would occur in the resource assessment survey schedule. This alternative would reduce administrative costs relative to the status quo because no need would exist for issuing interim specifications. Two options are detailed below.

Option 1: Rollover current year's specifications on interim basis; NMFS would publish proposed specifications with a 15-day comment period and would publish final specifications, following the December Council meeting.

This option would implement regulations that would stipulate the rollover of the current year's specifications, without any Federal action needed. That is, the TACs would be set for a 16-month period, or until superceded by final specifications. Proposed specifications would be based on Council recommendations and would be published after the December Council meeting. Public comment would be taken during the proposed specifications comment period and at Plan Team meetings and Council meetings.
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Option 2: Rollover current year's specifications on an interim basis; NMFS would publish interim final specifications with a 30-day comment period. If necessary after considering comments received, NMFS would publish revised final specifications.

Under this alternative, NMFS would publish interim final specifications based on the Council recommendations after the December Council meeting, accompanied by the required NEPA and economic analyses. Public comment would be taken during interim final specification comment period, and at Plan Team meetings and Council meetings.

Option 1 would cause confusion to the public and difficulty in management of the fisheries as the harvest specifications would likely change half way through the fishing year. Option 1 does not meet the objectives to minimize disruption to the fisheries and public confusion, and to promote administrative efficiency. Option 2 does not meet the statutory requirements for prior public notification and comment on a proposed federal action. Because these options do not meet the objectives, this alternative is not further analyzed in this document.

Marine Conservation Alliance September 2002 Options

The MCA provided two alternatives for consideration to NMFS for the harvest specifications process (Frulla 2002). The first alterative maintained the status quo procedures for rulemaking. The proposed rule would specify a range which the TAC and other specifications may be set. Also the public notice process before the Council's final recommendations would be enhanced through Federal Register notices of the Plan Team and Council meetings in October through December and providing access through the internet of decision documents, such as SAFE reports.

MCA's second option in its September 2002 correspondence uses the same Council decision process as status quo except no proposed rule making is used. In January or February, NMFS would issue an interim final rule with a comment period that supercedes specifications currently in place. The final rule is later issued, after consideration of comments, for a 15 to 18 month time period.

Because both of MCA's September 2002 options rely on interim specifications, categorically requiring waiver of prior notice and public comment requirements of the APA, these options are considered legally insufficient (Pollard 2003a). The APA "good cause" waiver of notice and opportunity for comment is an exception to be "narrowly construed and only reluctantly countenanced." (Pollard 2003a) These options are not further analyzed in this EA/RIR/IRFA. MCA provided a revision to its second option in February 2003 (Frulla 2003), and this option is analyzed as Alternative 5 in this analysis. See section 2.1 for a description.

Option for biennial harvest specifications under Alternative 2 in previous versions of this EA/RIR/IRFA

This option to Alternative 2 would have harvest specifications for the GOA and the BSAI target species set on a biennial basis. The species on a biennial survey schedule include all of the target species in the Aleutian Islands, Bering Sea sablefish, and all GOA target species, except for sablefish. Currently, the resource surveys in these areas are done every two years. ABCs are recommended based on the most recent survey data which may have been collected one or two years in the past. As explained in sections 1.6 and 2.2, BSAI target species can not be set on a biennial basis because of annual adjustments done to maintain harvests below the 2 million optimal yield cap. The biennial harvest specifications are more appropriate to consider for long lived species on biennial survey schedules in the GOA. Option C in this analysis provides for the consideration of biennial specifications under all of the alternatives and limits consideration to only some GOA species on biennial survey schedules.

Option for biennial PSC limits in previous version of this EA/RIR/IRFA

Previous versions of this EA/RIR/IRFA contained an option to Alternative 4 that would set PSC limits on a biennial basis. Option 2, using projected values, would require for crab and herring stocks in the BSAI that NMFS and/or the State provide projections of crab and herring biomass one to two years in advance. At this time it is not known if the State and NMFS have the resources or data available to make reliable abundance and spawning biomass projections for the crab and herring stocks. Such stock projections are not practical therefore Option 2, using projected values, should be withdrawn from further consideration. While Option 2, (rolling over the previous year's PSC limits) would not be expected to adversely impact the stocks of prohibited species, but regulations at §679.21(d) and (e) specify that PSC limits in the GOA and BSAI shall be specified annually and be based on estimates of numerical abundance of crab and spawning biomass of herring in the BSAI. This regulation would need to be changed to allow for biennial PSC specifications if Option 2 was selected, but this would not solve the need to set crab and herring PSC limits based on spawning biomass which, with current resources, is only done annually. For this reason NMFS recommends that Option 2, rolling over PSC limits from the previous year, be withdrawn from further consideration.

2.4 Implementation Process for Alternatives

Figure 2.2 shows the implementation process for revising the FMPs and implementing Alternatives 2 or 4. In Figure 2.2, the Council makes a final recommendation in October 2003, proposed and final rule making for the harvest specifications process would need to be completed before April 2004 to allow the Council to make a final harvest specifications recommendation for 2005 (and 2006 for Alternative 4) under the new administrative procedure. At the same time, the 2004 harvest specifications would need to be implemented by proposed, interim, and final rulemaking as the new process is being put in place. Proposed and final rulemaking for 2005 harvest specifications would happen in June and October 2004, respectively so those specifications will be in place by January 2005.

In Figure 2.3, Alternative 3 would have a similar FMP amendment approval and rulemaking process as Alternatives 2 or 4 for revising the harvest specifications process. Regulatory action for implementing the FMP amendments may occur later in 2004 compared to Alternative 2 because harvest specifications under Alternative 3 need to be effective 6 months later than under Alternative 2. Establishing the harvest specifications for 2004 would be done by proposed, interim, and final rulemaking as currently specified in the regulations. FMP amendments and regulatory amendment for the harvest specifications process would be completed in 2004, including proposed and final rulemaking for harvest specifications for January through June 2005 and January through December 2005 for sablefish, with Option 1. In December 2004, the Council would recommend July 2005 through June 2006 harvest specifications, and January through December 2006 sablefish TAC, if Option 1 is implemented. Proposed and final rulemaking for the July 2005 through June 2006 harvest specifications would be completed in the first half of 2005.

Figure 2.2: Alternative 2 and 4: Amendments 48/48 Implementation Schedule

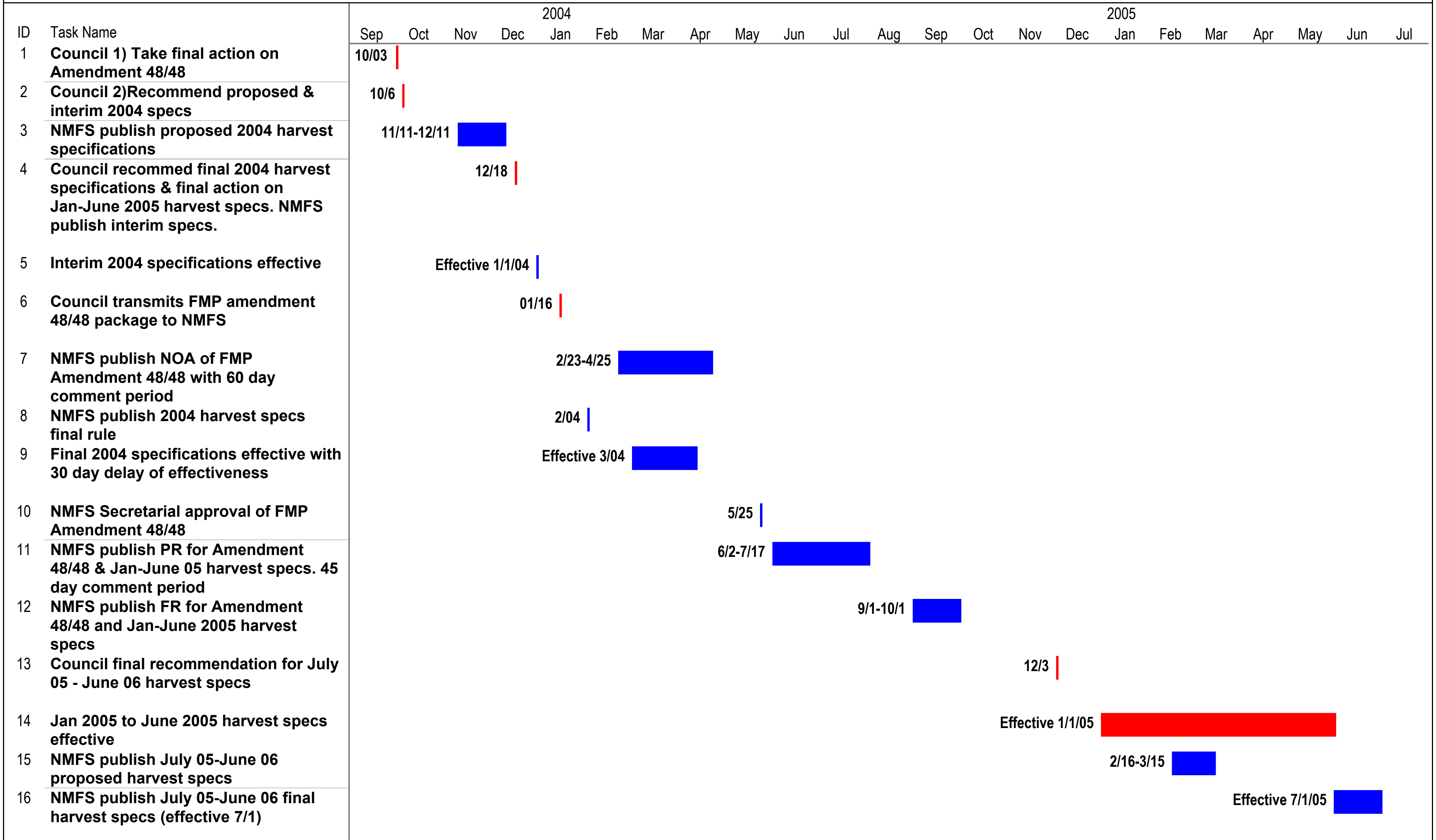
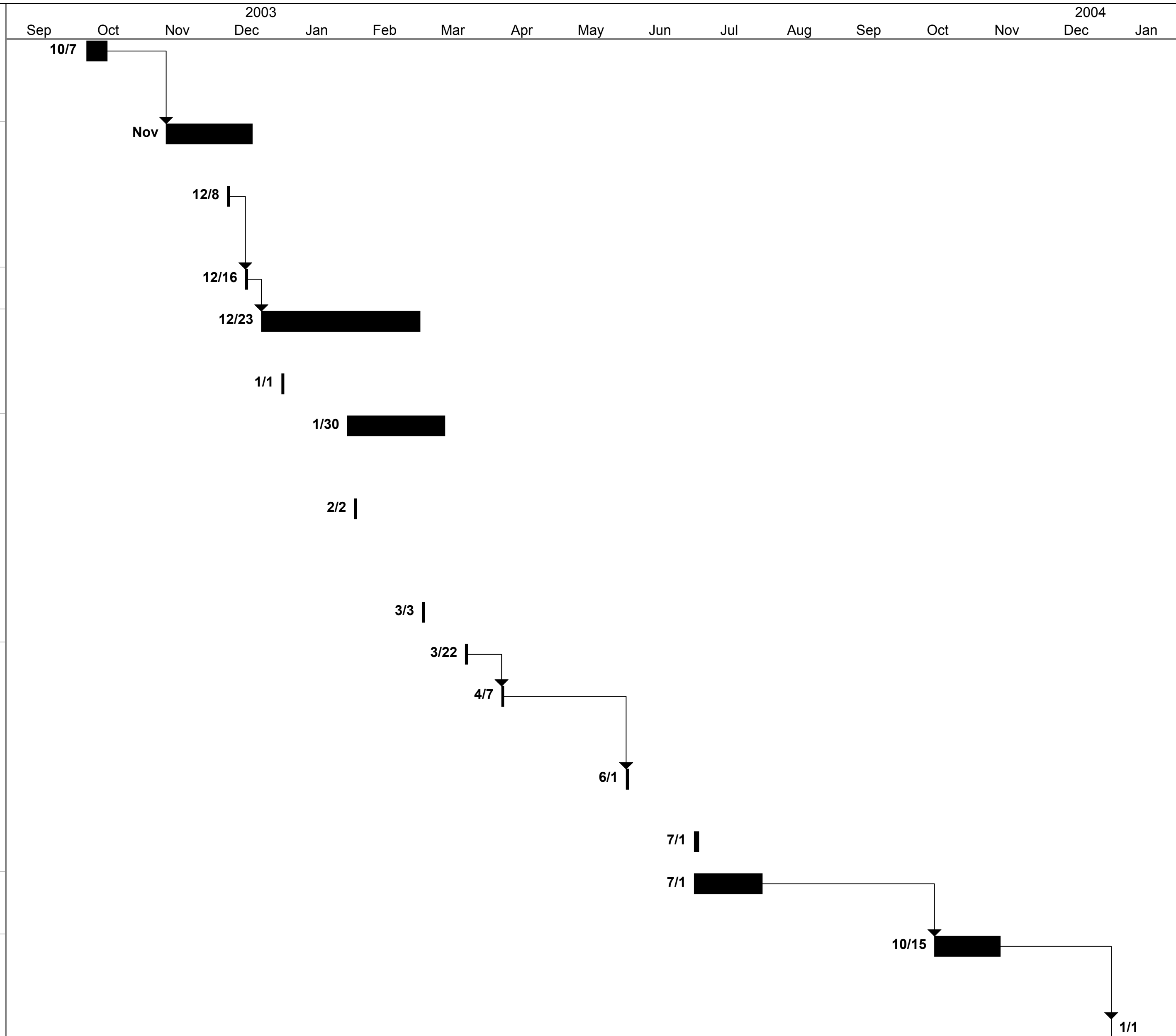


Figure 2.3 Rulemaking Schedule for Implementing Alternative 3 Harvest Specification Process

ID	Task Name
1	**Council takes final action on harvest specification process - October 2003; Council recommends proposed and interim 2004 specifications**
2	**NMFS publish proposed 2004 harvest specifications - November 2003**
3	**Council recommends final 2004 harvest specifications - December 8, 2003. NMFS publishes Interim 2004 Specifications**
4	**Council transmits FMP amendment package to NMFS - December 16, 2003**
5	**Notice of Availability of FMP published with 60 day comment period - December 23. 2003 to March 1, 2004**
6	**2004 interim harvest specifications - January 1, 2004**
7	**Proposed rule for specification process published with 45 day comment period - January 30 to March 15, 2004**
8	**Council follows new harvest specifications process - recommends proposed harvest specifications for 2005. February 2, 2004**
9	**2004 final harvest specifications published - March 3, 2004**
10	**Secretarial approval of FMP - March 21, 2004**
11	**Council recommends final 2005 harvest specifications - April 7, 2004 for harvest specification process**
12	**Final Rule published with 30 day delayed effectiveness period - June 1, 2004**
13	**Harvest specification process rule effective - July 1, 2004**
14	**Publish proposed rule for 2005 harvest specifications with 30 day comment period - July 1 to August 1, 2004**
15	**Publish final rule for 2005 harvest specifications with 30 day delayed effectiveness - October 15 - November 14, 2004**
16	**2005 harvest specifications effective - January 1, 2005**



Implementation of Alternative 5 would require FMP and regulatory amendments in 2004 to change the harvest specifications process. Harvest specifications implementation in 2004 will follow the status quo process. The regulations would need to be changed to allow the setting of TAC for at least an 18 month time period, and for the option, setting of sablefish TAC for at least 24 months in the first year. To implement harvest specifications in the time period between January 2005 and the final 2005 harvest specifications (approximately March to June 2005), the 2004 regulatory amendment for the harvest specifications process would need to include an interim rule provision for 2005. After the FMP and regulatory language is revised, the Council at the end of 2004 would recommend proposed, interim, and final harvest specifications during its October and December meetings, respectively. The harvest specifications would apply during all of 2005 and the first half of 2006. The interim specifications will be used to manage the fishery until the final specifications are in place in approximately March 2005. This would be the only time interim specifications would be permitted for implementing harvest specifications. In October and December 2005, the Council would make recommendations for 2006 and the first half of 2007 for proposed and final rulemaking. No interim specifications would be needed because specifications would be in place from final specifications for 2005 and the first half of 2006. See Table 2.5 for an implementation schedule for Alternative 5 with the option

If the option is implemented, the sablefish specifications would need to cover all of 2005 and 2006. In the following years, the harvest specifications will be implemented for 18 month time periods and the harvest specifications for sablefish will be needed for only the full second year. For example, harvest specifications recommended for the groundfish fisheries, except sablefish, in 2005 would be implemented for 2006 and half of 2007. Sablefish harvest specifications recommended in 2005 would only need to cover all of 2007 because 2006 sablefish harvest specifications were implemented with the 2005 and 2006 specifications recommended in 2004.

Table 2.5 Alternative 5 and Option Implementation Schedule

Council Recommendation Year	Council Recommends	Groundfish Harvest specifications, except sablefish	Sablefish Specifications
2004 (initial year)	proposed , interim and final harvest specs.	2005 and Jan-June 2006	2005 and 2006
2005	proposed and final harvest specs.	2006 and Jan-June 2007	2007
2006	proposed and final harvest specs.	2007 and Jan-June 2008	2008

3.0 AFFECTED ENVIRONMENT

Because the proposed action primarily changes an administrative process, impacts to many of the physical and biological components of the human environment are not expected. A change in the administrative procedures will not affect the location or methods of groundfish harvest. Because environmental impacts are not expected from the alternatives for most of the environmental components, a detailed description of the marine environment is not necessary in this analysis. For those components where impacts may occur, detailed descriptions are found in other recent NEPA analyses and will be cross referenced for the purposes of this EA/RIR/IRFA. General information and sources of additional information regarding the environment of the groundfish fisheries off Alaska is provided in this section.

Table 3.1 shows the components of the human environment and whether the alternatives may have an impact on the component beyond status quo, and require further analysis. Potential impacts on marine mammals are related to Steller sea lions and groundfish harvest and are further explained in section 4.5. Potential impacts on groundfish are explained in section 4.1. Socioeconomic descriptions and impacts are described in the RIR and IRFA, Sections 5 and 6. Environmental impacts from a range of TACs using the administrative process under Alternative 1 are analyzed in the 1998 SEIS (NMFS 1998a) and a variety of management regimes for the groundfish fisheries are analyzed in the revised draft PSEIS (NMFS 2003b). Extensive environmental analysis on all environmental components is not needed in this document because none of the alternatives are anticipated to have environmental impacts on all components. Analysis is included for those environmental components on which an alternative may have an impact beyond impacts analyzed for Alternative 1 in previous NEPA analysis.

Table 3.1 Resources potentially affected by an alternative beyond Alternative 1

	Potentially Affected Component							
Alternative	Physical	Benthic Comm.	Groundfish	Marine Mammals	Seabirds	Other Species	Prohibited Species	Socioeco nomic
2	N	N	Y	Y	N	N	N	Y
3	N	N	Y	N	N	N	N	Y
4	N	N	Y	Y	N	N	N	Y
5	N	N	N	N	N	N	N	Y

N = no impact beyond status quo anticipated by the alternative on the component.
Y = an impact beyond status quo is possible if the alternative is implemented.

The revised draft PSEIS (NMFS 2003b) provides a recent, complete description of the environment that may be affected by groundfish fishing activities in the following sections:
Features of the physical environment, section 3.3.
Threatened and endangered species, section 3.4
Groundfish resources, section 3.5,
Prohibited species, section 3.5.2
Other species, section 3.5.3
Habitat, section 3.6.
Seabirds, section 3.7
Marine mammals, section 3.8.
Socioeconomic Conditions, section 3.9
Ecosystem, section 3.10.

The revised draft PSEIS (NMFS 2003b) is available through the NMFS Alaska Region home page at http://www.fakr.noaa.gov. This EA/RIR/IRFA adopts much of the environmental status description in the revised draft PSEIS. Additionally, the current, detailed status of each target species category, biomass estimates, and acceptable biological catch specifications are presented annually both in summary and in detail in the annual GOA and BSAI SAFE reports (NMFS 2003a, appendices A and B). The SAFE reports for the 2003 fisheries are available through the Council's home page at http://www.fakr.noaa.gov/npfmc.

3.1 Status of Managed Groundfish Species

Designated target groundfish species and species groups in the BSAI are walleye pollock, Pacific cod, yellowfin sole, Greenland turbot, arrowtooth flounder, rock sole, other flatfish, flathead sole, sablefish, Pacific ocean perch, other rockfish, Atka mackerel, squid, and other species. Designated target species and species groups in the GOA are walleye pollock, Pacific cod, deep water flatfish, rex sole, shallow water flatfish, flathead sole, arrowtooth flounder, sablefish, other slope rockfish, northern rockfish, Pacific Ocean perch, shortraker and rougheye rockfish, pelagic shelf rockfish, demersal shelf rockfish, Atka mackerel, thornyhead rockfish, and other species. This EA cross-references and summarizes the status of the stock information in the SAFE reports (NMFS 2003a appendix A for BSAI and appendix B for GOA). For detailed life history, ecology, and fishery management information regarding groundfish stocks in the BSAI and GOA see Section 3.5. in the revised draft PSEIS (NMFS 2003b).

For those stocks where enough information is available, none are considered overfished or approaching an overfished condition. The BSAI and GOA Plan Teams met in November 2002 to finalize the SAFE reports and to forward 2003 ABC and OFL recommendations to the Council for action at its December 2002 meeting. The ABC, OFL, and TAC amounts for each target species or species group for 2003 were specified in final rules (68 FR 9924 and 9907, March 3, 2003). Tables 3.2 and 3.3 show the 2003 OFL, ABC, and TAC amounts for the BSAI and GOA groundfish fisheries, respectively.

Table 3.2 2003 Overfishing Level, Acceptable Biological Catch, Total Allowable Catch, Initial Tac (ITAC), and Community Development Quota (CDQ) Reserve Allocation of Groundfish in the BSAI[1] [Amounts are in mt]

Species	Area	OFL	ABC	TAC	ITAC[2]	CDQ reserve[3]
Pollock[4]	Bering Sea (BS)	3,530,000	2,330,000	1,491,760	1,342,584	149,176
	Aleutian Islands (AI)	52,600	39,400	1,000	1,000	....
	Bogoslof District	45,300	4,070	50	50	....
Pacific cod	BSAI	324,000	223,000	207,500	176,375	15,563
Sablefish[5]	BS	4,290	2,900	2,900	1,233	399
	AI	4,590	3,100	3,100	659	523
Atka mackerel	Total	99,700	63,000	60,000	51,000	4,500
	Western AI	....	22,990	19,990	16,992	1,499
	Central AI	....	29,360	29,360	24,956	2,202
	Eastern AI/BS	....	10,650	10,650	9,053	799
Yellowfin sole	BSAI	136,000	114,000	83,750	71,188	6,281
Rock sole	BSAI	132,000	110,000	44,000	37,400	3,300
Greenland turbot	Total	17,800	5,880	4,000	3,400	300
	BS	....	3,920	2,680	2,278	201
	AI	....	1,960	1,320	1,122	99
Arrowtooth flounder	BSAI	139,000	112,000	12,000	10,200	900
Flathead sole	BSAI	81,000	66,000	20,000	17,000	1,500
Other flatfish[6]	BSAI	21,400	16,000	3,000	2,550	225
Alaska plaice	BSAI	165,000	137,000	10,000	8,500	750
Pacific ocean perch	BSAI	18,000	....	....	....	....
	BS		2,410	1,410	1,199	106
	AI Total	....	12,690	12,690	10,787	952
	Western AI	....	5,850	5,850	4,973	439
	Central AI	....	3,340	3,340	2,839	251
	Eastern AI	....	3,500	3,500	2,975	263
Northern rockfish	BSAI	9,468	7,101			
	BS			121	103	9
	AI			5,879	4,997	441
Shortraker/rougheye	BSAI	1,289	967	....	....	....
	BS	....	....	137	116	10
	AI	....	....	830	706	62
Other rockfish[7]	BS	1,280	960	960	816	72
	AI	846	634	634	539	48
Squid	BSAI	2,620	1,970	1,970	1,675	....
Other species[8]	BSAI	81,100	43,300	32,309	27,463	2,423
TOTAL		4,867,308	3,296,382	2,000,000	1,771,540	187,540

[1] These amounts apply to the entire BSAI management area unless otherwise specified. With the exception of pollock, and for the purpose of these specifications, the Bering Sea subarea includes the Bogoslof District.

[2] Except for pollock and the portion of the sablefish TAC allocated to hook-and-line and pot gear, 15 percent of each TAC is put into a reserve. The ITAC for each species is the remainder of the TAC after the subtraction of these reserves.

[3] Except for pollock and the hook-and-line or pot gear allocation of sablefish, one half of the amount of the TACs placed in reserve, or 7.5 percent of the TACs, is designated as a CDQ reserve for use by CDQ participants (see §§ 679.20(b)(1)(iii) and 679.31).

[4] The American Fisheries Act (AFA) requires that 10 percent of the annual Bering Sea pollock TAC be allocated as a CDQ reserve and the entire Aleutian Islands and Bogoslof District pollock ITAC be allocated as an incidental catch allowance. NMFS then subtracts 3.5 percent of the remaining Bering Sea pollock as an incidental catch allowance, which is not apportioned by season or area. The remainder of the ITAC is further allocated by sector as directed fishing allocations as follows: inshore, 50 percent; catcher/processor, 40 percent; and motherships, 10 percent.

[5] The ITAC for sablefish reflected in Table 1 is for trawl gear only. Regulations at § 679.20(b)(1) do not provide for the establishment of an ITAC for the hook-and-line and pot gear allocation for sablefish. Twenty percent of the sablefish TAC allocated to hook-and-line gear or pot gear and 7.5 percent of the sablefish TAC allocated to trawl gear is reserved for use by CDQ participants (see § 679.20(b)(1)(iii)).

[6] "Other flatfish" includes all flatfish species, except for Pacific halibut (a prohibited species), flathead sole, Greenland turbot, rock sole, yellowfin sole, arrowtooth flounder and Alaska plaice.

[7] "Other rockfish" includes all Sebastes and Sebastolobus species except for Pacific ocean perch, northern, shortraker, and rougheye rockfish.

[8] "Other species" includes sculpins, sharks, skates and octopus. Forage fish, as defined at § 679.2, are not included in the "other species" category.

Table 3.3 Final 2003 ABCs, TACs, and OFLs of Groundfish for the Western/Central/West Yakutat (W/C/WYK), Western (W), Central (C), Eastern (E) Regulatory Areas, and in the West Yakutat (WYK), Southeast Outside (SEO), and Gulf-Wide (GW) Districts of the GOA. [Amounts are in mt]

Species	Area[1]	ABC	TAC	OFL
Pollock[2]				
Shumagin	(610)	16,788	16,788	
Chirikof	(620)	19,685	19,685	
Kodiak	(630)	10,339	10,339	
WYK	(640)	1,078	1,078	
Subtotal	W/C/WYK	47,890	47,890	69,410
SEO	(650)	6,460	6,460	8,610
Total		54,350	54,350	78,020
Pacific cod[3]				
	W	20,600	15,450	
	C	29,000	22,690	
	E	3,200	2,400	
Total		52,800	40,540	70,100
Flatfish[4]	W	180	180	
(deep-	C	2,220	2,220	
water)	WYK	1,330	1,330	
	SEO	1,150	1,150	
Total		4,880	4,880	6,430
Rex sole	W	1,280	1,280	
	C	5,540	5,540	
	WYK	1,600	1,600	
	SEO	1,050	1,050	
Total		9,470	9,470	12,320
Flathead	W	16,420	2,000	
sole	C	20,820	5,000	
	WYK	2,900	2,900	
	SEO	1,250	1,250	
Total		41,390	11,150	51,560
Flatfish[5]	W	23,480	4,500	
(shallow-	C	21,740	13,000	
water)	WYK	1,160	1,160	
	SEO	2,960	2,960	
Total		49,340	21,620	61,810

Table 1. (continued)

Species	Area[1]	ABC	TAC	OFL
Arrowtooth flounder	W	17,990	8,000	
	C	113,050	25,000	
	WYK	18,190	2,500	
	SEO	5,910	2,500	
Total		155,140	38,000	181,390
Sablefish[6]	W	2,570	2,570	
	C	6,440	6,440	
	WYK	2,320	2,320	
	SEO	3,560	3,560	
Subtotal	E	5,880	5,880	
Total		14,890	14,890	20,020
Pacific[7] ocean perch	W	2,700	2,700	3,220
	C	8,510	8,510	10,120
	WYK	810	810	
	SEO	1,640	1,640	
Subtotal	E			2,900
Total		13,660	13,660	16,240
Short raker/ rougheye[8]	W	220	220	
	C	840	840	
	E	560	560	
Total		1,620	1,620	2,340
Other rockfish[9,10]	W	90	90	
	C	550	550	
	WYK	270	150	
	SEO	4,140	200	
Total		5,050	990	6,610
Northern Rockfish[10,12,15]	W	890	890	
	C	4,640	4,640	
	E	N/A	N/A	
Total		5,530	5,530	6,560
Pelagic shelf rockfish[13]	W	510	510	
	C	3,480	3,480	
	WYK	640	640	
	SEO	860	860	
Total		5,490	5,490	8,220
Thornyhead rockfish	W	360	360	
	C	840	840	
	E	800	800	
Total		2,000	2,000	3,050

Table 1. (continued)

Species	Area[1]	ABC	TAC	OFL
Demersal shelf rockfish[11]	SEO	390	390	540
Atka mackerel	GW	600	600	6,200
Other[14,15] species	GW	N/A	11,260	N/A
TOTAL[16]		416,600	236,440	531,410

[1] Regulatory areas and districts are defined at § 679.2.

[2] Pollock is apportioned in the Western/Central Regulatory areas among three statistical areas. During the A season, the apportionment is based upon an adjusted estimate of relative distribution of pollock biomass at 25 percent, 56 percent, and 19 percent in Statistical Areas 610, 620, and 630, respectively. During the B season, the apportionment is based on the relative distribution of pollock biomass at 25 percent, 66 percent, and 9 percent in Statistical Areas 610, 620, and 630, respectively. During the C and D seasons, the apportionment is based on the relative distribution of pollock biomass at 47 percent, 23 percent, and 30 percent in Statistical Areas 610, 620, and 630, respectively. These seasonal apportionments are shown in Table 3. In the West Yakutat and Southeast Outside Districts of the Eastern Regulatory Area, pollock is not divided into seasonal allowances.

[3] The annual Pacific cod TAC is apportioned 60 percent to an A season and 40 percent to a B season in the Western and Central Regulatory Areas of the GOA. Pacific cod is allocated 90 percent for processing by the inshore component and 10 percent for processing by the offshore component. Seasonal apportionments and component allocations of TAC are shown in Table 4.

[4] "Deep water flatfish" means Dover sole, Greenland turbot, and deep sea sole.

[5] "Shallow water flatfish" means flatfish not including "deep water flatfish," flathead sole, rex sole, or arrowtooth flounder.

[6] Sablefish is allocated to trawl and hook-and-line gears (Table 2).

[7] "Pacific ocean perch" means Sebastes alutus.

[8] "Shortraker/rougheye rockfish" means Sebastes borealis (shortraker) and S. aleutianus (rougheye).

[9] "Other rockfish" in the Western and Central Regulatory Areas and in the West Yakutat District means slope rockfish and demersal shelf rockfish. The category "other rockfish" in the Southeast Outside District means slope rockfish.

[10] "Slope rockfish" means Sebastes aurora (aurora), S. melanostomus (blackgill), S. paucispinis (bocaccio), S. goodei (chilipepper), S. crameri (darkblotch), S. elongatus (greenstriped), S. variegatus (harlequin), S. wilsoni (pygmy), S. babcocki (redbanded), S. proriger (redstripe), S. zacentrus (sharpchin), S. jordani (shortbelly), S. brevispinis (silvergrey), S. diploproa (splitnose), S. saxicola

(stripetail), S. miniatus (vermilion), and S. reedi (yellowmouth). In the Eastern GOA only, “slope rockfish” also includes northern rockfish, S. polyspinous.

[11] "Demersal shelf rockfish" means Sebastes pinniger (canary), S. nebulosus (china), S. caurinus (copper), S. maliger (quillback), S. helvomaculatus (rosethorn), S. nigrocinctus (tiger), and S. ruberrimus (yelloweye).

[12] "Northern rockfish" means Sebastes polyspinis.

[13] "Pelagic shelf rockfish" means Sebastes ciliatus (dusky), S. entomelas (widow), and S. flavidus (yellowtail).

[14] "Other species" means sculpins, sharks, skates, squid, and octopus. The TAC for "other species" equals 5 percent of the TACs of assessed target species.

[15] N/A means not applicable.

[16] The total ABC is the sum of the ABCs for assessed target species.

3.2 Status of Prohibited Species Stocks

Prohibited species taken incidentally in groundfish fisheries include: Pacific salmon (chinook, coho, sockeye, chum, and pink salmon), steelhead trout, Pacific halibut, Pacific herring, and Alaska king, Tanner, and snow crabs. In order to control bycatch of prohibited species in the groundfish fisheries, the Council annually specifies halibut limits for the GOA groundfish fishery, and halibut and other PSC limits in BSAI. The status of the prohibited species is detailed in section 3.5.2 of the revised draft PSEIS (NMFS 2003b) and in the SAFE reports (NMFS 2003a, appendices A and B). During haul sorting, these species or species groups are to be returned to the sea with a minimum of injury except when their retention is required by other applicable law.

3.3 Forage Species and Nonspecified Species

Forage fish species are abundant fishes that are preyed upon by marine mammals, seabirds and other commercially important groundfish species. The following forage species are included in the forage fish category established in 1998: Osmeridae (which includes capelin and eulachon), Myctophidae (lanternfishes), Bathylagidae (deep sea smelts), Ammodytidae (sand lances), Trichodontidae (sandfishes), Pholididae (gunnels), Stichaeidae (pricklebacks), Gonostomatidae (bristlemouths), and the Order Euphausiacea (krill). For further detailed discussion of forage fish species including life history, distribution and baseline information for each group, see section 3.5.4 of the revised draft PSEIS (NMFS 2003b) and the EA for Amendments 36 and 39 to the FMPs (NMFS 1998b).

Nonspecified species are fish and invertebrate species that are not considered commercially important and are not managed under the FMPs, such as jellyfish, sea stars and grenadiers. Because of the paucity of nonspecified species information, detailed information on nonspecified species is limited to the grenadiers and may be found in section 3.5.5 of the revised draft PSEIS (NMFS 2003b)

The information available for forage and nonspecified species is much more limited than that available for target fish species. Estimates of biomass, seasonal distribution of biomass, and natural mortality are unavailable for most forage and non-specified species. Predictions of impacts from different levels of harvest can only be qualitatively described. Research needs to address these concerns are discussed in sections 5.1.2.5 and 5.1.2.6 of the revised draft PSEIS (NMFS 2003b). Direct effects of groundfish fishing include the removal of forage and nonspecified species from the environment as incidental catch in the groundfish fisheries. Information on the current research on several forage species and nonspecified species may be found in Ecosystem Considerations for 2003 (NMFS 2003a, appendix C).

3.4 Status of Marine Habitat

The adjacent marine waters outside the EEZ, adjacent State of Alaska waters, shoreline, freshwater inflows, and atmosphere above the waters, constitutes habitat for prey species, other life stages, and species that move in and out of, or interact with, the target species in the management areas (NMFS 2003b). Distinctive aspects of the habitat include water depth, substrate composition, substrate infauna, light penetration, water chemistry (salinity, temperature, nutrients, sediment load, color, etc.), currents, tidal action, phytoplankton and zooplankton production, associated species, natural disturbance regimes, and the seasonal variability of each aspect. Substrate types include bedrock, cobbles, sand, shale, mud, silt, and various combinations of organic material and invertebrates which may be termed biological substrate. Biological substrates present in these management areas include corals, tunicates, mussel beds, tube worms. Biological substrate has the aspect of ecological state (from pioneer to climax) in addition to the organic and inorganic components. Ecological state is heavily dependant on natural and anthropogenic disturbance regimes.

The fishery management plans (NPFMC 1999a, 1999b) contain descriptions of habitat requirements and life histories of the managed species. All the marine waters and benthic substrates in the management areas comprise the habitat of the target species. Much remains to be learned about habitat requirements for most of the target species. A detailed discussion of habitat and potential effects of fishing on habitat is in section 3.6 of the revised draft PSEIS (NMFS 2003b).

3.5 Status of Marine Mammal Populations

Marine mammals not listed under the ESA that may be present in the GOA and BSAI include cetaceans, [minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise *(Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon spp*.)] as well as pinnipeds [northern fur seals (*Callorhinus ursinus*), Steller sea lions (*Eumetopias jubatus),* and Pacific harbor seals (*Phoca vitulina*)], and the sea otter (*Enhydra lutris*). The sea otter has been identified as a candidate for listing under the Endangered Species Act and the US Fish and Wildlife Service (USFWS) is conducting a formal review. Additional information concerning the endangered Steller sea lions is in section 3.7. For further information on marine mammal population status, see section 3.8 of the revised draft PSEIS (NMFS 2003b).

3.6 Seabird Species Population Status and Possible Fisheries and Raptor Interactions

Seabirds by definition spend the majority of their life at sea rather than on land. Alaska's extensive estuaries and offshore waters provide breeding, feeding, and migrating habitat for approximately 100 million seabirds. Thirty-four species breed in the BSAI and GOA regions numbering 36 million and 12 million individuals in each respective area. Another 6 species breed at other locations in Alaska. In addition, up to 50 million shearwaters and 3 albatross species feed in Alaskan waters during the summer months but breed farther south. The current world population of the endangered short-tailed albatross is approximately 1,200 individuals. Detailed seabird information on species population status, life history, ecology, and bycatch is contained in section 3.7 of the revised draft PSEIS (NMFS 2003b) and section 3.7 of the Steller sea lion SEIS (NMFS 2001).

The Bald Eagle Protection Act (16 U.S.C. 668(a)) and the Migratory Bird Treaty Act (16 U. S. C. 703-712) prohibit the taking of bald eagles. Taking includes causing the injury or death of an eagle. In February 2001, the U. S. Fish and Wildlife Service (USFWS) surveyed the pollock shoreside fish processing facilities in Unalaska, Alaska regarding interactions with Bald Eagles.[6] Anecdotal information indicated that eagles were attracted to the pollock vessels delivering shoreside, with birds entering the ship holds, and becoming caught in the hoppers as fish is being delivered. Covering of fish totes on deck, cleaning the decks of fish parts and dragging the trawl nets through the water to remove fish parts were key to reducing the food source attraction for the eagles. The percentage of the fishing industry using these practices is unknown.

Occasionally, an injured bird would be sent to the Bird Treatment and Learning Center (BTLC) in Anchorage, Alaska for rehabilitation. The BTLC maintains a database recording information about the nature and cause of each birds injury, but many birds received from Unalaska are not accompanied by information on the cause of the injury. The current database contains no birds reported as injured by groundfish fishing activities.[7] The BTLC staff also reported that they received an owl that had head injuries from flying into lights on a fishing vessel and have had an eagle injured by being stuck in a crab pot. It is believed that the incident of raptor injury or death from interactions with the groundfish fisheries is rare, (one or two per year).

3.7 Status of Endangered or Threatened Species

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

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

In addition to listing species under the ESA, the critical habitat of a newly listed species is designated concurrent with its listing to the “maximum extent prudent and determinable” [16 U.S.C. § 1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas that are essential to the conservation of a listed species and that may be in need of special consideration. Federal agencies are

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[6]Michael Jacobson, Wildlife Biologist, Personal Communication, April 22, 2003, USFWS 3000 Vintage Blvd. Ste. 201, Juneau, AK 99801.

[7]Ferg Fergeson, Volunteer, Personal Communication, April 22, 2003, The Bird Treatment and Learning Center, 6132 Nielson Way, Anchorage, AK.

prohibited from undertaking actions that destroy or adversely modify designated critical habitat. Some species, primarily the cetaceans, which were listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA, have not received critical habitat designations.

Federal agencies have an affirmative mandate to conserve listed species. One assurance of this is Federal actions, activities or authorizations (hereafter referred to as Federal action) must be in compliance with the provisions of the ESA. Section 7 of the ESA provides a mechanism for consultation by the Federal action agency with the appropriate expert agency (NMFS or USFWS). Informal consultations, resulting in letters of concurrence, are conducted for Federal actions that may affect but are not expected to adversely affect listed species or critical habitat. Formal consultations, resulting in biological opinions, are conducted for Federal actions that may have an adverse affect on the listed species. Through the biological opinion, a determination is made as to whether the proposed action is likely to jeopardize the continued existence of a listed species (jeopardy) or destroy or adversely modify critical habitat (adverse modification). If the determination is that the action proposed (or ongoing) will cause jeopardy, reasonable and prudent alternatives may be suggested which, if implemented, would modify the action to avoid the likelihood of jeopardy to the species or destruction or adverse modification of designated critical habitat. A biological opinion with the conclusion of no jeopardy may contain conservation recommendations intended to further reduce the negative impacts to the listed species. These conservation recommendations are advisory to the action agency [50 CFR. 402.14(j)]. If a likelihood exists of any taking[8] occurring during promulgation of the action, an incidental take statement may be appended to a biological opinion to provide for the amount of take that is expected to occur from normal promulgation of the action.

Twenty-three species occurring in the GOA and/or BSAI groundfish management areas are currently listed as endangered or threatened under the ESA (Table 3.4). The group includes great whales, pinnipeds, Pacific salmon and steelhead, and seabirds.

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

Table 3.4 ESA listed and candidate species that range into the BSAI or GOA groundfish management areas and whether Reinitiation of Section 7 Consultation is occurring for the proposed action

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Common Name	Scientific Name	ESA Status	Whether Reinitiation of ESA Consultation is occurring
Blue Whale	*Balaenoptera musculus*	Endangered	No
Bowhead Whale	*Balaena mysticetus*	Endangered	No
Fin Whale	*Balaenoptera physalus*	Endangered	No
Humpback Whale	*Megaptera novaeangliae*	Endangered	No
Right Whale	*Balaena glacialis*	Endangered	No
Sei Whale	*Balaenoptera borealis*	Endangered	No
Sperm Whale	*Physeter macrocephalus*	Endangered	No
Steller Sea Lion (Western population)[2]	*Eumetopias jubatus*	Endangered	Yes
Steller Sea Lion (Eastern Population)	*Eumetopias jubatus*	Threatened	No
Chinook Salmon (Puget Sound)	*Oncorhynchus tshawytscha*	Threatened	No
Chinook Salmon (Lower Columbia R.)	*Oncorhynchus tshawytscha*	Threatened	No
Chinook Salmon (Upper Columbia R. Spring)	*Oncorhynchus tshawytscha*	Endangered	No
Chinook Salmon (Upper Willamette .)	*Oncorhynchus tshawytscha*	Threatened	No
Chinook Salmon (Snake River Spring/Summer)	*Oncorhynchus tshawytscha*	Threatened	No
Chinook Salmon (Snake River Fall)	*Oncorhynchus tshawytscha*	Threatened	No
Sockeye Salmon (Snake River)	*Oncorhynchus nerka*	Endangered	No
Steelhead (Upper Columbia River)	*Onchorynchus mykiss*	Endangered	No
Steelhead (Middle Columbia River)	*Onchorynchus mykiss*	Threatened	No
Steelhead (Lower Columbia River)	*Onchorynchus mykiss*	Threatened	No
Steelhead (Upper Willamette River)	*Onchorynchus mykiss*	Threatened	No
Steelhead (Snake River Basin)	*Onchorynchus mykiss*	Threatened	No
Steller's Eider [1]	*Polysticta stelleri*	Threatened	Ongoing
Short-tailed Albatross [1]	*Phoebaotria albatrus*	Endangered	Ongoing
Spectacled Eider[1]	*Somateria fishcheri*	Threatened	Ongoing
Northern Sea Otter[1]	*Enhydra lutris*	Candidate	No

[1]The Steller's eider, short-tailed albatross, spectacled eider, and Northern sea otter are species under the jurisdiction of the USFWS. For the bird species, critical habitat has been established for the Steller's eider (66 FR 8850, February 2, 2001) and for the spectacled eider (66 FR 9146, February 6, 2001). The northern sea otter has been proposed by USFWS as a candidate species (November 9, 2000; 65 FR 67343).

[2]Informal consultation on this action has been initiated July 7, 2003 by memorandum from Sue Salveson, Assistant Region Administrator for Sustainable Fisheries to P. Michael Payne, Assistant Region Administrator for Protected Resources.

Of the species listed under the ESA and present in the action area (Table 3.4), some may be negatively affected by groundfish fishing. Section 7 consultations with respect to actions of the federal groundfish fisheries have been done for all the species listed in Table 3.4, either individually or in groups. See section 3.8 of the SEIS (NMFS 1998a), for summaries of section 7 consultations done prior to December 1998. An FMP-level biological opinion was prepared pursuant to Section 7 of the ESA on all NMFS listed species present in the fishery management areas for the entire groundfish fisheries program. This comprehensive biological opinion (FMP BiOp) was issued November 30, 2000 (NMFS 2000). The Steller sea lion was the only species to be determined to be in jeopardy or risk of adverse modification of its habitat based upon the FMPs. Consultations prepared subsequent to the SEIS (NMFS 1998a) are summarized below.

Steller sea lions and other ESA listed marine mammals.

The only marine mammal identified as a concern with the implementation of the FMPs for the BSAI and GOA groundfish fisheries was the Steller sea lion. In compliance with the ESA, NMFS developed a reasonable and prudent alternative (RPA) in 2000 for the BSAI and GOA groundfish fisheries to avoid jeopardy to endangered Steller sea lions and adverse modification of their critical habitat. The RPA is based on the following three main principles: (1) temporal dispersion of fishing effort, (2) spatial dispersion of fishing effort, and (3) sufficient protection from fisheries competition for prey in waters adjacent to rookeries and important haulouts. The RPA focused on three fisheries that posed the most concern for competition with Steller sea lions for prey; the BSAI and GOA pollock and Pacific cod fisheries, and the BSAI Atka mackerel fishery. Neither the conclusions of the FMP BiOp (NMFS 2000) nor the RPA was adopted by the Council at its December 2000 meeting for numerous reasons, including lack of confidence in the scientific premises supporting the biological opinion, lack of public and Council input during its development, and general disagreement about the efficacy of the RPA measures. Subsequently, the Alaska congressional delegation sponsored a rider to the 2001 appropriations bill (Section 209 of Pub. L. 106-554) that provided direction for a one-year phase-in of the RPA and opportunity for the Council to assess and potentially modify the RPA prior to full implementation in 2002 based on independent scientific reviews or other new information.

The protection measures in the emergency rule (66 FR 7276, January 22, 2001) reflect the first year implementation phase of the RPA. In January 2001, the Council established an RPA Committee to make recommendations on Steller sea lion protection measures for the second half of 2001 and to develop Steller sea lion protection measures for 2002 and beyond. The RPA Committee was composed of 21 members from the fishing community, the environmental community, NMFS, the Council's Science and Statistical Committee, the Council's Advisory Panel, and ADF&G. In April 2001, the RPA Committee presented its recommendations to the Council for fishery management measures for the second half of 2001. These recommendations were then forwarded by the Council to NMFS and were implemented by amendment to an emergency interim rule (66 FR 37167, July 17, 2001). In June 2001, the RPA Committee recommended Steller sea lion protection measures for 2002 and beyond, and the Council modified and forwarded these recommendations to NMFS in October 2001. ESA consultation was requested on these protection measures and a biological opinion (2001 BiOp) was prepared by the Protected Resources Division (NMFS 2001, Appendix A). The final 2001 BiOp concluded that the proposed Steller sea lion protection measures were not likely to jeopardize the continued existence of either the eastern or western distinct population segment of Steller sea lions or adversely modify their critical habitat. These protection measures are implemented by emergency interim rule in 2002 (67 FR 956, January 8, 2002) and by permanent rulemaking for 2003 and beyond (68 FR 204, January 2, 2003).

Detailed analysis of the Steller sea lion protection measures is contained in the SEIS for Steller sea lion protection measures (NMFS 2001).

On December 18, 2002, the United States District Court for the Western District of Washington remanded to NMFS the 2001 BiOp for the groundfish fisheries managed pursuant to the Steller sea lion protection measures published on January 2, 2003 (68 FR 204). Greenpeace, et al. v. National Marine Fisheries Service, No.C98–492Z (W.D. Wash.). The Court held that the biological opinion's findings of no jeopardy to the continued existence of endangered Steller sea lions and no adverse modification of their critical habitat were arbitrary and capricious. On December 30, 2002, the Court issued an Order declaring that the 2001 BiOp "shall remain effective until June 30, 2003," while NMFS completed the response to the remand. The response evaluated the effects of fishing activities authorized pursuant to the Steller sea lion protection measures final rule on listed species and critical habitat. Revisions to the 2001 BiOp addressing the Court's concerns were completed June 2003. This supplement to the BiOp is available from the NMFS Alaska Region home page at www.fakr.noaa.gov/protectedresources/steller/biop2002/703remand.pdf.

ESA Listed Pacific Salmon and Steelhead

Using the year 2000 proposed TAC specifications, NMFS reinitiated consultations for ESA listed Pacific salmon for all twelve ESUs of Pacific salmon that are thought to range into Alaskan waters. The consultation for the Pacific salmon species was issued December 22, 1999, and contained a determination of not likely to jeopardize their continued existence. No critical habitat has been designated for these species within the action area, therefore, none will be affected by the groundfish fisheries. The biological opinion reviewed the status of Snake river fall chinook, Snake River spring/summer chinook, Puget Sound chinook, Upper Columbia river spring chinook, Upper Willamette River chinook, Lower Columbia river chinook, Upper Columbia river steelhead, Upper Willamette River steelhead, Middle Columbia river steelhead, Lower Columbia river steelhead, and Snake river Basin steelhead, the environmental baseline for the action area, the effects of the groundfish fishery and the cumulative effects. The opinion was accompanied by an Incidental Take Statement that states the catch of listed fish will be limited specifically by the measures proposed to limit the total bycatch of chinook salmon. Bycatch should be minimized to the extent possible and in any case should not exceed 55,000 chinook per year in the BSAI fisheries or 40,000 chinook salmon per year in the GOA fisheries. The FMP BiOp (NMFS 2000) stated that ESA listed Pacific salmon and steeelhead are not in jeopardy or risk of adverse modification of their habitat by the groundfish fisheries in the BSAI or GOA, and reaffirmed the ITS in the previous opinion.

NMFS has conducted a code wire tag study on surrogate stocks of ESA listed salmon for the Upper Willamette and Lower Columbia rivers nearly annually since 1984. For all the years data have been collected, no more than 3 tagged fish in a year was estimated taken in the BSAI groundfish fisheries[9]. In the GOA, the tagged fish were primarily taken near Kodiak Island. The maximum approximate number of tagged fish taken in the groundfish fisheries in a year was 89 Upper Willamette River salmon in 1999.

[9]Adrian Celewycz, NMFS, Auke Bay Lab, Personal Communication regarding CWT database, November 14, 2002.

For the year 2003 harvest specifications, a memorandum dated November 19, 2002, from Sue Salveson, Assistant Regional Administrator (ARA) of Sustainable Fisheries to Michael Payne, ARA of Protected Resources, reviewed the current information regarding salmon bycatch in the BSAI and GOA groundfish fisheries and requested informal consultation (Salveson 2002). The Sustainable Fisheries Division determined that the 2003 harvest specifications were unlikely to adversely affect listed salmon or steelhead species beyond those effects identified in the FMP BiOp. Informal consultation was completed on November 29, 2002 (Payne 2002).

ESA Listed Seabirds

The only new information on seabirds since publication of the SEIS (NMFS 1998a) concerns the taking of short-tailed albatross and subsequent Section 7 consultations on listed seabird species. It is summarized below:

On 22 October 1998, NMFS reported the incidental take of 2 endangered short-tailed albatrosses in the hook-and-line groundfish fishery of the BSAI. The first bird was taken on 21 September 1998, at 57 30'N lat., 173 57'W long. The bird had identifying leg bands from its natal breeding colony in Japan. It was 8 years old. In a separate incident, one short-tailed albatross was observed taken on 28 September 1998, at 58 27'N lat., 175 16'W long., but the specimen was not retained for further analysis. Identification of the bird was confirmed by USFWS seabird experts. The confirmation was based upon the observer's description of key characteristics that matched that of a subadult short-tailed albatross to the exclusion of all other species. A second albatross was also taken on 28 September 1998, but the species could not be confirmed (3 species of albatross occur in the North Pacific). Both vessels were using seabird avoidance measures when the birds were hooked.

The USFWS listed the short-tailed albatross as an endangered species under the ESA throughout its United States range (65 FR 46644, July 31, 2000). Under terms of the 1999 biological opinion, incidental take statement, a take of up to 4 birds is allowed during the 2-year period of 1999 and 2000 for the BSAI and GOA hook-and-line groundfish fisheries (USFWS 1999). If the anticipated level of incidental take is exceeded, NMFS must reinitiate formal consultation with the USFWS to review the need for possible modification of the reasonable and prudent measures established to minimize the impacts of the incidental take.

NMFS Alaska Regional Office, NMFS Groundfish Observer Program, and the USFWS Offices of Ecological Services and Migratory Bird Management are actively coordinating efforts and communicating with each other in response to the 1998 take incidents and are complying to the fullest extent with ESA requirements to protect this species. Regulations at 50 CFR 679.24(e) and 679.42(b)(2) contain specifics regarding seabird avoidance measures. In February 1999, NMFS presented an analysis on seabird mitigation measures to the Council that investigated possible revisions to the currently required seabird avoidance methods that could be employed by the long-line fleet to further reduce the take of seabirds.

The Council took final action at its April 1999 meeting to revise the existing requirements for seabird avoidance measures. The Council's preferred alternative would: 1) explicitly specify that weights must be added to the groundline (Currently, the requirement is that baited hooks must sink as soon as they enter the water. It is assumed that fishermen are weighting the groundlines to achieve this performance standard.); 2) the offal discharge regulation would be amended by requiring that prior to any offal discharge, embedded hooks must be removed; 3) streamer lines, towed buoy bags and float devices could both qualify as bird scaring lines (Specific instructions are provided for proper placement and deployment of bird scaring lines.); 4) towed boards and sticks would no longer qualify as seabird avoidance measures; 5) the use of bird scaring lines would be required in conjunction to using a lining tube; and 6) night-setting would continue to be an option and would not require the concurrent use of a bird scaring line. These revised seabird avoidance measures are expected to be in effect in 2003. A proposed rule was published February 7, 2003 (68 FR 6386). The avoidance measures affect the method of harvest in the hook-and-line fisheries, but are not intended to affect the amount of harvest.

Consultations on short-tailed albatross was not re-initiated for the year 2000 TAC specifications because the March 19, 1999, biological opinion covered through the end of calendar year 2000. In September 2000, NMFS requested re-initiation of consultation for all listed species under the jurisdiction of the USFWS, including the short-tailed albatross, spectacled eider and Steller's eider for the BSAI and GOA FMPs and 2001-2004 TAC specifications. Based upon NMFS' review of the fishery action and the consultation material provided to USFWS, NMFS concluded that the BSAI and GOA groundfish fisheries are not likely to adversely affect either the spectacled eider or the Steller's eider or destroy or adversely modify the critical habitat for each of these species. The USFWS new biological opinion on the effects of the groundfish fisheries on listed seabirds is expected to be finalized in 2003.

3.8 Ecosystem Considerations

Ecosystem considerations for the BSAI and GOA groundfish fisheries are explained in detail in *Ecosystem Considerations for 2003* (NMFS 2003a, Appendix D). That document provides updated information on biodiversity, essential fish habitats, consumptive and non-consumptive sustainable yields, and human considerations. This information is intended to be used in making ecosystem-based management decisions such as establishing ABC and TAC levels.

3.9 The Human Environment

The operation of the groundfish fishery in the BSAI and the GOA is described by gear type in the SEIS (NMFS, 1998a) and in the revised draft PSEIS (NMFS 2003b, Appendix B). General background on the fisheries with regard to each species is given in the BSAI and GOA groundfish FMPs (NPFMC 1999a and 1999b). The following fishery sectors are most likely to be affected by a change in the annual harvest specification process: pollock (GOA and BSAI), Pacific cod, Atka mackerel, and rock sole roe. These fisheries are predominantly high volume fisheries (or high value fisheries) that are prosecuted early in the calendar year and could be affected by how TAC is set for the beginning of the fishing year. Environmental impacts resulting from the specified TACs would be assessed in annual EAs that accompany the final harvest specifications.

3.9.1 Fishery Participants

For detailed information on the fishery participants including vessels and processors see section 5.6 of this EA/RIR/IRFA. Revising the process by which annual harvest specifications are set may result in impacts on all fishery participants but would particularly affect those who concentrate effort early in the calendar year, depending on which alternative is selected. Section 5.0 outlines the economic impacts of each alternative on fishery participants. Additional information regarding fishery participants can be found in the 2001 Economic SAFE report (NMFS 2003a, Appendix D).

3.9.2 Economic Aspects of the Fishery

The most recent description of the economic aspects of the groundfish fishery is contained in the 2001 Economic SAFE report (NMFS 2003a, Appendix D). This report, incorporated herein by reference, presents the economic status of groundfish fisheries off Alaska in terms of economic activity and outputs using estimates of catch, bycatch, ex-vessel prices and value, the size and level of activity of the groundfish fleet, the weight and value of processed products, wholesale prices, exports, and cold storage holdings. The catch, fleet size and activity data are for the fishing industry activities that are reflected in Weekly Production Reports, Observer Reports, fish tickets from processors who file Weekly Production Reports, and the annual survey of groundfish processors. External factors that, in part, determine the economic status of the fisheries are foreign exchange rates, the prices and price indices of products that compete with products from these fisheries, and fishery imports. Sections 5.0 and 6.0 of this EA./RIR/IRFA contain additional information regarding the economics of the groundfish fisheries.

4.0 ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

The environmental impacts generally associated with fishery management actions are effects resulting from (1) harvest of fish stocks which may result in changes in food availability to predators and scavengers, changes in the population structure of target fish stocks, and changes in the marine ecosystem community structure; (2) changes in the physical and biological structure of the marine environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and (3) entanglement/entrapment of non-target organisms in active or inactive fishing gear. A recent summary of the effects of the impacts associated with groundfish harvest on the biological environment are discussed in the final EA for the 2003 annual groundfish harvest specifications (NMFS 2003a). The SEIS (NMFS 1998a) analyzes the impacts of fishing over a range of TAC specifications and the revised draft PSEIS (NMFS 2003b) analyzes impacts of a range of management policies.

This section analyzes alternative administrative procedures associated with implementing the harvest specifications.[10] An analysis of possible environmental impacts from each alternative follow. Any environmental impacts of the actual TAC levels set using these administrative procedures would be determined each year when the EA/IRFA is prepared for the annual harvest specifications for the groundfish fishery. Revising the annual harvest specification process will not affect NEPA compliance procedures. A draft EA on proposed harvest specifications would still be developed and made available for public review and comment. A final EA would be prepared annually prior to the approval of the final harvest specifications. The analyses would consider any change in fishing patterns or levels and the resulting impacts.

[10] An additional discussion of these analyses may be found in Section 5.8-5.10.

4.1 Impacts on Groundfish Species

Two types of analyses were done to compare the alternatives, retrospective evaluation and simulation modeling. Alternative 1 was used as status quo for purposes of comparing the effects of Alternatives 2 and 4. Alternative 3 was not separately analyzed because it was expected to have an effect between effects from Alternatives 1 and 2 because the time delay for using survey data is between the time delays in Alternatives 1 and 2. Alternatives 2 and 4 involve projecting ABC amounts one or two years into the future compared to Alternatives 1 and 3.

Alternative 5 is likely to have an effect between Alternatives 1 and 3. In some years the 18 month projected value will be fully used if a second proposed rule is needed, requiring the fishery to be conducted with data in the same manner as Alternative 3. In years that an additional proposed rule is not needed under Alternative 5, the effect would be similar to the status quo, fishing on a projected value for only the first few months of the fishery. For these reasons, Alternative 5 is also not separately analyzed under the retrospective evaluation or the simulation model.

4.1.1 Retrospective evaluation

One simple approach to evaluating Alternative 2 was developed whereby assessment authors extracted ABC which was used as a proxy for TAC recommendations, as projected one year further than usual (e.g., an assessment presented at the December 2000 Council meeting would give 2001 recommendations as usual, and also 2002 projected recommendations). These values were compiled for four key stocks: Eastern Bering Sea (EBS) pollock, EBS/AI Pacific cod, Aleutian Island Atka mackerel, and GOA pollock, and compared with the status quo. The species selected reflect the true variability in assessment/ABC/TAC setting processes due to changes in stock assessment approaches and changes in management considerations. Except for EBS pollock, these species were also chosen because their ABCs were close to the TAC values. When EBS pollock has a high ABC, its TAC is usually restricted by the 2 million optimal yield (OY) cap. Mean catch and catch variability (expressed as coefficients of variability) were computed for Alternatives 1 and 2. Additionally, the annual average change in catch ($\overline{\Delta}$) was computed as:

$$\overline{\Delta} = \sum_{t=1}^{n-1} \frac{\left|C_t - C_{t+1}\right|}{C_t} (n-1)^{-1}.$$

This is a simple measure of how much year-to-year catch variability one can expect expressed as a percentage of the current year's catch. The impact of the BSAI 2 million mt OY was not considered in the analysis.

4.1.2 Simulation model

A second approach for evaluating the alternatives was developed using simulations. The purpose of the simulation study was to evaluate general patterns and trends for these alternatives. The current assessment information (compiled in 2001) was used to form the starting point for the simulations.

An extension of the single-species numerical simulation model (NMFS 2003b) used for all age-structured groundfish stocks was developed to evaluate Alternatives 2 and 4 relative to Alternative 1.

Under Alternatives 2 and 4, the projected ABC estimates were those as computed from previous years. For example, under Alternative 2 in year *t*, the procedure was as follows:

1) Compute the fishing mortality associated with the ABC as computed in year *t-2*
2) Project abundance to year *t+1* and compute the fishing mortality associated with the ABC as computed in year *t-1;*
3) Project the population from *t+1* to year *t+2* assuming fishing mortality estimated from 2);
4) Compute the ABC value for year *t+2* using Amendment 56 harvest control rules. This ABC value is later used as the actual catch, e.g., as in steps 1) and 2).

Under Alternative 4, the procedure is the same but extended to reflect the increase in time horizon. Therefore the last two steps are :

4) Project the population from *t+2* to year *t+3* assuming fishing mortality estimated from 3);
5) Compute the ABC value for year *t+3* using Amendment 56 harvest control rules. This ABC value is later used as the actual catch, e.g., as in steps 1) and 2).

For Alternative 1, the ABC values were computed using the current procedures as outlined under FMP Amendment 56.

For each species considered, a single time series simulation was conducted for 1,000 years. Because the primary interest in this analysis was a characterization of the different lag-times between the assessment and quota specifications, the alternatives were simulated for single long-time horizon (1,000) projections to minimize the impact of the phase-in period. For a given species, each alternative was simulated using the same random recruitment sequence.

In interpreting these results, the following factors need to be recognized:

1) These simulations fail to capture the effect of management interactions with other regulations and general bycatch issues, including the use of interim specifications under status quo.

2) The simulations begin with the assumption that we know precisely the current state of the populations considered.

3) The simulations do not reflect future (unknown) assessment estimation problems.

4) These simulations fail to anticipate the action that may be taken by the Council in establishing TAC in relation to ABC, which may reduce adverse effects. The Council has a history of recommending more conservative ABC and TAC levels as uncertainty increases. The actual catches are likely to be less than ABC shown.

5) The BSAI 2 million mt OY constraint was not used in this analysis.

6) For pollock, Pacific cod and Atka mackerel, the Steller sea lion protection measure harvest control rule was not accounted for in the model.

Diagnostics for evaluating the simulation results include: catches (assuming the full ABC recommendations would be harvested), full-selection fishing mortality rates, spawning biomass (females only unless otherwise indicated), annual average change in catch, the average age of the population, the frequency (similar to probability) that the catch will exceed the long-term expected $F_{40\%}$ catch level, the frequency that the spawning biomass will be above the B_{msy} level (assuming $B_{35\%}$ as a proxy), and the frequency that the fishing mortality rate exceeds the F_{OFL} level (as defined in Amendment 56). The first three results are presented as means with coefficients of variation. The others are presented as relative probability of population responses under the different alternatives. The frequency that the fishing mortality rate exceeds the F_{OFL} is presented as a relative indication only.

The simulation model predictions are based on future projections. Ideally, they would be validated using historical inputs for example, inputting known historical starting age structure and recruitment and then comparing simulation results with actual historical values of ABC.

A comparison of the mean levels of ABC generated by the simulation models with historical Plan Team ABCs suggests that, at least for pollock, the model predicts levels of ABC that are higher than those achieved historically. For EBS pollock, the average Plan Team ABC from 1991 to 2002 was 1.39 million metric tons. The Alternative 1 ABC, reflecting a similar TAC setting process, produced TAC estimates of about 1.5 million metric tons. The simulations for Alternatives 2 and 4, admittedly using a different TAC setting process, produced average ABCs of about 1.47 and 1.45 million metric tons. (Figure 4.1) Similarly, in the GOA pollock fishery, the average Plan Team ABC from 1991 to 2002 was about 105,000 metric tons. The simulation for Alternative 1 produced an average ABC of 162,000 metric tons. The simulations for Alternatives 2 and 4 produced estimates of about 145,000 and 136,000 metric tons. (Figure 4.2) These results suggest that the simulation results may be more useful as indicators of the direction of change from one alternative to another than of the absolute levels of ABC and harvest under an alternative.

Figure 4.1 EBS pollock TAC and ABC, 1980 to 2002, compared to mean Alternative 1, 2, and 4 ABC projections from the simulation model

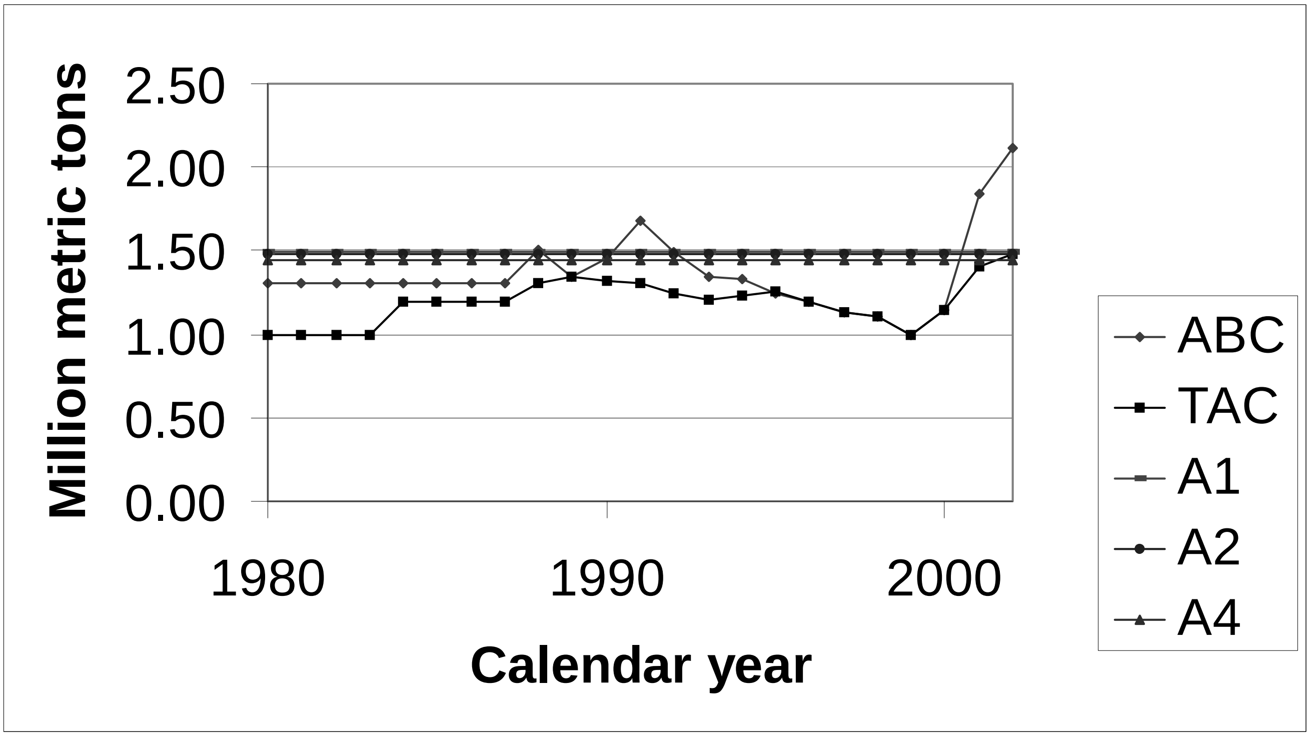
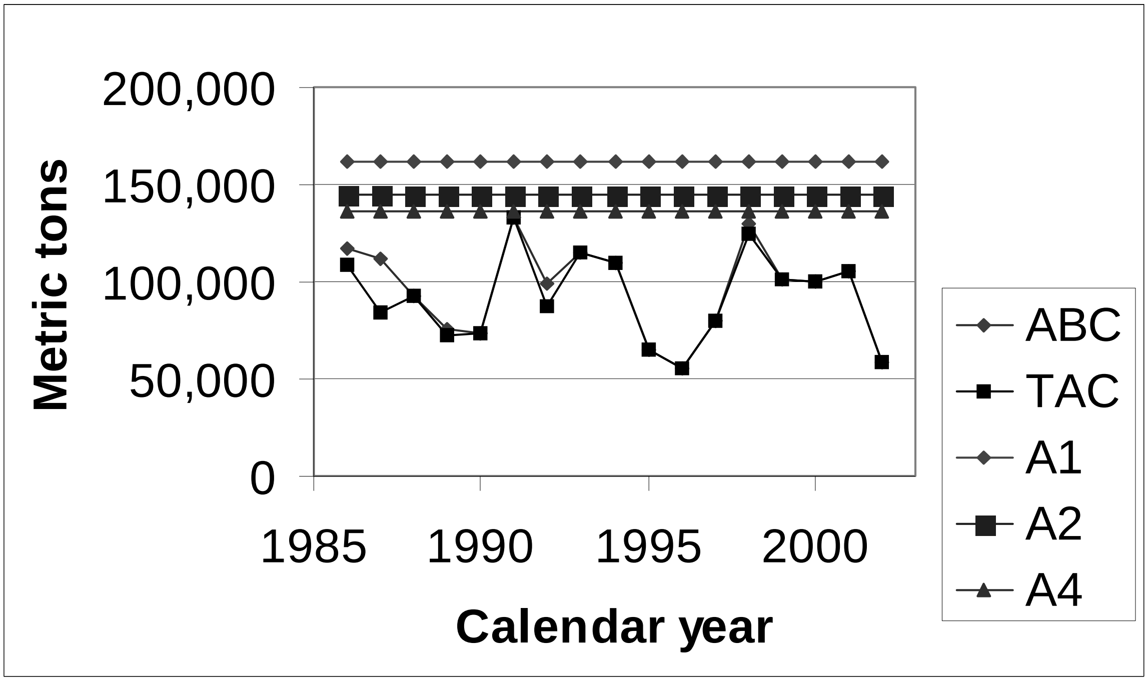


Figure 4.2 EBS pollock TAC and ABC, 1980 to 2002, compared to mean Alternative 1, 2, and 4 ABC projections from the simulation model



4.1.3 Results and Discussion

For the retrospective analysis, it was not always possible to obtain an ABC recommendation under Alternative 2 in exactly the same way as under Alternative 1. In some years the ABC recommendation was revised (e.g., by the SSC) for the coming year but not the subsequent year, as would be required under Alternative 2. For example, in one projection for EBS pollock the Alternative 2 ABC was 1.54 million tons whereas for Alternative 1 it was 1.13 million tons. In some years for some stocks, it was not possible to project the Council recommendations explicitly and only the projected ABC levels were possible. In these cases, it may have been possible to exceed the 2-million ton cap for the BSAI, consequently, the realized hypothetical catches would have been lower.

With these caveats in mind, the results are presented in Figure 4.3 and Table 4.1-1. For the four stocks where retrospective examinations were possible, the pattern of recommended catch levels are quite similar under the two alternatives but with a regular lag. Under Alternative 2, the declines and increases often follow similar trends found in Alternative 1, but one year later. The variability of catch is greater for two out of the four stocks under Alternative 2, while the average annual change in catch is greater for all four stocks.

Similar patterns were observed for the simulation model results. The variability in catch generally increases under Alternatives 2 and 4 relative to Alternative 1 (Figs. 4.4-4.9; Table 4.1-2). The Gulf of Alaska pollock, BSAI Pacific cod (although only slightly), and Atka mackerel catch simulations under Alternative 4 were less variable than under Alternative 2. This was presumably due in part to the fact that, unlike the other stocks, these stocks are modeled with a steeply declining selectivity at the oldest ages.

Among the different stocks, the simulations revealed that the inherent life-history characteristics are an important factor in how stocks respond under different alternatives. Pollock, Pacific cod, and Atka mackerel live to a maximum of approximately 20 years while Pacific Ocean perch may live to 90 years. All 4 of the relatively fast-growing, high natural mortality species (EBS and GOA pollock, Pacific cod, and Atka mackerel) were quite sensitive to Alternatives 2 and 4 while the effect on BSAI Pacific ocean perch was minimal. Sablefish was intermediate between these categories. While all stocks considered exhibit considerable recruitment variability, the impact of this variability on the exploitable stock is much more gradual for the longer-lived species. The average catch (and fishing mortality) is predicted to decrease under Alternatives 2 and 4, even though the probability of exceeding the OFL increases. This may seem contradictory. However, this characteristic is due to the effect of lagging information on the year class variability, i.e. having to substitute average values of recruitment instead of using available information on whether recruitment is going to be above or below average. The average biomass is also expected to increase under Alternatives 2 and 4; presumably this would be a benefit to predators. However, the model-predicted increase in population variability may impact predators. The magnitude of these potential impacts are unknown.

The life history also affects the sensitivity of a stock to the use of recent data in the determination of ABC.[11] For the shorter lived species, the ABC is more dependent on the incoming year class compared to longer lived species. Therefore, it is more important for species such as pollock and Pacific cod to have recent information for ABC determination compared to a species such as sablefish.

Under Alternative 1, there is always uncertainty in stock status from which ABC and OFL recommendations are derived. The harvest control rules under FMP Amendment 56 allow for a modest amount of error in the measurement of stock size without resulting in estimated ABC exceeding true OFL (assuming F_{msy} is estimated correctly = F). It is possible to unknowingly exceed the “true” OFL with Alternative 1 ABC recommendations. If OFL was exceeded on a long-term basis, the average stock sizes would be expected to be below B_{msy}. Such overfishing would have to be very drastic (i.e., much greater than our current OFL definitions) to result in stock sizes that would be unsustainable.

In general, it is difficult, if not impossible, to model the full process of setting TACs under these alternatives. The retrospective analysis approach taken here was to examine historical patterns in ABC recommendations under the Alternative 1 and (quasi) Alternative 2 scenarios. This approach reflects to some degree the full Council process but is limited in the number of applicable stocks and our ability to assess long-term expectations. For a more extensive analyses of how the population dynamics of the stocks would be affected, a simple simulation scenario was constructed which allowed comparison of more stocks and also Alternative 4. Under Alternatives 2 and 4, the variability in catch was expected to increase and the potential to exceed overfishing (as currently assessed) was expected to increase. In practice, these effects are likely to moderated somewhat by the Council and NMFS’ tendency to recommend TACs that are less variable than ABC recommendations. Overall, it is likely that the TACs established under Alternative 2 or 4 will be less than the TACs under Alternative 1 as the Council and

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[11]Dr. James Ianelli, Personal Communication, June 25, 2003, AFSC National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070

NMFS set TACs conservatively. Added variability with Alternatives 2 and 4 would likely be small in comparison to the natural environmental variability these fish populations already experience. It is unknown what significance this variability may have on prey abundance and if there may be any potential stress on ESA listed species.

The above analyses capture the effect of ABC specifications from the full Council-NMFS TAC setting process (i.e., in the empirical retrospective analysis) and the effect of how different stocks may behave under the different alternatives (i.e., in the simulation analyses). Another aspect remains where the *estimation* efficiency actually will change under the alternatives. That is, under the current Alternative 1 regime, the most recent survey data are used to forecast populations into the next year for setting quotas. These forecasts have a relatively high level of uncertainty about them. Under Alternatives 2 and 4 where the forecasts are further into the future, it is reasonable to expect that this uncertainty will increase. To illustrate this a stock assessment model was selected where the assessment uncertainty (which includes both measurement and, to some extent, process error information) is readily available for future years. The uncertainty (expressed as coefficient of variation) in forecasted EBS pollock spawning biomass based on different (constant) fishing mortality rates are as follows (based on model results from Ianelli et al. 2001):

Year	CV of spawning biomass with $F_{40\%}$	CV of spawning biomass with F_{msy}
2001	39%	39%
2002	43%	46%
2003	48%	81%
2004	59%	90%
2005	74%	93%
2006	82%	100%

This table shows how the uncertainty increases as the time to forecast increases. The difference between the results under the F_{MSY} and $F_{40\%}$ (constant) harvest rate scenarios is due in part because the F_{msy} is estimated with greater uncertainty than the $F_{40\%}$ (note that 2001 catch is pre-specified) and because the F_{msy} harvest rate is somewhat higher (resulting in a lower spawning biomass and hence higher CV). The impact that this would have in a practical, implementation sense would tend towards somewhat lower (on average) absolute catch recommendations. This is because under Amendment 56, fishing specified by an F_{msy} rate requires a "reliable" estimate of the uncertainty in order to compute the harmonic-mean value. Given that the harmonic mean value decreases as the uncertainty increases, the harvest rates projected further into the future are likely to be lower, reducing the frequency of exceeding the OFL.

The use of data for the determination of ABC is also affected by the sensitivity of the stock to the incoming year class. Predicting ABC for short lived species, such as pollock, Pacific cod or Atka mackerel, is more dependent on recent data compared to longer lived species. [12]

An evaluation of the impact of Alternative 3 was not amenable to either the retrospective nor the simulation analyses. From a calendar year perspective, the *annual* catch levels would be specified to be

[12] Dr. James Ianelli, Personal Communication, June 25, 2003, AFSC National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070

the same as under Alternative 1. However, the timing of quota changes occurs from (effectively) December 31st - Jan 1st (under Alternative 1) to June 30th - July 1st (as under Alternative 3). The current assessments are based on calendar years and can retain the same data and model conventions. The computer code that performs standard projections for ABC recommendations would have to be modified slightly to provide projected values that reflect the quota-year (July-June). Note that this modification would also provide calendar-year catch values that may be useful for planning purposes. From a quota-year perspective, the 12-month catches (spanning July-June) will be slightly more variable than Alternative 1 and less variable than Alternative 2. Theoretically, this variability would fall half-way between Alternative 1 and 2 (as would the other variables of interest, e.g., biomass, catch, F etc.).

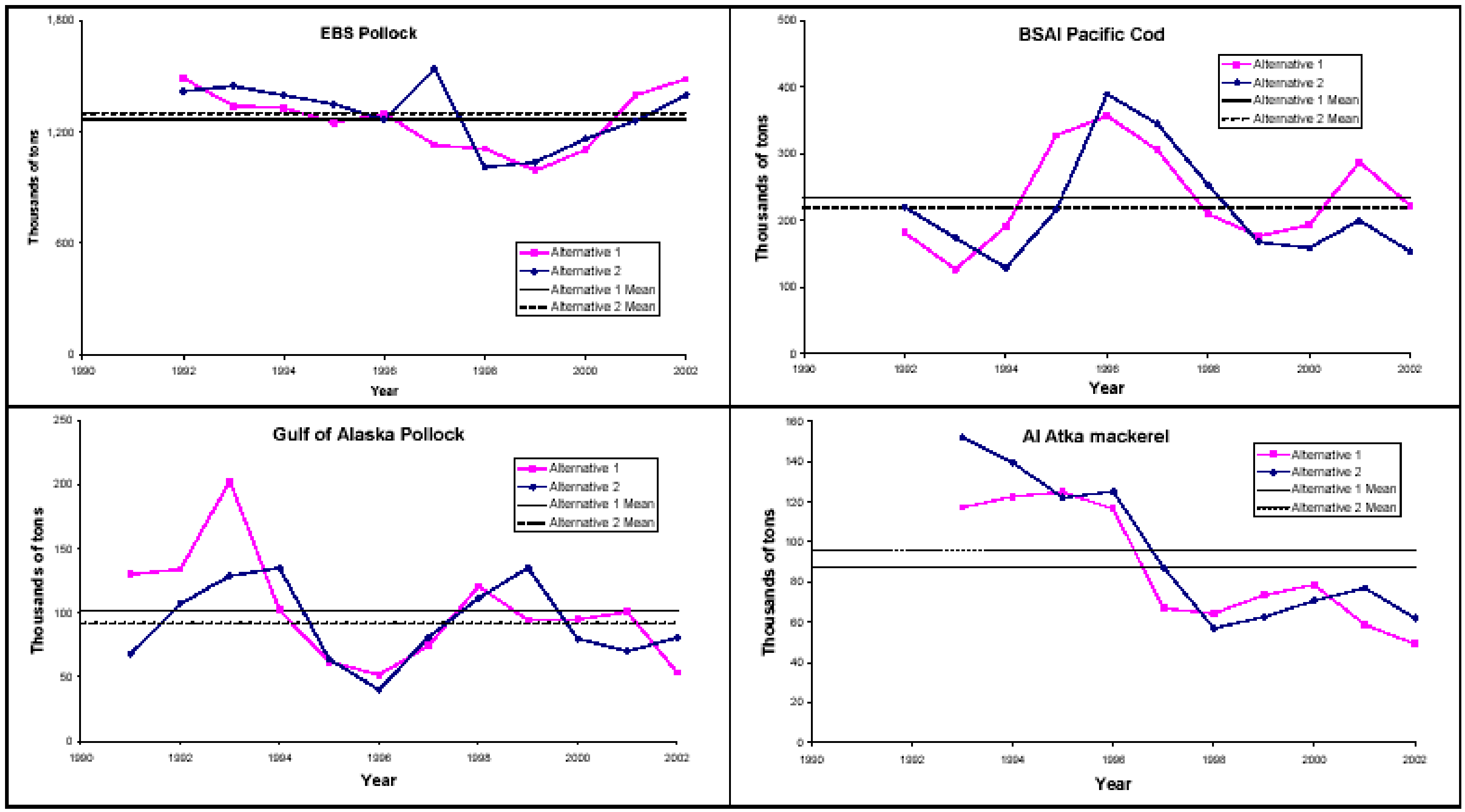

Figure 4.3 Comparison of Alternatives 1 and 2 TAC (or ABC) recommendations for some key groundfish species in the North Pacific. Alternative 2 values were derived from historical stock assessment projections as done historically.

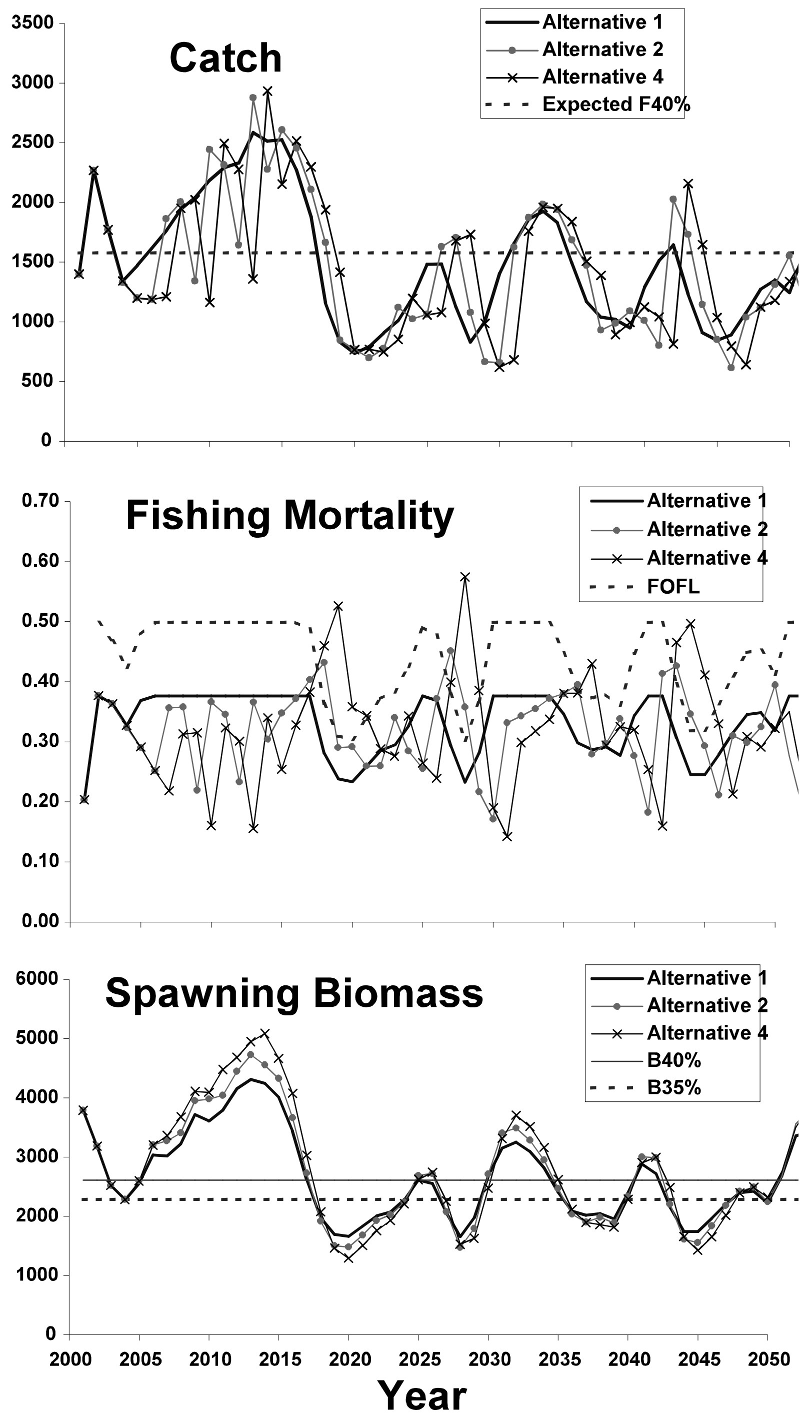

Figure 4.4 Simulated Eastern Bering Sea pollock trajectory showing the first 50 year of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in thousands of metric tons.

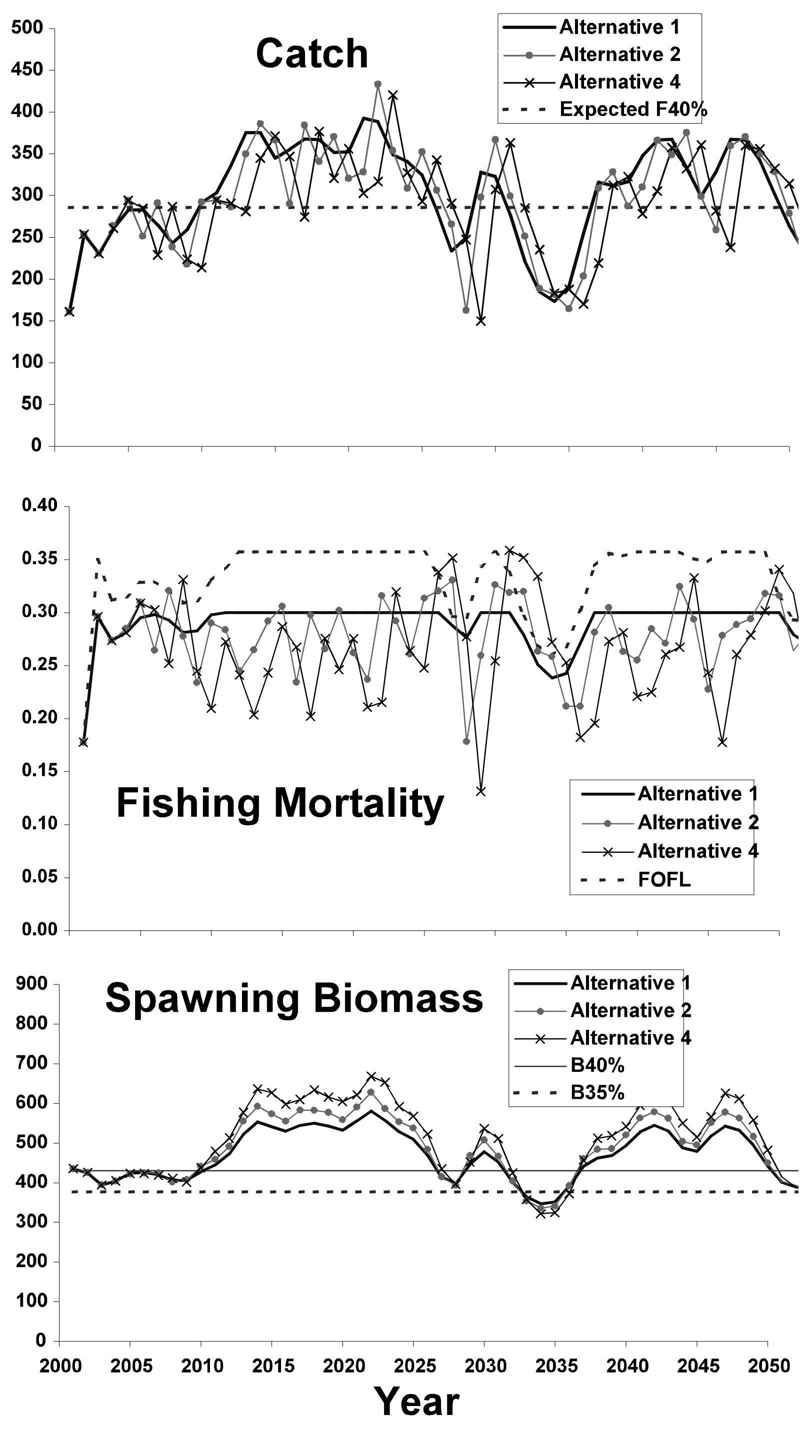

Figure 4.5 Simulated Aleutian Islands/Eastern Bering Sea Pacific cod trajectory showing the first 50 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in thousands of metric tons.

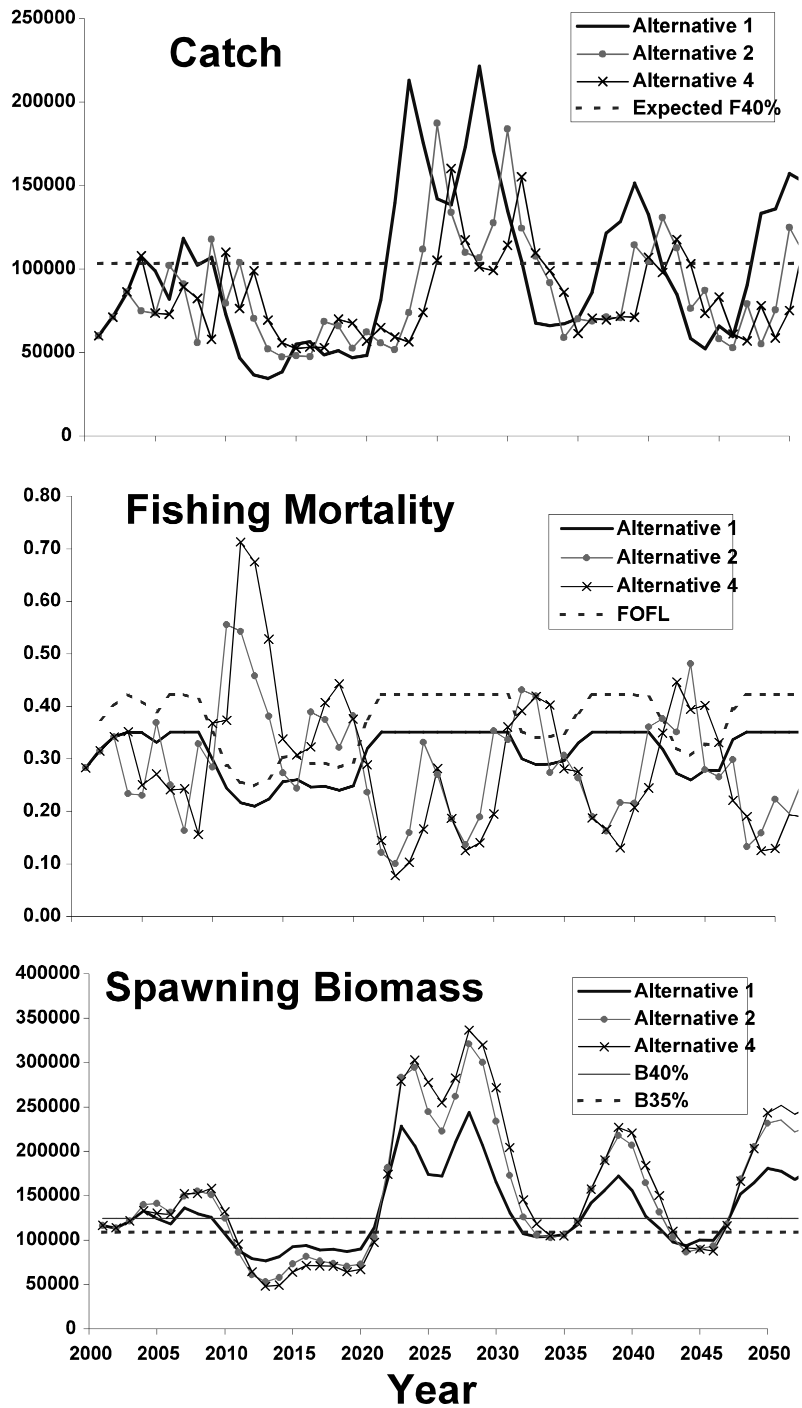

Figure 4.6 Simulated Aleutian Islands atka mackerel trajectory showing the first 50 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in metric tons.

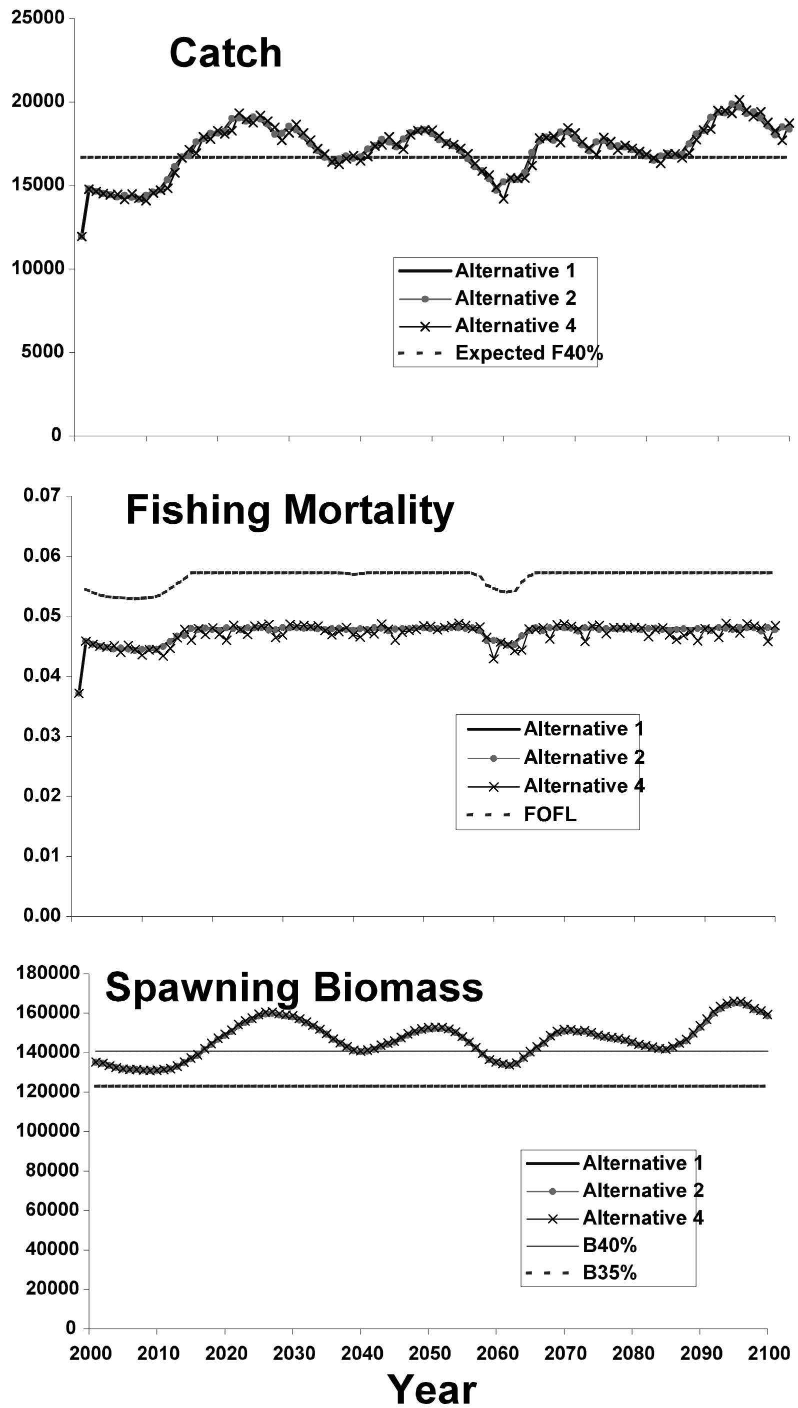

Figure 4.7 Simulated Aleutian Islands/Eastern Bering Sea Pacific ocean perch trajectory showing the first 100 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in metric tons.

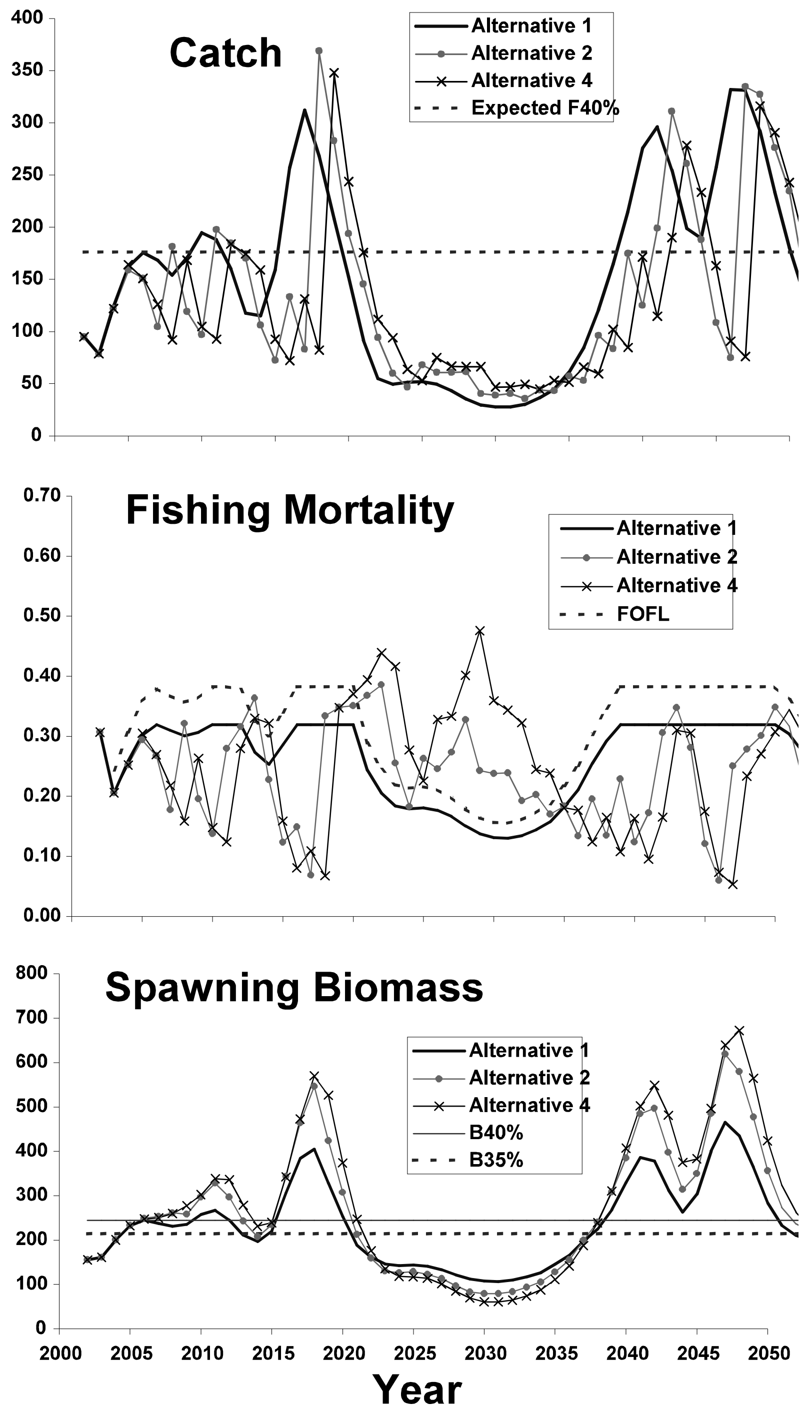

Figure 4.8 Simulated Gulf of Alaska pollock trajectory showing the first 50 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in thousands of metric tons.

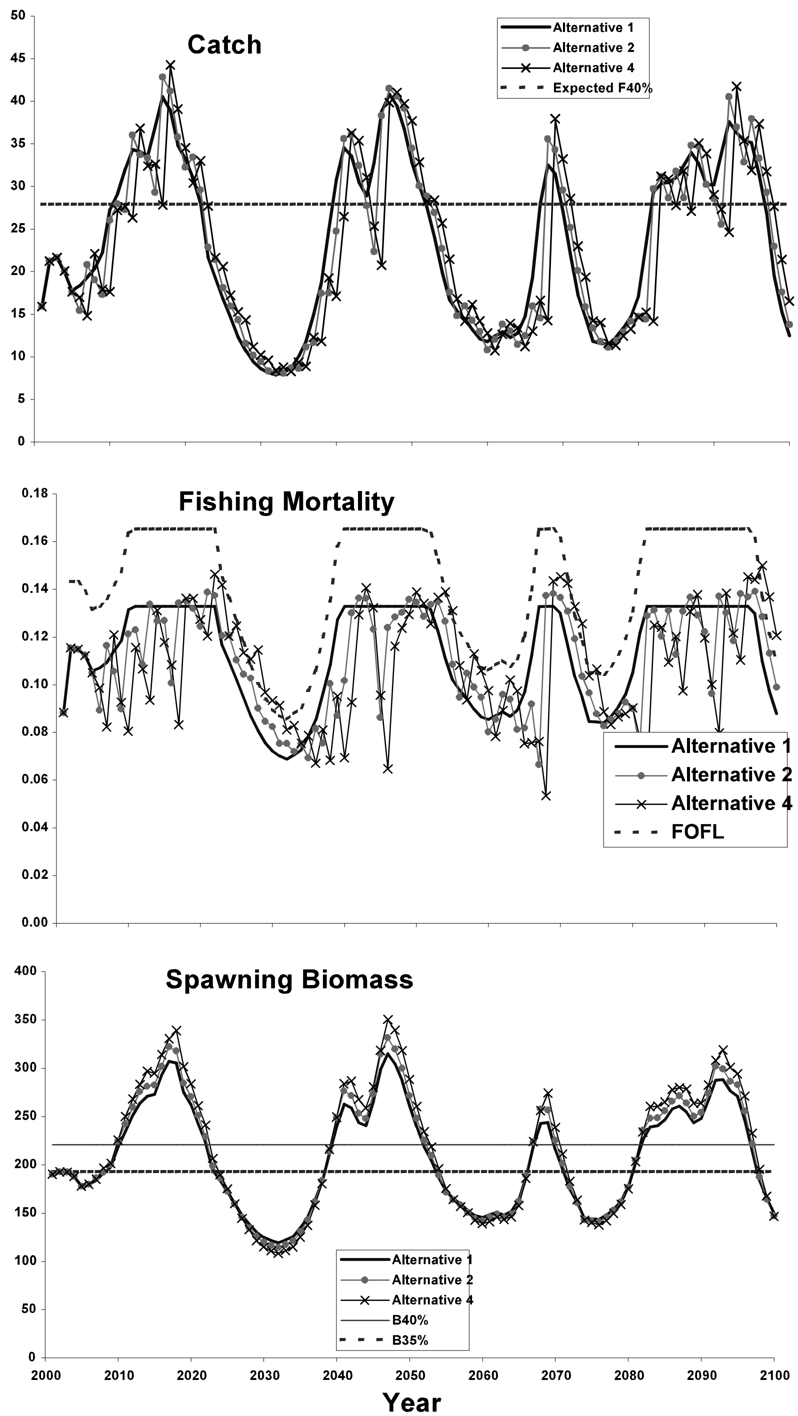

Figure 4.9 Simulated sablefish trajectory showing the first 100 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in thousands of metric tons, spawning biomass includes males and females.

Table 4.1-1 Results from retrospective examination of past SAFE reports comparing alternatives 1 and 2. Coefficients of variation are shown in parentheses. Catch (=ABC recommendation) units are in thousands of tons.

	Alternative 1	Alternative 2
EBS Pollock		
Mean catch	1,299	1,266
	(15%)	(13%)
Avg. annual catch change	9%	10%
BSAI PCOD		
Mean catch	219	235
	(30%)	(37%)
Avg. annual catch change	29%	32%
Aleutian Islands Atka mackerel		
Mean catch	95	87
	(34%)	(37%)
Avg. annual catch change	14%	16%
GOA Pollock		
Mean catch	92	102
	(41%)	(34%)
Avg. annual catch change	31%	35%

Table 4.1-2 Results from 1,000-year simulations comparing Alternatives 1, 2, and 4. Coefficients of variation are shown in parentheses. Catch and biomass units are in thousands of tons.

EBS Pollock	**Alternative 1**	**Alternative 2**	**Alternative 4**
Mean Catch	1,498	1,474	1,448
	(32.8%)	(38.4%)	(39.0%)
Mean spawning biomass	2,643	2,717	2,784
	(27.4%)	(32.2%)	(35.5%)
Mean fishing mortality	0.337	0.322	0.320
	(14.1%)	(19.7%)	(27.9%)
Avg. annual catch change	13%	29%	32%
Avg. age (equil. F40%=2.27)	2.41	2.42	2.44
Freq catch > F40% catch	41.5%	39.9%	36.8%
Freq spawning biomass > B35%	64.4%	64.6%	65.4%
Freq F > FOFL	0.0%	9.1%	20.5%

BSAI Pacific cod	**Alternative 1**	**Alternative 2**	**Alternative 4**
Mean Catch	278	274	269
	(24.6%)	(26.8%)	(25.8%)
Mean spawning biomass	442	454	469
	(16.7%)	(20.2%)	(24.3%)
Mean fishing mortality	0.283	0.275	0.269
	(8.1%)	(14.2%)	(21.1%)
Avg. annual catch change	10%	19%	21%
Avg. age (equil. F40%=2.61)	2.68	2.69	2.71
Freq catch > F40% catch	45.4%	44.2%	40.6%
Freq spawning biomass > B35%	82.0%	79.7%	78.6%
Freq F > FOFL	0.0%	3.3%	14.9%

Aleutian Islands atka mackerel	**Alternative 1**	**Alternative 2**	**Alternative 4**
Mean Catch	98	88	84
	(41.3%)	(35.4%)	(28.8%)
Mean spawning biomass	128	146	153
	(27.3%)	(40.6%)	(42.4%)
Mean fishing mortality	0.317	0.294	0.288
	(13.5%)	(39.7%)	(49.2%)
Avg. annual catch change	24%	30%	24%
Avg. age (equil. F40%=2.52)	2.67	2.78	2.82
Freq catch > F40% catch	42.6%	29.8%	20.6%
Freq spawning biomass > B35%	68.0%	71.8%	74.0%
Freq F > FOFL	0.0%	25.7%	25.7%

Table 4.1-2 (cont'd).

BSAI Pacific ocean perch	**Alternative 1**	**Alternative 2**	**Alternative 4**
Mean Catch	16	16	16
	(11.2%)	(11.2%)	(11.4%)
Mean spawning biomass	142	142	142
	(7.4%)	(7.4%)	(7.6%)
Mean fishing mortality	0.047	0.047	0.046
	(4.2%)	(4.3%)	(4.6%)
Avg. annual catch change	2%	2%	2%
Avg. age (equil. F40%=9.91)	10.03	10.03	10.04
Freq catch > F40% catch	47.6%	47.8%	47.7%
Freq spawning biomass > B35%	97.1%	97.1%	96.8%
Freq F > FOFL	0.0%	0.0%	0.0%

Gulf of Alaska Pollock	**Alternative 1**	**Alternative 2**	**Alternative 4**
Mean Catch	162	145	136
	(54.8%)	(61.1%)	(56.8%)
Mean spawning biomass	251	289	311
	(38.6%)	(50.3%)	(54.0%)
Mean fishing mortality	0.275	0.242	0.232
	(18.3%)	(36.7%)	(45.6%)
Avg. annual catch change	20%	49%	45%
Avg. age (equil. F40%=2.68)	2.92	3.01	3.07
Freq catch > F40% catch	38.7%	29.2%	23.3%
Freq spawning biomass > B35%	56.4%	64.2%	66.9%
Freq F > FOFL	0.0%	21.1%	24.8%

Sablefish	**Alternative 1**	**Alternative 2**	**Alternative 4**
Mean Catch	26	26	25
	(36.5%)	(39.1%)	(39.2%)
Mean spawning biomass	225	231	238
	(26.2%)	(28.1%)	(30.0%)
Mean fishing mortality	0.120	0.115	0.111
	(13.4%)	(16.6%)	(20.6%)
Avg. annual catch change	9%	17%	20%
Avg. age (equil. F40%=5.27)	5.64	5.71	5.79
Freq catch > F40% catch	44.8%	43.0%	40.9%
Freq spawning biomass > B35%	65.8%	67.6%	69.3%
Freq F > FOFL	0.0%	0.0%	6.0%

4.1.4 Summary of Target Species Effects

The potential direct and indirect effects of the groundfish fisheries on target species are detailed in the revised draft PSEIS (NMFS 2003b, section 4.5 for the current management policy). Direct effects include fishing mortality, changes in biomass, and spatial and temporal concentration of catch that may lead to a change in the population structure. Indirect effects include the changes in prey availability and changes in habitat suitability. Indirect effects are not likely to occur with any of the alternatives or the options analyzed because the proposed action does not change overall fishing practices that indirectly affect prey availability and habitat suitability. Significance criteria are explained in Table 4.1-1 of the PSEIS (NMFS 2003b, appendix A). Potential direct effects are summarized below for each alternative.

Alternative 1. Status Quo

The status quo process is not likely to have adverse impacts on groundfish species beyond those analyzed in previous NEPA analyses (NMFS 1998a, 2003b, section 4.4). Alternative 1 differs from the other alternatives in the use of interim TACs at the beginning of the fishing year. Interim TACs make available only a fraction of the Council's proposed TAC, depending on the fishery (25 percent or first seasonal allowance). The 25-percent cap for interim TACs may be an artificial constraint on the fishery which may have economic impacts (refer to Section 5.0) but is not likely to have negative environmental impacts, particularly for target species. The interim specifications are based on information from surveys conducted two year previously. The specifications for the current year fishery are not effective until approximately March of the fishing year. Therefore, even under status quo, a portion of the fishing year is conducted based on data approximately 18 months old. The analysis in this section does not reflect the potential effect of this lag or the potential effects of managing a fishery on an interim value.

As seen in the results of the retrospective analysis and the simulation modeling, less variability and more harvest is expected over time under the status quo. Less likelihood exists of exceeding the OFL compared to alternatives 2 and 4. Fishing at levels consistent with an ABC with less uncertainty is likely to be more protective of the stocks than alternatives that result in increased uncertainty as seen in projections necessary under alternatives 2 and 4, especially for short-lived species.

Alternative 2. Proposed and final specifications before start of fishing year; option for biennial harvest specifications for GOA and BSAI species on biennial survey schedule.

Under Alternative 2, there is some evidence that year-to-year fluctuations in fishing mortality may increase, that average fishing mortality levels may fall, and that fishing mortality levels for short-lived species may have a tendency to inadvertently exceed OFL levels more often than under Alternative 1. GOA pollock and Aleutian Islands Atka mackerel tend to exceed the F_{ofl} more frequently than other stocks analyzed under Alternative 2. The potential exceedance would not likely jeopardize the stock's capacity to produce MSY because the frequency of fishing mortality over the F_{ofl} is well under 50 percent, and is therefore, considered an insignificant effect. Long term biomass is predicted to increase with the model results compared to Alternative 1. The stocks are likely to stay above the MSST, but no information exists to indicate that the ability to stay above this level is enhance. Therefore, the effects on biomass is considered insignificant.

Alternative 2 increases the lag between the time summer biomass surveys are conducted and the start of the year in which specifications based on that survey are implemented. Under Alternative 1, this lag is four months; under Alternative 2 it rises to 16 months. This increased lag means that a biomass level may have evolved (through recruitment, natural or harvesting mortality, or growth) by a greater amount before fishing takes place under Alternative 2 than under Alternative 1. The TAC may thus be less appropriate for a given biomass in any year under Alternative 2. If the biomass has dropped, the TAC may tend to be higher than it otherwise would have under Alternative 1, exacerbating the drop. If the biomass has risen, the opposite effect may take place. Thus, year-to-year fluctuations in biomass may be greater under Alternative 2 than under Alternative 1. Since harvest specifications are based on biomass estimates, fishing mortality for target species is also likely to become more variable. Analyses performed at the AFSC, and reported in Sections 4.1.3 and 5.10 of this EA/RIR/IRFA provide some support for this proposition, especially for species that have relatively short life spans.

In part because of the increased variability, mean annual fishing mortality is expected to be lower under Alternative 2 than under Alternative 1. The increased variability means that annual biomass levels may trigger harvest control rule induced reductions in harvest rates more often. This may lead to lower fishing mortality in more years than under Alternative 1, and lower mean fishing mortality overall. Moreover, other uncertainties, some connected with avoiding OFLs (discussed below), may also lead to more conservative harvest rates. The analyses performed in section 4.1.3 also provided some support for this result.

The increased variability in the mean annual biomass is also expected to increase the possibility that managers may inadvertently exceed OFLs. This possibility currently exists under Alternative 1, but based on simulations, it would be greater under Alternative 2. In consequence, managers may set harvest specifications in a more conservative manner under Alternative 2 in order to reduce the likelihood of this result. It is possible that the increased probability of exceeding the OFL may be dampened by conservative setting of TAC.

The simulation analysis indicates that the average catch is likely to be lower under Alternative 2 and 4 compared with Alternative 1. This is likely underestimated since the analysis did not take into account extra measures in the TAC setting process that would lead to having the total groundfish TAC fall within the 2 million mt OY cap in the BSAI. The added stock status uncertainty for Alternatives 2 and 4 is likely to lead to additional quota reductions under FMP Amendment 56 harvest control rules (e.g. under Tier 1, the higher the uncertainty, the lower the ABC). See the PSEIS (NMFS 2003b) for an explanation of tiers in fisheries management. Response to population changes will be slower under Alternatives 2 and 4 resulting in increased variability in catch and biomass.

Based on the analyses, Alternative 2 appears likely to lead to lower harvest mortality, greater year-to-year fluctuations in harvest mortality, and an increased possibility of exceeding OFL levels; the sizes of these impacts are unknown. The potential increase in biomass over time may have a beneficial effect on target species but there may also be short term negative effects with the higher potential expected for exceeding the OFL. The analyses did not account for the Council process in establishing TAC, therefore the model results can only be used to indicate general trends in the absence of Council action.

This alternative will not have an effect on the spatial harvest of target species because locations of fishing activities are not affected. The effects on temporal harvest is considered in terms of the Steller sea lion protection measures which require seasonal apportionment of prey species harvest. The temporal harvest may only be affected if the amount of harvest set for the year is determined to be not appropriate based on new information in November before the fishery commences in January. If the annual TAC or seasonal apportionment of the annual TAC is established too high in consideration of the new information, an inseason or emergency action may be necessary to lower the annual TAC and seasonal apportionment to the appropriate harvest level. This potential shift in seasonal harvest is not expected to alter the genetic sub population structure of any stocks or change the reproductive success because the fish populations occur over a wide area and the frequency of this occurrence will be limited, if not prevented as the fishery is managed within Steller sea lion protection measures requirements. Therefore, the effects of Alternative 2 on the temporal concentration of harvest of target species is insignificant.

Alternative 3. Issue Proposed and Final Specifications Based on an Alternative Fishing Year Schedule.
Option 1: Set sablefish TAC on a January through December schedule
Option 2: Reschedule the December Council meeting to January

This alternative is not likely to have any significant affect on the overall fishing mortality compared to the status quo. A 10 month lag in using “the most current information” would be introduced under this alternative. However, this lag will have no impact on the calendar year catch expectation (from the standpoint of ABC recommendations). Because the variability in harvest is expected to be less than that seen under Alternative 2 and Alternative 2 has a mean fishing mortality that remains under F_{OFL}, the effect of Alternative 3 on fishing mortality is considered insignificant.

Long term biomass is predicted to increase less than under Alternative 2 compared to Alternative 1.This alternative will have quota changing between June and July as compared with status quo where changes occur between December and January. In addition, a change in the quota fishing year will require stock assessment model projections to be modified slightly. However, the current model structure can remain the same. The stocks are likely to stay above the MSST, but no information exists to indicate that the ability to stay above this level is enhance. Therefore, the effects on biomass is considered insignificant.

Spatial harvest of target species is not affected by this alternative because locations of fishing are not changed. Because of the shifting of the fishing year, the temporal harvest of target species may be affected. Alternative 3 may cause fishermen to change their fishing behaviors. For example, fishermen may choose to fish conservatively early in the [new] quota fishing year in order to “save up” PSC limits and TAC and maximize their returns during the winter high value roe fishery, however, this is unlikely due to the competition for the TAC under non-rationalized fisheries. Real-time tracking and co-operation among fishery participants might mitigate the possible economic impacts and minimize changes in fishing patterns, which could mitigate the possible environmental impacts. Greenland turbot and sablefish fisheries may be the most likely to be impacted because their directed fishing season overlaps with the July 1 quota fishing year date. See Tables 5.9-2 and 5.9-3 for fishery specific information. Sablefish issues are also covered in detail in section 4.9.

Table 4.1.3 shows how ABC would be calculated and apportioned under Alternative 3 compared to Alternative 1, for a fishery with a 60% January through June A seasonal apportionment (i.e. pollock). The use of interim specifications in the first part of the fishing year under the status quo is not considered in this comparison because the seasonal apportionment is ultimately dependent on the final specifications. Assume that the ABC is used as TAC for the fishing year for purposes of the seasonal apportionment. The first four columns provide the background information that is used in the calculations. Each row represents one year of harvest specifications process. This table should be read across the rows to understand the difference in seasonal apportionment between the alternatives. Column 1 in Table 4.1.3 shows a hypothetical Year 1 ABC projection in metric tons for pollock. This projection would have been made at the Plan Team meetings in November of the preceding year for the oncoming calendar year (Year 1). Column 2 shows Year 2 ABC projections that would have been made at the same Plan Team meetings for the year after the oncoming calendar year (Year 2). Column 3 is simply half of the Year 2 ABC projection. Column 4 shows the A season apportionment under Alternative 3 in the first 6 months of the Year 1 (with the first cell being an assumed value) for Alternative 3. This amount is subtracted from the Year 1 ABC so that the remaining amount of ABC is applied to the July- December part of the fishing year. This amount is then added to half of the Year 2 ABC to get the full year's ABC for the July through June time period. Column 5 shows the actual calculation of the ABC for the July of Year 1 to June of Year 2 fishing year under Alternative 3.

The A seasonal apportionments for the July to June fishing year (Column 6) are set at 60% of the July - June ABC (from Column 5). For Alternative 1, the A seasonal apportionment for the same January through June time period is 60 percent of the Year 2 ABC projection. Columns 6, 7, and 8 compare "A" season (January to June) apportionments under Alternatives 1 and 3. Column 6 shows the "A" season apportionment under Alternative 3. This is equal to 60% of Column 5. Column 7 shows the "A" season apportionment under Alternative 1. This is equal to 60% of Column 2 (the Year 2 ABC). Column 8 is the difference (the Alternative 3 apportionment minus the Alternative 1 apportionment).

Table 4.1.3 shows that there will be a lag between changes in biomass and the setting of seasonal apportionments under Alternative 3, which will likely lead to seasonal apportionments different from those resulting under Alternative 1. Reading across the rows, during periods of falling biomass between Year 1 and Year 2, Alternative 3 is likely to have a higher seasonal apportionment than Alternative 1. Conversely, during periods of rising biomass between Year 1 and Year 2, Alternative 3 is likely to have lower seasonal apportionments than Alternative 1.

Table 4.1-3 Example of Pollock Seasonal Apportionment Comparison of Alternative 3 and Alternative 1. Values are in thousand mt.

1	2	3	4	5	6	7	8
Yr. 1 ABC projection	Yr. 2 ABC projection	50 % Yr. 2 ABC = (Col. 2)/2	Alt. 3 Previous A season appor. = Col.6 year $_{(x-1)}$	Alt. 3 July -June ABC = (1-4)+3	Alt. 3 A season Apportionment =60 % of col. 5	Alt 1 A season apportionment = 60 % of Col. 2	Difference = 6-7
1200	1400	700	assume 720	1180	708	840	-132
1400	1000	500	708	1192	715	600	115
1000	5000	2500	715	2785	1671	3000	-1329
5000	3000	1500	1671	4829	2897	1800	1097
3000	3000	1500	2897	1603	962	1800	-838
3000	3200	1600	962	3638	2183	1920	263
					total = 9844	total = 9960	total = - 116

The timing of the harvest can be important to Steller sea lions, as further explained in section 4.5, and may affect the economic outcome for the industry. Because it is difficult to predict a potential shift in fishing behavior, it is unknown if Alternative 3 may have an effect on the temporal harvest of target groundfish species. However, it is unlikely that this alternative will be appreciably different from status quo since the annual *calendar year* catches will be essentially identical (with some variability increase between first and second halves of a calendar year).

Seasonal apportionments would be based on the new quota year. For example, if it is desirable for 60% of the quota to be allocated to the period July-December, then 40% of the quota year value would be specified for the subsequent year during Jan-June. Harvest levels may be higher and variability lower for Alternative 3 compared to Alternative 2 or 4 because the time lag between data and fishery implementation is less for Alternative 3 compared to Alternatives 2 and 4. It is not possible to fully predict the annual actions that may be taken by the Council and the level of conservation exercised in setting annual harvest specification. It is possible that the Council may conservatively set TAC for target species and species groups, reducing the potential for overfishing due to the variability of biomass data.

The effects on temporal harvest is considered in terms of the Steller sea lion protection measures which require seasonal apportionment of prey species harvest. The temporal harvest may only be affected if the amount of harvest set for the January through June period is determined to be not appropriate based on new information in November. If the seasonal apportionment of the annual TAC is established too high in consideration of the new information, an inseason or emergency action may be taken to lower the seasonal apportionment to the appropriate harvest level. This potential shift in seasonal harvest is not expected to alter the genetic sub population structure of any stocks or the reproductive success because the fish populations occur over a wide area and the frequency of this occurrence will be limited, if not prevented as the fishery is managed within Steller sea lion protection measures requirements. Therefore, the effects of Alternative 3 on the temporal concentration of harvest of target species is insignificant.

Option 1 to Alternative 3 to set the sablefish TAC for the following January through December time period would allow the sablefish IFQ fishery to be managed with the halibut IFQ fishery. The simulation model indicated that the effect of projecting ABC on sablefish biomass and future harvest is minimal compared to Alternative 1, therefore projecting ABC levels to the following year is not likely to have an impact on sablefish stocks.

Option 2 would allow additional time for the stock assessment scientist to examine data and write reports for Council consideration. This may have a beneficial effect for target species because of the potential improvement in the quality of the assessments which may lead to better management of the stocks. However, this potential improvement is difficult to quantify.

Alternative 4. Biennial harvest specifications

In Alternative 4, the TACs set by the Council for the future years will be based on two year projections from the SAFE reports. Year-to-year fluctuations in fishing mortality may increase, average fishing mortality levels may fall, and fishing mortality levels for short-lived species may have a tendency to inadvertently exceed OFL levels more often than under Alternative 1 and Alternative 2. In the simulation model above, Alternative 4 has similar effects as Alternative 2 with the variability in catch increased somewhat over Alternative 2 and even more over Alternative 1. Average catch is expected to be lower than under Alternative 2 and the probability of exceeding the overfishing level is expected to be greater. As explained above for Alternative 2, some of this potential effect, may be reduced by conservative recommendations of TAC by the Council, especially for the short-lived species. GOA pollock and Aleutian Islands Atka mackerel tend to exceed the F_{ofl} more frequently than other stocks analyzed under Alternative 1. The potential exceedance would not likely jeopardize the stock's capacity to produce MSY because the frequency of fishing mortality over the F_{ofl} is well under 50 percent, and is therefore, considered an insignificant effect. Long term biomass is predicted to increase with the model results compared to alternatives 1 and 2. The potential increase in biomass over time may have a beneficial effect on target species, The stocks are likely to stay above the MSST but no information exists to indicate that the ability to stay above this level is enhance. Therefore, the effects on biomass is considered insignificant.

Alternative 4 would not allow use of winter pollock biomass distribution survey data collected in the BSAI Bogoslof and GOA Shelikof Strait during the current year. For instance, a winter survey in 2003 would be used for 2005 and 2006 harvest projections. With setting TAC for two years, the annual biomass distribution survey results will be used every two years. This is not as much of an issue for the Bogoslof TAC since it is historically set at a level that allows bycatch only. The Shelikof Strait TAC allows for directed pollock fishing. Setting a two year TAC for pollock may not be the most desirable method of managing because of the annual variability of recruitment and the high level of exploitation in the Bering Sea. There is less ability to annually adjust the harvest specifications based on recent catch data, or in the case of the Bogoslof and Shelikof Strait, adjust based on annual winter biomass distribution data. Because of these conditions of the fishery, there is more potential to exceed overfishing levels, if TAC was set near the ABC value.[13]

A number of the tier 1-4 target species may have catch information available during the time period between the first and second year TAC. Tier 5 and 6 species will not likely have new information available that could be used in adjusting TAC. New catch information for the tier 1-4 species would not be used while the first and second year TACs are in place. This likely is not a problem since the catch projections used for the tier 1-4 species generally are fairly close to the actual catch amounts realized by the fisheries. Updating the TAC with the new actual catch data is unlikely to make a large difference between the TAC based on catch projections vs the TAC based on actual catch data[14]. If this difference is not significant, it may not be appropriate to initiate the process to change the TAC based on new catch data.

For demersal shelf rockfish, biennial submersible line transects are conducted to determine the standing stock. The State of Alaska performs these surveys and provides the information during the November Plan Team meeting recommending the ABC for the following year. Under Alternative 4, the State would need to provide a projection of the ABC for year 2. Currently, the State does not model the population

[13]Gary Stauffer, Director of Resource Assessment and Conservation Engineering Division, Personal communication. February 22, 2001, NMFS, WASC, Route: F/AKC2, BLDG: 4, RM: 2121, 7600 Sandpoint Way NE, Seattle, WA 98115-6349

[14]Dr. Michael Sigler, Mathematical Statistician. Personal communication. February 22, 2001, NMFS, Auke Bay Laboratory, 11305 Glacier Highway , Juneau , AK 99801-8626

for this target species group and has no future plans to do such modeling.[15] For these reasons, the demersal shelf rockfish should not be included in the biennial harvest specifications process under Alternative 4. Separate annual rulemaking may be necessary for this species and PSC limits, making the harvest specifications process under this alternative less administratively efficient.

This alternative will not have an effect on the spatial harvest of target species because locations of fishing activities are not affected. The effects on temporal harvest from Alternative 4 are similar to Alternative 2 and considered insignificant. The temporal harvest may only be affected if the amount of harvest set for the year is determined to be not appropriate based on new information in November before the fishery commences in January. If the seasonal apportionment of the annual TAC is established too high in consideration of the new information, an inseason or emergency action may be necessary to lower the annual TAC and seasonal apportionment to the appropriate harvest level.

Alternative 5: 18 Month Harvest Specifications with December Rulemaking Decision (Year 1 and first half of Year 2)

Option: Set sablefish TAC for following 12 months. (Year 2)

The effects of Alternative 5 will depend on whether a second proposed rule will be needed or if the harvest specification can be implemented after a proposed rule and a final rule. The fishery will begin the year on harvest specifications that are based on projections from data available in October, before the SAFE reports supporting the new year's harvest specifications are available. The data used in November of the previous year for the projection will be very similar to the data available in October, except for January through September catch information, which is not likely to have a large effect on the projected value.

No spatial effect is expected with Alternative 5 because no change in the location of fishing activities is require with this alternative. If the harvest specifications can be implemented using proposed and final rulemaking so that specifications are in place by February or March, the effects of Alternative 5 on fishing mortality, biomass and spatial and temporal harvest of fish would be the same as Alternative 1. If a second proposed rule is used under this alternative, the possible effects on target species will likely be similar to Alternative 3, where harvest amounts are also projected out to 18 months. The seasonal apportionment of TAC during the first 6 months of the fishing year may be affected in the same way as explained in Table 4.1-3.

If information is available during the fishing year that indicates significant changes in biomass, the TAC for the January through June time period may be adjusted accordingly with an inseason or emergency action. It will be difficult to complete rulemaking for this type of adjustment before the start of the fishery because one to two month are needed for the rulemaking process.

As seen under option 1 for Alternative 3, the option to Alternative 5 to set the sablefish TAC for the second year would allow the sablefish IFQ fishery to be managed with the halibut IFQ fishery. The simulation model indicated that the effect of projecting ABC on sablefish biomass and future harvest is

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[15]Dave Carlile, Biometrician, Personal communication. February 22, 2001, Alaska Dept. of Fish and Game, Division of Commercial Fisheries, 1255 W. 8th Street, Juneau, AK 99801

minimal compared to Alternative 1, therefore, projecting ABC levels to the following year is not likely to have an impact on sablefish stocks.

Cumulative Effects on Target Species

A cumulative effects analysis is a requirement of NEPA. An environmental assessment or environmental impact statement must consider cumulative effects when determining whether an action significantly affects environmental quality. The CEQ regulations define cumulative effects as:

> "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

The cumulative effects on target species under all alternatives in this analysis would be the same as those identified for Alternative 4 in the Steller sea lion protection measures SEIS in section 4.13.2 (NMFS 2001). Each alternative in this analysis include the implementation of the same Steller sea lion protection measures analyzed in Alternative 4 in the Steller sea lion protection measures SEIS. A list of the past, present, and predicted future effects on target species include:

Past External Effects

- Foreign Fisheries
- Other Fisheries - Joint Venture (JV) and Domestic groundfish fisheries, State of Alaska managed fisheries, the International Pacific Halibut Commission (IPHC) managed halibut fishery
- Subsistence Fisheries
- Seal Harvesting
- Whaling
- Pollution - includes effects from the Exxon Valdez oil spill (EVOS)
- Climate Effects - short-term and long-term climate variability, climate change, and ecological regime shifts.

See the introduction to Section 4.13 of the Steller sea lion SEIS for description of individual effects categories.

Present and Predicted Future Effects

- Other Fisheries - State of Alaska (state) managed fisheries (e.g., scallop, flatfish, sablefish, Pacific cod, herring roe and bait fishery, and crab pot fishery), the IPHC managed halibut fishery, and sport fisheries (halibut and salmon).
- Subsistence Fisheries
- Climate Effects - short-term and long-term climate variability, climate change, and ecological regime shifts.

Not all of the external effects identified above are pertinent to all target groundfish species or other species. No conditionally significant cumulative effects were identified for pollock, Pacific cod, sablefish, BSAI Atka mackerel, yellowfin, rock and flathead sole, Pacific Ocean perch, Greenland turbot, arrowtooth flounder and Alaska plaice; and GOA arrowtooth flounder and thornyhead rockfish. Unknown cumulative significant effects were identified for BSAI other flatfish," other rockfish, and other red rockfish; and GOA rockfish, shallow water flatfish, deep water flatfish, Atka mackerel, and flathead sole. Discussions focusing on individual species or species groups are included in Section 4.13.2 of the Steller sea lion protection measures SEIS.

Option A. Abolish TAC Reserves.

This option is an administrative change to accommodate the practice of releasing nonspecified TAC reserves for the fisheries. Implementation of this option would have no impact on the groundfish target species that differs from the status quo. Given that Option A addresses TAC reserves as a subset of the TAC that is assumed to be available for harvest, the impacts are assessed annually in the analyses that accompany final harvest specifications.

In the past 12 years, only a BSAI flatfish reserve has been released once to allow a harvest amount over the TAC but less than the ABC. The amount of harvest that year did not reach the TAC because of halibut bycatch mortality, the same constraint that is experienced every year by this fishery. The release of the reserves has no effect on the higher volume groundfish fisheries.

Option C. Biennial GOA specifications for some species/complexes

See Alternative 4 for a description of the potential effects of projecting specifications for two years. Groundfish species under Option C is less likely to be impacted by management with projections for harvest because the biennial specifications will be limited to long-lived species or those for which no biomass information is available. As shown for Pacific ocean perch and sablefish, the species/complexes under this option are unlikely to be affected by using projections for management.

Table 4.1-4 provides a summary of the effects of the alternatives on target species beyond the status quo.

Table 4.1-4 Effects of Alternatives 1 through 5 on Target Species

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Option: Abolish Reserves	Option: GOA Biennial Specs.
Direct Effects							
Fishing Mortality	**N**	**I**	**I**	**I**	**I***	**N**	**N**
Biomass	**N**	**I**	**I**	**I**	**I***	**N**	**N**
Spatial/Temporal concentration of Catch	**N**	**I#**	**I#**	**I#**	**I*#**	**N**	**N**
Indirect Effects							
Prey availability	**N**	**N**	**N**	**N**	**N**	**N**	**N**
Changes in Habitat Suitability	**N**	**N**	**N**	**N**	**N**	**N**	**N**

I = insignificant
U = unknown
N = no effect
* If second proposed rule is required, otherwise effects are the same as Alternative 1.
# Potential temporal effect only. No spatial effect expected with this alternative.

4.2 Effects on Species Prohibited in Groundfish Fisheries Harvest

Catches of Pacific halibut, crabs, salmon, and herring are controlled by PSC limits for the BSAI that are established in regulations as part of the annual specification process. The Council recommends annual GOA Pacific halibut PSC limits for gear types, with seasonal and fishery target allowances. Additionally as part of the annual specification process the Council recommends apportionments of BSAI PSC limits among seasons and fishery targets. Section 4.3.5 of the SEIS (NMFS 1998a) analyzes the impacts of fishing over a range of TAC specifications and compares them to impacts of status quo fishing on prohibited species. Section 4.5.2 of the revised draft PSEIS (NMFS 2003b) analyzes the effects of a range of groundfish management on prohibited species. Each year the final EA for the annual groundfish harvest specifications analyzes the impacts of TAC alternatives on prohibited species.

The final EA prepared for the action of setting the 2003 TACs for the groundfish fisheries off Alaska analyzed the effects of setting the 2003 TACs over a range of levels on prohibited species in section 4.4 (NMFS 2003a). The direct and indirect effects analyzed were the impact of incidental catch of prohibited species in the groundfish fisheries on stocks of prohibited species, the impact of incidental catch of prohibited species in the groundfish fisheries on the harvest levels of those species in their respective directed fisheries, and the effect on levels of incidental catch of prohibited species in the groundfish fisheries. The effects on prohibited species were all determined to be insignificant over a wide range of TACs, except for Alternative 5 which would have set TACs at zero (no fishing for groundfish) and would have resulted in a significant decrease in the levels of incidental catch of prohibited species in the groundfish fisheries (NMFS 2003a). An additional indirect effect of the groundfish fisheries is a potential change to the prey composition as analyzed in the Steller sea lion SEIS (NMFS 2001) and found to be insignificant for the alternatives analyzed. The significance of the impacts in these analyses were dependent on the level of removals of prohibited species biomass. The alternatives analyzed here are not believed to have an impact on prohibited species not already considered because they do not effect the manner in which TACs or PSC limitations are set, rather the alternatives analyzed here are procedural in nature and would not be expected to change the overall amount of prohibited species or prey species harvested.

Alternative 1. Status Quo.

Under the status quo, 25 percent of the previous year's PSC limits and fishery apportionments thereof are made available during the interim period, until final specifications are published in the Federal Register. This does not have any adverse impacts on prohibited species unless the annually specified PSC limits are reduced significantly, by more than 75 percent. Therefore, the status quo allocation of 25 percent of the PSC limits as an interim measure "protects" against excessive harvesting of prohibited species. This alternative has no impact on the manner in which prohibited species and PSC limits are established and managed, and therefore, has no additional direct, indirect, or cumulative impacts on prohibited species not already considered.

Alternative 2. Proposed and Final Specifications before start of fishing year

Alternative 2 is not likely to affect the bycatch of prohibited species. Proposed and final specifications, including PSC limits, would be finalized under this alternative before the fishing year started, with the potential for better management of PSC over the status quo. The potential for improvement of PSC management is due to the removal of the limitation of 25 percent of the annual PSC limits during the period the interim specifications are in effect. The Council could then recommend a lesser or greater amount of the annual PSC limit at the beginning of the fishing year during which the interim specifications are normally in effect, depending on the bycatch needs of the directed groundfish fisheries. This would not necessarily result in an overall decrease in the annual amount of PSC bycatch, but rather the same amount of bycatch could be used to harvest a greater amount of the available groundfish resources.

Annual PSC limits for crab in the BSAI are based on a percentage of the estimated abundance (numbers) of crab. Annual PSC limits in the BSAI for herring are based on a percentage of estimated spawning biomass (mt). At present these estimates are not available until October or November of the year as is the case with groundfish stock assessments. Thus, the Council's final action on PSC limits in April would be based on the previous year's assessment of crab abundance and spawning biomass of herring. ADF&G has stated that estimates of spawning herring biomass cannot be forecast [16], while the abundance (numbers) of crab estimated by the NMFS trawl survey can vary by 30 percent from one year to the

[16] Personal communication with Fritz Funk, Statewide Herring Biometrician, January 24, 2001, Alaska Department of Fish and Game, Division of Commercial Fisheries, 1255 W 8th St., Juneau, AK 99801

next.[17] The possible impact of using the previous year's assessment of these stocks for establishing PSC limits on crab and herring stocks is negligible because the PSC limits are by regulation set at extremely low levels; 1 percent of the estimated spawning biomass in herring (in mt) and between 0.1 percent and 2.5 percent of estimated crab abundance (in numbers). This alternative would have minor impacts as described on prohibited species stocks by the manner in which PSC limits are established and managed. Annual PSC limits are not impacted by this alternative, and therefore, Alternative 2 has no additional direct, indirect, or cumulative impacts on prohibited species not already considered.

Alternative 3. Issue Proposed and Final Specifications Based on an Alternative Fishing Year Schedule.
Option 1: Set sablefish TAC on January through December schedule.
Option 2: Reschedule the December Council meeting to January

Under Alternative 3 the fishing year would begin in July. Proposed and final specifications, including PSC limits, would be finalized under this alternative before the fishing year started. The discussion of the potential benefits of eliminating the 25 percent limit on the annual PSC caps during the period the interim specifications would have been in effect under Alternative 2 would also apply under Alternative 3. As discussed under Alternative 2, biomass estimates of the crab and herring stocks would continue be to updated in October and November. The annual PSC limits for crab and herring would presumably be available over the entire fishing year without adjustments based on new biomass estimates available late in the first half of the fishing year (November), these new estimates however would be the basis for establishing the next year's PSC limits.

It is not known how a change in the opening date of fishing would impact fishing practices such as the amount of effort directed at specific groundfish targets over time and space during the fishing year. The seasons for Atka mackerel, pollock, Pacific cod, rockfish, sablefish (normally concurrent with the Pacific halibut fishery dates) and Greenland turbot are already established by regulation. Since many fisheries are constrained by PSC limits during the course of the year, the manner in which the Council apportions PSC allowances to the gear types over the course of the year by season and fishery target could have the effect of preserving current fishing practices or deliberately altering them. NMFS does not believe that this would necessarily result in an overall decrease in the annual amount of PSC bycatch, but rather that the Council would apportion PSC limits to optimize the harvest of the available groundfish resources. Option 1 to set sablefish TAC on a January through December schedule will keep the halibut and sablefish IFQ fisheries on the same schedule, eliminating any potential increases in halibut bycatch if the sablefish fishery is on a different schedule. Option 2 is unlikely to have any effect on prohibited species since the additional time for analysis will likely be concentrated on target species.

It is likely that the BSAI pollock A season end date and B season beginning date of June 10 will need to be changed to July 1 so that the seasons are not truncated by the fishing year. The June 10 date for this seasonal end point was part of the Steller sea lion protection measures. If the date is changed, there is the potential for the pollock fishery to experience higher salmon bycatch rates as the industry pushes fishing effort into the later part of the year. Lower salmon bycatch rates are experience in June compared to October. The average pollock harvest during the June 10 through July 1 time period for 2001 and 2002

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[17] Personal communication with Dr. Robert Otto, Director NMFS RACE lab, March 7, 2002, 301 Research Count, Kodiak, AK 99615.

was 35, 896 mt. If the harvest of this amount of pollock was made up during October when the bycatch rates are high (ave. .25 during October 2001), the number of additional chinook salmon bycatch may be up to 5,815 salmon.[18] The potential additional amount of bycatch could be reduced if the industry was able to limit the amount of harvest in October, especially towards the end of the month. Whether there would be an effect on the amount of salmon bycatch is dependent on the actions of the industry, and therefore, the effects of Alternative 3 on salmon bycatch is unknown. This alternative will have no effect on the salmon PSC management measures currently in regulations.

Alternative 3 would have a greater impact on the manner in which annual PSC limits are apportioned and managed throughout the fishing year than the other alternatives considered. Annual PSC limits are not impacted by this alternative, and therefore, Alternative 3 has no known additional direct, indirect, or cumulative impacts on prohibited species not already considered.

Alternative 4. Biennial harvest specifications. Set PSC limits annually.

After the first year, when the annual OFL, ABC, and TAC levels together with PSC limits would be established by proposed, interim, and final rule, Alternative 4 would follow the same schedule as Alternative 2 for completion of the SAFE reports, Council action, public comment, and proposed, and final rule making. PSC limits for crab and herring under Alternative 4, like Alternative 2 would be based on the previous year's assessment and the discussion of impacts on prohibited species under Alternative 2 would apply here. Annual PSC limits are not impacted by this alternative and therefore, Alternative 4 has no additional direct, indirect, or cumulative impacts on prohibited species not already considered.

Alternative 5: 18 Month Harvest Specifications with December Rulemaking Decision

The effects of Alternative 5 on prohibited species is primarily related to the projection of PSC limits to 18 months. As explained in section 2.3, option to set PSC limits biennially, the crab and herring PSC limits are based on annual biomass estimates. The biomass estimates to project the 13-18 months portion of the PSC limit are not currently available under the current survey schedules. It is likely that this projection could be handled in the same manner as described under Alternative 3. The crab and herring PSC need to be established with the rest of the harvest specifications because of the sideboard specifications for the AFA fisheries for crab and the allocation of PSC limits to specific groundfish fisheries. The expected effects of this alternative are the same as those listed under Alternative 3, including the sablefish option. The fishing year is not changed so there will be no potential effect on salmon bycatch in the pollock fishery.

Cumulative Effects on Prohibited Species

A discussion of the general external effects screened for the cumulative effects analyses is presented in Section 4.13.1 of the Steller sea lion protection measures SEIS (NMFS 2001). The external effects determined to be applicable to the prohibited species cumulative effects analyses include the following:

- Past External Effects:
  - Foreign fisheries catch & bycatch

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[18]NMFS Inseason Management salmon bycatch data from www.fakr.noaa.gov/2001/bysalb.txt.

- Joint venture (JV) and domestic fisheries bycatch
- State fisheries catch and bycatch
- International Pacific Halibut Commission (IPHC) halibut fishery catch (halibut only)
- Resource development (salmon only)
- Exxon Valdez Oil Spill (EVOS, herring in GOA only)
- Short and long-term climatic and regime shifts

- Present and Predicted External Effects:
  - IPHC Halibut Fishery catch (halibut only)
  - State fisheries catch & bycatch
  - Short and long-term climatic and regime shifts.

Short-term effects (1-2 seasons), long term effects (years), and regime shifts (decades) could have either a beneficial or adverse impact on mortality (considered as bycatch in the Cumulative effects tables (NMFS 2001)). It is believed that only long-term and/or regime shifts could impact the prey availability for a given prohibited species since short-term (seasonal) changes in prey are unlikely to have population level effects on consumers.

No significant cumulative effects were identified for Pacific halibut. Unknown conditionally significant cumulative effects were identified for BSAI and GOA red king crab and Tanner crab; BS other Tanner Crab, other king crab, Pacific herring and salmon; and AI and GOA other king crab, other Tanner crab, Pacific herring and chinook salmon. Conditionally significant positive effects were also identified for AI other Tanner crab and chinook salmon. Discussions focusing on individual species or species groups are included in Section 4.13.5 of the Steller sea lion protection measures SEIS.

In this EA/RIR/IRFA, potential cumulative effect on prohibited species is the harvest levels of prohibited species in groundfish fisheries under Alternative 3. This potential effect is primarily regarding salmon in the pollock fishery. The pollock industry is currently studying a salmon excluder device for trawl gear that may reduce the levels of bycatch in the pollock fishery (68 FR 44927, July 31, 2003). If such a device was effective and used by the pollock industry, any potential increase in salmon bycatch under Alternative 3 may be mitigated by this future action. The cumulative effect is unknown because the effectiveness of a salmon excluder device is also unknown and dependent on the actions of the industry.

Option A. Abolish TAC Reserves

This alternative has no impact on prohibited species bycatch, direct, indirect, or cumulative since it only involves an administrative process to remove the need to establish nonspecified TAC reserves in the BSAI and specified reserves in the GOA.

Option C. Biennial GOA specifications for some species/complexes

This option is limited to setting harvest levels for certain GOA target species and has no impact on prohibited species.

Summary of Effects on Prohibited Species

Table 4.2-1 Effects of Alternatives 1 through 5 on Prohibited Species

Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Option A: Abolish Reserves	Option C: Biennial GOA specs.
Incidental Catch of Prohibited Species on Prohibited Species Stocks	**N**	**N**	**N**	**N**	**N**	**N**	**N**
Harvest Levels in Directed Fisheries Targeting Prohibited Species	**N**	**N**	**N**	**N**	**N**	**N**	**N**
Harvest Levels of Prohibited Species in Directed Groundfish Fisheries	**N**	**N**	**U***	**N**	**N**	**N**	**N**
Prey composition	**N**	**N**	**N**	**N**	**N**	**N**	**N**

N = No effect
U = Unknown
* Due to potential salmon bycatch in the BSAI pollock fishery.

4.3 Forage Species and Nonspecified Species

Direct effects of the groundfish fisheries on forage species and nonspecified species are the same as potential direct effects on target species (NMFS 2003b). Groundfish fisheries remove from the environment forage species and nonspecified species as bycatch. Indirect effects of the groundfish fisheries on forage and nonspecified species include potential changes in prey availability and habitat. Because of the lack of data regarding the life history and biomass of the forage and nonspecified species, it is difficult to determine the effects of such removals on these species. Sections 4.5.4 and 4.5.5 of the revised draft PSEIS (NMFS 2003b) contains effects information on forage and nonspecified species using the current groundfish management policies.

Because of the inability to evaluate past and predicted future external effects, and the qualitative results of the direct and indirect effects analysis, a cumulative effect analysis of the impacts of the Steller sea lion protection measures was not developed for nonspecified and forage fish species. Research needs to address management concerns for nonspecified and forage fish species are discussed in section 5.1.2.5 and 5.1.2.6 of the revised draft PSEIS (NMFS 2003b).

Because the proposed action is the modification of an administrative process for annual harvest management, no direct, indirect or cumulative effects on forage and nonspecified species are expected with this action, beyond effects previously identified in previous NEPA analyses.

4.4 Effects on Marine Mammals, Sea Birds, and Species Listed as Threatened or Endangered Under the ESA, except Steller sea lions.

The effects of groundfish harvest under the current management policies on marine mammals, including ESA listed species, are discussed in section 4.5.8 of the revised draft PSEIS (NMFS 2003b). Direct and indirect effects include the incidental take, entanglement in debris, harvest of prey species, spatial and temporal concentration of harvest and disturbances. Causal relationships between commercial harvesting of groundfish in the EEZ off Alaska and the population status and trends of marine mammals have not been established. The complexity of potential interactions at multiple temporal and spatial scales that might affect foraging behavior, coupled with the paucity of data available to characterize those relationships, inherently limit detection of fisheries effects. Thus, the mechanisms by which fish biomass removals might translate to marine mammal fitness or mortality are largely unknown at this time. The alternatives and Option C analyzed in this EA/RIR/IRFA will not change significantly the mechanisms for fish biomass removal, and therefore, will not likely have any effects on marine mammals beyond those already described in the revised draft PSEIS.

Groundfish harvest effects on seabirds, including ESA listed species, are described in section 4.5.7 of the revised draft PSEIS (NMFS 2003b). The direct effect is incidental take and vessel strikes, and the indirect effects include prey availability, benthic habitat disturbances, and processing waste and offal discharge. The change in the harvest specifications administrative process will have no effects beyond what is described in the PSEIS because there will be no changes in fishing practices that would alter the direct or indirect effects listed. No change in the potential effect on raptors should occur compared to status quo because fish delivering practices at shoreside will not be changed by any of the alternatives or Option C.

ESA listed steelhead have not recently occurred in the BSAI or GOA so no impact is anticipated for this species by any alternative or Option C in this EA/RIR/IRFA. ESA listed salmons are directly impacted by the groundfish fisheries through incidental catch. It is unknown whether they may also be indirectly affected by the groundfish fisheries from spatial or temporal concentration of bycatch or prey competition. Because PSC limits are established by regulation each year for salmon and the alternatives and Option C do not affect the PSC limits, none of the alternatives or Option C is expected to have an impact on ESA listed salmon beyond those identified in the revised draft PSEIS (NMFS 2003b).

Revising the process by which harvest specifications are established, and eliminating TAC reserves are not expected to affect ESA listed species (except Steller sea lions), marine mammals, or seabirds in any way not considered in previous consultations and environmental analyses. None of the alternatives or options are expected to have an impact on direct incidental takings of marine mammals or sea birds since there will be no significant changes in fishing practices. In all cases in the groundfish fisheries, levels of direct incidental take are low relative to each marine mammal stock’s Potential Biological Removal. Two short-tailed albatross were taken in 1998 in the long-line fishery, however, this was within incidental take guidelines and did not prompt the USFWS to re-initiate consultation. The Council adopted additional seabird avoidance measures for implementation in the year 2000. Regulations at 50

CFR 679.24(e) and 679.42(b)(2) contain specifics regarding seabird avoidance measures and additional measures are anticipated by the end of 2003.

Potential impacts on Steller sea lions is further examined in Section 4.5. Steller sea lions have been determined to be adversely affected by the groundfish fisheries and have required protection measures in the groundfish fisheries to prevent the likelihood of jeopardy of extinction or adverse modification or destruction of critical habitat for the western distinct population segment. All harvest specification alternatives must comply with the Steller sea lion protection measures (68 FR 204, January 2, 2003). The selected alternative for setting the harvest specifications would be subject to consultation under Section 7 of the ESA, if it is determined that there is the likelihood of an adverse effect on Steller sea lions or any other ESA listed species. If the consultation results in a finding of the likelihood of jeopardy or adverse modification of critical habitat for Steller sea lions, any reasonable and prudent alternative (RPA) would be implemented by separate rulemaking. Informal consultation on this proposed action was initiated in July 2003 (Salveson 2003).

Cumulative Effects

Section 4.13.1.3 of the Steller sea lion protection measures SEIS (NMFS 2001) contains detailed cumulative effects analysis for cetaceans, northern fur seals, harbor seals, other pinnipeds and sea otters. The external effects determined to be applicable to the marine mammals cumulative effects analyses include the following.

Past External Effects:

- Foreign Fisheries (Appendix B of the revised draft PSEIS provides a description of the historical foreign fisheries in the region).
- Other Fisheries - joint venture (JV) and domestic groundfish fisheries (also see Appendix B of the revised draft PSEIS), State of Alaska managed fisheries, the International Pacific Halibut Commission (IPHC) managed halibut fishery, west coast drift gillnet fisheries.
- Subsistence harvest - both Alaskan and Russian native harvest
- Commercial harvest of seals and seal lions
- Commercial whaling
- Pollution - includes effects from the Exxon Valdez Oil Spill (EVOS)
- Climate Effects - short-term (El Nino), long-term (global warming), regime shift.

Present and Predicted Future Effects:

- Other Fisheries - State of Alaska managed fisheries (e.g., salmon drift and set gillnet, flatfish, sablefish and Pacific cod, herring roe and bait fishery, crab pot fishery), the IPHC managed halibut fishery, and west coast drift gill net fisheries.

- Subsistence harvest

- Climate effects - short-term, long-term, regime shift.

Harbor seals, Steller sea lions, and northern fur seals were determined to have conditionally adverse significant cumulative effects for marine mammals.

Section 4.13.7 of the Steller sea lion protection measures SEIS contains detailed cumulative effects analysis for seabirds. The past, present, and predicted external effects determined to be applicable to the seabirds cumulative effects analyses include the following:

- Foreign fisheries
- State fisheries
- International Pacific Halibut Commission (IPHC) halibut fishery
- Short-term climatic shifts (1-2 seasons)
- Long-term climatic shifts (years)
- Regime shifts (decades)

Short tailed albatross was the only species determined to have a conditionally significant adverse cumulative effect from the groundfish fisheries.

Because no direct or indirect effect is identified, no cumulative effects on marine mammals, sea birds or listed species, except Steller sea lions, is expected under the alternatives beyond those already identified for the status quo.

Summary of Effects on Marine Mammals, Sea Birds, and Species Listed as Threatened or Endangered Under the ESA, except Steller sea lions.

Table 4.4-1 Effects of Alternatives 1 through 5 on Marine Mammals, Sea Birds, and Species Listed as Threatened or Endangered Under the ESA, except Steller sea lions.

Direct and Indirect Effects	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Option: Abolish Reserves	Option C: Biennial GOA Specs.
Incidental Catch of marine mammals, seabirds, ESA listed species (except Steller sea lions)	N	N	N	N	N	N	N
Prey availability	N	N	N	N	N	N	N
Benthic Habitat	N	N	N	N	N	N	N
Processing waste and Offal discharge (seabirds effect)	N	N	N	N	N	N	N

N = No effect

4.5 Effects on Steller sea lions

The groundfish fisheries may have direct impacts on Steller sea lions by incidental catch and entanglement of the animals during groundfish harvest and illegal shooting of the animals. Indirect effects include competition for prey species over time and space, and disturbance of the animals. Because this action would not change fishing practices, there are no effects on incidental catch, entanglement, illegal shooting or disturbances expected.

The directed and indirect effects were analyzed in the Steller sea lion SEIS (NMFS 2001), Section 4.1.1, for the pollock, Atka mackerel and Pacific cod fisheries. Of these effects, Alternatives 2, 3, 4, and 5 have insiginificant effects on Steller sea lions from the removal of prey over time. The revised draft PSEIS (NMFS 2003b) established significance criteria for the harvest of prey species as no more than 20 percent of the baseline fishing mortality rate. Alternatives 1, 2, and 4 were analyzed in section 4.1 for differences in fishery mortality rate over a 1,000 year simulation (Table 4.1-2). Neither alternatives 2 nor 4 resulted in more than 20 percent increase in fishing mortality rate compared to Alternative 1. Alternatives 3 and 5 are considered to have fishing mortality rates between Alternatives 1 and 2. All of the alternatives have considerations regarding temporal harvest of prey species. This is further explained below under each alternative.

The Steller sea lion protection measures address in several ways the competition between the groundfish fishery and non-human predators in the marine ecosystem, which is considered by NMFS to be a potential factor in the population decline of Steller sea lions. The protection measures modify the existing harvest control rule to ensure that there are enough prey resources overall and that prey densities are sufficient to supply all competitors on a large scale. The catch of important prey species is distributed over space and time to reduce the effects of localized depletion. Localized depletion is the reduction of prey resources below a threshold necessary to effectively supply predators in a specific area during a specific time period. Fishing is prohibited in areas immediately surrounding rookery and most haulout sites, and fishing is curtailed for important prey species in significant portions of designated critical habitat to relieve competition in areas considered important to Steller sea lion survival and recovery. None of the alternatives or option affect this spatial dispersion of the groundfish fishery. The January 2, 2003 regulations (68 FR 204) control available biomass, and temporal and spatial aspects of the pollock, Pacific cod, and Atka mackerel fisheries to reduce competition for prey species between fishermen and Steller sea lions. Additional information regarding Section 7 consultations for the groundfish fishery for Steller sea lions and all other listed species can be found in the 2001 BiOp (NMFS 2001, appendix A) and in the FMP BiOp (NMFS 2000).

Alternative 1. Status Quo

Under Alternative 1, there is no change to the harvest specification setting process and no additional effect on Steller sea lions beyond what has already been described for the groundfish fisheries (NMFS 2001 and 2003b), except for considerations described below regarding interim specifications.

Steller sea lion protection measures require the temporal dispersion of the fishery which is accomplished by seasonal apportionment of annual TAC. Setting the interim TAC at a level higher than is appropriate for the biomass may result in greater harvest than was intended when the Steller sea lion protection measures were enacted. Under current procedures, the interim TAC is calculated starting with the proposed TAC for each specified groundfish species or species group. If a large change in the biomass is discovered during the November Plan Team meeting, this typically would not be reflected in the interim TAC. Because of this, the interim TAC might be higher or lower than appropriate. This is of a particular concern for the BSAI and GOA pollock and Pacific cod, and BSAI Atka mackerel fisheries which have interim TAC equal to their first seasonal allowances (25 to 60 percent). If the final TAC is less than proposed, the interim TAC would be based on the higher proposed TAC and the level of harvest in the first season could exceed the seasonal apportionment that is specified in final specifications.

The change in biomass and corresponding ABC would have to be quite large before what is taken during the interim period exceeds the annual TAC. In 2001, the TAC for GOA pollock was 95,875 mt. A large drop in projected biomass in 2002 resulted in TAC of 58,250 mt. If the 2001 TAC had been used to calculate the interim TAC in 2002, the interim value would have been 23,969 mt (25 % of 95,875 mt for the first seasonal apportionment). The interim 2002 TAC would have been 41percent of the 2002 TAC and would have allowed the 25 percent 2002 A season apportionment to be exceeded. Any overages in one season can be subtracted from the following seasons. Therefore, even in this situation where a difference of 40 percent ABC occurred between years, it would be unlikely that the annual TAC would have been exceeded, if interim specifications based on proposed TACs were applied.

Even though the annual TAC is unlikely to be exceeded using interim TAC, the use of interim TAC does not ensure the appropriate seasonal apportionment of the annual TAC. In the case of GOA pollock in 2002, if the interim TAC had been used, 41 percent of the annual TAC could have been harvested during the beginning of the year, exceeding the 25 percent seasonal apportionment and concentrating the pollock harvest during a critical time for juvenile Steller sea lions. Therefore, harvest of interim specifications levels for Atka mackerel, Pacific cod, or pollock may undermine the temporal dispersion of the fisheries in times of decreasing biomass.

As described in section 1.3.3, to minimize the potential problem with the interim TACs, the proposed ABCs may be based on a scientifically derived value rather than rollovers of the previous year's harvest level. For example, proposed ABCs could be based on projections from the SAFE reports from two years earlier. If the projection is an accurate reflection of what currently is known about the stocks, then an interim TAC that is appropriate for the known biomass would likely result. If new information indicates that the stock biomass is declining and the decline is not reflected in the projection from two years earlier, the more conservative value of either a SAFE projection or a rollover may be selected. Because of the flexibility in determining the proposed ABC recommendation, it is possible that the interim TACs will be set closer to a level that is appropriate for the most recent biomass information.

For 2003, projections of biomass and ABC were used for the proposed harvest specifications. For GOA pollock and Pacific cod, the percent change between the proposed and final TAC was 6.7 and 4.5 percent, respectively (Table 1.6). For the BSAI, very little change occurred for the pollock fishery (0.46 percent), but the Pacific cod fishery proposed and final TAC changed by 3.75 percent (Table 1.5). Atka mackerel proposed and final TAC amounts changed by 0.7 to 59 percent. The reasons for the changes include biological and socioeconomic considerations of where to set TAC and attempts to maximize the opportunities for the groundfish fisheries while staying below the overall harvest limits set for the BSAI and GOA in § 679.20(a)(1).

With various considerations, it is not possible to know if interim TACs will meet seasonal apportionment limits until after the December Council meeting. An inseason or emergency action may be used to ensure the interim TACs are below seasonal limits in times of falling biomass, ensuring Steller sea lion protection measures are met. It is unlikely that an inseason adjustment can be used based on the November SAFE because the interim TAC are usually not published until mid December. Because such actions may require up to two months to complete, it is unlikely that the inseason or emergency action could be completed before the start of the fishery in January.

Because the actions of the Council to set proposed and final TAC in the future can not be predicted and inseason or emergency action may be taken to adjust seasonal harvest , the potential for effects on the temporal dispersion of harvest of prey species is unknown.

Alternative 2. Proposed and Final Specifications

Under Alternative 2, the execution of the fishery will not be changed, only the process in implementing harvest specifications. There is an increased potential for setting TAC over the OFL for shorter lived species, such as pollock, compared to Alternative 1 (see analysis in section 4.1). This potential effect may be offset by the projected overall increase in average spawning biomass and by the conservative TAC amounts that may be recommended each year by the Council.

The harvest levels set for this time period would be based on stock assessment data that are 16 months old, increasing the possibility that the quota being managed at that point in time may not be set optimal for the current biomass. The available biomass of Atka mackerel, Pacific cod, and pollock were identified as a critical element in the FMP BiOp (NMFS 2000). If the biomass had unexpectedly dropped in the time period between when harvest specifications went into effect and were fished, the removals might be higher than desirable. If more recent information indicates that the level of TAC set is too high for the biomass, regulatory action may be taken to adjust the TAC to a more appropriate level. For instance, in November 2002, the Regional Administrator may initiate an inseason adjustment of 2003 TAC based on information from the 2002 SAFE report that indicates that the biomass is lower than what was projected for 2003 from the 2001 SAFE report, ensuring that the amount of harvest complies with the harvest control rule and seasonal apportionments under the Steller sea lion protection measures. The inseason action started in November is more likely to be completed before the start of the fishing year, compared to attempts to adjust the interim TAC under Alternative 1.

The simulation models used in section 4.1 indicated that the fishing mortality under this alternative would be less than Alternative 1. Also, the average biomass over time would be greater than Alternative 1. This may have a beneficial effect for Steller sea lions, if the additional biomass is available as prey.

No other potential direct or indirect effects on Steller sea lions or on their critical habitat are anticipated from this alternative beyond what has already been described for the groundfish fisheries (NMFS 2001). Because the level of conservation used by the Council to recommend proposed and final TAC in the future can not be predicted, and inseason and emergency action are possible to adjust annual and seasonal harvest , the potential for effects on the temporal dispersion of harvest of prey species is unknown.

Alternative 3. Issue Proposed and Final Specifications Based on an Alternative Fishing Year Schedule.

Option 1: Set sablefish TAC based on January through December schedule.

Option 2: Reschedule the December Council meeting to January

Alternative 3 may pose some difficulties in executing the fisheries in the framework of the Steller sea lion protective measures because of starting the fishing year at a later date. The Steller sea lion protection measures specify beginning and ending dates for seasonal allocations for BSAI and GOA pollock and Pacific cod and BSAI Atka mackerel. Tables 5.9-2 and 5.9-3 in Section 5.9 show that seasons for EBS pollock and BSAI Pacific cod trawl fisheries directly conflict with a July 1- June 30 fishing year. Pacific cod nontrawl fisheries are not affected because halibut PSC amounts are not apportioned during the June 10 through August 15 time period. Therefore, Pacific cod nontrawl fisheries activities would not overlap fishing years. The C season for the BSAI Pacific cod trawl fishery begins on June 10 and would over lap fishing years under Alternative 3. Adjustments to the seasons and the impacts on Steller sea lions would need to be analyzed before this alternative could be implemented. It is possible that shifting the June 10 seasonal date to July 1 would have little or no effect on Steller sea lions.[19] With a later fishing year, the end of the fishing year would be in the January-March time period, which is also a period of major activity in the Atka mackerel, Pacific cod, and pollock fisheries.

The annual harvest levels set for this time period would be based on stock assessment data that are 10 months (September to July) old compared to approximately 7 months (September to February and not considering interim specifications) under status quo for the beginning of the fishing year, thus increasing

[19]Shane Capron, Personal Communication. May 16, 2002. Fisheries Biologist. Division of Protected Resources, NMFS, 709 W. 9th St. Juneau, AK 99081.

the possibility that the quota being managed at that point in time may not be set optimal for the current biomass. This potential is the same as the interim specifications under Alternative 1, the last 6 months of the 18 month harvest specifications under Alternative 5, and Alternative 2 but less potential than Alternative 4 with two year harvest specifications. The available biomass of Atka mackerel, Pacific cod, and pollock were identified as a critical element in the FMP BiOp (NMFS 2000). If the biomass had unexpectedly dropped in the time period between when harvest specifications went into effect and were fished, the removals might be higher than desirable. If more recent information indicates that the level of TAC set is too high for the biomass, regulatory action may be taken to adjust the TAC to a more appropriate level. It is also likely that the biomass will be greater under this alternative than under alternatives 1 and 5 as TAC are adjusted downward to address uncertainty, as in Alternatives 2 and 4, only not as much.

Table 4.1-3 compared Alternatives 3 and 1 to show the potential effects on seasonal apportionments in conditions of falling and rising biomass. Under Alternative 3, a time lag exists between the biomass information and the adjustment of TAC to reflect the new biomass level. If the changes in biomass are minor or increasing, this lag is not likely to have an effect on Steller sea lions. If the biomass rapidly drops, this may be of a concern because higher amounts of harvest may be authorized than is appropriate for the biomass level. The potential effect of this is unknown because of potential Regional Administrator actions and actions that the Council may recommend to prevent this situation from causing an adverse effect, including inseason or emergency action before the beginning of the January through June fishery.

To the extent authorized under the Steller sea lion protection measures, the participants in the Atka mackerel, pollock, and Pacific cod fisheries may also alter their fishing practices to “save” their fishing allocation towards the end of the fishing year, when product price is higher. This may cause excess removal rates, if not carefully monitored to meet Steller sea lion protection measures. The saving of fishing allocation is also considered unlikely under non-rationalized fisheries.

Option 1 should have no effect on Steller sea lions since it is limited to the sablefish fishery and sablefish is not a main prey species for Steller sea lions (NMFS 2000). Option 2, providing more time to stock assessment scientist, may lead to better management of the target species, including Steller sea lion prey, which may indirectly benefit Steller sea lions.

Alternative 4. Biennial Harvest Specifications

The potential effects of Alternative 4 on Steller sea lions is similar to Alternative 2, only potentially more adverse, if conservative Council action is not assumed. This alternative has a potential for greater variability in biomass than Alternatives 2, 3, and 5 because of the projections of TACs from stock assessment data that are up to 28 months old. This could have an effect on Steller sea lions if future TACs are set too high for the available biomass. The possibility of setting the future TAC at a level that is too high for the biomass over time may be reduced by conservative action taken by the Plan Teams and Council in recommending harvest limits. Setting of TAC at a level higher than what is appropriate for the biomass may increase competition for prey between the Steller sea lions and the commercial fisheries. Any possible effects on prey availability are likely to be short term because the Plan Teams and Council will be assessing stock conditions biennially. Any excess amounts of harvest in one year will likely lead to a downward adjustment in future harvest, if future stock assessment information indicates this is necessary. If more recent information indicates that the level of TAC set is too high for the biomass, inseason or emergency rulemaking may be used to adjust the TAC to a more appropriate level. Also under this alternative, the average biomass over time is projected by the simulation model in section 4.1 to be greater than Alternative 1 or 2 due to reductions in fishing mortality because of uncertainty with projections. This may be beneficial to Steller sea lions if the biomass is available as prey for Steller sea lions.

The annual setting of PSC limits has no effect on Steller sea lions because it would not effect the harvest of prey species or the interaction between Steller sea lions and groundfish fishery participants.

Because the actions of the Council to set proposed and final TAC in the future can not be predicted and the ability to use inseason or emergency action to adjust seasonal harvest, the potential for effects on the temporal dispersion of harvest of prey species is unknown.

Alternative 5: 18 Month Harvest Specifications with December Rulemaking Decision (Year 1 and first half of Year 2). Option: Establish sablefish TAC for the following 12 months (Year 2).

Ensuring the correct temporal dispersion of harvest of the groundfish fisheries in the first part of the year will require close management under Alternative 5. In the time period between January 1 and the final specifications (March or June), the groundfish fishery will be managed on the last part of the 18 months specification that was adopted in the previous harvest specifications. If the final specifications seasonal TAC amounts for pollock, Pacific cod, and Atka mackerel implemented in either March or June (depending on whether a second proposed rule is needed), are not identical to the seasonal TACs used in the January through March or June time period, the potential exists for either seasonal overharvest or underharvest of pollock, Pacific cod, or Atka mackerel. If more fish is taken in the January through March or June time period than what would have been seasonally apportioned in the final specifications for that year, more Steller sea lion prey could be harvested than the seasonal apportionments allow. The potential effect would depend on the amount of overharvest, location, and the frequency.

As in Alternative 2, 3, and 4, Alternative 5 would also be setting harvest specifications based on data that are projected beyond projections used in the status quo. In Alternative 5, the last part of the 18 month specifications is based on survey information that are approximately 17 to 22 months old (September data in year 1 to the harvest specifications in January through June in year 3). In years of falling biomass, the amounts of harvest during the last portion of the 18 month period may be more than is appropriate under the Steller sea lion protection measures. The same concerns described above for Alternative 3 regarding drops in biomass discovered after the harvest specifications are in place and the lag time effects on seasonal apportionments with falling biomass also apply to Alternative 5.

Depending on the potential overharvest, the possible effects on Steller sea lions of temporal concentration of harvest or overharvest compared to biomass may be reduced or avoided by inseason or emergency rulemaking, ensuring the January through March or June harvest meets the seasonal apportionment amounts based on the Council's December recommendation or that TAC is set to ensure the amount of harvest is appropriate for available biomass. The time required to complete inseason or emergency rulemaking may not allow for totally avoiding overharvest in the first season. The Council may also recommend TAC conservatively so that potential overharvest may be avoided.

Because the actions of the Council to set proposed and final TAC in the future can not be predicted and the ability to use inseason and emergency action to adjust seasonal harvest , the potential for effects on the temporal dispersion of harvest of prey species is unknown.

The option to Alternative 5 affects only the sablefish fishery and is not likely to have an effect on Steller sea lions.

Cumulative Effects on Steller sea lions

Section 4.4 lists the past external and present and predicted future effects on marine mammals, including Steller sea lions. Section 4.13.1.3 of the Steller sea lion protection measures SEIS (NMFS 2001) contains detailed cumulative effects analysis for Steller sea lions. Conditionally significant adverse cumulative effects were identified for Steller sea lions under the status quo. These effects apply to the availability of prey and the spatial/temporal harvest of prey. Because each alternative would be implemented in the manner as status quo regarding the Steller sea lion protection measures, and effects on temporal harvest of prey species are unknown, cumulative effects for each alternative are unknown.

Option A. Elimination of TAC Reserves

This option should have no effect on Steller sea lions since it is only a change in regulations on the management of reserves and has no effect on the current fisheries practices or on the final level of TAC.

Option C: Biennial GOA specifications for some species/complexes

Option C does not affect Steller sea lion prey species, except Atka mackerel. Since 1998, the TAC for Atka mackerel in the GOA has been 600 mt for bycatch purposes only. Tables 4.5a and 4.5b in the FMP BiOp show that Atka mackerel isn not a major prey species for Steller sea lions in the western and central GOA between 1990 and 1998. This species was occurred in less than 5 percent of the scat samples analyzed (NMFS 2001b). Establishing biennial harvest specifications will not likely have an effect on Atka mackerel because no directed fishery is expected under the current lack of information regarding the stock condition. If additional information becomes available in the future regarding the stock condition and a directed fishery is appropriate, the use of biennial specifications for this species would be reevaluated under the harvest specifications process.

Table 4.5-1 summarizes the potential direct and indirect effects on Steller sea lions under each alternative. Indirect effects on the harvest of prey species are insignificant for alternatives 2-5 because the change in the fishing mortality rate under these alternatives over time was less than 20 percent of the baseline fishing mortality rate, as shown section 4.1. The harvest of prey species was shown in section 4.1 (Table 4.1-2) to not exceed 20 percent of the status quo fishing mortality rate and is therefore, considered insignificant (NMFS 2003b, Table 4.1-6). The effects of all alternatives on the temporal dispersion of harvest of prey species is unknown. Action by the Council in setting TAC is a critical component to the harvest specifications and was not included in the analysis used for predicting groundfish effects in section 4.1. Also the analysis was compared to historical information and shown to overestimate the amount of harvest for Eastern Bering Sea pollock. The use of inseason or emergency rulemaking is available under each alternative but no experience exists in using this process for the adjustment of a seasonal TAC. It has not been determined under what situations such an action would be used and therefore, the effectiveness of this tool to control seasonal harvests is unknown. The harvest specifications will include NEPA, ESA, and RFA analysis each time they are implemented. It is not likely that adverse effects on Steller sea lions will occur because of the annual (or biennial) review process in each alternative.

Table 4.5-1 Summary of Effects of Alternatives on Steller Sea Lions

	Alternatives					**Options**	
	1	**2**	**3**	**4**	**5**	**A**	**C**
Direct Effects							
illegal shooting	**N**	**N**	**N**	**N**	**N**	**N**	**N**
Incidental take/Entanglement	**N**	**N**	**N**	**N**	**N**	**N**	**N**
Indirect effects							
harvest of prey	**N**	**I**	**I**	**I**	**I**	**N**	**N**
Spatial/temporal conc. of harvest	**U***	**U***	**U***	**U***	**U***	**N**	**N**
disturbance	**N**	**N**	**N**	**N**	**N**	**N**	**N**

I = insignificant
N = No effect
U = unknown
*** No spatial effect. Unknown temporal effect.**

4.6 Effects on Essential Fish Habitat and Benthic Communities

Direct effects from groundfish fisheries on essential fish habitat and benthic communities include the removal of organisms by fishing gear and the modification of substrate by fishing gear. Indirect effects could be the change in biodiversity from fishing activity removals or various organisms. The management areas where the fisheries take place are identified as essential fish habitat (EFH) for all the managed species listed in the fishery management plans. The proposed action would potentially involve all BSAI and GOA species noted in the environmental assessment prepared for EFH (NPFMC, 1999c). The impacts of fishing gear on substrates and benthic communities were analyzed in the revised draft PSEIS (NMFS 2003b), section 4.5.6.

NMFS prepared an assessment of impacts to essential fish habitat and received a letter of consultation in reply regarding 2003 TAC specifications (Kurland 2002). In that letter, NMFS stated it concurs with the assessment that fishing may have adverse impacts on EFH for managed species but concluded that any adverse effects have been minimized to the extent practicable. No EFH recommendations were offered.

This action changes procedures for establishing harvest specifications and no direct, indirect or cumulative effects by any alternative on EFH or benthic communities are anticipated beyond those already identified in other NEPA documents. There will be no changes in overall harvest amounts, gear types, and locations. Changing temporal patterns of fishing may occur under Alternative 3, although this effect, to the extent that it occurs, would be assessed annually. Effects on EFH, target and non-target species, and associated species such as prey species, resulting from harvest specifications will be assessed annually in supporting documents for those actions.

4.7 Coastal Zone Management Act

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

4.8 Effects on State Managed Fisheries

The Alaska Department of Fish and Game manages a number of fisheries in the BSAI and GOA areas. The herring, crab, and salmon fisheries are not affected by the method of setting harvest specifications [20] and will not be further analyzed in this EA/RIR/IRFA. The State fisheries which could be affected are:

1) the parallel groundfish fisheries occurring in state waters which could be affected by those alternatives which change the season opening dates (These are the pollock, Pacific cod and Atka mackerel fisheries run in state waters concurrent with the seasons and harvest limits of the Federal fisheries.);
2) the state waters seasons established for Pacific cod in the GOA and sablefish in the AI. The guideline harvest limits (GHLs) for these fisheries are based on a percentage of the federal ABC, and in some areas the open season dates are determined by the closing dates of the federal seasons;
3) the demersal shelf rockfish (DSR) fishery which could be effected by those alternatives which change the season opening dates; and
4) the Prince William Sound (PWS) pollock fishery.

The PWS pollock fishery itself would not be affected in any manner by any of the alternatives considered. However the GHL established for the PWS pollock has a direct effect on the ABC established for the pollock fishery in the West Yakutat/Central/Western (WYK/C/W) area of the GOA. Specifically the GHL for the pollock fishery in PWS is deducted from the combined pollock ABC for the federal WYK/C/W area of the GOA.

The final EA prepared for the action of setting the 2003 TACs for the groundfish fisheries off Alaska analyzed the effects of setting the 2003 TACs over a range of levels on the State of Alaska state waters seasons and parallel fisheries for groundfish in section 4.9 (NMFS 2003a). The direct effect analyzed was the impact over a range of TAC levels on harvest levels in the state managed groundfish fisheries. The effects on harvest levels in state managed fisheries were all determined to be insignificant over a wide range of TACs, except for Alternative 3 which would have reduced the harvest level of Pacific cod in the state waters seasons and Alternative 5 which would have reduced harvest levels of groundfish in

[20] Personal Communication with Herman Savikko, Extended Jurisdiction/Fishery Biologist, April 26, 2001, Alaska Department of Fish and Game, Division of Commercial Fisheries, 1255 W. 8th Street, Juneau, AK 99801

the Pacific cod and sablefish state waters seasons and of Atka mackerel, pollock, and Pacific cod in the parallel seasons. Harvests in these state managed fisheries under those alternatives would have been reduced by more than 50 percent and the effect was deemed significantly adverse (NMFS 2003a). Each year the final EA for the annual groundfish harvest specifications analyzes the impacts of TAC alternatives on state managed fisheries.

The state's parallel groundfish fisheries would be affected in the same manner as the federal groundfish fisheries discussed in section 4.1 of this EA. The alternatives are not believed to have an impact on the state managed groundfish fisheries not already considered, with the possible exception of Alternative 3, because they do not impact the manner in which ABCs, TACs, or PSC limits are set, rather the alternatives analyzed here are procedural in nature and should not change the harvest levels in state managed groundfish fisheries. Alternative 3 may have a direct impact on the management of the state fisheries because of the shifting of the fishing year, as further explained below.

Alternative 1. Status Quo

Under Alternative 1 there would be no effects on any of the state fisheries, with the exception of the parallel state groundfish fisheries which could close prematurely if during the period the interim specifications are in effect, the first seasonal apportionments of the pollock, Pacific cod, or Atka mackerel TACs are harvested prior to the effective date of the final annual specifications. Such closures (if any) would be modified when the final specifications become effective. Alternative 1 has no additional direct or indirect effects on state managed fisheries not already considered (NMFS 2003a).

Alternative 2. Proposed and Final Specifications before start of fishing year

Alternative 2 and the option for biennial harvest specification for the GOA and AI would not change the seasonal dates of the fisheries, and therefore, would have no effect on the state managed fisheries. The establishment of the PWS pollock GHL for the next year(s) would be available in a timely manner and so would have no effect on the annual establishment of the pollock ABC for the combined WYK/C/W area in the GOA. The elimination of the interim specifications would have no effect on state managed fisheries with the exception that the state's parallel groundfish fisheries (along with the federal groundfish fisheries) would not be faced with potential closures while the interim specifications are in effect. This would also be the case for Alternatives 3, 4, and 5 which also eliminate interim specifications. Alternative 2 has no additional direct or indirect effects on state managed fisheries not already considered.

Alternative 3. Issue Proposed and Final Specifications Based on an Alternative Fishing Year Schedule.
Option 1: Set sablefish TAC for January through December time period.
Option 2: Reschedule the December Council meeting to January

Alternative 3 would have the greatest potential for effects on state managed fisheries of those alternatives considered. Impacts may occur on the state waters seasons for Pacific cod in management areas where the opening date is dependent upon the closing date of adjacent federal A season Pacific cod fisheries in the GOA. In 2003, those areas are the PWS, Cook Inlet, Kodiak, and the South Alaska Peninsula areas. The state's Pacific cod fisheries in the GOA are based on up to 25 percent of the ABC for the GOA and are restricted to jig and pot gear only. Table 4.8-1 shows the end date, or the status of the State Pacific cod harvests by area and gear in PWS and the Central and Western GOA for 2003 through July 1, 2003.

Table 4.8-1 Ending dates for harvest (or status) of State Pacific cod fisheries in 2003 through July 1, 2003 (ADF&G, 2003)

Gear Type	PWS	Cook Inlet	Kodiak	Chignik	S. Alaska Peninsula
Pot	Open	2/27	3/2	4/11	3/11
Jig	Open	Open	5/9	6/4	4/22

Since their inception in 1997 the state waters Pacific cod fisheries have developed along the lines laid out by the State of Alaska Board of Fish's (BOF) action taken in October 1996 in all areas except PWS. During 2001, the BOF reviewed issues related to state and federal management of Pacific cod fisheries, including the state waters seasons and parallel state fisheries. For the 2002 season the BOF established an opening date for the Chignik area state waters Pacific cod season of March 1. This action was taken primarily to insure that participants in the Chignik fishery would have a greater opportunity to harvest the GHL In other areas the opening dates are from 1 to 7 days after the close of the federal A season. Beginning in 2001, once the state water season opened in an area, it remained open until the GHL for that area was harvested or December 31.

Under Alternative 3 the federal A season for Pacific cod would not open in the GOA until September 1. There may not be enough time between the end of the federal A season fishery and the present ending date (December 31) of the state fishery to allow the GHL to be fully harvested before the end of the year. In February 2002, the BOF took action to reduce the GHL for the PWS from 25 percent of the federal ABC established for the Eastern GOA to 10 percent while leaving room to increase the GHL back to 25 percent, based on the future performance of the PWS fishery.

The state waters season for sablefish in the AI opens May 15. Harvests in this fishery could also be reduced by a change in the dates of the annual fishing year unless Option 1 is also adopted.

If Alternative 3 were implemented, it would likely result in the BOF adjusting the season dates and possibly other management measures for the state waters seasons for other areas in the GOA and sablefish in the AI as well. While such actions could mitigate the adverse effects on the state waters Pacific cod seasons in the GOA and AI, it would entail additional administrative costs to the State.

The State also manages the DSR fishery in the GOA based on an annual TAC allocation. During the calendar year, a small amount of directed fishing for DSR is allowed until the opening of the halibut and sablefish IFQ fisheries, approximately March 15. DSR is then placed on bycatch for the remainder of the IFQ fishery until November 1 so that the halibut fishery will not be constrained by DSR bycatch. After closure of the IFQ fishery, the DSR directed fishery may be reopened to finish harvest of the remaining TAC.

With a shift in the fishing year under Alternative 3, the State would be unable to determine how much directed fishing would be allowed for DSR until after the closure of the IFQ fisheries in November. The

DSR directed fishery would have to be limited to the time period between November 1 and approximately March 15. This may cause difficulty in the DSR directed fishery if participants need to know what amount they can harvest for planning purposes at the beginning of the calendar year.

Option 1 to set the sablefish TAC on a January through December schedule would eliminate the potential effects on the State sablefish fishery and DSR fishery described above.

Under Alternative 3, the effects on the state's parallel groundfish and DSR fisheries are unknown due to potential changes in fishing effort seasonally and spatially, the potential effects could be mitigated by Council action in setting directed fishing seasons and PSC apportionments for the federal groundfish fisheries which would likewise affect these state managed fisheries. The impacts on the state waters seasons for Pacific cod are also unknown as potential adverse effects could be mitigated by BOF action to adjust season opening dates and other management measures. Under Alternative 3, the annual GHL established for the PWS pollock fishery would have no effect on the federal pollock fishery in the WYK/C/W area of the GOA. In summary the direct and indirect effects on state managed fisheries under Alternative 3 are unknown.

Option 2 may have an indirect beneficial effect on State fisheries, if the additional time provided scientist results in improved management of target species stock.

Alternative 4. Use Stock Assessment Projections for Biennial Harvest Specifications. For the BSAI and GOA set the Annual Harvest Specifications Based on the Most Recent Stock Assessment and Set Harvest Specifications for the Following Year Based on Projected OFL and ABC Values. Set PSC Limits Annually.

Alternative 4 would have the same impacts on the state's parallel groundfish fisheries, the DSR fishery, and the state waters seasons for Pacific cod as on federal groundfish fisheries discussed in Section 4.1 of this EA. The State conducts biennial surveys of the pollock resource during the summers months of odd numbered years, most recently in 2001. The assessment results become available later in the year to establish GHLs for the next two years, most recently 2003 and 2004. If Alternative 4 were adopted to begin setting the TACs in an even numbered year then the ABCs for the WYK/C/W area of the GOA would not be effected. If Alternative 4 were adopted to begin setting the TACs in an odd numbered year then ABCs and TACs for the area would need to be adjusted between the publication of the proposed and final specifications once every two years, if the GHL for the pollock fishery were to change. This would likely be a minor adjustment as the PWS pollock GHL has recently averaged 2 percent the WYK/C/W area ABC. Changes in the GHL have averaged less than 1 percent of the WYK/C/W area ABC between assessments. The DSR fishery would need to be on an annual specifications schedule because modeling is not available to provide projections for the second year of TAC limits.[21] Alternative 4 and its options for setting PSC limits would have no additional direct or indirect effects on state managed fisheries.

Alternative 5: 18 Month Harvest Specifications with December Rulemaking Decision

[21]Dave Carlile, Biometrician, Personal communication. February 22, 2001, Alaska Dept. of Fish and Game, Division of Commercial Fisheries, 1255 W. 8th Street, Juneau, AK 99801

Alternative 5 and the option to set sablefish specifications two years in advance would not change the seasonal dates of the fisheries and therefore, would have no effect on the state managed fisheries. The establishment of the PWS pollock GHL for the next year(s) would be available in a timely manner and so would have no effect on the annual or biennial establishment of the pollock ABC for the combined WYK/C/W area in the GOA. The elimination of the interim specifications would have no effect on state fisheries with the exception that the state's parallel groundfish fisheries (along with the federal groundfish fisheries) would not be faced with potential closures while the interim specifications are in effect. Alternative 5 has no additional direct or indirect effects on state managed fisheries not already considered.

Cumulative Effects on State Managed Fisheries

Section 4.13.10 of the Steller sea lion protection measures SEIS (NMFS 2001) contains analysis of the cumulative effects of the protection measures on the State managed fisheries. Because the State managed fisheries depend on the resources harvested, it was assumed that if there is a cumulative effect on a resource, then the State managed fishery for that resource may also be affected. The analysis concluded that there would be no reasonably foreseeable external actions resulting in cumulative effects on State managed fisheries. Because of the unknown effects of Alternative 3 on the GOA Pacific cod, AI sablefish, demersal shelf rockfish and parallel fisheries, cumulative effects of Alternative 3 on these fisheries are also unknown.

Option A: Abolish TAC Reserves

This option would have would have no additional direct, indirect, or cumulative effects on state managed fisheries not already considered because it has no effect on fishing practices or the amounts of harvest.

Option C: Biennial GOA specifications for some species/complexes

This option should have no impacts on the State managed fisheries because it would only affect the TAC setting for demersal shelf rockfish in the GOA. The state will be provided two years of harvest specifications on which to base their management so that harvest level adjustments will be made only every other year. As described in section 4.1, demersal shelf rockfish is a long-lived species which is not likely to be impacted by management based on projections.

Table 4.8-3 Effects of Alternatives 1 through 4 on Harvest Levels in State Managed Groundfish Fisheries

Fishery	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Option A: Abolish Reserves	Option C: Biennial GOA specs.
Pollock PWS (SWS)	N	N	N	N	N	N	N
Pacific cod GOA (SWS) Sablefish AI (SWS)	N	N	U	N	N	N	N
DSR in SEI	N	N	U	N	N	N	N
Parallel Seasons in BSAI and GOA	N	N	U	N	N	N	N

N = No effect, U = Unknown SWS = State Waters Seasons

4.9 Effects on the Sablefish and Halibut IFQ and Halibut CDQ programs

Alternatives 3 and 5 are the only alternatives and options that may have an impact on these programs by shifting the commercial fishing year to start in July (Alternative 3) and by allowing the annual fishery to commence on specifications that may change in March or June (Alternative 5). Pacific halibut and sablefish IFQs and CDQ halibut are commercially harvested under an individual fishing quota program managed by NMFS. Since the start of the program in 1995, the harvest time period under these programs has been mid March through mid November, established annually by the IPHC for halibut and adopted by NMFS for the sablefish fishery. In 2003, the start date was March 1 and is being reviewed by IPHC move the date even earlier (Leaman, Williams, and Gilroy 2003). These fisheries are conducted concurrently to reduce the amount of discard for both species and for fishing efficiency. Conducting both fisheries at the same time also reduces the resource needs for NMFS Enforcement and Restricted Access Management.

NMFS requires approximately six weeks to conduct an administrative permit process before fishing can occur under any new or revised TAC allocation, regardless of when an allocation becomes effective. Currently, NMFS uses the time period between the end of the fishing year (December 31) and the start of the IFQ season (March) to perform a number of management steps. These steps include: 1) establish final TACs, 2) reconcile accounts (landings completed, corrections made, and quota transfers are stopped), 3) calculate, print, and mail IFQ permits, and 4) allow for fair start. The Pacific halibut TAC is set by the IPHC at its annual meeting in late January each year. TAC setting requires review and publication in the Federal Register for sablefish, and Governmental approval and publication of the halibut regulations established by the IPHC for halibut. The permit calculation process cannot start until all fishing has stopped and the IFQ accounts are stable because new year's permits are a function of the final account balances from the previous permits. Halibut may not be retained, and directed fishing for IFQ sablefish stops, in mid November although sablefish bycatch which accrues against IFQ permits occurs through December. Some vessels, especially larger freezer vessels, may take 2 to 3 weeks before completing their last landings after the close of the fishery. After landings are completed and information is stable, NMFS calculates overages and underages which apply to next year's IFQ accounts; and also distributes the new TAC to all current quota share holders. New year IFQ permit amounts are calculated on January 31 at which time the printing and distribution steps begin. The participants in the IFQ fisheries normally are mailed their permits in February so that permits can be received and all participants, even those in remote locations, are able to participate on the opening date of the fishery, which historically has yielded the highest exvessel prices. The processes of implementing TACs, account stabilization; calculating, printing, issuing, and mailing permits, takes approximately six weeks of time when no fishing may occur between the fishing years. This intermission is also needed to implement revised reporting and recordkeeping requirements and new electronic reporting software; to issue registered buyer permits, and to process IFQ leases and hired skippers applications.

If Alternative 3 was implemented, the annual TAC would be established to be effective with the new fishing year, in July. The "intercession" period would have to occur just prior to that, at a time when the fishing weather and opportunity was best; and the safety issues at a minimum. If the sablefish season were intended to start concurrent with the halibut season in March just after a closed period, there would be two periods during the year in which no sablefish could be harvested. If the sablefish season were not concurrent with the halibut IFQ (and CDQ) season, waste and discard of halibut would occur in the sablefish fishsery; and of sablefish in the halibut fishery. In particular, it is undesirable to allow sablefish fishing in winter, when halibut are deep and have much spatial overlap with sablefish, increasing halibut bycatch potential[22]. While the sablefish fishery dates can be adjusted by NMFS (50 CFR 679.23(g)(1)), halibut fishing seasons are established by the IPHC and might not coincide with any changes made to the sablefish fishery.

It is possible that the IFQ permits could be issued on the proposed TAC rather than the final TAC. If the TAC and/or area allocations changed between the proposed and final rulemaking, new permits would need to be processed and issued. This is the worst possible scenario due to the potential for two sablefish permitting processes in one year and the additional down time that would be required. There also is a potential for exceeding a quota if the final annual TAC decreased, yet fishing in excess of that had already occurred. There is also a potential for exceeding an area allocation or even the entire TAC if by the time the final annual TAC was known to decrease, fishing in excess of that amount had already occurred.

Under the current IFQ program, a number of regulation changes may mitigate some of the difficulties of having inadequate time for intercessions between different allocation periods. Multiyear permitting and other program changes could reduce the time needed, or reduce the frequency of stand down periods. Numerous regulation changes may also be made such as: shifting cost recovery program reporting and payment schedules, adjusting the date before which IFQ permits may not be calculated, and revising logbook submission dates. Removing the provision for applying overages and underages to the following year’s IFQ permits would mean the following year’s IFQ permits could be calculated based solely on quota shares held and the new year's TACs; only transfer activity would need to halt temporarily. If Alternative 3 was implemented, significant management and regulation changes to the IFQ program would be necessary to ensure the sablefish and halibut IFQ programs are implemented concurrently, fairly, and with little disruption.

[22]Gregg Williams, Senior Biologist, Personal Communication, April 25, 2002, International Pacific Halibut Commission, P.O. Box 95009, Seattle, WA 98145-2009, U.S.A.

Option 1 to Alternative 3, setting sablefish TAC on a January through December schedule, would allow NMFS to manage the sablefish IFQ fishery consistent with the halibut IFQ fishery. Option 1 would result in no effect from Alternative 3 on the Pacific halibut and sablefish IFQ and CDQ halibut programs. Option 2 would also have no effect since it only deals with the timing of the Council meeting for final harvest specifications recommendations.

If Alternative 5 was implemented, the potential exists that the sablefish fishery would be started on a TAC amount that may change with the final specifications in March or June. This would result in administrative difficulties as new IFQ amounts would need to be calculated and new permits issued on the final values. As stated above, the fishery needs to be stable for enough time to perform the calculations, which may result in not allowing the fishery to open parallel with the halibut fishery until the new permits can be issued. The implementation of the option to Alternative 5 would eliminate this potential problem by ensuring a full year's TAC is available to base permitting and fishery management for the sablefish fishery. Considering the stability of the projections of the sablefish fishery as seen in section 4.1, it is possible that the sablefish TAC will not change from the January to March or June time period and when the final harvest specifications are in place. However, even though the 2003 proposed sablefish TAC was based on projections, the final sablefish TAC changed from the proposed TAC by 2 to 50 percent (Tables 1.3 and 1.4). It is unclear if there may be more reluctance to adjust the sablefish TAC if it is set for a full year 2 under the option compared to being set for a portion of year 2 without the option. The stability of projections for sablefish may make it less likely that new biomass information would result in adjustments of TAC, as may be more likely for shorter lived species with more variable biomass. Because various portions of this analysis have different results, Alternative 5 implemented without the option, has an unknown effect on the sablefish fishery. If Alternative 5 is implemented with the option, assuming less likelihood for the need to adjust TAC based on new information, no effects are expected on the sablefish fishery.

Cumulative Effects on IFQ Fisheries

One forseeable action that may result in cumulative effects on the halibut and sablefish IFQ programs is the extension of the halibut fishery up to a 12 month fishery. The IPHC is currently considering the potential impacts of extending the season and the effects that it would have on the management of the halibut and sablefish IFQ fisheries, as well as other fisheries. For management efficiency and to reduce the potential for bycatch, the sablefish season would likely be extended to match the halibut fishery, requiring regulatory changes in how the annual IFQ amounts are calculated, in how permits are issued, in how transfers are conducted, and in the cost recovery program. Under either Alternatives 3 or 5, if the sablefish TAC were to change after the process of issuing permits is complete, permits would need to be reissued to adjust harvest to the appropriate amounts. As described above, NMFS would need approximately 6 weeks to reissue permits, requiring transfers and possibly fishing to stop, unless changes were made to the management of the IFQ program. Because it is not possible to determine if the IPHC will extend the halibut fishing year to up to 12 months, the cumulative effects under alternatives 3 and 5 are unknown.

4.10 Effects on the American Fisheries Act Fisheries

An EIS analyzing the impacts of the AFA fisheries was completed in the February 2002 (NMFS 2002). Section 2, Alternative 3 of the AFA EIS describes the action to manage the AFA fisheries which was implemented by final rule in 2003 (67 FR 79692, December 30, 2002).

Under the AFA, close to 100 percent of the BSAI directed pollock fishery has been allocated to fishery cooperatives. In all three sectors of the BSAI pollock fishery, cooperatives function as a form of privately-operated individual fishing quota program. Within each cooperative, member vessels are granted an allocation of pollock based on their catch history and are free to lease their quota to other members of the cooperative, or acquire quota from other members to harvest. The catcher/processor and mothership sector cooperatives operate at the sector level in that NMFS makes a single allocation to the sector and the cooperatives are responsible for dividing up the quota among individual participants in the sector. Inshore sector cooperatives are organized around each processor and NMFS makes individual allocations to each cooperative rather than to the inshore sector as a whole.

Alternative 1. Status Quo

The AFA cooperative pollock fishery has been operating under the status quo since 1999 in the catcher/processor sector and since 2000 in the inshore and mothership sectors. While cooperatives have been able to form and function under the status quo, the ability of cooperatives to establish efficient markets for pollock quota has been hampered, to some extent, by the lack of certainty about quotas prior to the start of the fishing year. In 2001 and 2003 NMFS started the fishing year under interim pollock TACs which meant that cooperative allocations also were issued on an interim basis. This meant that each cooperative member had some degree of uncertainty about the total value of his pollock allocation in metric tons. While cooperative members started the fishing season with the knowledge of the Council's final TAC recommendations from its December meeting, they did not have absolute certainty that NMFS would ultimately implement the Council's recommendations, especially given the uncertainty surrounding Steller sea lion management measures.

Alternative 2. Proposed and Final Specifications before start of fishing year

Alternative 2 would represent an improvement over the no-action alternative because final annual co-op allocations could be established prior to the start of the fishing year. Co-op members would have greater certainty that pollock quota leased prior to the start of the fishing year would actually represent quota that could be harvested during the fishing year. As a general rule, greater advance notice of final TAC amounts will result in greater efficiency in the cooperative markets in pollock quota. The greater advanced notice of pollock TAC could be confounded, if new information becomes available before the commencement of the fishery leading to adjustment of TAC.

Alternative 3. Issue Proposed and Final Specifications Based on and Alternative Fishing Year Schedule.

Option 1: Set sablefish TAC on a January through December schedule.
Option 2: Reschedule the December Council meeting to January

Alternative 3 would have mixed effects on the management of the AFA pollock fishery. On the one hand, final pollock quotas would be established prior to the start of any pollock fishing which should lead to greater efficiency in cooperative management. However, changing the fishing year would have greater effects on the AFA pollock management regime which is currently based on the calendar fishing year. Adoption of Alternative 3 would affect existing regulations that establish application deadlines for AFA pollock cooperatives and reporting deadlines for annual co-op reports. Initially these changes would be more disruptive than adoption of Alternative 2 or Alternative 5. Option 1 to this alternative would have no effect because it is limited to the sablefish fishery. Option 2 would provide less time to the AFA pollock industry for planning before the fishing year, but it is unlikely that there would be an effect on the industry with a planning time period reduction from 6 months to 5 months.

This alternative also has the potential to effect the capability to harvest pollock during the B season. Less time will be available in the B season, which may be a problem in years of high TAC. This is covered in more detail in section 5.9 of this document.

Alternative 4. Use Stock Assessment Projections for Biennial Harvest Specifications. For the BSAI and GOA set the Annual Harvest Specifications Based on the Most Recent Stock Assessment and Set Harvest Specifications for the Following Year Based on Projected OFL and ABC Values. Set PSC limits annually.

Given that the harvest specifications setting process under Alternative 4 would follow the same schedule as Alternative 2, the effects on the AFA pollock fishery are likely to be the same as for Alternative 2.

Alternative 5: 18 Month Harvest Specifications with December Rulemaking Decision

The potential effects of Alternative 5 are very similar to the effects described under the status quo regarding interim specifications. As under Alternative 1 and interim specifications, the last part of the 18 months specifications (January through March or June) under Alternative 5 requires the coops to begin the year on TAC values that could potentially change with the implementation of the final specifications. While cooperative members started the fishing season with the knowledge of the Council's final TAC recommendations from its December meeting, they would not have absolute certainty that NMFS would ultimately implement the Council's recommendations, especially given the uncertainty surrounding Steller sea lion management measures and with the added complexities of decision making for the final setting of harvest specifications. The option to this alternative would have no effect on the AFA fisheries because it is restricted to the sablefish fishery.

Option A. Abolish TAC Reserves

The AFA provides for the full allocation of the pollock TAC, and therefore, this option will have no effect on the AFA fisheries.

Option C: Biennial GOA specifications for some species/complexes

This option would have no impact on the AFA fisheries because it is limited to the GOA long-lived species/complexes.

Cumulative Effects on AFA Fisheries

The AFA fisheries are focused on the harvest of pollock in the eastern Bering Sea and would be affected by changes in the pollock resource. Therefore, past, present, or forseeable actions that may cause cumulative effects on pollock, would also potentially have a cumulative effect on the AFA fisheries. In Section 4.1, no conditionally significant cumulative effects were identified for pollock. External effects that may impact the AFA fisheries include human caused and natural events, as detailed in the AFA SEIS, (NMFS 2002,section 4.9). Potential effects identified in this section are primarily administrative in nature for Alternative 3 and increased uncertainty when new information may lead to the adjustment of a TAC that is already established. It is unknown if additional past, present, or future actions may combine with these potential effects to cause cumulative effects.

4.11 Summary of Environmental Impacts and Conclusions

To determine the significance of impacts of the actions analyzed in this EA, NMFS is required by NEPA and 50 CFR 1508.27 to consider the following:

Context: The setting of the action is the groundfish fisheries of the BSAI and GOA. Any effects of the action are limited to these areas. The effect on society within these areas is isolated to the direct and indirect participants in the groundfish fisheries of the BSAI and the GOA. The proposed action has no major changes to fishing practices nor to total allowable harvest amounts and management measures, only administrative changes to the process of setting harvest specifications.

Intensity: A listing of considerations to determine intensity of the impacts are in 50 CFR 1508.27 (b) and in NOAA Administrative Order 216-6 Section 6. Each consideration is addressed below in order as it appears in the regulations and administrative order.

1. **Adverse or beneficial impact determinations for marine resources**, **including sustainability of target and nontarget species, damage to ocean or coastal habitat or essential fish habitat, effects on biodiversity and ecosystems**, **and marine mammals**. The proposed action is primarily an administrative action that does not significantly affect the overall amounts, location, and techniques for groundfish harvest. Environmental components that may be affected by this action include groundfish target species, prohibited species, Steller sea lions, State and AFA fisheries. No effects were identified for marine mammals, seabirds, other ESA listed species, essential fish habitat, biodiversity and ecosystems beyond the status quo.

The effects of alternatives 2 through 5 on fishing mortality, biomass, and temporal harvest of groundfish species are insignificant. No indirect or spatial effects were identified for target species. Retrospective and simulation analyses on the effects of Alternatives 2 and 4 on target species indicated that the level of catch for several groundfish species is likely to decrease but the potential for exceeding the overfishing level is likely to increase compared to the status quo. These amounts of change fall under the significance criteria. Alternatives 3 and 5 would likely have effects between the potential effects from Alternative 1 and Alternative 2.

Alternative 3 (change in fishing year) could alter fishing patterns which has unknown effects for the prohibited species (salmon in the pollock fishery), and the AFA fisheries. The shifted fishing year may pose difficulties to the BSAI pollock fisheries in times of high TAC regarding meeting the B season allocations and potential higher salmon bycatch levels. However, those changes would be assessed in an annual EA that accompanies the harvest specifications. The Council, State, and industry may be able to modify fishing management measures and practices lessening the potential effects of shifting the year and seasons, and in the pollock fishery, to ensure full harvest of the B season TAC, and to avoid high salmon bycatch. Option 1 to Alternative 3 and the option to Alternative 5 would remove potential effects on the sablefish IFQ and halibut fisheries.

Because the harvest of groundfish species may have an indirect effect on Steller sea lions, effects on Steller sea lions from the overall harvest of prey species were identified under alternatives 2 through 5, and temporal dispersion of harvest were identified under alternatives 1 through 5. No direct effects or disturbance effects were identified for Steller sea lions under the alternatives. The harvest of prey was found to be insignificant because the amount of prey harvested would not exceed 20 percent of the status quo fishing mortality rate. The harvest of groundfish under all alternatives may not be temporally dispersed, as required by Steller sea lion protection measures, if new information indicates that the biomass is less than expected. If adverse effects are expected, inseason or emergency rulemaking can be used to adjust the harvest to a more appropriate level, therefore the potential effect on temporal harvest is unknown. Because of the rulemaking process, this type of TAC adjustment is unlikely to be completed before the beginning of the January fisheries.

No effects are expected from Option A, to eliminate certain TAC reserves or from Option C to set biennial harvest specifications for some GOA target species.

Specific impacts on the environment resulting from the harvest specifications would be assessed under NEPA requirements in the same frequency that harvest specifications are implemented, either annually or biennially.

2. **Public Health and Safety:** All alternatives, except Alternative 3, have no new, additional effects on public health and safety. Alternative 3 during years of high TAC for pollock, has the potential to shift fishing activities into October as the industry attempts to harvest all of the B season allocated pollock. The industry may be able to concentrate harvest in the July 1 through August 31 time period to avoid fishing in deteriorating weather in October, and therefore, the effect on safety may be avoid.

3. This action takes place in the geographic areas of the Bering Sea, Aleutian Islands and Gulf of Alaska. Even though these areas contain **cultural resources and ecologically critical areas,** no effects on the unique characteristics of these areas are anticipated to occur with any alternative considered with this action.

4. This action may or may not be **controversial** depending upon which alternative is chosen and level of public concern. At this time a preferred alternative is not identified.

5. The **risks to the human environment including social and economic effects** by implementing the BSAI and GOA groundfish fisheries are described in detail in the SEIS (NMFS 1998a) and in the revised draft PSEIS (NMFS 2003b). Because the action analyzed in this EA is an administrative process, conducted consistently with the Steller sea lion protection measures, and does not change basic fishing practices, there are no additional known risks to the human environment, beyond those already analyzed, by taking this action.

6. **Future actions** related to the setting of harvest specifications may result in significant impacts on the groundfish fisheries and environment. The setting of specifications is an annual process that includes a NEPA analysis with each regulatory action. NMFS has released for public review and comment a revised draft PSEIS to address the BSAI and GOA groundfish fishery FMPs (NMFS 2003b) with analysis of several management policies. Future harvest specifications will be used to implement any changes in management policies. Future EAs analyzing the setting of harvest specifications will be tiered from the final version of the PSEIS.

7. **Cumulatively significant effects, including those on target and nontarget species** are described in each section analyzing the impact of the alternatives on the various components of the human environment (Sections 4.1-4.10). Section 4.13 of the Steller sea lion SEIS (NMFS 2001) contains detailed information on cumulative effects of the Steller sea lion protection measures on the human environment. Alternative 4 in the Steller sea lion SEIS is similar to the current groundfish management regime that would be implemented by the process described in each alternative in this EA/RIR/IRFA. No cumulative effects beyond those identified for Alternative 4 in the Steller sea lion SEIS are identified for each alternative in this analysis.

A potential forseeable action is the national interest by NMFS in the use of multi-year harvest specifications. As seen in this analysis, multi year specifications could result in difficulties in managing short-lived target species which may also lead to difficulties in complying with Steller sea lion protection measures. It is unknown if Alaska groundfish fisheries management would be require to use such a method of management.

8. Because this is primarily an administrative process, this action will have no effect on **districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places**, nor cause loss or destruction of significant scientific, cultural, or historical resources. This consideration is not applicable to this action.

9. NEPA required NMFS to determine the degree an action may **affect threatened or endangered species and designated critical habitat** under the ESA. Because fishing practices essentially remain the same under all alternatives, the only ESA listed species that may be adversely affected by the proposed action is Steller sea lions. Alternatives 2 through 5 were found to have insignificant effects on available biomass of prey species based on significance criteria in the PSEIS (NMFS 2003b) and the groundfish analysis in section 4.1. All alternatives may affect the temporal dispersion of harvest of prey species. Each alternative requires the early calendar months of the fishing year to be based on older data. New information becomes available either immediately before the start of the fishing year, as in alternatives 1, 2, and 4 or while the fishery is underway, as in alternatives 3 and 5.   The January through March or June fishery harvest levels could be adjusted through inseason or emergency action, if adverse effects on Steller sea lions are anticipated based on new information showing less biomass. It is unlikely this method of regulatory adjustments can be completed before the beginning of the January fishery.

Alternative 3 may posed some difficulties in executing the fisheries in the framework of the Steller sea lion protective measures because of starting the fishing year at a later date. Steller sea lion protection measures specify beginning and ending dates (June 10) for seasonal allocations for BSAI pollock and Pacific cod trawl in a way which may conflict with beginning a fishing year, July 1. With a later fishing year, the end of the fishing year would be in the January-March time period, which is also a period of major activity in the Pacific cod and pollock fisheries. To the extent authorized under the current Steller sea lion protection measures (68 FR 204, January 2, 2003), the participants in the pollock and Pacific cod fisheries may also alter their fishing practices to “save” their fishing allocation towards the end of the fishing year, when it is most profitable. This may cause localized depletion if not carefully monitored to meet Steller sea lion protection measures.

The Division of Sustainable Fisheries has initiated informal consultation with the Division of Protected resources regarding this action and the potential effects on the western DPS of Steller sea lions and its critical habitat, identifying Alternative 5 as likely to be chosen over the other alternatives. (Salveson 2003).

10. This action poses **no known violation of Federal, State, or local laws or requirements for the protection of the environment**. Section 1.3 describes the legal consideration of tiering this EA off of the PSEIS for the groundfish fisheries (NMFS 1998a). A revised draft PSEIS (NMFS 2003b) for the BSAI and GOA groundfish fisheries FMPs is available for public review in September 2003.

11. This action poses **no effect on the introduction or spread of nonindigenous species** into the BSAI and GOA because it involves the change of an administrative process and not actual fishing practices that may lead to the introduction of nonindigenous species.

5.0 REGULATORY IMPACT REVIEW

5.1 Introduction

This Regulatory Impact Review (RIR) examines the benefits and costs of alternatives to the administrative process used to specify the annual allowable biological catches (ABCs), overfishing limits (OFLs), total allowable catches (TACs), and prohibited species caps (PSCs) for the groundfish fisheries in the Gulf of Alaska (GOA) and the Bering Sea and Aleutian Islands (BSAI).

5.2 What is a Regulatory Impact Review?

This Regulatory Impact Review (RIR) addresses the requirements of Presidential Executive Order (E.O.) 12866 (58 *FR* 51735, October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

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

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

- Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

5.3 Statutory authority

The National Marine Fisheries Service manages the U.S. groundfish fisheries of the Gulf of Alaska (GOA) and the Bering Sea/Aleutian Islands (BSAI) management areas in the Exclusive Economic Zone under the Fishery Management Plans (FMPs) for these areas. The North Pacific Fishery Management Council (Council) prepared the FMPs under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Regulations implement the FMPs at 50 CFR part 679. General regulations that also pertain to U.S. fisheries appear at subpart H of 50 CFR part 600.

5.4 Purpose and need for action

Chapter 1.0 of the EA discusses the purpose and need for this action.

Each December proposed groundfish harvest specifications for the Bering Sea and Aleutian Islands area (BSAI) and Gulf of Alaska (GOA) are published in the Federal Register for the coming year. These proposed specifications, recommended by the Council at its October meeting, list TAC, ABC, OFL, and PSC limits, and apportionments thereof. These proposed specifications are based on Stock Assessment and Fishery Evaluation (SAFE) report biomass and ABC projections for those species which have enough information to allow projections of allowable harvest. For other species, they are based on a rollover of the current year's ABCs.

Final specifications, based on public comment on the proposed specifications and information made available at the December Council meeting, are published in the Federal Register during February or early March. So that fishing may begin January 1, interim regulations are published in the Federal Register in December that authorize the release of one-fourth of each proposed TAC and apportionment thereof, one-fourth of each PSC and apportionment thereof and the first seasonal allowance of pollock, Pacific cod, and Atka mackerel. The interim specifications are superceded by the final specifications when these are published.

This process is problematic for several reasons. The public is notified and given the opportunity to comment on proposed specifications. However, the publication of proposed specifications each year can confuse or mislead the public, because the strict time line that must be met to comply with all relevant regulations makes it necessary to base the proposed specifications on incomplete and outdated information. Neither the proposed specifications, or the interim specifications that are based on the proposed specifications, take into account the recommendations contained in the Groundfish Plan Teams' final SAFE reports, the recommendations coming from public testimony, from the Science and Statistical Committee (SSC), from the Advisory Panel (AP), or from the Council (at its December meeting). Moreover, one fourth of the initial TAC and PSC amounts have been found to be an inadequate amount for those fisheries that attract the greatest amount of effort at the beginning of the fishing year. Under the current process, administrative inefficiency exists in taking the regulatory actions necessary to set interim, proposed and final specifications. For these reasons, NMFS seeks to revise the harvest specification process.

The objectives of the proposed action are summarized in Table 2.1. They are: (1) develop and use best available scientific information, (2) provide adequate opportunity for prior comment to the Secretary on proposed action, (3) provide additional opportunity for Secretarial review of Council recommendations, (4) minimize disruption to fisheries and minimize public confusion, and (5) promote administrative efficiency.

Market failure rationale

U.S. Office of Management and Budget guidelines for analyses under E.O. 12866 state that

> ...in order to establish the need for the proposed action, the analysis should discuss whether the problem constitutes a significant market failure. If the problem does not constitute a market failure, the analysis should provide an alternative demonstration of compelling public need, such as improving governmental processes or addressing distributional concerns. If the proposed action is a result of a statutory or judicial directive, that should be so stated.[23]

The Secretary determines the ABCs, OFLs, and TACs in the groundfish fisheries in the GOA and the BSAI in response to the statutory mandates of the Magnuson-Stevens Act (MSA). The requirements of the MSA in turn represent a management response to the open access and common property rights that prevail in the GOA and BSAI groundfish fisheries. This action does not, however, address a common property problem per se; it does improve government processes.

5.5 The Five Alternatives

Five alternatives (and associated options) were discussed in detail in Section 2.1. While the reader should refer to that section for detailed descriptions of the alternatives, summaries of the alternatives and options are presented here. To make the discussion concrete, the summaries presented here are described in terms of their hypothetical impact on the 2004 specifications[24].

Alternative 1: the Status Quo

Under the status quo alternative, proposed and interim specifications would be published in November or December 2003. The proposed specifications would be based on analysis from the fall of 2001 during the preparation of the 2002 specifications (it is this 2001 analysis that forms the basis for the projections and rollovers used for the proposed 2003 specifications). The interim specifications would be equal to one/fourth of these proposed specifications, or the first seasonal allowances of pollock, Pacific cod, and Atka mackeral. The interim specifications at the start of the fishing year are based on survey data that are 16 months old (in this instance 2003 interim specifications will be based on survey data from August 2001).

[23]Memorandum from Jacob Lew, OMB director, March 22, 2000. "Guidelines to Standardize Measures of Costs and Benefits and the Format of Accounting Statements," Section 1.

[24] This discussion assumes the alternatives are in place. The hypothetical dates in this description of the alternatives do not reflect the transitional process by which the Council would move from the status quo to one of these alternatives.

The final specifications would be based on updated information compared to the proposed specifications. The annual biological surveys for 2003 would be completed in August 2003. These data would be supplied by the Resource Assessment and Conservation Engineering (RACE) Division to the Resource Ecology and Fisheries Management (REFM) division, analyzed by assessment authors, and reviewed by the plan teams. The plan teams would finalize the SAFE reports by late November 2003. These would be used by the Council in its early December meeting as the raw material from which it would construct its own 2004 harvest specifications. Following Council approval, the final rule would be prepared by NMFS, and published in February or March 2004, supplanting the interim regulations.

Alternative 2: One Year Projected Specifications

Under this alternative, the Council would recommend its proposed harvest specifications for 2004 in February, 2003. (This is long before the summer 2003 harvest survey information becomes available. The most recent data available in this instance would be the survey data from summer 2002. The SAFE reports based on this data would become available in January 2003 and would be the input into the Council's February decision.) The Council would make its final decision on the specifications in April 2003.

After the Council's final decision, NMFS would publish its proposed regulations in June or July 2003. After a public comment period, NMFS would publish final harvest specifications by December 1, 2003. December 1, 2003 is the last date on which the regulations could be published if they are to become effective on January 1, 2004, since a 30 day delayed effective period is required before a published final rule becomes effective under the APA.

Alternative 3: New Fishing Year

Under Alternative 3, the assessment authors, the plan teams, the SSC, AP, and Council, would develop specifications under the Alternative 1 schedule. RACE would provide survey data in September or October, 2003, the assessment authors would report to the Council's plan teams in November, 2003, and the SSC, AP and Council would meet in early December, 2003. The Council would make its specifications recommendations in December, 2003. NMFS would then begin preparation of proposed specifications for publication in January or February, 2004. Final regulations would be published in May or June, 2004. The new fishing year would begin on July 1, 2004.

This would differ from Alternative 1 in several ways. Most notably, the fishing year would begin on July 1 instead of January 1. There would be no interim specifications. The proposed specifications would be published in January or February, 2004, instead of October 2003.

Alternative 3 has two options. One option would set sablefish TAC on a January through December schedule. This option would allow the sablefish IFQ program to be managed concurrently with the halibut IFQ program. A second option would move the December Council meeting to January to provide stock assessment scientists additional time to analyze data and produce reports.

Alternative 4: Two year projected specifications

These proposed specifications would be in effect for 2004 and 2005. There would be no specifications setting process in 2004. However, during 2005 a specifications process would produce rules for the period 2006 and 2007.

Under this alternative, the annual survey data would be compiled in the summer of 2002. The plan teams would receive it in September 2002 and begin to prepare the SAFE reports. Preliminary SAFE reports would become available to the Council in January 2003, and the Council would prepare proposed harvest specifications for 2004 and 2005 in February 2003. Final SAFE reports would be prepared for the April meeting and the Council would produce its final specifications for 2004 and 2005 at that meeting. NMFS would then publish the proposed specifications in June or July 2003 and publish a final rule no later than December 1, 2003. The proposed specifications would take effect on January 1, 2004.

Alternative 5: 18 month projected specifications

Under Alternative 5, specifications would authorize fishing for 18 months at a time. Thus, the specifications that governed harvests in 2003 would also cover the first six months of 2004. NMFS would adopt 2004 specifications within the first six months of 2004, and these would supercede the earlier set of specifications before the end of their effective date.

For 2004, NMFS would prepare the notice of proposed specifications after the October 2003 Council meeting, based upon the best scientific information then available and in consideration of the Council's October recommendations. NMFS would publish this notice of proposed specifications in the Federal Register as soon as practicable after the October Council meeting and solicit public comment for 30 days.

Following the public comment period, and after consideration of the recommendations made by the Council at its December 2003 meeting and of any new information that has become available after the publication of the notice of proposed specifications, NMFS would have two options. It could publish a notice of final specifications in the Federal Register. Alternatively, if the notice of proposed specifications (from October 2003) was found to have been inadequate to afford the public a meaningful opportunity to comment on the issues involved (for example, if the final specifications diverge significantly from the notice of proposed specifications), the Council could begin a second cycle of rulemaking to implement the harvest specifications. In the event a second cycle of rulemaking is necessary, NMFS could either (1) publish a second notice of proposed specifications in the Federal Register and solicit public comment, or (2) waive the requirement for notice and comment for "good cause" pursuant to the APA and directly publish final specifications with a post-effectiveness public comment period of 15 to 30 days.

It is unlikely, under either of the alternative paths open to NMFS after the December 2003 meeting, that 2004 specifications could be in place by January 1, 2004. However the preceding year's specifications, covering 2003 and the first half of 2004, would still be in place and would remain in place until superceded by the new specifications.

An option under Alternative 5 would provide a method of ensuring that sablefish fishery specifications do not change during the fishing year. Under this option, harvest specifications would include sablefish specifications for all of year 2 (as opposed to the first six months of year 2). This option would ensure that the management of sablefish would be parallel to the halibut fishery and that quotas would not have to be recalculated during the calendar year.

Options A, B, and C

There are three options that could be adopted with any of the five alternatives (except that Option C is already incorporated into Alternative 4).

Under Option A, NMFS would no longer set aside nonspecified TAC reserves in the BSAI and would no longer set aside TAC for GOA reserves. CDQ reserves would be established as a set allocation of the total TAC. This option is independent of the five alternatives or their options, and may be adopted or not adopted with any of them.

Option B would update language in certain sections of the BSAI and GOA FMPs to remove references to foreign fishing and allocates foreign fishing, and to update the description of the harvest specification process for the Plan Teams regarding PSC limits apportionments, and allocations. This option will remove obsolete references to foreign fishing in the Introduction, Goals and Objectives, Stock and Area Description, and Management Measures sections of the FMPs. The name of the BSAI FMP will also be revised to make it more concise and consistent with the GOA FMP title. This option is a housekeeping option and is independent of the five alternatives or their options, and may be adopted or not adopted with any of them.

Option C would set harvest specifications for some GOA species/complexes on a biennial basis. The species/complexes would be limited to long-lived species and Atka mackerel, which biomass information is not available. This option is independent of the alternatives 1, 2, 3, and 5 or their options, and may be adopted or not adopted with any of them. Alternative 4 would set all harvest specifications on a biennial basis so that this option is not considered with alternative 4.

5.6 Description of the groundfish fishery

Detailed descriptions of the social and economic backgrounds of the groundfish fisheries may be found in the following reports:

Alaska Groundfish Fisheries. Revised Draft Programmatic Supplemental Environmental Impact Statement (NMFS, 2003b). This report contains detailed fishery descriptions and statistics in a section on “Social and Economic Conditions,” and in an appendix on, “Sector and Regional Profiles of the North Pacific Groundfish Fisheries.”

“Economic Status of the Groundfish Fisheries off Alaska, 2001" (NMFS, 2003a, Appendix D), also known as the “2002 Economic SAFE Report.” This document is produced by NMFS and updated annually. The 2002 edition contains 49 historical tables summarizing a wide range of fishery information through the year 2001.

In 2001, the most recent year covered by the Groundfish Economic SAFE report, the fishing fleets off Alaska produced an estimated $542.8 million in ex-vessel gross revenues from the groundfish resources of the Bering Sea and Gulf of Alaska. In 2001, groundfish accounted for just over half of the $974.2

million in ex-vessel gross revenues generated off of Alaska by all fisheries. (NMFS, 2003a, Appendix D, Tables 2.2 and 2.3).

The two most economically important groundfish species were pollock and Pacific cod. Pollock catches generated estimated ex-vessel revenues of $295.2 million and accounted for 54 percent of all ex-vessel revenues.[25] Pacific cod was the next most significant groundfish species, measured by the size of gross revenues. Pacific cod generated an estimated $124.7 million in ex-vessel gross revenues and accounted for about 23% of all groundfish gross revenues. (NMFS, 2003a, Appendix D, Table 21.)

Other groundfish species were economically important as well. These included sablefish ($62.7 million in estimated ex-vessel gross revenues), flatfishes (as a group of species generated $31.4 million in estimated ex-vessel gross revenues), rockfishes (as a group generated $7.9 million), and Atka mackerel generating $21.1 million. (NMFS, 2003a, Appendix D, Table 21.)

At the first wholesale level, the gross revenue generated by the groundfish fisheries off of Alaska were estimated to be in excess of $1.39 billion. Over half of this, $664.7 million, came from catcher/processors and motherships operating in the BSAI. Another $432.6 million came from shoreside processors operating in the BSAI, and $90.6 million came from motherships in the BSAI.. In the GOA, $26.9 million was generated by catcher/processors and $176.9 million was generated by shoreside processors. (NMFS 2003a, Appendix D, Table 23).

5.7 Introduction to cost and benefit analysis

The stocks of groundfish in the waters off of Alaska are a capital asset belonging to the people of the United States. Each year these stocks provide different types of “income” to the people of the United States; this income includes the net revenues generated by the commercial fisheries, annual net benefits to sport, subsistence, and personal use fishermen off Alaska, and the value of the set of ecological services (for example, Steller sea lion prey) that the fish stocks provide each year. The annual income through time associated with the resource stock has an associated present value.[26] Different management decisions by the Council and the Secretary of Commerce will produce different time paths for the groundfish stocks, and these will have different associated present values.

The alternatives considered in this EA/RIR/IRFA will have varying impacts on decision making by the Council and the Secretary. They will affect the quality of the scientific information available, the

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[25]As noted below, a large proportion of pollock is taken by catcher processors and ex-vessel prices are not generated. Ex-vessel prices have been inferred for these operations.

[26]The benefits and costs from alternative courses of action are often felt at different points in time. One alternative may have somewhat lower net benefits, but may produce them sooner, while another alternative may have larger net benefits but at a later date. Present value analysis is necessary to make benefits and costs at different times comparable. Economists typically discount sums of income received in future years in order to convert them to present value equivalents. This is necessary since current income usually is considered more valuable than income in the future. After all, $100 dollars received now could be invested, perhaps at 5% a year, and be worth $105 a year from now. Discounting adjusts these sums into equivalents. For example, in the case just discussed, $105 a year from now might be worth ($105/1.05) = $100 now. That is, $100 invested at 5% now would be worth $100*1.05 = $105 a year from now.

opportunities and the value of the public input received through the Council and mandated notice and comment processes, and the amount of time available to decision makers to review this information. The impacts on the decision making process may affect the quality of those decisions, and through this means, may produce changes in the present value of the groundfish stocks, when compared to the baseline present value. These changes in present value are the appropriate conceptual measure for the benefits flowing from the different alternatives.

It is impossible to do a monetary benefit-cost analysis based on this conceptual scheme. The state of the available biological and economic knowledge does not permit it. On the economic side alone, we do not have the cost information, the models of operational behavior, or the demand studies that would allow us to estimate net returns and changes in net returns. Moreover, and extremely importantly, this is an action to change the institutional context within which responsible persons (assessment authors, Council Plan Teams, SSC and AP committees, the Council, and the Secretary of Commerce) will make future decisions. The decisions these persons may make are free acts - not known to us at this time. The benefits or costs of the action will depend crucially on these decisions and cannot therefore be determined. For these reasons, this RIR focuses its attention on a set of outcomes from this action that may affect the benefits and costs. In some cases it has been possible to indicate quantitative and monetary dimensions of these outcomes. These are reported where available.

This RIR reviews the outcomes of the alternatives under three general headings. First, some of the benefits and costs will flow from changes in the process by which the specifications are determined. For example, alternatives differ in the scope they provide for APA mandated rulemaking notice and comment. These procedural effects are discussed in Section 5.8, on “Impacts on the harvest specifications process.” Second, Alternative 3 changes the fishing year. This alternative may impose costs and benefits by producing changes in fishing patterns. These potential impacts are discussed in Section 5.9, on “Change in fishing year under Alternative 3.” Third, some of the alternatives may have implications for future harvests and stock sizes. A discussion of the reasons for this, a description of two modeling exercises meant to see if the potential impact is practically significant, and a discussion of the benefits and costs, may be found in Section 5.10, on “Changes in harvests and biomass under Alternatives 2, 3, 4, and 5.”

5.8 Impacts on the harvest specification process

The current harvest specifications process is described in Section 1.2 of this EA/RIR/IRFA. An additional description can be found in Chapter 2 of the Alaska Groundfish Fisheries Revised Draft Programmatic Supplemental Environmental Impact Statement.[27] (NMFS 2003b)

Alternatives 2, 3, 4, and 5 would alter the process by which the harvest specifications are developed and implemented in ways that may affect the transparency of the process, the opportunities for public input, and the quality of the analysis and decision making. These different elements are discussed below under the following headings: (1) opportunities for scientific analysis; (2) opportunities for public notice and comment; (3) environment for decision-making; (4) cost changes associated with these opportunities; (5) increased forecast uncertainty; (6) private sector planning horizons.

[27] Available on the Internet at the following URL: http://www.fakr.noaa.gov/sustainablefisheries/seis/intro.htm

Opportunities for scientific analysis

For the purposes of this discussion, the annual analytical process behind the specifications is assumed to start when the data from the annual summer biomass surveys conducted and reported by the NMFS Alaska Fisheries Science Center's RACE Division are delivered to the Center's REFM Division for analysis. The surveys are assumed to be completed in August, with data delivery in September or October, under each of these five alternatives.

The annual process formally ends with publication of the final harvest specifications in the Federal Register. However, for the purpose of this discussion of the scientific analysis, the practical end is assumed to take place when the Council makes its final recommendations for specifications (additional analysis past this point - for example public review and comment or the preparation of the Final Regulatory Flexibility Analysis (FRFA) - is treated here implicitly as a part of the Secretarial decision-making and rulemaking process).

Figure 5.8-1 illustrates the changes in time available for analysis under the different alternatives. The analytical process takes the same amount of time under Alternatives 1, 3, and 5 (although, Option 2 to Alternative 3 would provide one additional month compared to Alternatives 1 and 5). Four additional months are available under Alternatives 2 and 4 .

Figure 5.8-1 Period from summer survey to final Council action under each alternative

<table>
<tr><th>Alt.</th><th>Aug.</th><th>Sep.</th><th>Oct.</th><th>Nov.</th><th>Dec.</th><th>Jan.</th><th>Feb.</th><th>Mar.</th><th>Apr.</th></tr>
<tr><td>1 and 5

(Status quo and 18 month projected specifica-tions)</td><td>Summer survey</td><td>Survey data starts to become availabl e.Prelim inary Plan Team Meeting.</td><td>Survey data available; ; Draft EA/ IRFA; Council's proposed specs. Prelim. SAFE</td><td>Final Plan team meeting</td><td>Final SAFE; Draft EA/RIR/ IRFA; Council's final specs.</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">2

(One year projected specifica-tions)</td><td rowspan="2">Summer survey</td><td colspan="4" rowspan="2">Survey data starts to become available in September. Data analysis and model review</td><td rowspan="2">Plan Team Meeting. Prelim. SAFE; Draft EA/RIR/ IRFA</td><td>Council's proposed specs.</td><td>Plan Team Meeting</td><td rowspan="2">Final SAFE; Council's final specs.</td></tr>
<tr><td colspan="2">Revisions to EA/RIR/IRFA</td></tr>
<tr><td>3

(New fishing year)</td><td>Summer survey</td><td>Survey data starts to become available .Prelimi nary Plan Team Meeting.</td><td>Survey data available; Prelim. SAFE; Draft EA/IRFA; Council's proposed specs.</td><td>Final Plan team meeting</td><td>Final SAFE; Draft EA/RIR/ IRFA; Council final specs.</td><td>Option 2: Final SAFE; Draft EA/RIR/ IRFA; Council final specs.</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">4

(Two year projected specifica-tions)</td><td rowspan="2">Summer survey</td><td colspan="4" rowspan="2">Survey data starts to become available in September. Data analysis and model review</td><td rowspan="2">Plan Team meeting. Prelim. SAFE; Draft EA/RIR/ IRFA</td><td>Council's proposed specs.</td><td>Plan Team Meeting</td><td rowspan="2">Final SAFE; Council's final specs.</td></tr>
<tr><td colspan="2">Revisions to EA/RIR/IRFA</td></tr>
<tr><td colspan="10">Notes: Based on Tables 2.2 and 2.3, and the description of Alternative 3 in this EA/RIR/IRFA.</td></tr>
</table>

It is assumed that the RACE survey data will continue to be delivered in the early fall. Currently the RACE Division releases final biological survey data in this time frame. When released, the RACE data typically have gone through the normal editing/checking process, and are generally close to the final survey data and will remain the same for many years. Alternatives 2, 4, and (to some extent) Option 2 to Alternative 3 would provide RACE some flexibility to provide the data sets at a later point in time if that were necessary, and may provide some benefits compared to Alternatives 1, 3 and 5. However, because RACE is currently able to provide carefully audited data in a timely manner, these benefits are assumed to be small.

Under Alternative 1, (the status quo), Alternative 3 and Alternative 5, stock assessment analysts in the Alaska Fishery Science Center's REFM Division use the RACE data to prepare the SAFE reports updating biological models with the latest survey data, and providing recommendations on appropriate ABC and OFL levels for the individual stocks. The preparation of these reports needs to be done quickly, since the survey data may only become available in September or October, and the stock assessment reports must be completed for the Council's Plan Team November meetings.

The Council's Plan Teams peer review these reports in November. These teams also make ABC and OFL recommendations to the Council for its December meeting. Additional scientific peer review is done at the Council meeting by the Council's SSC. Peer review at the November plan team meeting and the December SSC meeting may be constrained to some extent by the short lead time with which the stock assessment analyst's reports are delivered.

Under Alternatives 2, 4, and Option 2 to Alternative 3, more time is available for the analysts to use in conducting their analyses, preparing the SAFE reports, and for review by the members of the Council's groundfish plan teams prior to their meetings. This may permit more careful analysis and more detailed peer review. The advantages for SSC peer review may be somewhat less since the SSC currently receives the SAFE analyses several weeks in advance of their meetings. Nevertheless, there may be some advantage for this part of the peer review process as well.

Environmental and socio-economic analysis of the specifications are called for under different statutes and executive orders. The National Environmental Policy Act (NEPA) calls for evaluation of the impacts of the specifications on the human environment. This includes the impacts on nature and on the human activities that are affected by the natural impacts. The Magnuson-Stevens Act has several national standards that address the socio-economic considerations. The Regulatory Flexibility Act calls for an evaluation of the impact of the specifications on small entities. These acts require a review of a set of alternatives.

Two aspects of Alternative 1 (the status quo) make these analyses difficult to complete in a timely manner, and limit their usefulness. First the proposed specifications may be weakly related to the final specifications. The proposed specifications for a new year are based on an analysis conducted the prior year when the current year's specifications were set. They do not account for new information obtained from biomass surveys and observers during the past year. The final specifications take this information into account. As noted in Section 1.3 of this EA/RIR/IRFA, there can often be differences between these two sets of specifications. Environmental and socio-economic analysis prepared for the Council's October meeting and for the publication of the proposed rule, will not address the specifications that may actually be adopted, and would be of limited usefulness. Time constraints make it difficult to integrate NEPA and the other required analyses earlier into the decision making process. The agency is currently investigating methods for regulatory streamlining. Efforts to incorporate NEPA analyses into earlier stages of decision making are an important component of regulatory streamlining.

Second, the time period between the Council plan team's ABC and OFL recommendations and the Council's December decision-making meeting is very short. The formal delivery of the plan teams' recommendations to the Council for distribution to the SSC, the AP, and its membership, takes place almost immediately after the plan teams' meetings, but this only leaves the Council, SSC and AP about two weeks to review these documents. This short time frame makes detailed analysis extremely difficult and does not allow additional time for analysis of data that may be unusual.

Alternative 3 does not address this issue in a meaningful way and does not provide benefits over Alternative 1. Under Alternative 3, analysis would need to be completed by the December Council meeting. There would be no additional time to produce a socio-economic analysis following the November plan team meetings. Option 2 to Alternative 3 does provide an additional month for the Plan Teams to prepare their SAFE reports, providing more analytical benefit than Alternative 1 but less than Alternatives 2 and 4.

Alternatives 2 and 4 lengthen the time available for analyses considerably. If the plan team meetings change to January, there would be at least an additional month to complete the individual stock assessments for the preliminary SAFE reports. Moreover, the documents prepared at this time would better reflect specifications alternatives which would actually underlie the decision-making process of the Council in February and April.

Alternative 5 makes it possible to prepare a new proposed rule and redo the notice and comment process if the Council's December recommendations are substantively different from the proposed specifications recommended in October. Thus environmental, social, and economic analyses that accompany the proposed specifications that will underlay the final specifications can address the issues raised by a set of proposed specifications that will be meaningfully related to the final specifications.

Opportunities for public notice and comment

The five alternatives may affect the opportunities for notice and comment in two ways. First, the alternatives have different implications for the quality of the information provided to the public and on which they may comment. Second, the alternatives affect the time and opportunities for public input into the decision-making process. Alternatives 2, 4, and 5 provide the best opportunities for notice and comment on meaningful specifications, followed by Alternative 3, and then Alternative 1.

Under Alternative 1, proposed specifications for a year, published following the October Council meeting, and prior to the preparation of the plan team SAFE reports, are based on an analysis conducted the prior year, in order to set the specifications for the current year. For example, the analysis underlying the 2002 specifications provides the proposed specifications for 2003. Final regulations are published in late February or March, following the recommendations by the plan teams and the Council in December. However, as detailed in Section 1.3, the final regulations are not based on the same annual stock survey data as the proposed regulations. This means that the public comment period that follows the publication of the proposed specifications (and the associated IRFA) provides little or no actual opportunity to comment on these regulations. Moreover, as noted above, the time constraints and limited information available before the publication of the proposed specifications mean that it is very difficult for analysts to prepare useful environmental or socio-economic analyses of the proposed specifications, or of the final recommendations from the November Plan Team meetings, for the Council to use for its decision-making in December.

Alternatives 2 and 4 provide improved opportunities for public comment during the decision making process. Under these alternatives, more time will be available for the preparation of the SAFE reports and associated environmental and socio-economic analyses. While final SAFE reports are now due in November, the preliminary SAFE reports and associated draft analyses would become available in January under these alternatives. These preliminary documents would be available before the SSC, the AP, and the Council take up the proposed specifications in February. Opportunities would exist for the

Council to require revision of these documents before release to the public. The public should have opportunities to review these documents before scheduled final action by the Council in the April meeting. The proposed specifications, published in the Federal Register following the Council's April meeting would reflect mature consideration by the Council about what it wanted to adopt and associated analyses should be of a high quality. A public notice and comment period would be provided on harvest specifications that reflect the Council's recommendations for final harvest specifications.

Alternative 3 falls between Alternatives 2 and 4, and Alternative 1. Under Alternative 3, the proposed specifications would be adopted by the Council at its December meeting following an analysis of survey data similar to that under Alternative 1. NMFS would be able to publish the proposed specifications in January or February, allowing public comment on proposed specifications directly related to the final specifications. Publication of final specifications would be expected in May or June.
Option 2 to Alternative 3 would postpone the December Council meeting, and Council recommendations of specifications, from December to January. Since the Plan Team meetings would still take place in November, this would increase the time between the Plan Team meetings and the Council meeting by one month. The Plan Team meetings are public meetings and are attended by members of the public and representatives of industry and environmental groups. The one month delay in the Council meeting will therefore give these interested persons an additional month for informal consideration of information used by the Plan Teams to develop the SAFE reports.

Alternative 5 provides improved opportunities for public comment similar to those under Alternatives 2 and 4. Alternative 5 makes it possible to prepare a new proposed rule and redo the notice and comment process if the Council's December recommendations are substantively different from the proposed specifications recommended in October. Thus the public would be able to comment on a set of proposed specifications that will be meaningfully related to the final specifications.

Environment for decision-making

The five alternatives may affect the environment for decision-making in two ways. First, as they change the opportunities for analysis and notice and comment, they may change the quality of the information available to decision makers. The improved notice and comment opportunities under alternatives 2, 4, and 5, should ensure that decision-makers receive full input from interested and knowledgeable stakeholders and provide additional opportunity for the provision of new scientific information, and review of information already provided.

Second, the alternatives affect the opportunities for decision makers to consider the available options. Alternative 1 (status quo) does not increase the available time. Alternatives 2 and 4 provide more time. Under Alternatives 2 and 4, the Council will review realistic specifications alternatives in February and April. The Secretary will receive the Council's recommendations following the April meeting and will have time for mature consideration during a complete notice and comment process. Alternative 3 provides additional time for notice and comment, but not as much as Alternatives 2 and 4. Option 2 to Alternative 3 would reduce the amount of time for rule making by one month, by shifting the time into the analysis part of the process. Less time would be available to consider comments before the specifications are final. Alternative 3 requires a final rule in May or June, while Alternatives 2 and 4 do not require the final rule until the end of November. Alternative 5 may provide additional time, because the first six months of the new year would be covered by the existing specifications. It seems likely, however, that managers would be anxious to implement the new year's specifications as soon as possible to supercede the existing specifications. If a new round of proposed and final rulemaking was initiated, this would take up the additional time. For these reasons, Alternative 5 does not clearly provide additional time (compared to Alternative 1) for decision making.

Alternatives 2 and 4 offer some prospect of taking account of biomass surveys in the year before the specifications year. Technically, for the fishing year 2004, these alternatives would involve specifications based on the biomass surveys in 2002. The year 2003 would be spent on Council deliberations and rulemaking for the 2004 specifications. However, the 2003 summer survey information should become available in September or October 2003. This information could become available before the October Council meeting, and would become available before the final specifications had to be published. If the Council chose to respond to this new information by making substantive changes to the specifications, these changes would require regulatory action. Under NMFS policy, an emergency rule may be used to adjust TAC if there is a potential for overfishing or for an economic emergency (62 FR 4421, August 21, 1997). Use of an emergency rule for adjustments is more likely for purposes of stock conservation than for other reasons because of statutory responsibilities to protect fish stocks. NMFS may also do an inseason adjustment of TAC limits based on new biological information that indicates that the current TAC is wrong (50 CFR 679.25(a)(2)(i)(B)).

Because Alternative 3 adjusts the fishing year to July through June, there is the potential for new information to become available during the fishing year (in October) that may lead to a mid year adjustment in harvest specifications for the January through June time period. The change would need to be significant enough to justify an emergency action under the Magnuson-Stevens Act or an inseason action could be taken to adjust TAC.

Additional regulatory action would take analytical resources, occupy the Council at its October and December meetings, and impose a new rulemaking responsibility on NMFS Sustainable Fisheries. The costs associated with this activity would offset some gains from the longer rulemaking lead time. Furthermore, additional regulatory action would offset some of the gains obtained from greater opportunities for notice and comment. It is possible that the annual opportunity to revise specifications that are too high for biological reasons would impose a responsibility on the REFM and RACE scientists at the Alaska Fisheries Science Center to review the current year survey data faster and more carefully than contemplated under Alternatives 2 through 4. This would increase the analytical burden.

Administrative cost changes associated with these opportunities

To some extent, Option 2 to Alternative 3 provides additional time for completion of survey analysis and data modeling. Either the existing analysis would be stretched over this additional period, without the application of additional person-hours to complete the analysis, or advantage would be taken of the additional time to do increased data analysis. If additional person-hours are used, the cost of completing the analysis will be higher than otherwise.

There are administrative costs associated with Option 2 to Alternative 3. The Council schedules its meetings up to three years in advance. Changing the December Council meeting to January would require rescheduling meeting facilities and meeting participants. Some meeting locations could be changed, possibly resulting in loss of deposits on cancelled reservations. The Council may also choose to maintain at least two months between Council meetings, which would require rescheduling February, April and June meetings to March, May and July, compounding the problem of rescheduling meetings over a three year period.   The International Pacific Halibut Commission also meets in January. At least one member of the Council is also a member of the IPHC, and Council meeting attendees may also need to attend the IPHC meeting.

The impact of Alternative 5 is not clear cut. The requirements for interim specifications are eliminated under Alternative 5. This would produce some administrative savings within NMFS. On the other hand, Alternative 5 leaves open the possibility of reopening a second round of proposed and final rulemaking if the Council's December recommendations differ considerably from its October recommendations. This would be associated with somewhat higher administrative costs. The potential need for in-season management actions during the first six months of the year would also increase potential costs.

Increased forecast uncertainty

Under Alternatives 2, 3 and 4, the time period between receipt of the most recent survey data and the specifications year will be increased. The time period is not increased under Alternative 5, unless a second proposed rule is required (If a second proposed rule is required, the lag time between the data and the specifications based on that data will approximate the lag under Alternative 3).   Assuming that the most recent data is the best available data, this increases the uncertainty of biomass forecasts for the specifications year. The increase in the time period will be least for Alternative 3 (about six months), somewhat greater for Alternative 2 (9 months), and greatest of all for the two year projections under Alternative 4 (9-21 months). This increased forecast uncertainty may have important implications for annual harvest and biomass levels, particularly under Alternatives 2 and 4. However, note that under Alternatives 2 and 4, the prospect of taking additional regulatory action late in the year while the final harvest specifications are actually published may reduce this source of uncertainty. These are discussed in detail below in Section 5.9.

Private sector planning horizons

Table 5.8-2 illustrates the planning horizons available to entities affected by the specifications process under the different alternatives. These entities include the fishing firms harvesting the quotas, processors to whom they deliver, coastal governments depending on a share of State of Alaska raw fish tax revenues, CDQ groups and communities harvesting CDQ allocations, AFA harvesting co-ops, and other entities. Alternatives 1 and 5 would provide the shortest planning horizons available to these entities. Under Alternatives 1 and 5, the Council would determine its final specifications in early December, and the fishing year would begin in the following January.

Alternative 3 would extend this planning horizon somewhat. The Council would recommend its final specifications in December, as under Alternative 1, but the fishing year would not begin until the following July. Affected entities would have six months in which to plan. Option 2 to Alternative 3 would reduce this planning period by one month. Alternatives 2 and 4 would extend the planning period considerably. Under Alternative 2, the Council would recommend its final specifications in April for a fishing year beginning the following January. The planning horizon is extended to eight to nine months. Under Alternative 4, the planning horizon for the first year is eight to nine months, while the planning horizon for the second is 20 to 21 months.

Table 5.8-2 Number of months between final Council action and start of the fishing year

Alternative	Month of final Council action	Start of fishing year	Months difference
1	December	January	less than one*
2	April	January	almost nine
3	December	July	seven
3, Option 2	January	July	six
4	April	January	Depends on year, almost nine for first year, almost 21 for second year
5	December	January	less than one**

* Even though the fishing year begins in January, the first 3 months of the year are managed using interim specifications based on the previous year's TACs. In reality, the management of the fishing year based on the Council's recommendations does not occur until the final regulations are effective in late February or March.
** Even though the fishing year begins in January, the first 3 to 6 months of the year are managed using the last portion of the 18 month harvest specifications established in the previous year. The management of the fishing year based on the Council's final recommendation does not occur until the final specifications are effective in March if only one proposed rule can be used, or June if two proposed rules were used.

Longer planning horizons could be a benefit to many entities. For example, Alternatives 2, 3, and 4 may be an improvement over the no-action alternative because final annual American Fisheries Act (AFA) co-op allocations or CDQ allocations could be established prior to the start of the fishing year. Co-op or CDQ group members would have greater certainty that pollock quota leased prior to the start of the fishing year would actually represent quota that could be harvested during the fishing year. As a general rule, greater advance notice of final TAC amounts will result in greater efficiency in the cooperative markets in pollock quota. Alternative 4 would have similar effects.

One factor that may limit the benefits to these entities is the potential willingness of the Council and the Secretary to intervene late in the process or even during the fishing year given new information under Alternatives 2 through 4. This possibility was discussed above. If this became a common practice, it would offset some of this enhanced planning capability

5.9 Changes in fishing year under Alternative 3

Changes in starting dates for groundfish fishing year

A hypothetical example is used here to review the details of Alternative 3. Under Alternative 3, survey data would be received from the RACE Division in September or October of a year such as 2005. Assessment authors would work with these results and generate assessment reports for review in Council plan team meetings in November 2005. In early December 2005, the plan team reports would be reviewed by the SSC, AP and the Council at the Council meeting and the Council would prepare its preferred specifications alternative.

The Alternative 1 and Alternative 3 approaches will already have diverged by this point. Under Alternative 1, NMFS would have published proposed specifications in October. By January 2006, NMFS would also have published interim specifications allowing fishermen to harvest one-fourth of, or the first seasonal allowance of, the proposed specifications. However, under Alternative 3, none of this would have happened.

Under Alternative 3, NMFS would publish proposed specifications following the December 2005 Council meeting (rather than in October) and a set of final harvest specifications in May or June 2006. These final specifications would be effective on July 1, 2006. There would be no interim specifications under Alternative 3. Option 2 to Alternative 3 would require the Council to postpone its December meeting until January, and to make its specifications recommendation actions then.

Alternative 3 has advantages over Alternative 1. It avoids the interim specifications, it permits proposed specifications that are based on assessment author, plan team, SSC, AP and Council decision-making for the coming year, and it provides improved opportunities for notice and comment. However, it does create problems that are unique to it (among the alternatives).

Under Alternatives 1, 2, 4, and 5 the fishing year will begin on January 1 and end on December 31. However, Alternative 3 changes the date on which the fishing year begins; Alternative 3 will begin the fishing year on July1, and end it on June 30. The difference between Alternatives 1, 2, 4 and 5 and Alternative 3 is shown below in Table 5.9-1.

Table 5.9-1 Comparison of fishing years under Alternatives 1, 2, 4, and 5, Alternative 3, and halibut/sablefish IFQ season (in 2006 and 2007).

Al t.	Jan '06						Jul '06						Jan '07					June '07
1,2,4, 5																		
3																		
IFQ																		

Notes: Uniformaly shaded areas show fishing years under the alternatives. Variable shading shows halibut and sablefish IFQ seasons.

This may have important implications. Under Alternatives 1, 2, 4, and 5 the fishing year corresponds to the calendar year. Within the calender year there are actually many different fishing seasons for different groundfish species. However, under these alternatives, none of these seasons (or their associated allowable harvests) fall within two fishing years. Under Alternative 3, the fishing year begins in the middle of the calendar year and overlaps existing fishing seasons. The potential effects of the seasonal overlaps are further explained below in this section.

Fishing seasons and the fishing year

If current fishing seasons, and the TAC allocations between the seasons, naturally match the new fishing year, or can be made to match the new year, there may be little problem. Table 5.9-2 discusses the seasons for the most important directed groundfish fisheries in the BSAI and discusses the implications for the proposed July-June fishing year, while Table 5.9-3 does so for the GOA.

Table 5.9-2 Timing of directed fishing seasons for major BSAI groundfish stocks with respect to a July-June fishing year

Species	Seasons
Pollock	Currently (2003) there is a fishery in the EBS. Steller sea lion measures constrain the fishery to an "A"/"B" 40/60 TAC split. The "A" season ends, and the "B" season begins on June 10. Active "B" season pollock fishing begins on June 10 and lasts through October creating a conflict with a fishing year that begins on July 1. However, until recently the "B" season began at the end of July or in August. The June 10 starting date is a recent innovation associated with Steller sea lion protection measures. Limited portions of the TAC have been taken in June in recent years (6% in 2003). In years of high TAC, there may be difficulties with harvesting the full B season apportionment before the end of October, otherwise a change to July 1 may not impose a serious burden on the fishermen.
Pacific cod	This TAC is divided among gear types with seasonal apportionments that vary by gear segment. The "A" season ends for most of these fisheries on June 10, but the harvests will generally have been completed in April. "B" seasons for trawl catcher vessels, and trawl catcher/processors begin on April 1, while "C" seasons for trawl vessels begin on June 10. The "B" season for pot gear vessels begins on September 1 and therefore creates no conflicts with a July-June fishing year. However, "B" seasons for hook-and-line catcher/processors and catcher vessels begin on June 10. While these seasons and seasonal TAC allocations overlap the proposed fishing year start date, halibut PSC limits constrain the hook-and-line fishery so that no fishing takes place around July 1. Halibut PSC releases occur on January 1, June 10, and August 15. The January release is normally used by June 10 (if not used (as in 2003) this is rolled over to the August 15 allocation, skipping the second season). Currently, no halibut are actually released on June 10, so no fishing takes place. The next actual halibut release takes place on August 15, and that is when fishing resumes. Moreover, while trawl fishermen could fish in late June and early July, they do not to any great extent (only 3% of the 2003 TAC was taken in this period). A July 1 fishing year may thus not impose serious costs. The seasons for pot CDQ fishermen and for small boat fixed gear are continuous through the year. The allocation of the CDQ share of the TAC among the CDQ groups is similar to the operation of an IFQ program. As discussed earlier, the choices these groups make about when to harvest their allocations should not be affected by the start date for the fishing year. The case is not clear with respect to small boat fixed gear operations.
Sablefish	This fishery is managed under IFQs. The fishing season opens March 1 closes in mid-November. The July-June fishing year may impose important costs on this fishery due to the need for a long no-fishing period between fishing years and to the convenience of having this no-fishing period in the winter months. The option to Alternative 3 would eliminate these potential costs. This issue is discussed at length in Section 4.9 of this EA/RIR/IRFA, and also below in this section.
Atka mackerel	This BSAI TAC has an A/B seasonal apportionment with a 50/50 split. The first season runs from January 20 to April 15, and the second season runs from September 1 to November 1. The proposed fishing year should not affect the management of this fishery directly. The CDQ fishery is not subject to the seasonal allotments; fishing can take place continuously all year long. However, the allocation of the CDQ share of the TAC among the CDQ groups is similar to the operation of an IFQ program. As discussed earlier, the choices these groups make about when to harvest their allocations should not be affected by the start date for the fishing year.
Yellowfin sole	This fishery is driven by halibut PSC. These are allocated to the fishery in four increments during the year. The fourth increment is due for release on July 1. Because of this, the proposed fishing year should not affect the management of this fishery directly.

Species	Seasons
Greenland turbot	This fishery opens May 1 for hook and line gear. There are no seasonal allocations. It may close due to harvest of TAC or PSC. The open season may continue through July 1, so a change in the fishing year may create a problem.
Flatfish (rock sole, flathead sole, other flatfish, Alaska plaice)	Openings and closings in these fisheries are driven by halibut PSC. These are allocated to the fishery in three increments during the year. The third increment is due around July 1. Because of this, the proposed fishing year should not affect the management of this fishery directly.
Pacific ocean perch	This fishery opens around July 1. Closings in this fishery are driven by harvest of TAC. The fishery is open continuously until one of these conditions is met, but the condition is usually met within a month. Because of the opening date, the proposed fishing year should not affect the management of this fishery directly.

Table 5.9-3 Timing of directed fishing seasons for major GOA groundfish stocks with respect to a July-June fishing year

Species	Seasons
Pollock	“A” and “B” seasons run from January to the end of May,“C” and “D” seasons run from late August to the start of November. Each season receives a separate TAC apportionment. Because this fishery has four seasons (with separate TACs), and because the proposed July 1 opening date falls between two of these seasons, the proposed fishing year should not affect the management of this fishery directly.
Pacific cod	An “A” season runs from January to June 10, while a “B” season runs from September 1 to the end of December (closing in early November for trawl gear). The “A” season receives 60% of the TAC, while the “B” season receives 40% of the TAC. The Pacific cod fisheries would normally close well before June, either because the “A” season TAC allotment was taken, or because the PSC was reached for hook-and-line and trawl. The proposed fishing year should not directly affect the management of this fishery.
Sablefish	This is managed under IFQs. The fishing season opens March 1 and closes in mid-November. The July-June fishing year may impose important costs on this fishery due to the need for a long no-fishing period between fishing years and to the convenience of having this period in the winter months. The option to Alternative 3 would eliminate these potential costs. This issue is discussed at length in Section 4.9 of this EA/RIR/IRFA, and also below in this section.
Demersal shelf rockfish	There are two directed fishing seasons. 70% of TAC is available from January 1 to March 15, while 30% is available from November 15 to December 31. In this fishery deductions are made from an annual TAC for halibut and groundfish bycatch, and the remainder is divided between the two seasons above. The bycatch harvest is not currently monitored and doesn’t affect the two seasonal TACs. A July-June fishing year may not affect the management of these fisheries.
Deep water flatfish	These species are all fished by trawl gear. There are no seasonal allocations, only one annual allocation. The harvests from these fisheries are limited by PSC allocations which are released in five annual increments to the fishermen. The second PSC allotment is released on April 1, and the third PSC allocation would be released on or about June 30. Trawl fishing is usually closed before June because of the harvest of the PSC allocation. Because harvests normally cease due to PSC limits before June, and a new PSC allotment is released about June 30 (or July 1) a new July-June fishing year may not affect these fisheries directly.
Rex sole	
Flathead sole	
Shallow water flatfish	

Species	Seasons
Arrowtooth flounder	
Pacific ocean perch	These fisheries are usually managed by their TAC. The rockfish fishery opens by regulation around July 1. The trawl fleet also gets a halibut allocation around July 1, which they need to fish rockfish.
Northern rockfish	
Pelagic shelf rockfish	

Are there fisheries which may not readily adapt?

In general, Tables 5.9-2 and 5.9-3 suggest that the July to June fishing year under Alternative 3 may not directly conflict with existing fishing seasons in many fisheries. However, the sablefish fishery in the BSAI and in the GOA, and the BSAI pollock fishery may be exceptions.

The possible impacts of Alternative 3 on the sablefish fishery were described in detail in Section 4.9 of this EA/RIR/IRFA. Although the sablefish fishery is managed with IFQs, the interactions between the sablefish fishery and the halibut fishery, the need for a closed fishing period between fishing years in this halibut IFQ program, and the potential losses from placing the closure during the good weather in the spring, all create important problems for this fishery under Alternative 3.

Currently, the halibut and sablefish IFQ fisheries are closed to directed fishing between mid-November and March 1. This closed period is important in the management of the fishery. This is a period of time in which the “books are cleared” and administrative groundwork is laid for the coming season.

The annual IFQ calculation process for the new fishing year cannot start until all fishing and deliveries for the current year have stopped and the IFQ accounts are stable, because the new year’s permits are a function of the final account balances from the previous permits. Halibut may not be retained, and directed fishing for IFQ sablefish stops, in mid November although sablefish bycatch which accrues against IFQ permits occurs through December. Some vessels, especially larger freezer vessels, may take 2 to 3 weeks before completing their last landings after the close of the fishery.

NMFS uses the time period between the end of the fishing year (December 31) and the start of the IFQ season (March 1) to perform a number of management steps. These steps include: 1) establish final TACs, 2) stabilize accounts (landings completed, corrections made and quota transfers are stopped), 3) calculate, print, and mail permits, 4) allow for fair start, and 5) collect IFQ fees. TAC setting requires review and publication of sablefish harvest specifications in the Federal Register, and Government approval and publication of the halibut regulations established by the IPHC for halibut. After landings are completed and information is stable, NMFS calculates overages and underages which apply to next year’s IFQ accounts, and distributes the new TAC to all current quota share holders. New year IFQ permit calculations are completed on or about January 31, at which time the printing and distribution steps begin. The participants in the IFQ fisheries normally are mailed their permits in February so that permits can be received and all participants, even those in remote locations, are able to participate on the opening date of the fishery, which historically has yielded the highest exvessel prices. The processes of implementing TACs, account stabilization; calculating, printing, issuing, and mailing permits, and collecting fees, takes approximately six weeks of time. This period between the fishing years is also needed to implement revised reporting and recordkeeping requirements and new electronic reporting software, to issue registered buyer permits, and to process IFQ leases and hired skipper applications.

As discussed in Section 4.9, a number of problems are created if the closed period in the fishery is shifted from mid-November to mid-March, to the four month period prior to a July 1 opening (March to June). The new opening would occur during some of the best weather conditions of the year, when fishing was productive and safety issues were at a minimum. Moreover, this would create a winter fishery from November through February, when halibut were found in deeper waters and there was more spatial overlap with sablefish, increasing potential bycatch problems.

While the sablefish fishery dates can be adjusted by NMFS with the Council's recommendation, halibut fishing seasons are established by the IPHC and may not coincide with any changes made to the sablefish fishery. If the sablefish season were not concurrent with the halibut IFQ (and CDQ) season, waste and discard of halibut would occur in the sablefish fishery; and of sablefish in the halibut fishery. In particular, it is undesirable to allow sablefish fishing in winter, when halibut are deep and have much more spatial overlap with sablefish, increasing halibut bycatch potential[28].

IFQ permits could be issued on the proposed TAC rather than the final TAC. If the TAC and/or area allocations changed between the proposed and final rulemaking, new permits would need to be processed and issued. This scenario raises the possibility of two sablefish permitting processes in one year and of additional associated down time. There also is a potential for: (a) exceeding a quota if the final annual TAC decreased, yet fishing in excess of that had already occurred, and (b) exceeding an area allocation or even the entire TAC if by the time the final annual TAC was known to decrease, fishing in excess of that amount had already occurred.

If the sablefish fishing year is changed, there are steps that could be taken under the current IFQ program, to mitigate some of the difficulties of having inadequate time between different allocation periods. Multiple year permitting and other program changes could reduce the time needed, or reduce the frequency of stand down periods. Numerous regulation changes may also be made such as: shifting cost recovery program reporting and payment schedules, adjusting the date before which IFQ permits may not be calculated, and revising logbook submission dates. Removing the provision for applying overages and underages to the following year's IFQ permits would mean the following year's IFQ permits could be calculated based solely on quota shares held and the new year's TACs; only transfer activity would need to halt temporarily. If Alternative 3 was implemented, significant management and regulation changes to the IFQ program would be necessary to ensure the sablefish and halibut IFQ programs are implemented concurrently, fairly, and with little disruption. These changes and potential problems can be avoided if the option (set sablefish TAC for the January through December time period) to Alternative 3 is implemented.

Alternative 3 also raises important issues for the BSAI pollock fishery. As noted in Section 4.10, under the AFA, close to 100% of the BSAI directed pollock fishery has been allocated to fishery cooperatives. In all three sectors of the BSAI pollock fishery, cooperatives function as a form of privately-operated individual fishing quota program. Within each cooperative, member vessels are granted an allocation of

[28]Gregg Williams, Senior Biologist, Personal Communication, April 25, 2002, International Pacific Halibut Commission, P.O. Box 95009, Seattle, WA 98145-2009, U.S.A.

pollock based on their catch history and are free to lease their quota to other members of the cooperative, or acquire quota from other members to harvest. The catcher/processor and mothership sector cooperatives operate at the sector level in that NMFS makes a single allocation to the sector and the cooperatives are responsible for dividing up the quota among individual participants in the sector. Inshore sector cooperatives are organized around each processor and NMFS makes individual allocations to each cooperative rather than to the inshore sector as a whole.

Alternative 3 would have mixed effects on the management of the AFA pollock fishery. On the one hand, final pollock quotas would be established prior to the start of any pollock fishing. This should lead to greater efficiency in cooperative management. However, the AFA pollock management regime is currently based on the calendar fishing year. Adoption of Alternative 3 would affect existing regulations that establish application deadlines for AFA pollock cooperatives and reporting deadlines for annual co-op reports.

The AFA pollock fishery may also experience a number of additional problems with the shifting of the seasonal end date from June 10 to July 1 under Alternative 3. During years of high TAC, it may be difficult to harvest the 60 percent allocation in the B season because the time available would be reduced by 3 weeks. Also, fishing effort would be shifted out of June which is a time of low salmon bycatch to parts of the year when salmon bycatch rates are higher. There may also be difficulties in processing all of the TAC in the second season if the markets for surimi and fillets are not strong and the plants would operate less efficiently by not simultaneously processing these products. The pollock processing facilities are also used for crab processing which begins in mid October, so it is desirable to have the pollock fishery completed before the crab fishery begins.[29]

"Rollovers" under Alternative 3

Sometimes fishermen are unable to completely harvest the amounts of fish available to them in a season. In these instances, NMFS in-season managers may "rollover" some or all of the unfished portion to a later fishing season during the same fishing year, giving fishermen a second chance to harvest it. Rollovers can take place within a gear group, or from one gear group to another. Currently, the opportunity exists to rollover fish that are not harvested in the January to June period to the second half of the year, July through December. Fish not harvested in the second half of the year are lost when the new fishing year begins in the following January.

Under Alternative 3, the period from July to December will be the first season of the fishing year, and the period from January to June will be the second season. Any fish not harvested from January to June will be lost when the new fishing year begins in July. In the past, these fish might have been rolled over to the following season. Moreover, the Steller sea lion protection measures establish a fixed amount of harvest in the first season (January through February, April or June, depending on the species and area). Under current protection measures, managers will not be able to rollover fish not harvested from July to December into the season starting in January because doing so would exceed the harvest limits.

The Steller sea lion protection measures establish seasonal apportionments for pollock, Atka mackerel, and Pacific cod, and these are the only groundfish fisheries that may be affected by changes in the ability

[29]Christian Asay, Catcher Vessel Fleet Manager /Coop Manager, Personal Communication, August 13, 2002, Trident Seafoods, 5303 Shishole Ave., Seattle, WA 98107

to do rollovers. These species are unusually important to both the Steller sea lions and fishermen during the first part of the calendar year. They are an important source of food for the Steller sea lions during an environmentally stressful period, and they have an unusually high value for the fishermen due to their high roe content at this time. The seasonal specifications set for the harvests of these species in the first half of the year are set so as to ensure that the prey available to the Steller sea lions will not drop to low levels that would jeopardize Steller sea lion survival or adversely modify their critical habitat. Harvests above these levels, for example to harvest fish rolled over from the previous season under Alternative 3, may cause the temporal depletion of Steller sea lion prey and could not be considered without reconsultation on the current biological opinion.

The directed pollock fishery in the BSAI is conducted under cooperative arrangements introduced by the AFA. The cooperatives maintain careful control over their harvests, and are likely to be able to arrange their operations so as to harvest seasonal quotas. Rollover issues are not expected to be important in the directed fishery. Pollock incidental catch allowances (ICA) may be of more concern. Usually, the unused ICA is reallocated to the pollock fishery after the A season. From 1999 to the present, an average of approximately 8,000 mt of pollock ICA has been rolled over to the B season. About a third of the pollock bycatch occurs in March and April, after the important pollock roe season, and if the industry does not fully use the ICA, it may lose it.

In the BSAI Pacific cod fishery the rollover occurs from trawl & jig gears to hook-and-line and pot gear in September. The BSAI cod hook-and-line gear rollover in September depends on the January through April trawl fishery needs for the directed fishery and trawl bycatch needs in other non-cod fisheries. The bycatch needs in other trawl fisheries are fairly consistent. The major Pacific cod trawl and hook-and-line fisheries in the January to June period occur in March and April, when the Pacific cod are concentrated in spawning condition, and after other roe fisheries have slowed down. If trawlers are unable to fully harvest their allocations in March and April, there is an opportunity to rollover the fish to a hook-and-line fishery in May and June. With the Pacific cod directed trawl fishery occurring at the end of the fishing year, and a very limited opportunity for the hook- and-line gear sector to fully harvest rollover amounts in May and June, some fish may be lost. It is also not clear that the hook-and-line fishermen would be fully able to take advantage of the rollover due to high halibut by-catch at that time of year. Therefore, there is a good chance that, if the trawl fishermen are unable to fully harvest their allocation, the fish will not be harvested in that year.

It would not be possible to rollover Atka mackerel from the September-November season to the January - April season, because of the 50 percent seasonal apportionment required in the Steller sea lion protection measures. This type of rollover would concentrate more of the Atka mackerel fishery in the time period important for foraging Steller sea lions. Atka mackerel not harvested in the fall would likely be lost to the industry.

In the Gulf of Alaska pollock fishery the August and October fisheries occur first under the new system. Managers may have either more fish than expected in the January or March fishery, or less, depending on the in-season management of the late summer and fall fisheries. Current Steller sea lion protection measures allow for rollover of unharvested pollock from one season to the next as long as no more than 30 percent of the annual TAC is apportioned to any one season. However, under these protection measures, rollover from the D season (October to November) to the A season (January to February) can not be allowed because of the 25 percent annual limit established for the first season. The Steller sea lion protection measures allowed for rollovers from seasons in the early part of the calendar year to later seasons. The analysis in the 2001 Biological Opinion was based on a fixed amount of harvest in the early part of the calendar year (NMFS 2001). Because of the 30 percent limitation on the amount of rollover and the number of seasons, rollovers in the GOA pollock fisheries are possible under Alternative 3. Therefore, Alternative 3 is less likely to have an effect on the GOA pollock fishery.

Presently there is a directed GOA Pacific cod fishery of 60% of the annual TAC from January through June. If 40% were harvested in the fall, then the directed fishery could not be allowed to take the full 60% since it would be necessary to set aside some of the TAC for incidental catch through the end of June. This consideration will affect the timing of the closure of the directed fishery in February or March. The closure must be timed to leave sufficient Pacific cod quota for bycatch needs in the April and May flatfish fisheries in the GOA. If too much Pacific cod quota is left for bycatch needs, it would be lost when the fishing year ended in June. It is unclear if unused Pacific cod quota in the fall can be used for bycatch in the January through June time period. NMFS Sustainable Fisheries Division is currently consulting with the Protected Resources Division to determine if rollover used for bycatch purposes during the A season poses Steller sea lion concerns.

Limited time for rulemaking

While Alternative 3 calls for a fishing year that begins on July 1, the time required to prepare and publish a Federal regulation may make it hard to meet this deadline. The elements of the rulemaking process are described in Section 1.2 of this EA/RIR/IRFA.

Following the Council's December meeting, the proposed rule containing the specifications, along with its preamble and supporting documents, must be prepared by the NMFS Sustainable Fisheries Division. The annual specifications rule is complicated, and it can take several weeks after the Council meeting to prepare. Before the proposed rule can be published, it must be reviewed by several offices within the Alaska Region including NOAA Enforcement, NMFS Protected Resources, and NOAA General Counsel. It must also be reviewed by several offices in Washington, D.C. including NOAA General Counsel, and the Department of Commerce General Counsel. As noted in Section 1.2, in future years, the Federal Office of Management and Budget may treat the annual specifications as a "significant" document within the terms of E.O. 12866. This means OMB may require its own review of the proposed rules (which can take up to 90 days) before the proposed rule can be published.

A 15 to 60 day notice and comment period is required following publication of the proposed rules. Once this period ends, NMFS Sustainable Fisheries must address the comments received and prepare a final rule. Any changes between the proposed and final rules must go through an internal NMFS vetting process. Under the APA, the final rule cannot become effective for 30 days following its publication in the Federal Register, unless good cause exists to waive all or a portion of this cooling off period.

It is possible to complete this process between the end of the December Council meeting and the July 1 opening date. However, there are also a number of uncertainties in this process which may make it difficult to implement the final regulations by July 1.

5.10 Changes in harvests and biomass under Alternatives 2, 3, 4, and 5

Truncation of harvest by interim specifications

Under the status quo, interim TACs have been set equal to 25 percent of the proposed TAC for some fisheries, and equal to the proposed first seasonal allowance for others. The status quo could result in a closure of one or more of the groundfish fisheries in the BSAI and GOA management areas if NMFS can not publish final specifications before the interim TAC levels are reached. This could be costly for those dependent upon the fishery or fisheries in question. Pollock and fixed gear cod fisheries in particular, have a high probability of attaining interim TACs in any given year, under the status quo alternative. Attainment of the interim TACs and subsequent short-term closure of important fisheries could impose costs on vessels, processors, and related industries and communities.

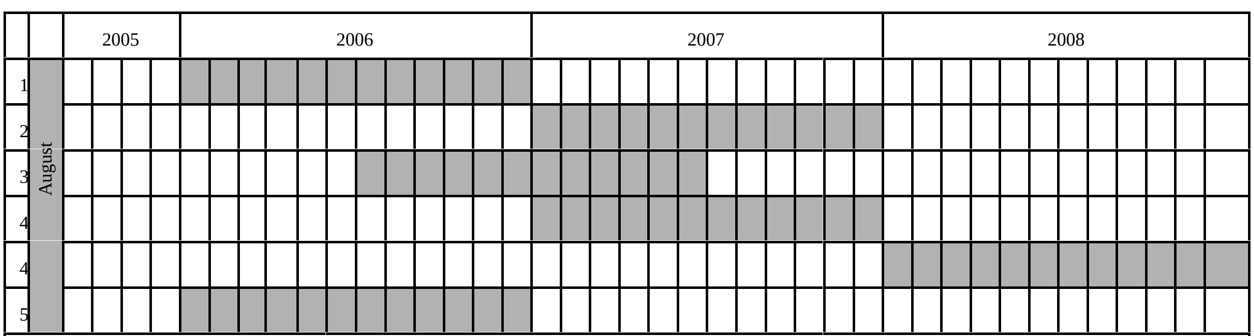
Under the status quo, PSC limits (which can result in closure of fisheries with resulting social and economic impacts) may bind during the interim period, particularly in the BSAI rock sole fishery which operates early in the fishing year. If the interim PSC limitations restrict fisheries, fishermen would forego potential revenues during the interim period, perhaps without the ability to subsequently recoup those losses.

TACs lag biomass longer

Alternatives 2, 3, and 4, all increase the period of time between a summer biomass survey and the opening of the fishing season whose specifications are based on that survey.

The changes in the elapsed time between the summer surveys and these fishing seasons are shown in Table 5.10–1. Under Alternative 1, biomass surveys in the summer of 2005 would underlie specifications in 2006.[30] Under Alternative 2, 2005 surveys would underlie the specifications for the 2007 fishing season, under Alternative 3, the 2005 surveys would underly the specifications for the 2006-2007 fishing season (introducing a half-year lag), under Alternative 4, the 2005 surveys would underlie the 2007 and 2008 fishing seasons, and under Alternative 5, the 2005 surveys would underlie the 2006 specifications (as under Alternative 1).

Table 5.10-1 Elapsed time between August 2005 summer survey and specifications year under different alternatives



Notes: Alternative 1 in the first 3 months is actually managed through interim specifications, therefore the management of the fishery based on the latest Council recommendation does not occur until approximately March, resulting in a 7 month lag time between available information and implementation of the fishery. Alternative 5 is similar to Alternative 1 unless a second proposed rule is required.

[30] Under the status quo, interim specifications in 2006 would reflect a biomass survey in 2004, not in 2005 (since the interim specifications would be based on the analysis underlying the 2005 specifications, which would have been based on summer 2004 surveys.).

The different lags between the summer biomass surveys and the fishing year specifications based on those surveys introduce additional uncertainty into the specifications process. The actual biomass in a fishing year may be higher or lower than the biomass measured in a summer survey, and as the lag between the survey and fishing year increases, the potential for discrepancy between the measured biomass underlying the specifications decisions and the actual biomass during the fishing year also increases. Since ABCs and TACs adjust to biomass fluctuations with a lag, biomass tends to change by larger amounts before changes are offset by harvest adjustments.

The uncertainties are greater for species that have shorter life spans. In these instances, the biomass will contain relatively smaller numbers of year classes. Each year's recruitment of a new year class to the biomass will have a relatively bigger impact on the size of the biomass. Thus, the biomass size (the weight of all existing age classes) is likely to fluctuate more for a species with a short life span than for a species with a longer life span, even if the variability in annual recruitment is the same for the two species.

Two analyses carried out at the Alaska Fisheries Science Center[31] suggest that these theoretical considerations may have practical implications for the alternatives. These analyses are described in the following two sections of this discussion as (a) the retrospective analysis, and (b) the simulation model.

The retrospective analysis draws conclusions by "looking back" at the period from 1991 to 2002.

The simulation model simulates the results of the specifications setting process 1,000 separate times and evaluates the means and variations from these simulations. The retrospective analysis captures some of the elements of Council specifications decision making, while the simulation model focuses to a greater extent on the impact of increased forecasting lead times on biological modeling.

The retrospective analysis

As they prepare their annual SAFE analyses, assessment authors often generate ABC estimates for the coming year and make projections for subsequent years. In the "Retrospective analysis," second year ABC projections from this process for these species are treated as Alternative 2 specifications, and are compared to the ABCs generated for the SAFE analysis in the following year, which are treated as Alternative 1 specifications.[32] Both sets of ABC estimates are implicitly treated as estimates of TACs resulting from the specifications process.

Concretely, in the fall of 2000, assessment authors would have produced ABC estimates for the 2001 specifications. They would also have projected an estimated ABC for the following year, 2002. This projection was not a specification for 2002, and in fact would be superceded in the specifications process for 2002 by an ABC estimate to be produced in the fall of 2001. In the retrospective analysis, the 2002

[31]The retrospective analysis and simulation model described below were developed by Dr. James Ianelli of the Alaska Fisheries Science Center REFM Division in the spring of 2002.

[32]Although the analysis was framed in terms of Alternative 1, the Alternative 1 results can also be used for Alternative 5, since the two alternatives have the same relation between the point at which new biological data become available and the year they are used for specifications.

projection made in 2000 is treated as an Alternative 2 specification for 2002 and is compared to the 2002 specification made in 2001, which is treated as an Alternative 1 specification for 2002.

The second year projections do not correspond exactly to the ABC estimates that would be prepared under Alternative 2. The second year projections used here were prepared under the time constraints of Alternative 1, and are subject to the limitations imposed by those constraints. They do not, for example, reflect recent catch data to the same extent ABC specifications developed under Alternative 2 might. Moreover, these second year projections are the assessment authors' projections, and do not reflect changes that might have been made in the SSC and the Council.

The retrospective analysis was performed for four species: (1) Eastern Bering Sea (EBS) pollock; (2) BSAI Pacific cod; (3) Aleutian Islands (AI) Atka mackerel; (4) GOA pollock. These species were chosen because of their importance in the fisheries, and because the ABCs and TACs in these fisheries are often relatively close together (although high EBS pollock ABCs are associated with large discrepancies between ABC and TAC during this period).[33]

Some results of this comparison are summarized in Table 5.10-2 below.[34] The table shows the change in metric tons associated with the substitution of Alternative 2 for Alternative 1.

Table 5.10-2 Estimated change in metric tonnage associated with Alternative 2 under the retrospective analysis

Species	ABC in metric tons under Alternatives 1 and 5	Change in annual metric tons under Alt. 2.	Percent change in ABC
EBS pollock	1,299,000	-33,000	-2.5%
BSAI Pacific cod	219,000	+16,000	7.3%
AI Atka mackerel	95,000	-8,000	-8.4%
GOA pollock	92,000	+10,000	10.9%
Notes: The metric tonnages from which these changes were derived may be found in Table 4.1-1 of this EA/RIR/IRFA.			

Applying 2000 first wholesale prices to the changes in TAC from the retrospective model implies a net impact on gross revenues from these four species of about +$2 million.[35] A net impact of this size is so

[33]This analysis was conducted in the winter and early spring of 2002. The estimates were based on observations from 1991 to 2002 for GOA pollock (12 observations), from 1992 to 2002 for EBS pollock and BSAI Pacific cod (11 observations), and from 1993 to 2002 for AI Atka mackerel (10 observations).

[34]Figures showing the paths of the specifications under the two alternatives and another table summarizing the results may be found in Section 4.1.3 of this EA/RIR/IRFA.

[35]The revenue estimates for this retrospective analysis, and in the following simulation model, were made using estimates of 2000 first wholesale prices per metric ton of landed round weight provided by Terry Hiatt in a personal communication. For EBS pollock these prices were $1,041 for the first half of the year and $555 for the second half. For BSAI Pacific cod they were $1,392 in the first half and $1,250 in the second half. For Atka mackerel they were $474 in the first half and $480 in the second half. For BSAI Pacific Ocean perch it was an

small that it is not practically meaningful, given the other large sources of revenue fluctuation in these fisheries, the extent of the fisheries not considered here, and the large sources of uncertainty in the model itself.

However, the results for individual species can have a meaningful impact. The absolute values of the percentage changes in the ABC/TAC vary between 2.5% for the EBS pollock, and 11% for the GOA pollock. The dollar value changes can be large. For EBS pollock and BSAI Pacific cod they are in the tens of millions of dollars (although one change is an increase in revenues and one is a decrease).

Table 4.1.1 in Section 4.1.3 of this EA/RIR/IRFA reports coefficients of variation for the ABCs under the retrospective analyses. These showed little pattern. In two instances they increased, in two they decreased. The results do suggest that the alternatives may affect the variability as well as the level of the specifications.

The simulation model[36]

The simulation model is focused on the biological interactions between the fish stocks and the stock assessment procedures for determining ABCs. The simulation model permits a more detailed investigation of the interaction of biology and assessment determination and makes it possible to look at more species. While the simulation model has certain advantages over the retrospective model, it doesn't consider the Council context within which the specifications are determined as well as the retrospective approach does.

Simulation models were run for EBS pollock, BSAI Pacific cod, AI Atka mackerel, BSAI Pacific Ocean perch, GOA pollock, and BSAI/GOA sablefish. Separate simulations were performed for each of these species for Alternatives 1, 2, and 4. Simulations were not run for Alternative 3, but the results for this alternative should fall between those for Alternatives 1 and 2. The implications of these simulations for Alternative 3 are discussed later. A separate simulation was not run for Alternative 5, however the Alternative 5 and Alternative 1 results should be the same, since the two alternatives share the same timeline. The operation of the simulation model for Alternative 2 is described immediately below; and a discussion of the modifications necessary for the simulation models under Alternatives 1 and 4 follows. The simulation models for the different species were the models used by the assessment authors when they prepared their 2002 ABC and OFL recommendations in the fall of 2001. In other words, these models use the equations and parameter estimates used at that time.

Under Alternative 2, in a typical simulation year such as 2007, the model receives several inputs and generates several outputs for future years. The important inputs include: (a) random recruitment into the fish stock generated using the mean and variance of historical recruitment for that stock; (b) an ABC set in the previous year (2006 in this example) based on stock biomass estimates from the year before (2005 in this example); (c) an actual stock biomass and age structure produced as an output from the simulation for the previous year (again, 2006 in this example).

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annual average of $514. For GOA pollock it was an annual average of $870. For sablefish it was an annual average of $4,997.

[36]This analysis was conducted in the winter and early spring of 2002. Another description of this model may be found in Section 4.1of this EA/RIR/IRFA.

The model simulates the impacts of these inputs on the fishery in 2007. Recruitment adds a new age class of a certain size to the fish stock. The biomass for each age class at the start of the year (aside from the recruited age class) is determined by outputs from the end of the previous year's simulation. Age class specific parameters for growth and mortality, built into the model structure, act on each age class to determine its year-end biomass. In a crucial simulation element, the ABC that was an input into the year's simulation is used as an estimate of the harvest during 2007, and each age class is reduced appropriately to account for this harvest.

Each year's simulation produces two important outputs that serve as inputs into the simulations for subsequent years: (a) a biomass and age structure for the stock that is input into the next year's (2008 in this case) simulation; and (b) a biomass structure that determines the ABC for the fishery two years out (2009 in this case).

The simulations were begun with the 2001 fishing year and were run for 1,000 years. Each year's recruitment was generated by a randomly chosen number, specific to that year. The random number sequence was the same for each alternative's series of annual simulations. The random numbers reflected the historical mean and variance of recruitment in the fishery. The historical period began in 1978 and continued through the most recent (that is "well estimated") year class. The most recent year class varied by species. For example, for EBS pollock, the most recent well estimated year class was the 2000 year class.

The simulations for Alternatives 1 and 4 have the same basic structure, but the connection between the years whose biomass information is used to set the specifications (referred to hereafter as a "biomass information year"), and the year for which the specifications are determined (hereafter the "specifications year"), differ. Under Alternative 1, the biomass information year is the year before the specifications year. So in the 2007 example above, the biomass information year would be 2006 (instead of 2005 as under Alternative 2). Under Alternative 4, specifications are determined for two years into the future. Assuming that 2005 was the biomass information year, the specifications would be determined for 2007 and 2008.[37]

The discussion in Section 4.1 of this EA/RIR/IRFA points out that the simulation model predictions have not been tested by simulating the model with historical inputs and comparing the model results with historical results, and that they have not received peer review. A comparison of simulation pollock ABCs with historical pollock ABCs showed that the simulation ABCs for all alternatives were generally higher than historical ABCs. The implication was that the levels of ABCs projected by the models were less reliable than the directions of change in ABC that they indicated.

The discussion of the simulation model results that follows will review estimated impacts on ABC levels (used in the model as harvest estimates), spawning biomass levels, and year-to-year variation in ABCs and spawning biomass levels. The discussion will actually begin with year-to-year variation in spawning biomass levels. The increased spawning biomass variability in turn affects the harvest level, which impacts the size of the spawning biomass.

[37] The relationship between the year for which the biomass information is available and the specifications year is illustrated in Table 5.10-1, above.

The simulations suggest that mean spawning biomass fluctuates more as the lag between the biomass information year and the specifications year grows. The spawning biomass fluctuations tend to be greater for Alternative 2 than for Alternatives 1 and 5, and greater for Alternative 4 than for Alternative 2. The fluctuations for Alternative 3 are believed to lie between those for Alternatives 1and 5 and Alternative 2. Moreover, the fluctuations appear to be systematically related to the biological characteristics of the fish species. The option to Alternative 3 to set the sablefish TAC on a January through December schedule is similar to Alternative 2 for sablefish. The simulation model showed that for sablefish, a longer lived species, there was little effect on biomass or harvest levels between Alternative 2 and Alternatives 1 and 5.

Table 5.10-3 uses coefficients of variation to show how the spawning biomass variability changes for Alternatives 1, 2, and 4. Larger coefficients indicate greater variability relative to the mean biomass. Each of these simulations is run for 1,000 years. The coefficient of variation for each alternative and species combination is equal to the standard deviation of the annual spawning biomasses divided by the mean annual spawning biomass for those 1,000 yearly observations. The coefficient of variation provides a measure of the variability of the spawning biomass compared to its average value. Increases in the index suggest that the variability increases compared to the mean spawning biomass. Table 5.10-3 shows that the coefficient of variation tended to increase for each species as the length of time between the biomass information year and the specifications year increased.

Table 5.10-3 Coefficients of variation calculated for the spawning biomass under Alternatives 1, 2 and 4.

Species	Alternative 1	Alternative 2	Alternative 4
EBS pollock	.274	.322	.355
BSAI Pacific cod	.167	.202	.243
AI Atka mackerel	.273	.406	.424
BSAI Pacific ocean perch	.074	.074	.076
GOA pollock	.386	.503	.540
Sablefish	.262	.281	.300
Notes: These CV estimates are summarized from Table 4.1-2 of this EA/RIR/IRFA			

The increases in the coefficients differed among the species. The difference was small for Pacific Ocean perch and larger for EBS pollock, BSAI Pacific cod, GOA pollock, and AI Atka mackerel. The increase for sablefish fell between the extremes. The differences tended to be greater for species that had relatively short life spans.

As discussed earlier, spawning biomass is likely to become more variable under alternatives that increase the period between the biomass information year and the specifications year. ABCs and TACs specified further into the future will be based on biomass estimates that will be lower or higher than appropriate given the actual biomass (in the future). This causes the biomass to increase or decrease even more than it otherwise would have before the ABC and TAC adjustments, leading to increased spawning biomass variability.

This increase in the biomass variability under Alternatives 2 and 4 leads to a reduction in the average ABC. Under the simulation model the average ABCs (treated as equivalent to average harvests) decreased with the length of time between the collection of the biomass survey data and the start of the fishing year whose ABC was based on that data. Average ABCs were largest for Alternative 1, smaller for Alternative 2, and smallest for Alternative 4. Alternative 3, which has a lag between those for Alternatives 1 and 2, is assumed to have an ABC reduction greater than that for Alternative 1, but less than that for Alternative 2. Alternative 5 is assumed to produce ABCs equal to those of Alternative 1.

As with the impacts on spawning biomass, these changes in ABC levels are systematically related to the biological characteristics of the stocks; stocks with shorter life spans have a relatively larger reduction in ABCs.

A key reason for this reduction in ABCs was the increased variability of the fishable biomass under Alternatives 2, 3, and 4 and the interaction of this variation with the harvest control rules (HCR) used in some of these fisheries. Fishing rates and ABCs in the fisheries discussed here depend to some extent on an HCR which lowers the acceptable fishery mortality rate as the estimated biomass is reduced. With the larger year-to-year variation in the biomass estimates, the low end of the spawning biomass relative to the unfished level will be lower more often, and will trigger the reduced ABCs associated with lower fishery mortality rates more often.

A second key reason is the use of median recruitment (rather than mean recruitment) for projecting biomass to the specification years. This will result in somewhat lower ABC specifications, but does reflect common practice in North Pacific groundfish stock assessments. That is, deterministic projections are often done with a conservative (e.g., median) recruitment assumption.

Changes in the average harvest level would change the gross revenues and profits accruing to industry. To some extent, the impact of changes in harvest would be off by shifts in product prices. For example, all other things equal, a reduction in pollock harvest would be expected to lead to an increase in the price of pollock. To some extent, this offsetting price shift would tend to mitigate the negative revenue impacts in this case. Similarly, higher pollock harvests would be associated with somewhat lower prices, offsetting the potential for revenue increases to some extent.

The simulation model results for changes in the average annual level of ABC under Alternative 2 are summarized in Table 5.10-4. This table shows the ABC under Alternative 1, the average change in the level of ABC from Alternative 1 to Alternative 2, and the percentage change in the ABC. Similar results for Alternative 4 are shown in Table 5.10-5 which immediately follows Table 5.10-4. ABCs are treated as harvests in the model.

Table 5.10-4 Estimated change in ABC associated with Alternative 2 from simulation analysis

Species	ABC in metric tons under Alt 1	Change in ABC in annual metric tons under Alt. 2	Percentage change in ABC
EBS pollock	1,498,000	-24,000	-1.6%
BSAI Pacific cod	278,000	-4,000	-1.4%
AI Atka mackerel	98,000	-10,000	-10.2%
BSAI Pacific ocean perch	16,000	0	0
GOA pollock	162,000	-17,000	-10.5%
Sablefish	26,000	0	0
Notes: These estimates are summarized from Table 4.1-2 of this EA/RIR/IRFA			

Table 5.10-5 Estimated change in ABC associated with Alternative 4 from simulation analysis

Species	ABC in metric tons under Alt 1	Change in annual metric tons under Alt. 4	Percentage change in ABC
EBS pollock	1,498,000	-50,000	-3.3%
BSAI Pacific cod	278,000	-9,000	-3.2%
AI Atka mackerel	98,000	-14,000	-14.3%
BSAI Pacific ocean perch	16,000	0	0
GOA pollock	162,000	-26,000	-16.0%
Sablefish	26,000	-1,000	-3.8%
Notes: These estimates are summarized from Table 4.1-2 of this EA/RIR/IRFA			

These results must be read cautiously. Their interpretation is complicated by several factors. As noted earlier, the magnitudes of these values may be less important than the direction of change. A second issue is that in some instances, for example BSAI pollock under Alternative 2, the percentage change in the ABC is small. Third, and related to this, variances of the simulation results around the mean estimates are large. The coefficients of variation for these results may be found below in Table 5.10-7. These large variances reflect the high degree of natural variability characteristic of some groundfish stocks. Hence, the difference found between alternatives is swamped by the expected variability within all alternatives. Statistical tests between the alternatives based on the simulations are inappropriate since the sample size could simply be increased by running more simulations.

The results do show systematic patterns which add to their credibility. Mean ABCs tend to get smaller as the length of time between the biomass information year and the specifications year gets longer for these species. Moreover, the effect tends to be greater the shorter the life span of the species. This was expected for reasons discussed earlier.

The simulation models suggest that Alternative 2 harvests are lower than those under Alternative 1, and that Alternative 4 harvests are even lower. The reductions range from 0% for BSAI Pacific Ocean perch and sablefish to 10.5% for GOA pollock under Alternative 2, and from 0% for Pacific Ocean perch to 16% for GOA pollock under Alternative 4.

Although the tonnage reductions often appear modest compared to Alternative 1 tonnages, the dollar magnitudes may be significant. If these tonnage changes in Tables 5.10-4 and 5.10-5 were multiplied by first wholesale prices for 2000[38] the impact under Alternative 2 would be about $40 million dollars, while the total dollar impact under Alternative 4 would be about $80 million dollars.[39] [40] Given the limitations of the model, these amounts should be treated as suggestive of magnitude rather than as specific predictions. The bulk of these reductions in value are coming from the pollock fisheries in the EBS and GOA. Small percentage changes in the EBS pollock catches can translate into large dollar values.

The reductions in ABCs projected by the simulation model under Alternatives 2 and 4 may understate the reductions we could expect. For example, although the simulation model suggests that average harvests will be lower under Alternatives 2 and 4, the model also suggests that, in the absence of any offsetting changes, the fishery will tend to inadvertently exceed the overfishing (OFL) level more often. While the OFL level might also be exceeded inadvertently under Alternative 1[41], it is likely to be exceeded more often under Alternatives 2 and 4. This may seem like a contradictory result: the average harvests are lower, but the OFL is exceeded in more years. This, however, is a result of increased variance in harvests under Alternatives 2 and 4. While the mean is lower, the variation around the mean is larger, and the OFL tends to be exceeded more often. The implication of this, however, is that the Council will behave more conservatively than would be implied by the straight biological model of specification determination, and will set TACs lower than they otherwise would have. Thus actual harvests might be lower than implied in Tables 5.10-4 and 5.10-5.

However, there may also be factors that lead the model to overstate the negative impacts. This model does not focus on the Council deliberations through which the ABCs and TACs are set. As noted in Section 5.8, under Alternatives 2 and 4 NMFS and the Council would have an opportunity in the fall of the year prior to the specifications year to examine new survey data. If these data showed low harvest levels for some species, NMFS could address the problem by regulatory action. These actions may be more likely in cases where very low stock levels would raise concerns about stock conservation. If this

[38]The first wholesale prices used to produce these revenue estimates were described in a footnote to the discussion of the retrospective model.

[39]The retrospective model suggested different results for Alternative 2 (the retrospective model was not run for Alternative 4). In the retrospective model BSAI Pacific cod and GOA pollock tonnages actually increased by relatively large amounts compared to the Alternative 1 levels. The net revenue impact obtained by multiplying the tonnage changes by the 2000 first wholesale prices could be in the tens of millions of dollars (including possible increases) for individual species, but for the four species examined, taken together, it was very small.

[40]Although, as noted, price changes might be expected to mute some of the fluctuations in gross revenues, the information needed to estimate the changes in price is not available. Therefore, these revenue changes do not incorporate price impacts.

[41]One shortcoming of the simulation model is that it cannot identify the instances when the OFL would be exceeded under Alternative 1.

sort of action tends to offset the impact of the lag that would otherwise be introduced by Alternatives 2 and 4, the year-to-year biomass fluctuation would be less than currently projected in the simulations. This would reduce the number of years in which low biomass levels triggered low harvest rates through the sliding scale and may tend to increase average ABCs from what the simulation model might have predicted.

The lower ABCs and associated harvests also have an implication for the mean size of the spawning biomass: since fewer fish are being harvested, mean annual spawning biomass sizes are larger. Table 5.10-6 shows the model estimates of mean spawning biomass under Alternatives 1, 2 and 4.

Table 5.10-6 Mean spawning biomass under Alternatives 1, 2 and 4

Species	Alternative 1	Alternative 2	Alternative 4
EBS pollock	2,643	2,717	2,784
BSAI Pacific cod	442	454	469
AI Atka mackerel	128	146	153
BSAI Pacific ocean perch	142	142	142
GOA pollock	251	289	311
Sablefish	225	231	238
Notes: These estimates are summarized from Table 4.1-2 of this EA/RIR/IRFA			

The simulation results also suggest that Alternatives 2 and 4 (and to some extent Alternative 3) may result in somewhat more year-to-year variation in ABCs, as well as lower average ABCs. The changes in the year-to-year variation are illustrated by simulation "coefficients of variation" in Table 5.10-7. The coefficient of variation is a statistical measure of relative variation. It is equal to the ratio of the standard deviation of simulation results to the mean of the simulation results. The standard deviation is itself a measure of variability. The coefficient of variation is used here because it provides a measure of the relative variability. In general, the increases appear to be modest. The year-to-year variation in ABC even appears to decline for AI Atka mackerel. This decline in variability appears to be related to the fact that the age-selectivity for the oldest Atka mackerel is quite low.

Table 5.10-7 Coefficient of variation calculated for the harvests under Alternatives 2 and 4

Species	Alternative 1	Alternative 2	Alternative 4
EBS pollock	32.8	38.4	39.0
BSAI Pacific cod	24.6	26.8	25.8
AI Atka mackerel	41.3	35.4	28.8
BSAI Pacific ocean perch	11.2	11.2	11.4
GOA pollock	54.8	61.1	56.8
Sablefish	36.5	39.1	39.2
Notes: These estimates are summarized from Table 4.1-2 of this EA/RIR/IRFA			

In summary, there appear to be four impacts on harvest and biomass levels: (1) biomass levels are more variable; (2) ABCs and harvest levels are smaller; (3) ABCs and harvests are more variable; and (4) biomass levels are higher.

These impacts appear likely to have several classes of economic impacts: (1) reduced fishery revenues and profits; (2) increased costs and reduced profits flowing from increased year-to-year harvest fluctuations; (3) impacts on valued elements of the ecosystem.

Revenue impacts have already been discussed. Potential revenue impacts suggested by the model results are summarized in Section 5.10. As noted, the revenue impacts are ambiguous. The retrospective model suggests there may be significant positive and negative impacts by species. The net impact on revenues for the four species examined were almost zero, but this could change with the introduction of more species. The simulation model suggests that ABC setting based on the models used by assessment authors might push the process towards lower ABCs, harvests, and revenues. However, the simulation modeling approach only looked at a part of the overall specifications process and the results were associated with great uncertainty.

Changes in the variability of year-to-year harvests may have social costs. These do not have to do with short-run projections of TACs and planning by organizations. As noted earlier, these planning horizons should be lengthened under Alternatives 2, 3 and 4, since the longer decision making process should provide reliable information about each year's TACs somewhat earlier. However, the TACs about which stakeholders would have earlier knowledge would (except for Atka mackerel) be changing by somewhat larger amounts from year-to-year.

This increased year-to year variability of harvests can contribute to market instability and increase the importance of inventories, perhaps increasing the average size of the inventories that are held. Increased inventories would be associated with increased storage and interest expenses for the firms holding them. Increased year-to-year fluctuations in harvests may increase the risk associated with fishing businesses and increase the interest rates they must pay for capital. Increased year-to-year fluctuations in income may impose a burden on persons trying to maintain a consistent standard of living from one year to another. Increased year-to-year variability in harvests may also impact the public sector by increasing the year-to-year fluctuations in raw fish tax revenues earned by the State of Alaska and by shoreside fishing communities.

The changes in the fish stock biomass may also have impacts on ecosystem services that persons value. Biomass is expected to be higher, but more variable. The net implications of these changes for an ecosystem component such as Steller sea lions are unknown. However, persons place a value on the survival of the sea lions, whose western distinct population segment is endangered. Biomass changes that enhanced the survival prospects for the sea lions would create a benefit, while changes that reduced those prospects would create a cost.

5.11 Options to Alternatives

Options associated with specific alternatives

Alternative 3 has two options : 1) set sablefish TAC on a January through December schedule and 2) reschedule the December Council meeting to January.

The purpose of Option 1 is to maintain the management of the sablefish IFQ program on the same annual schedule as the halibut IFQ program. Stock assessment information would be used to project the TAC to the following calendar year. For instance, 2000 stock assessment information would be used to establish TAC for all species, except sablefish, for July 2001 through June 2002. Sablefish TAC would be established with 2000 stock assessment information for January 2002 through December 2002.

Option 2 to Alternative 3 moves the Council's decision making from December to January, has the advantage of providing assessment authors and plan teams with more time to prepare their ABC and OFL recommendations for the Council. Science Center staff have indicated that this additional time may be helpful, particularly in instances when new survey data have unexpected information, and staff scientists need additional time to assimilate it into their models and projections. This option would require considerable adjustment on the part of the Council community, and would also seriously reduce the time available to move from the Council's specifications recommendations to a final rule.

Alternative 5 has an option to provide for a method of ensuring that sablefish fishery specifications do not change during the fishing year. Under this option, harvest specifications would include sablefish specifications for all of year 2 (as opposed to the first six months of year 2). This option would ensure that the management of sablefish would be parallel to the halibut fishery and that quotas would not have to be recalculated during the calendar year.

Options that stand alone

There are three options that may be used with any of the four alternatives. Option A would abolish non-specified TAC reserves in the BSAI and TAC reserves in the GOA, Option B would update the language in portions of the FMPs, and Option C would use biennial harvest specifications for some GOA species/complexes.

The elimination of the unspecified reserves under Alternative A is assumed to provide modest benefits at no cost. As discussed in Sections 1.4.1, 1.4.2, and 4.1.4 of this EA/RIR/IRFA, the reserves system was designed to meet management needs for flexibility when fishing and processing were performed by foreign fleets or under joint ventures. While conceptually, the unspecified reserves can allow managers to adjust the harvests of different species somewhat, this option has only been used once since 1991. The flexibility provided by the unspecified reserves can be achieved in other ways, while the system itself can increase confusion regarding which numbers are currently available for harvest and increase the administrative burden on fisheries managers.

The effect of Option B is described in detail in Section 1.5 of this EA/RIR/IRFA. Option B would update FMP language to more accurately describe the current responsibilities of the Council plan teams and to eliminate references to foreign fishing (which no longer takes place). The title of the BSAI FMP is also revised. This option also is expected to provide modest benefits at no cost.

Option C is described in detail in Section 1.6 of the EA/RIR/IRFA. Option C would set harvest specifications for most long-lived target species and complexes in the GOA on a biennial basis. The target species considered for biennial specifications are limited to those species on a biennial survey schedule in the GOA, and those for which annual stock assessments are not reasonable. This should reduce the work load of stock assessment scientists and regulation specialists by reducing the frequency of some species/complexes assessments and harvest specification rulemaking for those species/complexes. This alternative does not increase the time between the acquisition of survey information on a fishery, and the year in which specifications based on that survey information are made. It should thus have no impacts on harvest levels of fishery revenues.

5.12 Summary of benefit-cost analysis

The purpose of a benefit cost analysis is to summarize the tradeoffs between different alternatives in a systematic way.[42] Estimation of monetary net benefits for each alternative is helpful when it can be done, but has been impossible in this instance. In order to facilitate the comparison of the tradeoffs among the alternatives, in the absence of monetary net benefit estimates, the qualitative, quantitative, and those monetary costs and benefits that it has been possible to identify, are summarized below in Table 5.11.[43]

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[42]This is an important difference between a cost-benefit analysis required under E.O. 12866, and a NEPA EA assessment. A NEPA EA or EIS assessment compares each alternative to a defined level of environmental significance; it is not meant to provide a summary or valuation of the tradeoffs between alternatives.

[43]These impacts are discussed more carefully in Sections 5.8 ("Impacts on the harvest specification process"), 5.9 ("Changes in fishing year under Alternative 3"), and 5.10 ("Changes in harvests and biomass under Alternatives 2, 3, and 4"). The final section of the RIR, Section 4.13, summarizes the implications for the E.O. 12866 significance analysis. These proposals are not believed to be significant within the meaning of E.O. 12866.

Table 5.12 Summary of costs and benefits of the alternatives

	Alt 1	Alt 2	Alt 3			Alt 4	Alt 5
	No action, baseline. Specifications based on previous years surveys	*Specifications based on surveys two years before*	*Start the fishing year on July1*	Option 1 *Sablefish on 1/1-12/31 year*	Option 2 *Dec. Council Meeting moved to Jan.*	*Determine specifications for two years at a time. Annual PSC limits.*	Specifications run for 18 months
To what extent do the alternatives meet action objectives? These objectives are :They are: (1) develop and use best available scientific information, (2) provide adequate opportunity for prior comment to the Secretary on proposed action, (3) provide additional opportunity for Secretarial review of Council recommendations, (4) minimize disruption to fisheries and minimize public confusion, and (5) promote administrative efficiency.	Opportunity for analysis and peer review of survey data. Notice and comment not based on specifications that will eventually be adopted. Little time for Secretarial review. Potential for public confusion given tenuous relationship between proposed and final specifications. Not administratively efficient.	Improved opportunity for analysis of survey results and peer review before use. Use of increasingly lagged survey results. Potential to address new information through additional rulemaking. Provides significantly enhanced opportunities for notice and comment and Secretarial review. Promotes administrative efficiency.	No improvement in the quality of scientific information over Alt. 1, unless Option 2 is adopted. Does provide improved opportunities for public notice and comment and Secretarial review. Without Option 1, the change in the fishing year has the potential to disrupt the sablefish fishery fisheries. The change may create temporary public confusion. The adjustments to deal with sablefish issues would not contribute to administrative efficiency, unless the Option 1 is adopted.			Improved opportunity for analysis of survey results and peer review before use. Use of increasingly lagged survey results. Potential to address new information through additional rulemaking. Provides significantly enhanced opportunities for notice and comment and Secretarial review. Promotes administrative efficiency.	The alternative does not affect the quality of the scientific information behind the specifications. It does improve opportunities for public notice and comment, and if this produces better information, it would improve opportunities for secretarial decision making. It does not appear to affect average harvests or biomass size. Brings the specifications process into compliance with the APA but requires additional administrative decision making implementation and may result in additional rulemaking.
Opportunities for analysis and scientific peer review (from Section 5.8)	Baseline and status quo (currently about two months available)	More time (three to four months)	Little change from baseline (about two months) Option 2 provides an additional month for analysis and review.			More time (three to four months)	No change
Opportunities for notice and comment (from Section 5.8)	Baseline and status quo	Better information on which to comment. More time for the process.	Better information on which to comment. More time for the process.(But **not to the same extent as Alternatives 2 and 4**) Less time under Option 2.			Better information on which to comment. More time for the process.	Better information on which to comment. Final regulations will be an outgrowth of proposed regulations.
Environment for decision making (from Section 5.8)	Baseline and status quo	Better information on which to make decisions - more time for the process.	Better information on which to make decisions - more time for the process. (But **less than under Alternatives 2 and 4**) Less time to consider comments under Option 2.			Better information on which to make decisions - more time for the process.	Better information on which to make decisions.
Cost changes associated with specification process (from Section 5.8)	Baseline and status quo	Additional analysis time, notice and comment, and decision making time may increase administrative costs and time invested by public.	Additional analysis time, notice and comment, and decision making time may increase administrative costs and time invested by public.			Additional analysis time, notice and comment, and decision making time may increase administrative costs and time invested by public. Biennial specifications may reduce administrative costs.	Potentially additional rulemaking costs.

<table>
<tr><th></th><th>Alt 1</th><th colspan="2">Alt 2</th><th colspan="3">Alt 3</th><th>Alt 4</th><th>Alt 5</th></tr>
<tr><th rowspan="2"></th><th rowspan="2">No action, baseline. Specifications based on previous years surveys</th><th colspan="2" rowspan="2">Specifications based on surveys two years before</th><th rowspan="2">Start the fishing year on July1</th><th>Option 1</th><th>Option 2</th><th rowspan="2">Determine specifications for two years at a time. Annual PSC limits.</th><th>Specifications run for 18 months</th></tr>
<tr><th>Sablefish on 1/1-12/31 year</th><th>Dec. Council Meeting moved to Jan.</th><th></th></tr>
<tr><td>Private sector planning horizons (from Section 5.8)</td><td>Status quo and baseline (less than one month)</td><td colspan="2">About nine months</td><td colspan="3">Six or seven months</td><td>About nine months for first year, almost 21 for second year</td><td>Less than one month</td></tr>
<tr><td>Fishing year induced changes in fishing behavior (from Section 5.9)</td><td>Baseline and status quo</td><td colspan="2">None</td><td colspan="3">Potential costs, many of which could be addressed by changes in fishing seasons, changes in distribution of PSC limits, and other measures. Limited opportunities for rollovers. Serious problems may occur for sablefish and related halibut fishing, if Option 1 not adopted.</td><td>None</td><td>None</td></tr>
<tr><td>Impact on projected harvests (from Section 5.10)</td><td>Baseline and status quo</td><td colspan="2">Possibility of reduction in mean harvests and increased variability in harvests.</td><td colspan="3">Possibility of reduction in mean harvests and increased variability in harvests. These impacts would be smaller than those for Alternative 2.</td><td>Possibility of reduction in mean harvests and increased variability in harvests. These impacts would be greater than those for Alternative 2.</td><td>None if second proposed rule is not required.</td></tr>
<tr><td>Impact on projected biomass (from Section 5.10)</td><td>Baseline and status quo</td><td colspan="2">Possibility of increased mean spawning biomass with increased variability in spawning biomass</td><td colspan="3">Possibility of increased mean spawning biomass with increased variability in spawning biomass. These impacts would be smaller than those for Alternative 2.</td><td>Possibility of increased mean spawning biomass with increased variability in spawning biomass. These impacts would be greater than those for Alternative 2.</td><td>None if second proposed rule is not required.</td></tr>
<tr><td>Net benefits</td><td>Baseline and status quo

Not possible to monetize net benefits.

This alternative does not appear to meet the objectives of the proposed action.</td><td>Not possible to monetize net benefits

This alternative (along with Alt. 4) may come closest to meeting the objectives of the proposed action. However, it may be costly because of less harvest.</td><td>Not possible to monetize net benefits

This alternative (along with Alt. 4) may come closest to meeting the objectives of the proposed action. However, it may be costly because of less harvest.</td><td colspan="3">Not possible to monetize net benefits

This alternative improves notice and comment. Should be less costly than Alternative 2 in terms of potentially lower ABCs and harvests. Requires more systematic revision of fishing season due to new fishing year. This may create serious problems for the sablefish IFQ fishery, if the option is not adopted</td><td>Not possible to monetize net benefits.

This alternative (along with Alt. 2) may come closest to meeting the objectives of the proposed action. However, it may be costly because of less harvest.</td><td>Not possible to monetize net benefits.

This alternative improves notice and commnet, but without the costs of forgone harvests associated with Alternatives 2, 3, and 4 if a second proposed rule is not required.</td></tr>
<tr><td>E.O. 12866 significance (from Section 5.13)</td><td>Baseline and status quo</td><td>Does not appear to be significant with respect to considerations in this RIR. Impact appears to be less than $100 million.</td><td>Does not appear to be significant with respect to considerations in this RIR. Impact appears to be less than $100 million.</td><td colspan="3">Does not appear to be significant with respect to considerations in this RIR. Impact appears to be less than $100 million.</td><td>Does not appear to be significant with respect to considerations in this RIR. Impact appears to be less than $100 million.</td><td>Does not appear to be significant with respect to considerations in this RIR. Impact appears to be less than $100 million.</td></tr>
</table>

5.13 Summary of E.O. 12866 significance criteria

A "significant regulatory action" under E.O. 12866 means any action that is likely to result in a rule that may:

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

NMFS does not expect that any of the proposals will have an annual effect on the economy of $100 million or more, or will adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local or tribal governments. As described in Section 5.6 of this EA/RIR/IRFA, the aggregate value of groundfish production from groundfish fisheries in the GOA and the BSAI at the first wholesale level [44] was about 1.36 billion dollars in 2001. The most costly alternative, Alternative 4, was associated with a rough gross revenue impact estimate of $80 million in the simulation analysis.

Moreover, as noted in the discussion of the impacts of the alternatives, the changes contemplated are primarily procedural, and don't have a direct impact on the total volume, timing, or species composition of fish harvested and processed. Any impact on the value of the product, such as that just discussed, would occur as a result of new Federal decisions and actions taken under the new specifications process to specify annual or biennial ABCs, OFLs, and TACs. These actions may lead to changes in ABCs, OFLs and TACs because the increased time frames for analysis, public notice and comment, and decision making lead to better decisions about optimal harvest rates. These actions could only be taken following new NEPA, E.O. 12866, and RFA analyses.

NMFS has not identified any factors that would "Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency." The actions proposed may reduce the likelihood that future specifications decisions would interfere with actions taken or planned by another agency because the longer time period available for analysis, notice and comment, and decision making, provides more opportunities for input from the public and other agencies in any given rulemaking.

NMFS has not identified any factors that would: (a) "Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof"; or (b) "Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the executive order."

[44] The first wholesale level means the first sale of processed product by onshore processors, catcher/processor vessels, or motherships.

In summary, it does not appear to meet these criteria for a “significant regulatory action”.

6.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

6.1 Introduction

This Initial Regulatory Flexibility Analysis (IRFA) evaluates alternative regulatory actions that would change the way the annual harvest specifications are determined for the groundfish fisheries managed by the Federal government in the GOA and the BSAI. This IRFA examines the impacts of the alternative actions on small fishing entities, and addresses the statutory requirements of the Regulatory Flexibility Act (RFA) of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996. The IRFA requirements are given at 5 U.S.C. 603.

6.2 The purpose of an IRFA

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

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

In determining the scope, or ‘universe’, of the entities to be considered in an IRFA, NMFS generally includes only those entities that can reasonably be expected to be directly regulated by the proposed action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this analysis. NMFS interprets the intent of the RFA to address negative economic impacts, not beneficial impacts, and thus such a focus exists in analyses that are designed to address RFA compliance.

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the proposed regulatory action are insufficient, at present, to permit preparation of a “factual basis” upon which to certify that the preferred alternative does not have the potential to result in “significant adverse impacts on a substantial number of small entities” (as those terms are defined under RFA).

Because, based on all available information, it is not possible to 'certify' this outcome, should the proposed action be adopted, a formal IRFA has been prepared and is included in this package for Secretarial review.

6.3 What is required in an IRFA?

Under 5 U.S.C., Section 603(b) of the RFA, each IRFA is required to contain:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- A description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;
- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:

    1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;

    2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;

    3. The use of performance rather than design standards;

    4. An exemption from coverage of the rule, or any part thereof, for such small entities.

6.4 What is a small entity?

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

<u>Small businesses</u>. Section 601(3) of the RFA defines a 'small business' as having the same meaning as 'small business concern' which is defined under Section 3 of the Small Business Act. 'Small business' or 'small business concern' includes any firm that is independently owned and operated and not dominant in its field of operation. The SBA has further defined a "small business concern" as one "organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture,

association, trust or cooperative, except that where the firm is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture."

The SBA has established size criteria for all major industry sectors in the United States, including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of $3.5 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the $3.5 million criterion for fish harvesting operations. Finally a wholesale business servicing the fishing industry is a small businesses if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

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

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

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

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

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

6.5 What is this action?

Detailed descriptions of each alternative analyzed in this EA/RIR/IRFA can be found in Section 2.1.[45] The management alternatives are:

Alternative 1. Status Quo (No action alternative).

Alternative 2: Eliminate publication of interim specifications. Issue Proposed and Final Specifications Prior to Start of the Fishing Year.

Alternative 3: Issue Proposed and Final Harvest Specifications based on a July 1 to June 30 fishing year. Option 1: Set sablefish TAC on a January through December schedule. Option 2: Reschedule the December Council Meeting for January.

Alternative 4: Use Stock Assessment Projections for biennial harvest specifications. For the BSAI and GOA set the annual harvest specifications based on the most recent stock assessment and set harvest specifications for the following year based on projected OFL and ABC values.

Alternative 5: Same as status quo except set harvest specifications for periods of up to 18 months. Periods overlap, the fishery for a new period beginning between the 12^{th} and 18^{th} month of the previous period. Option: Establish TAC for sablefish for following 12 month time period (Year 2)

The following options may be implemented with any of the above alternatives (except that Option C is subsumed in Alternative 4):

Option A: Abolish TAC Reserves.

Option B: Update FMP language to incorporate new harvest specifications administrative process and to remove references to foreign fishing.

Option C: Biennial harvest specifications for certain GOA target species/complexes.

[45] Alternatives considered, but not analyzed in this EA/RIR/IRFA are listed in Section 2.3.

6.6 Reason for considering the proposed action

The reasons for the proposed action are discussed in detail in Sections 1.3, 1.6, and 5.4 of this EA/RIR/IRFA. In brief, the status quo provides a very compressed period of time in which to develop and implement harvest specifications for the coming year. The key biomass survey data only becomes available in September and October. The fishing year begins on the following January 1. This leaves only a short time to assess the survey data and update fishery models, obtain peer review of this work, obtain the input from the Council's SSC and AP, develop the Council's recommendations, provide for notice and comment, publish a final rule, and meet the APA requirement for a 30 day period between publication of a final rule and its effective date. The alternatives considered in this EA/RIR/IRFA improve this process in different ways.

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

The objectives of the proposed action are summarized in Table 2.1. They are: (1) develop and use best available scientific information, (2) provide adequate opportunity for prior comment to the Secretary on proposed action, (3) provide additional opportunity for Secretarial review of Council recommendations, (4) minimize disruption to fisheries and minimize public confusion, and (5) promote administrative efficiency.

The legal basis for the proposed action was discussed in Section 1.0 of this EA/RIR/IRFA and in Section 5.3. The National Marine Fisheries Service manages the U.S. groundfish fisheries of the Gulf of Alaska and Bering Sea and Aleutian Islands management areas in the Exclusive Economic Zone under the Fishery Management Plans (FMPs) for those areas. The North Pacific Fishery Management Council (Council) prepared the FMPs under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. Regulations implement the FMPs at §50 CFR part 679. General regulations that also pertain to U.S. fisheries appear at subpart H of §50 CFR part 600.

6.8 Number and description of small entities directly regulated by the proposed action

What are the directly regulated entities?

This action will change the process by which the annual groundfish ABC, OFL, and TAC levels will be determined. The entities directly regulated by this action are those entities that harvest groundfish in the BSAI and GOA. These entities include the groundfish catcher vessels and catcher/processor vessels active in these areas. It also includes organizations to whom direct allocations of groundfish are made. In the BSAI, this includes the CDQ groups and the AFA fishing cooperatives.

Number of small directly regulated entities

Table 6.8-1 shows the estimated numbers of small and large entities in the BSAI and GOA groundfish fisheries. The rationales for these estimates are presented in the paragraphs which follow the table.

Table 6.8-1 Estimated numbers of small directly regulated entities in the BSAI and GOA groundfish fisheries

Fleet segment	Number small entities	Number large entities	Total number of entities
Catcher vessels	1,211	17 (74 vessels)	1,228
Catcher processors	44	36 (47 vessels)	80
Motherships	0	3	3
Shoreside processors	36	13 (32 plants)	49
CDQ groups	6	0	6

Notes: In some cases, the number of entities is smaller than the number of vessels or shoreplants because at least some entities have multiple vessels or plants. The estimated numbers of vessels and plants have been placed in parentheses. Catcher vessel and catcher/processor estimates prepared from fishtickets, weekly processor reports, product price files, and intent-to-operate listing. The methodology used probably overstates the numbers of small entities. Shoreside processors prepared by comparing a list of processors producing groundfish in 2000 with data on monthly employment by processing firm in 2000 obtained from Alaska Department of Labor. All CDQ groups are non-profits and are therefore treated as small.

Fishing vessels, both catcher vessels and catcher/processors, are small if they gross less than $3.5 million in a year. Table 6.8-2 provides estimates of the numbers of catcher vessels and catcher/processors with less than $3.5 million in gross revenues from groundfish fishing in the BSAI and GOA. Estimates of the numbers of vessels are provided by year and gear type from 1997 to 2001. Estimates are also broken out for the GOA, the BSAI, and for all of Alaska. Table 6.8-3, provides similar information for catcher vessels and catcher/processors grossing more than $3.5 million.[46]

Table 6.8-2 indicates that, in 2001, there were 1,115 small catcher vessels in the GOA and 303 in the BSAI. There were 1,280 small vessels in total. These numbers suggest that 138 vessels must have operated in both the BSAI and the GOA. Table 6.8-2 implies that each of the small catcher vessels is treated as a separate small entity. This may overstate the number of separate entities since there is probably not a strict one-to-one correspondence between vessels and entities; some persons or firms may own more than one vessel.

It is possible to draw on analysis done recently for the American Fisheries Act amendments (61/61/13/8) to add somewhat more precision to the estimates of small catcher vessel entities in the BSAI (NMFS 2002). The FRFA prepared for those amendments provides a relatively detailed recent picture of the affiliations and sizes of the catcher vessel entities active in the BSAI pollock fisheries. This FRFA reports that 112 catcher vessels were active in the pollock fisheries covered by the American Fisheries

[46] The tables tend to overstate the number of small catcher vessels and catcher/processors. One important reason is that the tables only consider revenues from groundfish fishing in Alaska. They do not consider revenues that these vessels may have earned from fishing for other species or from fishing in other areas. In addition, the SBA small entity criteria state that an entity's affiliations should be considered in determining whether or not an entity is small. In many cases vessels are owned by larger firms, or multiple vessels are owned by a single person or firm. These affiliation issues are not reflected in the counts in Tables 6.8-2 and 6.8-3. Catcher/processor affiliations are addressed in the text.

Act. 100 of these delivered to inshore processing plants, 7 delivered to catcher/processors offshore, and 5 delivered only to motherships (a total of 20 delivered to motherships, but 15 of these also delivered to onshore processors and these 15 are included here with the onshore processing group). While Table 6.8-2 suggests that all but five of these had gross revenues under $3.5 million, the FRFA indicates that 69 of them had affiliations with large entities and should be considered large under the SBA criteria.[47] (NMFS 2002, pages 4-176 to 4-181) Adjusting the numbers of small entities in light of these considerations, the number for the BSAI drops from 303 to 234 and the total for the BSAI and GOA drops from 1,280 to 1,211. The change in the GOA alone can't be determined.

The number of large catcher vessel entities from Table 6.8-3 is 5. In addition, the 69 pollock catcher vessels determined to be large based on their affiliations in the AFA FRFA were associated with an estimated 12 entities.[48] (NMFS 2002, pages 4-176 to 4-181). Thus the total number of large catcher vessel entities is estimated to be 17, with 74 associated vessels.

Table 6.8-2 indicates that, in 2001, there were 21 small catcher/processors in the GOA and 43 in the BSAI. There were 44 small catcher/processors in total. These numbers suggest that 20 catcher/processors must have operated in both the BSAI and the GOA. Table 6.8-2 implies that each of the small catcher/processors is a separate small entity. This may overstate the number of separate entities since there is probably not a strict one-to-one correspondence between vessels and entities; some persons or firms may own more than one vessel.

Table 6.8-3 shows that there were 47 large catcher-processors in the GOA and BSAI. The AFA FRFA used above for the catcher vessel analysis indicates that in 2000, 20 large catcher/processors owned by 9 companies were authorized to fish for pollock in the BSAI under the AFA. (NMFS 2002, pages 4-176 to 4-181) For the purposes of this IRFA, there were an estimated 36 large entities (47 large entities from Table 6.8-3, minus 20 vessels affiliated with companies, plus the nine companies with which they were affiliated).

The estimates of large and small shoreside processors in Table 6.8-1 were made by comparing a list of processors and the gross revenues each generated from groundfish products in 2000, with data from the Alaska Department of Labor on numbers of employees per month for each processing facility. The employees data counted each employee, treating part-time and full-time employees alike. If a plant employed more than 500 persons in any month it was considered to be a large plant. Multiple plants that could be connected to a single processing firm were treated as a single entity in the counts. This procedure may overstate the number of small entities somewhat, since there are many interconnections between processing facilities in Alaska, and they are not well known.

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[47]This total of 69 catcher vessels affiliated with large entities is made up of 63 vessels delivering inshore, 2 of those delivering to catcher/processors, and 4 of those delivering to motherships. (NMFS 2002, pages 4-176 to 4-181)

[48]This estimate is not provided in the AFA FRFA, but is inferred from information contained in it. The 63 large catcher vessels delivering to inshore cooperatives were affiliated with seven large entities. The two delivering to catcher/processors and the four delivering only to motherships were each assumed to be affiliated with a separate entity (except that there were only three motherships so that there could be no more than three large entities in that case). (NMFS 2002, pages 4-176 to 4-181)

The three motherships are believed to be large entities. The six Community Development Quota (CDQ) groups are treated as small entities because they are non-profit entities supporting the community development objectives of 65 Western Alaska communities.

Table 6.8-2 Number of vessels that caught or caught and processed less than $3.5 million ex-vessel value or product value of groundfish by area, catcher type and gear, 1997-2001.

	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	Catcher Vessels	Catcher process	Total	Catcher Vessels	Catcher process	Total	Catcher Vessels	Catcher process	Total
1997									
All gear	1,178	39	1,217	266	57	323	1,256	60	1,316
Hook & line	946	25	971	93	36	129	958	38	996
Pot	142	4	146	70	13	83	187	13	200
Trawl	172	10	182	107	11	118	200	12	212
1998									
All gear	1,104	20	1,124	238	40	278	1,184	40	1,224
Hook & line	866	15	881	72	29	101	884	29	913
Pot	180	1	181	71	7	78	225	7	232
Trawl	167	4	171	115	6	121	205	6	211
1999									
All gear	1,149	29	1,178	284	31	315	1,265	34	1,299
Hook & line	902	17	919	75	19	94	926	22	948
Pot	201	10	211	90	11	101	256	11	267
Trawl	154	3	157	125	4	129	201	4	205
2000									
All gear	1,246	16	1,262	301	31	332	1,406	33	1,439
Hook & line	1,008	8	1,016	105	17	122	1,048	18	1,066
Pot	250	5	255	91	11	102	300	12	312
Trawl	123	3	126	113	6	119	203	7	210
2001									
All gear	1,115	21	1,136	303	43	346	1,280	44	1,324
Hook & line	933	15	948	118	31	149	967	31	998
Pot	155	4	159	74	7	81	213	9	222
Trawl	117	4	121	118	6	124	196	7	203

Note: Includes only vessels that fished part of Federal TACs.

Source: CFEC fish tickets, weekly processor reports, NMFS permits, annual processor survey, ADFG intent-to-operate listings. National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 6.8-3 Number of vessels that caught or caught and processed more than $3.5 million ex-vessel value or product value of groundfish by area, catcher type and gear, 1997-2001.

	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	Catcher Vessels	Catcher process	Total	Catcher Vessels	Catcher process	Total	Catcher Vessels	Catcher process	Total
1997									
All gear	1	26	27	1	56	57	1	56	57
Hook & line	0	4	4	0	8	8	0	8	8
Trawl	1	22	23	1	48	49	1	48	49
1998									
All gear	0	27	27	0	59	59	0	59	59
Hook & line	0	7	7	0	14	14	0	14	14
Pot	0	0	0	0	1	1	0	1	1
Trawl	0	20	20	0	45	45	0	45	45
1999									
All gear	0	29	29	1	57	58	1	57	58
Hook & line	0	13	13	0	22	22	0	22	22
Pot	0	1	1	0	3	3	0	3	3
Trawl	0	15	15	1	36	37	1	36	37
2000									
All gear	0	28	28	4	57	61	4	57	61
Hook & line	0	13	13	0	26	26	0	26	26
Pot	0	0	0	0	2	2	0	2	2
Trawl	0	15	15	4	33	37	4	33	37
2001									
All gear	0	19	19	5	47	52	5	47	52
Hook & line	0	5	5	0	14	14	0	14	14
Trawl	0	14	14	5	33	38	5	33	38

Note: Includes only vessels that fished part of Federal TACs.

Source: CFEC fish tickets, weekly processor reports, NMFS permits, annual processor survey, ADFG intent-to-operate listings. National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Description of small directly regulated entities

Section 5.6 of this EA/RIR/IRFA provides information on overall groundfish revenues, and lists reports with detailed descriptions of the fishery. This section focuses on the average revenues of small entities, absolutely, and in comparison with the revenues of large entities.

Tables 6.8-4 and 6.8-5 provide estimates of average gross revenues from groundfish production in the BSAI and GOA for small and for large vessels.[49] Considering activity in both the BSAI and the GOA, small catcher vessels grossed an average of about $150,000 in 2001. This average conceals variation by fishery management area and gear type. Small hook and line gear catcher vessels (longline and jig) in the GOA had the smallest average gross revenues at about $70,000, while small trawler catcher vessels in the BSAI had the largest at $850,000. The overall average gross revenues for all small catcher vessels active in the GOA were $100,000, while the overall average gross revenues for all small catcher vessels active in the BSAI was $420,000. Corresponding average gross revenues for large entities for these gear types and areas may be found in Table 6.8-5.

Catcher/processors carry the equipment and personnel they need to process the fish that they themselves catch. In some cases catcher/processors will also process fish harvested for them by catcher vessels and transferred to them at sea. There are many types of catcher/processors operating in the BSAI and GOA groundfish fisheries. They are distinguished by target species, gear, products, and vessel size. The 44 small catcher/processor vessels had average gross revenues of $1.78 million in 2001. This average conceals variation by fishery management area and gear type. Small pot catcher-processors operating in the BSAI had the lowest average gross revenues, $860,000, while trawler catcher-processors in the BSAI had the largest, $1.95 million. The overall average gross revenues for small catcher-processors operating in the GOA was $1.76 million, while the overall average gross for those operating in the BSAI was $1.77 million. Corresponding average gross revenues for large entities for these gear types and areas may be found in Table 6.8-5.

There were an estimated 36 small processors. In 2000, these small processors averaged gross revenues of $902,000 from groundfish products; these processors also averaged $5.2 million from all fish products. The 13 large processors averaged $43.5 million from groundfish products, and $79.1 million from all fish products. (Hiatt T., pers. comm. 9-27-01)

Through the Community Development Quota (CDQ) program, the North Pacific Fishery Management Council and NMFS allocate a portion of the BSAI groundfish, prohibited species, halibut and crab TAC limits to 65 eligible Western Alaska communities. These communities work through six non-profit CDQ Groups to use the proceeds from the CDQ allocations to start or support commercial fishery activities that will result in ongoing, regionally based, commercial fishery or related businesses. The CDQ program began in 1992 with the allocation of 7.5 percent of the BSAI pollock TAC. The fixed gear halibut and sablefish CDQ allocations began in 1995, as part of the halibut and sablefish Individual Fishing Quota Program. In 1998, allocations of 7.5 percent of the remaining groundfish TACs, 7.5 percent of the prohibited species catch limits, and 7.5 percent of the crab guidelines harvest levels were added to the CDQ program. At this time, the CDQ share of the pollock TAC was increased to 10 percent. The CDQ groups are reported to have had gross revenues of about $63.2 million in 2000 (Alaska Department of Community and Economic Development 2001, page 25); average gross revenues were thus about $10.5 million.

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[49]Since these estimates only include information on gross revenues from groundfish fishing, these are low estimates of the total gross revenues for these entities.

Table 6.8-4 Average revenue of vessels that caught or caught and processed less than $3.5 million ex-vessel value or product value of groundfish by area, catcher type and gear, 1997-2001. ($ millions)

	Gulf of Alaska			Bering Sea & Aleutians			All Alaska		
	Catcher Vessels	Catcher process	Total	Catcher Vessels	Catcher process	Total	Catcher Vessels	Catcher process	Total
1997									
All gear	.16	1.30	.20	.51	1.36	.66	.17	1.30	.22
Hook & line	.08	1.42	.12	.25	1.64	.64	.08	1.58	.14
Pot	.13	.23	.13	.11	.59	.19	.11	.59	.14
Trawl	.69	1.41	.73	.99	1.43	1.03	.67	1.31	.71
1998									
All gear	.12	1.68	.14	.37	1.58	.54	.12	1.58	.17
Hook & line	.06	1.58	.08	.13	1.57	.54	.06	1.57	.11
Pot	.11	-	.12	.22	.84	.28	.14	.84	.16
Trawl	.47	2.13	.51	.65	2.43	.74	.46	2.43	.52
1999									
All gear	.14	1.45	.18	.46	1.52	.57	.16	1.39	.19
Hook & line	.06	1.48	.09	.14	1.79	.47	.06	1.55	.10
Pot	.16	1.23	.21	.15	1.16	.26	.16	1.16	.20
Trawl	.66	-	.69	.89	1.59	.91	.66	1.59	.68
2000									
All gear	.12	1.34	.14	.57	1.39	.65	.19	1.38	.21
Hook & line	.09	1.25	.09	.23	1.62	.42	.08	1.54	.11
Pot	.15	1.04	.17	.12	.63	.18	.15	.75	.17
Trawl	.54	-	.58	1.23	1.84	1.26	.84	1.91	.87
2001									
All gear	.10	1.76	.13	.42	1.77	.59	.15	1.78	.20
Hook & line	.07	1.83	.10	.16	1.92	.53	.07	1.92	.13
Pot	.11	1.73	.15	.11	.86	.18	.11	1.17	.15
Trawl	.35	1.80	.40	.85	1.95	.90	.61	1.97	.65

Notes: Includes only vessels that fished part of Federal TACs.
Categories with fewer than four vessels are not reported.
Averages are obtained by adding the total revenues, across all areas and gear types, of all the vessels in the category, and dividing that sum by the number of vessels in the category.

Source: CFEC fish tickets, weekly processor reports, NMFS permits, annual processor survey, ADFG intent-to-operate listings. National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 6.8-5 Average revenue of vessels that caught or caught and processed more than \$3.5 million ex-vessel value or product value of groundfish by area, catcher type and gear, 1997-2001. (\$ millions)

	Gulf of Alaska		Bering Sea & Aleutians			All Alaska		
	Catcher process	Total	Catcher Vessels	Catcher process	Total	Catcher Vessels	Catcher process	Total
1997								
All gear	8.54	8.40	-	10.37	10.27	-	10.37	10.27
Hook & line	4.48	4.48	-	4.28	4.28	-	4.28	4.28
Trawl	9.28	9.08	-	11.39	11.25	-	11.39	11.25
1998								
All gear	6.30	6.30	-	8.59	8.59	-	8.59	8.59
Hook & line	4.45	4.45	-	4.51	4.51	-	4.51	4.51
Trawl	6.95	6.95	-	9.86	9.86	-	9.86	9.86
1999								
All gear	5.58	5.58	-	10.14	10.04	-	10.14	10.04
Hook & line	4.71	4.71	-	4.72	4.72	-	4.72	4.72
Trawl	6.43	6.43	-	13.29	13.05	-	13.29	13.05
2000								
All gear	6.59	6.59	4.66	10.64	10.24	4.66	10.64	10.24
Hook & line	4.87	4.87	-	5.13	5.13	-	5.13	5.13
Trawl	8.08	8.08	4.66	14.81	13.71	4.66	14.81	13.71
2001								
All gear	7.55	7.55	4.29	13.03	12.19	4.29	13.03	12.19
Hook & line	4.98	4.98	-	4.68	4.68	-	4.68	4.68
Trawl	8.46	8.46	4.29	16.57	14.95	4.29	16.57	14.95

Notes: Includes only vessels that fished part of Federal TACs.
Categories with fewer than four vessels are not reported.
Averages are obtained by adding the total revenues, across all areas and gear types, of all the vessels in the category, and dividing that sum by the number of vessels in the category.

Source: CFEC fish tickets, weekly processor reports, NMFS permits, annual processor survey, ADFG intent-to-operate listings. National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

6.9 Impacts on directly regulated small entities

Impact on cash flow or profitability

As discussed in Sections 4.1 and 5.10, alternatives which lengthen the period of time between a biomass survey year and its associated specifications year have the potential to reduce fish harvests. Some of the modeling results suggest that these costs could amount to tens of millions of dollars under Alternative 2, considerably more under Alternative 4, and less under Alternatives 3 and 5 (with a second proposed rule). These results have a high degree of uncertainty associated with them.

Alternatives that reduce the level of harvest from the fisheries would have an adverse impact on the cash flow and profitability for small entities. It is not possible to estimate the magnitudes of these impacts. The models that identify the impacts for the whole fishery do not provide a high level of precision at that level. It is not possible to make any predictions with the available models about the distribution of adverse impacts among vessel classes or large and small entities.

In addition to changes in the average levels of harvests, some of the modeling results suggest that year-to-year fluctuations in groundfish harvests may increase under Alternatives 2, 3, and 4 compared to Alternatives 1 and 5. The increase is likely to be largest under Alternative 4, less under Alternative 2, and least under Alternatives 3 and 5. These increased year-to-year fluctuations may result in increased year-to-year variability in gross revenues. This increased variability may result in higher interest expenses, higher carrying costs for inventory, and an increased need to borrow money to tide operations over short-term harvest reductions. All of these factors may increase operating costs for small entities. It is impossible to estimate the size of these operating increases.

Relative burden on directly regulated small entities

The answer to this question is unknown. As noted, the projections of changes in the mean harvest and in the year-to-year variability of the harvest, and its distribution among fleet sectors are unknown. It is not possible to make definite statements about the impacts on small entities in comparison with those on large entities. For example, while small entities may be less diversified and more vulnerable than large entities to an annual reduced harvest in any one species, some modeling results suggest that a large part of reduced revenues may come from the EBS pollock fishery, which is dominated by large entities. It is not possible to make a definitive statement on whether or not these results will bear disproportionately on small entities.

Other important impacts[50]

Alternatives 2, 3, 4, and 5 provide better opportunities for analysis, more meaningful notice and comment during rulemaking, and an improved environment for decision-making. For reasons discussed in Section 5.8, these may improve access to the decision making process for small entities and their representatives and improve small business input into the decision making process. If improvements in notice and comment on proposed rulemaking head off lawsuits that might disrupt fisheries, this would also be a benefit to small entities.

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[50]The following non-adverse impacts are introduced to provide a full summary of the impacts on small regulated entities. There is no implication that do, or do not, offset the adverse impacts.

Stand along options

Options A and B to this action are primarily housekeeping options with no impact on small entities. Option C would also have no impact on small entities would also have no impact on small entities because it will only relieve rulemaking burden for those GOA stocks not affected by the use of projections for setting ABC and TAC.

6.10 Recordkeeping and reporting requirements

The IRFA should include "a description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record..."

This regulation does not impose new recordkeeping or reporting requirements on the regulated small entities.

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

An IRFA should include "An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule..."

This analysis did not reveal any Federal rules that duplicate, overlap or conflict with the proposed action.

6.12 Description of significant alternatives

An IRFA should include "A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities."

The alternatives have been described in detail in Sections 2.1 and 5.5 of this EA/RIR/IRFA. Table 6.12-1 below lists each alternative, and indicates its impact on directly regulated small entities (so far as is known). When a preferred alternative is selected, the "Why not chosen..." column will be completed.

Table 6.12-1Alternatives subjected to detailed study

Alternative		Description	Impact on directly regulated small entities	Why not chosen if better for directly regulated small entities?
Alt 1		Publish proposed specifications, followed by interim and final specifications	This is the status quo and the baseline scenario. This alternative is the most constraining of the alternatives with respect to small business access to the decision-making process. It is likely to be associated with larger harvests than alternatives 2-4, and thus higher average revenues for small entities.	No preferred alternative at this time
Alt 2		Eliminate interim specifications. Issue proposed and final specs. Prior to start of fishing year.	This alternative improves opportunities for small business access to the decision making process. The alternative may be associated with reductions in groundfish harvests and with increased year-to-year variation in harvests. These changes would reduce small entity revenues; it is not clear if there would be a disproportionate impact on small entities.	No preferred alternative at this time
Alt 3	Opt. 1	Use status quo time line. Eliminate interim specs. Issue proposed and final specs. Begin fishing year in July. Sable fish remain on a 1/1-12/31 schedule.	Alternative 3 will shift the start of the fishing year until after the current beginning of the halibut and sablefish individual quota (IFQ) fisheries in the GOA and the BSAI. Either preliminary IFQs would have to be issued prior to the fishery and updated after the fishery began (reducing many of the benefits of an IFQ program) or disruptive regulatory actions would have to be taken to change the halibut and sablefish IFQ fishing seasons. Option 1 would eliminate this problem. This option would reduce harvest revenues less than Alternative 2 and more than Alternative 1.	No preferred alternative at this time
	Opt. 2	Fishing year on 7/1-6/30 schedule. December Council meeting rescheduled for January		
Alt 4		Use stock assessment projections for biennial harvest specs. Set PSC limits annually	This alternative will improve opportunities for small business access to the decision making process. The two options for this alternative are associated with the larger potential reductions in harvests than Alternative 2, and with more potential year-to-year variation in harvests. The changes would reduce small entity revenues, but it is not clear if there would be a disproportionate impact on small entities.	No preferred alternative at this time
Alt 5		Set specifications for 18 months at a time. Supercede specifications with new specifications between three to six months into year two.	Under this alternative there would be increased opportunities for notice and comment under the Administrative Procedures Act. Final rules would be clearly related to a proposed rule for which a Regulatory Flexibility Analysis would be conducted. This alternative does not introduce significant lags between biological surveys and subsequent specifications, thus avoiding adverse potential revenue impacts from this source. If a second proposed rule is required, the effect will be similar to Alternative 3.	No preferred alternative at this time.
Notes: A more detailed discussion of the impacts on small entities may be found in Section 6.9 of this EA/RIR/IRFA.				

7.0 COMMUNITY IMPACTS

Standard 8 of the Magnuson-Stevens Act requires that "Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities." (16 U.S.C. 1851) The term fishing community is described in the statute as "...a community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community." (16 U.S.C. 1802)

This section analyzes the social impacts of the final actions on fishing communities. The BSAI and GOA groundfish FMPs (NPFMC, 1999a and 1999b) have additional information regarding socioeconomic characteristics of fishing communities that depend to some extent on the harvesting of Alaska groundfish. General information regarding the impacts of TAC specifications on communities can be found in section 4.4.4 of the SEIS (NMFS, 1998a) and section 4.5.9 of the revised draft PSEIS (NMFS 2003b).

Table 7-1 below summarizes the impacts of the alternatives on fishing communities. All results in this table compare "action" alternatives to the "no-action" alternative (Alternative 1).

Table 7-1 Community impacts of the alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	No action, baseline. Specifications based on previous years surveys	*Specifications based on surveys two years before*	*Start the fishing year on July 1*	*Determine specifications for two years at a time.*	*Specifications run for 18 months*
Involvement in decision process	No action, baseline	Better information supports public notice and comment. Better notice and comment opportunities on expected final specifications.	Better notice and comment opportunities on expected final specifications. No additional time for environmental or economic analysis of proposed specifications, (except for one additional month under Option 2.)	Better information supports public notice and comment. Better notice and comment opportunities on expected final specifications.	Better notice and comment opportunities on expected final specifications.
Change in fishing seasons	No action, baseline	None	Change of season to July 1 can cause problems for conduct of sablefish IFQ fishery. Option 1 would eliminate this impact.	None	None

Table 7-1 Community impacts of the alternatives (Continued)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	No action, baseline. Specifications based on previous years surveys	*Specifications based on surveys two years before*	*Start the fishing year on July 1*	*Determine specifications for two years at a time.*	*Specifications run for 18 months*
Mean revenues	No action, baseline	Possible decline in mean revenues from groundfish fishery, although the result is tentative. If it occurs, there could be reduced incomes in fishing communities.	Possible overall decline in mean revenues from groundfish fishery, although the result is tentative. If it occurs, there could be reduced incomes in fishing communities. Any decline would be **smaller** than under Alt 2.	Possible overall decline in mean revenues from groundfish fishery, although the result is tentative. If it occurs, there could be reduced incomes in fishing communities. Any decline is likely to be **larger** than under Alt 2.	Similar to those under Alternative 1, unless a second proposed rule is required, resulting in effects similar to Alternative 3.
Year-to-year variability	No action, baseline	Possible increased year-to-year variability in revenues, although the result is tentative. If it occurs, it may create increased annual fluctuation in fishing community income.	Possible increased year-to-year variability in revenues, although the result is tentative. If it occurs, it may create increased annual fluctuation in fishing community income. Any increase would be **smaller** than under Alt 2.	Possible increased year-to-year variability in revenues, although the result is tentative. If it occurs, it may create increased annual fluctuation in fishing community income. Any increase would be **larger** than under Alt 2.	No increase in year-to-year variability, unless a second proposed rule is needed resulting in effects similar to Alternative 3.
CDQ groups	No action, baseline	Income impacts could affect CDQ groups and communities.	There are sablefish CDQ allocations so CDQ groups might be affected by the change in fishing year.	Income impacts could affect CDQ groups and communities.	No impacts

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Appendix A

Draft Amendment Language for the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish, Implementing Alternative 2 and Options A and B

Title:

The title of the document is revised to read as follows:

Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area

Section 3.0 is modified as follows:

1. The second introductory paragraph is revised to read as follows:

> One feature of the format of this FMP is that such items as Allowable Biological Catch, Expected Annual Harvest and annual catch statistics which are likely to change from time to time have been arranged in Annexes. This should facilitate both the drafting and review process when such changes are made in the future.

2. In Section 3.3, delete definitions 2. and 3. Delete the number 1. for the first definition.

Section 4.0 is revised to read as follows:

1. Delete "4.1 Areas and Stocks Involved"

2. Renumber section 4.1.1 to 4.1

3. Delete sections 4.1.2 through 4.2.2.3, including all figures and tables.

4. Add sections 4.2, 4.3, and 4.4 to read as follows:

4.2 Species of Fish Targeted

The Bering Sea supports about 300 species of fishes, the majority of which are found near or on the bottom (Wilimovsky 1974). Among the pelagic species are the commercially important, or potentially important groups such as the salmon (Oncorhynchus), herring (Clupea), smelts (Osmerus), and capelin (Mallotus). The fish groups of primary concern in this plan are the bottom or near-bottom dwelling forms--the flounders, rockfish, sablefish, cod, pollock, and Atka mackerel. Although not bottom-dwelling, squids (Cephalopoda) are also included in the plan.

There is a general simplification in the diversity of bottomfish species in the Bering Sea compared to the more southern regions of the Gulf of Alaska and Washington to California. As a result, certain species inhabiting the Bering Sea are some of the largest bottomfish resources found anywhere in the world. Relatively few groundfish species in the eastern Bering Sea and Aleutian Islands are large enough to attract target, or target fisheries: walleye pollock, Pacific cod, Pacific ocean perch, sablefish, Atka mackerel, several species of rockfishes and flatfishes. Since the 1960s, pollock catches have accounted for the majority of the Bering Sea groundfish harvest. Yellowfin sole and rock sole currently dominate the flatfish group and has the longest history of intense exploitation by foreign fisheries. Other flounder species that are known to occur in aggregations large enough to form target species or occasional target species are Greenland turbot, Pacific halibut, rock sole, flathead sole, Alaska plaice, and arrowtooth flounder.

Catch History

Catch statistics since 1954 are shown for the Eastern Bering Sea subarea in **Table 4.1a**. The initial target species was yellowfin sole. During the early period of these fisheries, total catches of groundfish reached a peak of 674,000 metric tons (t) in 1961. Following a decline in abundance of yellowfin sole, other species (principally walleye pollock) were targeted upon, and total catches rose to 2.2 million t in 1972. Catches have since varied from one to two million t as catch restrictions and other management measures were placed on the fishery.

Catches in the Aleutian region have always been much smaller than those in the Eastern Bering Sea. Target species have also been different (**Table 4.1b**): In the Aleutians, Pacific ocean perch (POP) was the initial target species. During the early years of exploitation, overall catches of Aleutian groundfish reached a peak of 112,000 t in 1965. As POP abundance declined, the fishery diversified to other species. Total catches from the Aleutians in recent years have been about 100,000 t annually.

Table 4.1.a. Groundfish and squid catches in the eastern Bering Sea, 1954-2001.

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex	Other Rock Fish	Yellow Fin Sole	Greenland Turbot
1954						12,562	
1955						14,690	
1956						24,697	
1957						24,145	
1958	6,924	171	6			44,153	
1959	32,793	2,864	289			185,321	
1960			1,861	6,100		456,103	36,843
1961			15,627	47,000		553,742	57,348
1962			25,989	19,900		420,703	58,226
1963			13,706	24,500		85,810	31,565
1964	174,792	13,408	3,545	25,900		111,177	33,729
1965	230,551	14,719	4,838	16,800		53,810	9,747
1966	261,678	18,200	9,505	20,200		102,353	13,042
1967	550,362	32,064	11,698	19,600		162,228	23,869
1968	702,181	57,902	4,374	31,500		84,189	35,232
1969	862,789	50,351	16,009	14,500		167,134	36,029
1970	1,256,565	70,094	11,737	9,900		133,079	19,691
1971	1,743,763	43,054	15,106	9,800		160,399	40,464
1972	1,874,534	42,905	12,758	5,700		47,856	64,510
1973	1,758,919	53,386	5,957	3,700		78,240	55,280
1974	1,588,390	62,462	4,258	14,000		42,235	69,654
1975	1,356,736	51,551	2,766	8,600		64,690	64,819
1976	1,177,822	50,481	2,923	14,900		56,221	60,523
1977	978,370	33,335	2,718	2,654	311	58,373	27,708
1978	979,431	42,543	1,192	2,221	2,614	138,433	37,423
1979	913,881	33,761	1,376	1,723	2,108	99,017	34,998
1980	958,279	45,861	2,206	1,097	459	87,391	48,856
1981	973,505	51,996	2,604	1,222	356	97,301	52,921
1982	955,964	55,040	3,184	224	276	95,712	45,805
1983	982,363	83,212	2,695	221	220	108,385	43,443
1984	1,098,783	110,944	2,329	1,569	176	159,526	21,317
1985	1,179,759	132,736	2,348	784	92	227,107	14,698
1986	1,188,449	130,555	3,518	560	102	208,597	7,710
1987	1,237,597	144,539	4,178	930	474	181,429	6,533
1988	1,228,000	192,726	3,193	1,047	341	223,156	6,064
1989	1,230,000	164,800	1,252	2,017	192	153,165	4,061
1990	1,353,000	162,927	2,329	5,639	384	80,584	7,267
1991	1,268,360	165,444	1,128	4,744	396	94,755	3,704
1992	1,384,376	163,240	558	3,309	675	146,942	1,875
1993	1,301,574	133,156	669	3,763	190	105,809	6,330

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex	Other Rock Fish	Yellow Fin Sole	Greenland Turbot
1994	1,362,694	174,151	699	1,907	261	144,544	7,211
1995	1,264,578	228,496	929	1,210	629	124,746	5,855
1996	1,189,296	209,201	629	2,635	364	129,509	4,699
1997	1,115,268	209,475	547	1,060	161	166,681	6,589
1998	1,101,428	160,681	586	1,134	203	101,310	8,303
1999	889,589	134,647	646	609	135	67,307	5,205
2000/d	1,132,736	151,372	742	704	239	84,057	5,888
2001/e	1,381,598	121,357	842	1,144	293	54,325	4,218

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/b	Atka Mackerel	Squid	Other Species	Total (All Species)
1954							12,562
1955							14,690
1956							24,697
1957							24,145
1958						147	51,401
1959						380	221,647
1960	a						500,907
1961	a						673,717
1962	a						524,818
1963	a	35,643					191,224
1964	a	30,604				736	393,891
1965	a	11,686				2,218	344,369
1966	a	24,864				2,239	452,081
1967	a	32,109				4,378	836,308
1968	a	29,647				22,058	967,083
1969	a	34,749				10,459	1,192,020
1970	12,598	64,690				15,295	1,593,649
1971	18,792	92,452				13,496	2,137,326
1972	13,123	76,813				10,893	2,149,092
1973	9,217	43,919				55,826	2,064,444
1974	21,473	37,357				60,263	1,900,092
1975	20,832	20,393				54,845	1,645,232
1976	17,806	21,746				26,143	1,428,565
1977	9,454	14,393			4,926	35,902	1,168,144
1978	8,358	21,040		831	6,886	61,537	1,302,509
1979	7,921	19,724		1,985	4,286	38,767	1,159,547
1980	13,761	20,406		4,955	4,040	34,633	1,221,944
1981	13,473	23,428		3,027	4,182	35,651	1,259,666
1982	9,103	23,809		328	3,838	18,200	1,211,483
1983	10,216	30,454		141	3,470	15,465	1,280,285
1984	7,980	44,286		57	2,824	8,508	1,458,299
1985	7,288	71,179		4	1,611	11,503	1,649,109
1986	6,761	76,328		12	848	10,471	1,633,911
1987	4,380	50,372		12	108	8,569	1,639,121
1988	5,477	137,418		428	414	12,206	1,810,470
1989	3,024	63,452		3,126	300	4,993	1,630,382

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/b	Atka Mackerel	Squid	Other Species	Total (All Species)
1990	2,773	22,568		480	460	5,698	1,644,109
1991	12,748	30,401	46,681	2,265	544	16,285	1,647,455
1992	11,080	34,757	51,720	2,610	819	29,993	1,831,954
1993	7,950	28,812	63,942	201	597	21,413	1,674,406
1994	13,043	29,720	60,276	190	502	23,430	1,818,628
1995	8,282	34,861	54,672	340	364	20,928	1,745,890
1996	13,280	35,390	46,775	780	1,080	19,717	1,653,355
1997	8,580	42,374	67,249	171	1,438	20,997	1,640,590
1998	14,985	39,940	33,221	901	891	23,156	1,486,739
1999	9,827	33,042	39,934	2,008	393	17,045	1,200,387
2000	12,071	36,813	49,186	239	375	23,098	1,497,520
2001	12,244	26,590	28,524	265	1,758	19,127	1,652,285

a/ Arrowtooth flounder included in Greenland turbot catch statistics.
b/ Includes POP shortraker, rougheye, northern and sharpchin.
c/ Rocksole prior to 1991 is included in other flatfish catch statistics.
d/ Data through December 31, 2000.
e/ Data through October 27, 2001. Does not include CDQ.
Note: Numbers don't include fish taken for research.

Table 4.1.b. Groundfish and squid catches in the Aleutian Islands region, 1962-2001.

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex / b	Other Rock Fish	Greenland Turbot	Yellow Fin Sole
1962				200			
1963			664	20,800		7	
1964		241	1,541	90,300		504	
1965		451	1,249	109,100		300	
1966		154	1,341	85,900		63	
1967		293	1,652	55,900		394	
1968		289	1,673	44,900		213	
1969		220	1,673	38,800		228	
1970		283	1,248	66,900		285	
1971		2,078	2,936	21,800		1,750	
1972		435	3,531	33,200		12,874	
1973		977	2,902	11,800		8,666	
1974		1,379	2,477	22,400		8,788	
1975		2,838	1,747	16,600		2,970	
1976		4,190	1,659	14,000		2,067	
1977	7,625	3,262	1,897	8,080	3,043	2,453	
1978	6,282	3,295	821	5,286	921	4,766	
1979	9,504	5,593	782	5,487	4,517	6,411	
1980	58,156	5,788	274	4,700	420	3,697	
1981	55,516	10,462	533	3,622	328	4,400	
1982	57,978	1,526	955	1,014	2,114	6,317	
1983	59,026	9,955	673	280	1,045	4,115	
1984	81,834	22,216	999	631	56	1,803	
1985	58,730	12,690	1,448	308	99	33	
1986	46,641	10,332	3,028	286	169	2,154	
1987	28,720	13,207	3,834	1,004	147	3,066	
1988	43,000	5,165	3,415	1,979	278	1,044	
1989	156,000	4,118	3,248	2,706	481	4,761	
1990	73,000	8,081	2,116	14,650	864	2,353	
1991	78,104	6,714	2,071	2,545	549	3,174	1,380
1992	54,036	42,889	1,546	10,277	3,689	895	4
1993	57,184	34,234	2,078	13,375	495	2,138	0
1994	58,708	22,421	1,771	16,959	301	3,168	0
1995	64,925	16,534	1,119	14,734	220	2,338	6
1996	28,933	31,389	720	20,443	278	1,677	654
1997	26,872	25,166	779	15,687	307	1,077	234
1998	23,821	34,964	595	13,729	385	821	5
1999	965	27,714	565	17,619	630	422	13
2000/c	1,244	39,684	1,048	14,893	601	1,086	13
2001/d	819	33,634	1,033	15,540	605	1,086	15

Table 4.1.b. Continued.

Year	Sole	Rock	Other Flat Fish	Arrow Tooth Flounder	Atka Mackerel	Squid	Other Species	Total (All Species)
1962								200
1963				a				21,471
1964				a			66	92,652
1965				a			768	111,868
1966				a			131	87,589
1967				a			8,542	66,781
1968				a			8,948	56,023
1969				a			3,088	44,009
1970				274	949		10,671	80,610
1971				581			2,973	32,118
1972				1,323	5,907		22,447	79,717
1973				3,705	1,712		4,244	34,006
1974				3,195	1,377		9,724	49,340
1975				784	13,326		8,288	46,553
1976				1,370	13,126		7,053	43,465
1977				2,035	20,975	1,808	16,170	67,348
1978				1,782	23,418	2,085	12,436	61,092
1979				6,436	21,279	2,252	12,934	75,195
1980				4,603	15,533	2,332	13,028	108,531
1981				3,640	16,661	1,763	7,274	104,199
1982				2,415	19,546	1,201	5,167	98,233
1983				3,753	11,585	510	3,675	94,617
1984				1,472	35,998	343	1,670	147,022
1985				87	37,856	9	2,050	113,310
1986				142	31,978	20	1,509	96,259
1987				159	30,049	23	1,155	81,364
1988				406	21,656	3	437	77,383
1989				198	14,868	6	108	186,494
1990				1,459	21,725	11	627	124,886
1991	n/a		88	938	22,258	30	91	117,942
1992	236		68	900	46,831	61	3,081	164,513
1993	318	59		1,348	65,805	85	2,540	179,659
1994	308		55	1,334	69,401	86	1,102	175,614
1995	356		47	1,001	81,214	95	1,273	183,862
1996	371		61	1,330	103,087	87	1,720	190,750
1997	271		39	1,071	65,668	323	1,555	139,049
1998	446		54	694	56,195	25	2,448	134,182
1999	577		53	746	51,636	9	1,633	102,582
2000	480		113	1,157	46,990	8	3,010	110,327
2001	526		96	1,220	61,234	5	3,851	119,664

a/ Arrowtooth flounder included in Greenland turbot catch statistics.
b/ Includes POP shortraker, rougheye, northern and sharpchin rockfish.
c/ Data through December 31, 2000.
d/ Data through October 27, 2001. Does not include CDQ.
Note: Numbers don't include fish taken for research.

4.3 Socioeconomic Characteristics of the Fishery

<u>Subsistence Fishery</u>

The earliest fisheries for groundfish in the eastern Bering Sea and Aleutian Islands were the native subsistence fisheries. The fish and other marine resources remain an important part of the life of native people, and dependence on demersal species of fish may have been critical to their survival in periods of the year when other sources of food were scarce or lacking. Fishing was in near-shore waters utilizing such species as cod, halibut, rockfish, and other species. These small-scale subsistence fisheries have continued to the present time. Although not well estimated, the total catch of groundfish in subsistence fisheries is thought to be minuscule relative to commercial fishery catches.

<u>Recreational Fishery</u>

At this time, there are no essentially recreational fisheries for groundfish species covered under this FMP. Recreational catches of groundfish in the BSAI region would take place in state waters and likely fall under the classification of subsistence fisheries.

<u>Charter Fishery</u>

A limited charter vessel fishery for Pacific halibut is based in Dutch Harbor. Three charter vessels participated in 1999.

<u>Commercial Fishery</u>

The first commercial venture for bottomfish occurred in 1864 when a single schooner fished for Pacific cod in the Bering Sea. This domestic fishery continued until 1950 when demand for cod declined and economic conditions caused the fishery to be discontinued. Fishing areas in the eastern Bering Sea were from north of Unimak Island and the Alaska Peninsula to Bristol Bay. Vessels operated from home ports in Washington and California and from shore stations in the eastern Aleutian Islands. The cod fishery reached its peak during World War I when the demand for cod was high. Numbers of schooners operating in the fishery ranged from 1-16 up to 1914 and increased to 13-24 in the period 1915-20. Estimated catches during the peak of the fishery ranged annually from 12,000-14,000 mt.

Another early fishery targeted Pacific halibut. Halibut were reported as being present in the Bering Sea by United States cod vessels as early as the 1800s. However, halibut from the Bering Sea did not reach North American markets until 1928. Small and infrequent landings of halibut were made by United States and Canadian vessels between 1928 and 1950, but catches were not landed every year until 1952. The catch by North American setline vessels increased sharply between 1958 and 1963 and then declined steadily until 1972.

Several foreign countries conducted large scale groundfish fisheries in the eastern Bering Sea and Aleutian Islands prior to 1991. Vessels from Japan, USSR (Russia), Canada, Korea, Taiwan, and Poland all plied the waters of the North Pacific for groundfish. In the mid 1950's, vessels from Japan and Russia targeted yellowfin sole, and catches peaked at over 550,000 mt in 1961. In the 1960's, Japanese vessels, and to a lesser extent Russian vessels, developed a fishery for Pacific ocean perch, pollock, Greenland turbot, sablefish, and other groundfish. By the early 1970's over 1.7 million mt of pollock was being caught by these two countries in the eastern Bering Sea annually. Korean vessels began to target pollock in 1968. Polish vessels fished briefly in the Bering Sea in 1973. Tiawanese

vessels entered the fishery in 1977. For more information on foreign fisheries in the BSAI, refer to NPFMC (1995), Megrey and Wespestad (1990), and Fredin (1987).

The foreign fleets were phased out in the 1980's. The transition period from foreign to fully domestic groundfish fisheries was stimulated by a quick increase in joint-venture operations. The American Fisheries Promotion Act (the so-called "fish and chips" policy) required that allocations of fish quotas to foreign nations be based on the nations contributions to the development of the U.S. fishing industry. This provided incentive for development of joint-venture operations, with U.S. catcher vessels delivering their catches directly to foreign processing vessels. Joint-venture operations peaked in 1987, giving way to a rapidly developing domestic fleet. By 1991, the entire BSAI groundfish harvest (2,126,600 mt, worth $351 million ex-vessel) was taken by only 391 U.S. vessels.

The commercial groundfish catch off Alaska totaled 1.9 million t in 1998, compared to 2.1 million t in 1997 Based on a preliminary estimate for 1998 that may not be consistent with the estimates for previous years, the ex-vessel value of the catch, excluding the value added by at-sea processing, decreased from $583 million in 1997 to $385 million in 1998. The value of the 1998 catch after primary processing was approximately $1 billion. The groundfish fisheries accounted for the largest share of the ex-vessel value of all commercial fisheries off Alaska in 1998 (40 percent), and approximately 80 percent of this total came from the BSAI management area. The Pacific salmon (*Oncorhynchus* spp.) fishery was second with $243 million or 26 percent of the total Alaska ex-vessel value. The value of the shellfish catch amounted to $219 million or 23 percent of the total for Alaska.

Walleye (Alaska) pollock (*Theragra chalcogramma*) has been the dominant species in the commercial groundfish catch off Alaska. The 1998 pollock catch of 1.25 million t accounted for 67 percent of the total groundfish catch of 1.87 million t. The next major species, Pacific cod (*Gadus macrocephalus*), accounted for 257,900 t or almost 14 percent of the total 1998 groundfish catch. The Pacific cod catch was down about 21 percent from a year earlier. The 1998 catch of flatfish, which includes yellowfin sole (*Pleuronectes asper*), rock sole (*Pleuronectes bilineatus*), and arrowtooth flounder (*Atheresthes stomias*) was 223,100 t in 1998, down almost 35 percent from 1997. Pollock, Pacific cod, and flatfish comprised almost 93 percent of the total 1998 catch. Other important species are sablefish (*Anoplopoma fimbria*), rockfish (*Sebastes and Sebastolobus* spp.), and Atka mackerel (*Pleurogrammus monopterygius*).

Trawl, hook and line (including longline and jigs), and pot gear account for virtually all the catch in the BSAI groundfish fisheries. There are catcher vessels and catcher processor vessels for each of these three gear groups. From 1993-1998, the trawl catch averaged about 91 percent of the total catch, while the catch with hook and line gear accounted for 7.5 percent. Most species are harvested predominately by one type of gear, which typically accounts for 90 percent or more of the catch. The one exception is Pacific cod, where in 1998, 48 percent (123,000 t) was taken by trawls, 43 percent (110,000 t) by hook and line gear, and 9 percent (24,000 t) by pots. During the same period, catcher vessels took 41 percent of the catch and catcher processor vessels took the other 59 percent.

The discards of groundfish in the groundfish fishery have received increased attention in recent years by NMFS, the Council, Congress, and the public at large. The discard rate is the percent of total catch that is discarded. For the BSAI and GOA fisheries as a whole, the annual discard rate for groundfish decreased from 15.1 percent in 1994 to 8.2 percent in 1998 with the vast majority of the reduction occurring in 1998. The 43 percent reduction in the overall discard rate in 1998 is the result of prohibiting pollock and Pacific cod discards in all BSAI and GOA groundfish fisheries beginning in 1998. Total discards decreased by almost 49 percent in 1998 with the aid of a 9.5 percent reduction in

total catch. Estimates of total catch, discarded catch, and discard rates by species, area, gear, and target fishery are provided in the annual Economic SAFE report.

The bycatch of Pacific halibut, crab, Pacific salmon, and Pacific herring (*Clupea pallasi*) has been an important management issues for more than twenty years. The retention of these species was prohibited first in the foreign groundfish fisheries. This was done to ensure that groundfish fishermen had no incentive to target these species. For a review of the history of prohibited species bycatch management, refer to Witherell and Pautzke (1997).

Residents of Alaska and of other states, particularly Washington and Oregon, are active participants in the BSAI groundfish fisheries. For the domestic groundfish fishery as a whole, 92 percent of the 1998 catch was made by vessels with owners who indicated that they were not residents of Alaska.

Estimates of ex-vessel value by area, gear, type of vessel, and species are included in the annual Economic SAFE report. The ex-vessel value of the domestic landings in the combined GOA and BSAI groundfish fisheries, excluding the value added by at-sea processing, increased from $425 million in 1993 to $585 million in 1995, decreased in 1996 to $531 million, and increased to $570 in 1997. The distribution of ex-vessel value by type of vessel differed by area, gear and species. In 1997, catcher vessels accounted for 44 percent of the ex-vessel value of the groundfish landings compared to 42 percent of the total catch because catcher vessels take larger percentages of higher priced species such as sablefish which was $2.25 per pound in 1997. Similarly, trawl gear accounted for only 67 percent of the total ex-vessel value compared to 90 percent of the catch because much of the trawl catch is of low priced species such as pollock which was about $0.10 per pound in 1997.

For the BSAI and GOA combined, 82.5 percent of the 1997 ex-vessel value was accounted for by vessels with owners who indicated that they were not residents of Alaska. Vessels with owners who indicated that they were residents of Alaska accounted for 15.5 percent of the total and the remaining 2.0 percent was taken by vessels for which the residence of the owner was not known. The vessels owned by residents of Alaska accounted for a much larger share of the ex-vessel value than of catch (15.5% compared to 8.5%) because these vessels accounted for relatively large shares of the higher priced species such as sablefish.

Employment data for at-sea processors (but not including inshore processors) indicate that in 1998, the crew weeks totaled 106,365 with the majority of them (101,064) occurring in the BSAI groundfish fishery. In 1998, the maximum monthly employment (18,864) occurred in October. Much of this was accounted for by the BSAI pollock fishery.

There are a variety of at least partially external factors that affect the economic performance of the BSAI and GOA groundfish fisheries. They include landing market prices in Japan, wholesale prices in Japan, U.S. imports of groundfish products, U.S. per capita consumption of seafood, U.S. consumer and producer price indexes, foreign exchange rates, and U.S. cold storage holdings of groundfish. Exchange rates and world supplies of fishery products play a major role in international trade. Exchange rates change rapidly and can significantly affect the economic status of the groundfish fisheries.

4.4 Description of Fishing Communities

Traditionally, the dependence of BSAI and GOA coastal communities on the groundfish fisheries and fisheries affected by the groundfish fisheries has resulted from these communities being one or more of the following: 1) the home ports of vessels that participate in these fisheries; 2) the residence of participants in the harvesting or processing sectors of these fisheries; 3) the port of landings for these fisheries; 4) the location of processing plants; and 5) a service or transportation center for the fisheries. With the creation of the pollock, sablefish and halibut community development quota (CDQ) programs for the BSAI in the early to mid-1990s and with the expansion of those programs into the multispecies CDQ program with the addition of all BSAI groundfish and crab by the late 1990s, the dependence now includes the participation of coastal, Western Alaska, Native communities in the CDQ program. The CDQ program has provided the following for the CDQ communities: 1) additional employment in the harvesting and processing sectors of these fisheries; 2) training; and 3) royalty income when the CDQs are used by a fishing company. In many cases, those royalties have been used to increase the ability of the residents of the CDQ communities to participate in the regional commercial fisheries.

Almost 100 Alaskan communities are listed as home ports. For the vast majority of the Alaska home ports, trawl vessels account for none or a very small part of the vessels and the mean length is less than 50 feet. Many of the Alaska home ports had fewer than 5 vessels. The Alaska home ports with typically more than 50 fishing vessels are as follows: Homer (100+), Juneau (200+), Kodiak (100+), Petersburg (50+), and Sitka (100+). For these five home ports, all but Kodiak had non-trawl vessels account for at least 90 percent of the vessels, and in Petersburg and Sitka almost 100 percent were non-trawl vessels. In 1997, the mean vessel lengths were as follow: Homer, 52 feet; Juneau, 54 feet; Kodiak, 61 feet; Petersburg, 52 feet; and Sitka, 44 feet. Sand Point, which typically had more than 30 vessels and a mean vessel length of 47 feet in 1997, was unique among Alaska home ports in that typically trawl vessels accounted for more than 50 percent of its vessels.

From 1991 to 1997, the number of fishing vessels in the BSAI and GOA groundfish fisheries owned by Alaska residents decreased from 1,511 to 916, with most of the decrease occurring in 1992, and the mean length increased from 45 feet to 49 feet. Trawl vessels accounted for fewer than 10 percent of the total in any year and for fewer than 2 percent of the overall decrease in the number of vessels between 1991 and 1997.

The vast majority of the groundfish fishing vessels owned by Alaska residents use hook-and-line gear and operate only in the GOA. For example, of the 894 Alaskan owned fishing vessels that participated in the BSAI and GOA groundfish fisheries in 1996, 852 fished in the GOA compared to only 115 in the BSAI and 752 used hook-and-line gear compared to either 140 for pot gear or 75 for trawl gear. This is explained by the following: 1) the small size of most of the Alaska vessels; 2) the ability of small vessels to use hook-and-line gear effectively and safely, particularly in the GOA; and 3) the greater proximity of GOA fishing grounds to the home ports and owners' residences for the vast majority of the Alaska vessels.

With respect to groundfish fisheries, the hook-and-line vessels owned by Alaska residents have been involved almost exclusively in the sablefish, Pacific cod, and rockfish fisheries. Trawlers owned by Alaska residents principally have been involved in the pollock, Pacific cod and flatfish fisheries. In 1996, 20 of the 75 Alaska owned trawlers participated in the BSAI groundfish fishery compared to 69 of the 752 Alaskan hook-and-line vessels, and 40 of the 140 Alaskan pot boats.

Vessels of residents of Alaska account for a larger percent of the ex-vessel value of the catch than of the weight of the catch. For example, in 1996, these vessels accounted for only 7.9 percent of the BSAI and GOA groundfish catch, but 14.5 percent of its ex-vessel value. This occurs because a larger percent of the catch of these vessels consists of higher priced groundfish species that are taken with hook-and-line gear. These species include sablefish, some of the higher priced rockfish, and Pacific cod .

When the fishing ports are ranked, from highest to lowest, on the basis of their 1997 groundfish landings and value, the first five ports account for in excess of 95 percent of the total Alaska groundfish landings. These are, in rank order:

Port & Ranking	Metric Tons*	Value	Number of Processors
1. Dutch Harbor/Unalaska	224,000	$59,774,500	6
2. Akutan	<120,000	NA	1
3. Kodiak	84,000	$33,488,800	9
4. Sand Point	<45,000	NA	1
5. King Cove	<25,000	NA	1

* estimated total groundfish landings
NA - data cannot be reported due to “confidentiality” constraints

For reference, in 1997, the sixth ranked Alaska groundfish landings port was Seward, Alaska. The total quantity of groundfish landed in Seward was approximately one-third that of King Cove, by far the smallest of the top five Alaska groundfish landings ports, and was dominated by sablefish, the only BSAI and GOA groundfish species managed under an ITQ program. Furthermore, much of the Seward groundfish catch comes from State waters (e.g., Prince William Sound). After Seward, the quantities of groundfish landings drop off even more sharply for the remaining ports. For these reasons, a natural break occurs between the top five ports and the remaining ports. Therefore, the balance of this section will focus on the five primary groundfish ports, listed above.

Dutch Harbor/Unalaska and Akutan are located on the Bering Sea side of the Alaska Peninsula/Aleutian Island chain, while Sand Point and King Cove are on the Gulf of Alaska side and Kodiak Island, where the port and City of Kodiak are located, is in the Gulf. Nonetheless, a substantial portion of the groundfish processed in Sand Point and King Cove is harvested in the Bering Sea, as is a somewhat lesser share of that landed in Kodiak. Historically, relatively small amounts of groundfish harvested in the GOA have been delivered for processing in Dutch Harbor/Unalaska and Akutan.

At present, pollock and Pacific cod are the primary groundfish species landed and/or processed in these five ports. Alaska Department of Fish and Game fish ticket data indicate that in Dutch Harbor/Unalaska and Akutan, pollock represented 83 percent and 76 percent, respectively, of the 1997 total groundfish landings in these ports, with Pacific cod making up virtually all of the balance. In the case of Sand Point, pollock and Pacific cod, respectively, accounted for 69 percent and 29 percent of the total, with fractional percentages of other groundfish species accounting for the rest. In King Cove, this relationship was reversed, with pollock catch-share at 31 percent and Pacific cod at 69 percent of the groundfish total. Kodiak presented the most diversified species complex, with pollock representing 43 percent, Pacific cod 36 percent, assorted flatfishes at 14 percent, and a mix of other groundfish species making up the balance of the total.

Dutch Harbor/Unalaska

Dutch Harbor/Unalaska is located approximately 800 miles southwest of Anchorage and 1,700 miles northwest of Seattle. Unalaska is the 11th largest city in Alaska, with a reported year-round population of just over 4,000. The name Dutch Harbor is often applied to the portion of the City of Unalaska located on Amaknak Island, which is connected to Unalaska Island by a bridge. Dutch Harbor is fully contained within the boundaries of the City of Unalaska, which encompasses 115.8 square miles of land and 98.6 square miles of water (Alaska Department of Community and Regional Affairs 1998).

Unalaska is primarily non-Native, although the community is culturally diverse. Subsistence activities remain important to the Aleut community and many long-time non-Native residents, as well. Salmon, Pacific cod, Dolly Varden, Pacific halibut, sea bass, pollock and flounders are the most important marine species, according to Alaska Department of Fish and Game reports. Sea urchins, razor and butter clams, cockles, mussels, limpets, chiton, crabs, and shrimps make up the shellfish and invertebrates most commonly harvested by subsistence users. Marine mammals traditionally harvested include sea lions, harbor and fur seals, and porpoises. Local residents also harvested reindeer, ducks, geese, sea gull eggs and other bird eggs in great numbers in previous years (NPFMC 1994a).

According to the 1990 U.S. Census, 682 total housing units existed and 107 were vacant. More than 2,500 jobs were estimated to be in the community. The official unemployment rate at that time was 1.0 percent, with 7.8 percent of the adult population not in the work force. The median household income was reportedly $56,215, and 15.3 percent of residents were living below the poverty level.

The majority of homes in the community are served by the City's piped water and sewer system. Sewage receives primary treatment before being discharged into Unalaska Bay. Approximately 90 percent of households are plumbed. Two schools are located in the community, serving 415 students.

Dutch Harbor/Unalaska has been called the most prosperous stretch of coastline in Alaska. With 27 miles of ports and harbors, several hundred local businesses, most servicing, supporting, or relying on the seafood industry, this city is the center of the Bering Sea fisheries.

Dutch Harbor is not only the top ranked fishing port in terms of landings in Alaska, but has held that distinction for the Nation, as a whole, each year since 1989. In addition, it ranked at or near the top in terms of the ex-vessel value of landings over the same period.

Virtually the entire local economic base in Dutch/Unalaska is fishery-related, including fishing, processing, and fishery support functions (e.g., fuel, supply, repairs and maintenance, transshipment, cold storage, etc.). Indeed, Dutch Harbor/Unalaska is unique among Alaska coastal communities in the degree to which it provides basic support services for a wide range of Bering Sea fisheries (Impact Assessment Incorporated 1998). It has been reported that over 90 percent of the population of this community considers itself directly dependent upon the fishing industry, in one form or another (NPFMC 1994a).

Historically, Dutch Harbor/Unalaska was principally dependent upon non-groundfish (primarily king and Tanner crab) landings and processing for the bulk of its economic activity. These non-groundfish species continue to be important components of a diverse processing complex in Dutch Harbor/Unalaska. In 1997, for example, nearly 2 million pounds of salmon, more than 1.7 million pounds of herring, and 34 million pounds of crabs were reportedly processed in this port.

Nonetheless, since the mid-1980s, groundfish has accounted for the vast majority of total landings in Dutch Harbor/Unalaska. Again, utilizing 1997 catch data, over 93.5 percent of total pounds landed and processed in this port were groundfish.

While well over 90 percent of this total tonnage was groundfish, a significantly smaller percentage of the attributable ex-vessel value of the catch is comprised of groundfish. While equivalent processed product values for non-groundfish production are not readily available, Alaska fish ticket data indicate that the ex-vessel value of these species landed in Dutch Harbor/Unalaska was nearly $43 million, in 1997; or about 60 percent of the reported gross product value of the groundfish output. If the value added through processing of these non-groundfish species were fully accounted for, the total would obviously exceed the ex-vessel value of the raw catch.

As suggested, transshipping is an integral component of the local service-based economy of this community, as well. The port serves as a hub for movement of cargo throughout the Pacific Rim. Indeed, the Great Circle shipping route from major U.S. west coast ports to the Pacific Rim passes within 50 miles of Unalaska. The Port of Dutch Harbor is among the busiest ports on the west coast. The port reportedly serves more than 50 domestic and foreign transport ships per month. Seafood products, with an estimated first wholesale value substantially in excess of a billion dollars, cross the port's docks each year and are carried to markets throughout the world.

The facilities and related infrastructure in Dutch Harbor/Unalaska support fishing operations in both the BSAI and GOA management areas. Processors in this port receive and process fish caught in both areas, and the wider community is linked to, and substantially dependent upon serving both the on-shore and at-sea sectors of the groundfish industry.

In a profile of regional fishing communities, published by the NPFMC in 1994, the local economy of Unalaska was characterized in the following way:

> If it weren't for the seafood industry, Unalaska would not be what it is today ... In 1991, local processors handled 600 million lbs. of seafood onshore, and 3 billion lbs. of seafood were processed offshore aboard floating processors that use Dutch Harbor as a land base. Seven shore-based and many floating processors operate within municipal boundaries.

While these figures presumably include both groundfish and non-groundfish species, and current sources identify at least eight shore-based processing facilities, they are indicative of the scope of this community's involvement in, and dependence upon, seafood harvesting and processing.

Because of this high level of economic integration between Dutch Harbor/Unalaska and the fishing industry, any action which significantly reduced the total allowable catch of groundfish from the Bering Sea/Aleutian Islands (and to a lesser extent Gulf of Alaska) management areas would be expected to have a severely negative impact on the port and surrounding community.

While the port continues to be actively involved in support operations for crab, salmon, and herring fisheries, these resources do not hold the potential to offset economic impacts which would be associated with a significant reduction in (especially pollock and Pacific cod) groundfish TACs. Indeed, the newest and largest of the processing facilities in Dutch Harbor/Unalaska are dedicated to pollock surimi production, and could not readily shift production to an alternative species or product form, even if such an opportunity were to exist.

Detailed data on costs, net earnings, capital investment and debt service for the harvesting, processing, and fisheries support sectors in Dutch Harbor/Unalaska are not available. Therefore, it is not possible to quantify the probable net economic impacts on this community attributable to a significant reduction in groundfish TACs for the Bering Sea and Aleutian Islands or Gulf of Alaska management areas. It is apparent, however, that no alternative fisheries exist into which the port might diversify, in order to offset such a reduction in groundfish activity (crab resources remain biologically depressed and those fisheries are fully subscribed. The herring and salmon fisheries are managed by the State of Alaska with limited entry programs. Neither are there prospects (at least in the foreseeable future) for non-fishery related economic activity in Dutch Harbor/Unalaska that could substantially mitigate impacts from a significant reduction in groundfish fishing activity.

While Dutch Harbor has been characterized as one of the world's best natural harbors, it offers few alternative opportunities for economic activity beyond fisheries and fisheries support. Its remote location, limited and specialized infrastructure and transportation facilities, and high cost make attracting non-fishery related industrial and/or commercial investment doubtful (at least in the short-run). Sea floor minerals exploration, including oil drilling, in the region have been discussed. No such development seems likely in the short run, however. Unalaska, also, reportedly expected nearly 6,000 cruise ship visitors in 1996.

Without the present level of fishing and processing activities, it is probable that many of the current private sector jobs in this groundfish landings port could be lost, or at the very least, would revert to highly seasonal patterns, with the accompanying implications for community stability observed historically in this and other Alaska seafood processing locations dependent upon transient, seasonal work forces. It is likely, for example, that the number of permanent, year-round residents of Dutch Harbor/Unalaska would decline significantly. This would, in turn, alter the composition and character of the community and place new, and different, demands on local government.

The municipal government of the City of Unalaska is substantially dependent upon the tax revenues which are generated from fishing and support activities. While a detailed treatment of municipal tax accounts is beyond the scope of this assessment, it is clear that, between the State of Alaska's Fisheries Business Tax and Fishery Resource Landings Tax revenues (both of which are shared on a 50/50 basis with the community of origin), local raw fish sales tax, real property tax (on fishery related property), and permits and fees revenues associated with fishing enterprises, the City of Unalaska derives a substantial portion of its operating, maintenance, and capital improvement budget from fishing, and especially groundfish fishing, related business activities. Should the groundfish harvest in the BSAI management area be substantially reduced, the municipality could experience a very significant reduction in its tax base and revenues (depending upon the species and size of the reduction). Potentially, the magnitude of these revenue reductions could be such that they could not readily be compensated for by the municipal government.

The local private business infrastructure which has developed to support the needs and demands of the fishery-based population of Dutch Harbor/Unalaska would very clearly suffer severe economic dislocation, should the number of employees in the local plants and fishing fleets decline in response to substantial TAC reductions. While insufficient cost and investment data exist with which to estimate the magnitude of probable net losses to these private sector businesses, it seems certain that a substantial number would fail. With no apparent economic development alternative available to replace groundfish harvesting and processing in Dutch Harbor/Unalaska (at least in the short run), there would be virtually no market value associated with these stranded assets.

<u>Akutan</u>

Akutan is located on Akutan Island in the eastern Aleutian Islands, one of the Krenitzin Islands of the Fox Island group. The community is approximately 35 miles east of Unalaska and 766 air miles southwest of Anchorage. Akutan is surrounded by steep, rugged mountains reaching over 2,000 feet in height. The village sits on a narrow bench of flat, treeless terrain. The small harbor is ice-free year-round, but frequent storms occur in winter and fog in summer. The community is reported to have a population of 414 persons, although the population can swell to well over 1,000 during peak fish processing months.

During the 1990 U.S. Census, 34 total housing units existed and 3 were vacant. 527 jobs were estimated to be in the community. The official unemployment rate at that time was .4 percent, with 7.4 percent of all adults not in the work force. The median household income was $27,813, and 16.6 percent of the residents were living below the poverty level. One school is in the community, serving 24 students.

Water is supplied from local streams, treated, and piped into homes. The seafood processing plant operates its own water treatment facility.

Akutan ranks as the second most significant landings port for groundfish on the basis of tons delivered and has been characterized as a unique community in terms of its relationship to these BSAI fisheries. According to a recent social impact assessment, prepared for the NPFMC, while Akutan is the site of one of the largest of the shoreside groundfish processing plants in the region, the community is geographically and socially separate from the plant facility.

Indeed, while the village of Akutan was initially judged to be ineligible to participate in the State of Alaska's CDQ program, based largely upon its being associated with "... a previously developed harvesting and processing capability sufficient to support substantial groundfish participation in the BSAI ...", it was subsequently determined that the community of Akutan was discrete and distinct from the Akutan groundfish processing complex.

As a result, Akutan has a very different relationship to the region's groundfish fisheries than does, for example, Dutch Harbor/Unalaska or Kodiak. While the community of Akutan derives economic benefits from its proximity to the large Trident Seafoods shore plant (and a smaller permanently moored processing vessel, operated by Deep Sea Fisheries, which does only crab), the entities have not been integrated in the way other landings ports and communities on the list have.

As a CDQ community, the community of Akutan enjoys access to the BSAI groundfish resource independently of direct participation in the fishery. The CDQ communities as a group will receive CDQs equal to 7.5 percent of each BSAI groundfish TAC, except for the fixed gear sablefish TACs. The CDQ communities will receive 20 percent of the fixed gear sablefish TACs for the eastern Bering Sea and the Aleutian Islands areas. Therefore, the CDQs available to the CDQ group to which Akutan is a member will change as the BSAI TACs change. As TACs decrease, the value per unit of CDQ would be expected to increase and at least partially offset the effect of the decrease in quantity. However, it is not known whether the total value of the CDQs would increase or decrease if TACs and, therefore, CDQs decrease. Similarly, the economic benefits the community derives from the local 1 percent raw fish tax from landings at the nearby plant are dependent on BSAI groundfish TACs and the resulting ex-vessel value of groundfish landings. As with the value of CDQs, typically decreases in TACs and landings would be expected to be at least partially offset by increases in ex-vessel prices.

Although this conclusion pertains to the community of Akutan, implications for the groundfish landings port of Akutan are quite different. The Trident plant is the principal facility in the Akutan port and, historically, a number of smaller, mobile processing vessels have operated seasonally out of the port of Akutan. Therefore, a substantial decrease in groundfish landings in this region, in response to decreases in TACs being assessed in this document, could have profoundly negative implications. Akutan does not have a boat harbor or an airport in the community. Beyond the limited services provided by the plant, no an opportunity exists in Akutan to provide a support base for other major commercial fisheries. Indeed, alternative economic opportunities of any kind are extremely limited.

While crab processing was a major source of income for the Akutan plant during the boom years of the late 1970s and early 1980s, with the economic collapse of this resource base in the early 1980s, groundfish processing became the primary source of economic activity. In 1997, for example, State of Alaska and NMFS catch records indicate that, while landings of herring and crabs were reported for the Akutan plant, more than 98 percent of the total pounds landed were groundfish, and these made up more than 80 percent of the estimated total value.

An obvious alternative to groundfish processing which could be developed to offset a significant reduction in groundfish landings in Akutan does not appear. Fisheries for crabs, halibut, salmon, and herring, while important sources of income to the region, are fully developed. Therefore, should the groundfish TAC be significantly reduced, most of the jobs held by employees of the plant would likely disappear (or at a minimum, become seasonal) and people would leave the area (although the exact number is unknown).

No data on cost, net revenues, capital investment and debt structure are available with respect to Trident Seafood’s Akutan plant complex. It is not possible, therefore, to quantify probable attributable net impacts to plant owners/operators of a potential reductions in groundfish catches, although as noted above, the Akutan facility is almost completely dependent upon pollock and Pacific cod deliveries. Should TACs for these two species decline significantly, the impacts would be greater than if TACs for other groundfish species were reduced. While some adjustment to alternative groundfish species might be possible, in response to a sharp decline in pollock and/or Pacific cod TACs, the fact that the plant has not become more involved with other groundfish species during the times of the year in which pollock and Pacific cod are not available suggests that the economic viability of such alternatives is limited and certainly inferior for the plant.

While the distribution of impacts across ports would not be expected to be uniform, should, in particular, pollock and/or Pacific cod TACs be reduced, it is likely that there could be substantial stranded capital costs and job losses in the port of Akutan. The size and rate of such losses is largely an empirical question.

Whereas the 1990 U.S. Census reported the population of Akutan at just under 600 (and the Alaska Department of Community and Regional Affairs CIS data places the figure at 414, in 1997), the local resident population is estimated at 80, with the remaining individuals being regarded as non-resident employees of the plant.

The permanent residents of the village are, reportedly, almost all Aleut. While some are directly involved in the cash economy (e.g., a small boat near-shore commercial fishery), many depend upon subsistence activities or other non-cash economic activities to support themselves and their families. The species important for subsistence users reportedly include: salmon, halibut, Pacific cod, pollock, flounders, Dolly Varden, greenling, sea lions, harbor and fur seals, reindeer, ducks and geese and their eggs, as well as intertidal creatures (e.g., clams, crabs, mussels). Berries and grasses are also collected as part of the subsistence harvest (NPFMC 1994a). These activities would be expected to be largely unaffected by any action to reduce the BSAI groundfish TAC.

Kodiak

The groundfish landings port of Kodiak is located near the eastern tip of Kodiak Island, southeast of the Alaska Peninsula, in the Gulf of Alaska. The City of Kodiak is the sixth largest city in Alaska, with a population of 6,869 (Alaska Department of Community and Regional Affairs 1998). The City of Kodiak is 252 air miles south of Anchorage. The port and community are highly integrated, both geographically and structurally. The port and community are the de facto center of fishing activity for the western and central Gulf of Alaska.

Kodiak is primarily non-Native, and the majority of the Native population are Sugpiaq Eskimos and Aleuts. Filipinos are a large subculture in Kodiak due to their work in the canneries. During the 1990 U.S. Census, 2,177 total housing units existed and 126 were vacant. An estimated 3,644 jobs were in the community. The official unemployment rate at that time was 4.4 percent, with 23 percent of the adult population not in the work force. The median household income was $46,050, and 6.2 percent of residents were living below the poverty level. Pillar Creek Reservoir and Monashka Reservoir provide water to the community, which is piped throughout the area. Piped sewage is processed in a secondary treatment plant. All homes are fully plumbed. Eight schools are located in the community, serving 2,252 students.

Kodiak supports at least nine processing operations which receive groundfish harvested from the GOA and, to a lesser extent, the BSAI management areas, and four more which process exclusively non-groundfish species. The port also supports several hundred commercial fishing vessels, ranging in size from small skiffs to large catcher/processors.

According to data supplied by the City:

> The Port of Kodiak is home port to 770 commercial fishing vessels. Not only is Kodiak the state's largest fishing port, it is also home to some of Alaska's largest trawl, longline, and crab vessels.

Unlike Akutan, or even Dutch Harbor/Unalaska, Kodiak has a more generally diversified seafood processing sector. The port historically was very active in the crab fisheries and, although these fisheries have declined from their peak in the late 1970s and early 1980s, Kodiak continues to support shellfish fisheries, as well as significant harvesting and processing operations for Pacific halibut, herring, groundfish, and salmon.

Kodiak processors, like the other onshore operations profiled in this section, are highly dependent on pollock and Pacific cod landings, with these species accounting for 43 percent and 36 percent of total groundfish deliveries, by weight, respectively. The port does, however, participate in a broader range of groundfish fisheries than any of the other ports cited. Most of this activity centers on the numerous flatfish species which are present in the GOA, but also includes relatively significant rockfish and sablefish fisheries.

In fact, Kodiak often ranks near the top of the list of U.S. fishing ports, on the basis of landed value, and is frequently regarded as being involved in a wider variety of North Pacific fisheries than any other community on the North Pacific coast.

In 1997, for example, the port recorded salmon landings of just under 44 million pounds, with an estimated ex-vessel value of over $12 million. Approximately 4.3 million pounds of Pacific herring were landed in Kodiak with an ex-vessel value of more than $717 thousand. Crab landings exceeded 1.1 million pounds and were valued at ex-vessel at more than $2.7 million.

While comparable product value estimates are not currently available for groundfish and non-groundfish production (i.e., first wholesale value), it may be revealing to note that groundfish landings accounted for 79 percent of the total tons of fish and shellfish landed in this port, in 1997.

In addition to seafood harvesting and processing, the Kodiak economy includes sectors such as transportation (being regarded as the transportation hub for southwest Alaska), federal/state/local government, tourism, and timber. The forest products industry, based upon Sitka spruce, is an important and growing segment of the Kodiak economy.

The community is, also, home to the largest U.S. Coast Guard base in the Nation. Located a few miles outside of the city center-proper, it contributes significantly to the local economic base. The University of Alaska, in conjunction with the National Marine Fisheries Service, operates a state-of-the-art fishery utilization laboratory and fishery industrial technology center in Kodiak, as well.

While Kodiak appears to be a much more mature and diversified economy that those of any other of the five primary groundfish landings ports in Alaska, it is likely that a substantial reduction in groundfish TAC in the Gulf, Aleutian Islands, and/or Bering Sea management area(s) could impose significant adverse economic impacts on Kodiak.

The absence of detailed cost, net revenue, capital investment and debt structure data for the Kodiak groundfish fishing and processing sectors precludes a quantitative analysis of the probable net economic impacts of such a TAC change. Nonetheless, one may draw insights from history, as when in the early-1980s king crab landings declined precipitously and Kodiak suffered a severe community-wide economic decline. It was largely the development of the groundfish fisheries which reinvigorated the local economy.

Unfortunately, an alternative fishery resource available to Kodiak fishermen and processors which could ameliorate significant reductions in groundfish landing does not appear. Neither do non-fishery based opportunities appear, at least in the short run, which could be developed to reduce the adverse economic impacts of such a change in groundfish harvesting and processing.

<u>Sand Point and King Cove</u>

These are two independent and geographically separate groundfish ‘landings ports’ (lying approximately 160 miles from one another), but because each has only a single processor and each community is small and remote, they are described jointly in this section.

Alaska CIS data place Sand Point’s 1998 population at 808, while King Cove’s population is listed as 897. Sand Point is located on Humboldt Harbor, Popof Island, 570 air miles from Anchorage. Sand Point is described by the Alaska Department of Community and Regional Affairs as "a mixed Native and non-Native community," with a large transient population of fish processing workers. During the April 1990 U.S. Census, 272 total housing units were in existence and 30 of these were vacant. A total of 438 jobs were estimated to be in the community. The official unemployment rate at that time was 2.9 percent, with 32.1 percent of all adults not in the work force. The median household income was $42,083, and 12.5 percent of the residents were living below the poverty level. One school is located in Sand Point, attended by 145 students.

King Cove is located on the Gulf of Alaska side of the Alaska Peninsula, 625 miles southwest of Anchorage. The community is characterized as a mixed non-Native and Aleut village. In the 1990 U.S. Census, 195 total housing units were in existence, with 51 of these vacant. The community had an estimated 276 jobs, with an official unemployment rate of 1.8 percent and 24.0 percent of all adults not in the work force. The median household income was $53,631, and 10 percent of the residents were living below the poverty level. One school is located in the community, attended by 140 students.

Sand Point and King Cove, like Akutan, are part of the Aleutians East Borough. Unlike Akutan, however, neither Sand Point nor King Cove qualify as a CDQ community. Indeed, both Sand Point and King Cove have had extensive historical linkages to commercial fishing and fish processing, and currently support resident commercial fleets delivering catch to local plants. These local catches are substantially supplemented by deliveries from large, highly mobile vessels, based outside of the two small Gulf of Alaska communities.

King Cove boasts a deep water harbor which provides moorage for approximately 90 vessels of various sizes, in an ice-free port. Sand Point, with a 25 acre/144 slip boat harbor and marine travel-lift, is home port to what some have called, “the largest fishing fleet in the Aleutian Islands” (NPFMC 1994a).

For decades, the two communities have principally concentrated on their respective area’s salmon fisheries. In 1997, for example, Sand Point and King Cove recorded salmon landings of several million pounds, each. State of Alaska data confidentiality requirements preclude reporting actual quantities and value when fewer than four independent operations are included in a category. Sand Point and King Cove each have one processor reporting catch and production data. In addition, King Cove had significant deliveries of Pacific herring and crabs. Recently, each community has actively sought to diversify its fishing and processing capability, with groundfish being key to these diversification plans.

According to a recent report presented to the Council (Impact Assessment Incorporated 1998):

> In terms of employment, 87 percent of Sand Point’s workforce is employed full time in the commercial fishery; for King Cove this figure is more than 80 percent (United States Army Corps of Engineers 1997, and 1998). In both cases, fishing employment is followed by local government (borough and local) and then by private businesses. Seafood processing ranks after each of these other employers, meaning that the vast majority of the workforce at the shore plants are not counted as community residents.

By any measure, these two communities are fundamentally dependent upon fishing and fish processing. In recent years, groundfish resources have supplanted salmon, herring, and crabs as the primary target species-group, becoming the basis for much of each community’s economic activity and stability.

Few alternatives to commercial fishing and fish processing exist, within the cash-economy, in these communities by which to make a living. However, subsistence harvesting is an important source of food, as well as a social activity, for local residents in both Sand Point and King Cove. Salmon and caribou are reportedly among the most important subsistence species, but crabs, herring, shrimps, clams, sea urchins, halibut and cod are also harvested by subsistence users. It is reported that Native populations in these communities also harvest seals and sea lions for meat and oil (Impact Assessment Incorporated 1998).

Any action which significantly diminishes the harvest of GOA and BSAI groundfish resources (especially those of pollock and Pacific cod) would be expected to adversely impact these two communities. King Cove is somewhat unique among the five key groundfish ports insofar as it is relatively more dependent upon Pacific cod than pollock, among the groundfish species landed (69 percent and 31 percent, respectively). Sand Point follows the more typical pattern with 69 percent of its groundfish landings being composed of pollock and 29 percent of Pacific cod (in 1997).

Because neither port has significant vessel support capabilities, their links to other groundfish fisheries is less direct than, say, either Kodiak or Dutch Harbor/Unalaska. This may suggest that reductions in TACs for species other than pollock and Pacific cod would have little or no direct impact on these two ports. However, because both compete with the larger ports for deliveries of these two groundfish species, structural changes in one or more of the other principal groundfish landings ports, attributable to TAC reductions for other than pollock and Pacific cod could, indirectly, affect King Cove and Sand Point. This is, however, largely an empirical question.

No data on cost, net revenues, capital investment and debt structure are available with respect to the Sand Point or King Cove plant complexes. It is not possible, therefore, to quantify probable attributable net impacts to plant owners/operators of the potential reductions in groundfish catches and deliveries to these landings ports.

Other Alaska Groundfish Fishing Communities

As noted above, the remaining 5 percent or so of the total groundfish landings made to Alaska fishing ports is distributed over more than twenty different locations (Table 3-44). Very few common characteristics are shared by all these remaining ports. Like virtually every settlement in Alaska (with the exception of Anchorage, population 254,269, in 1998), these landings ports are all relatively small communities. Some are exceedingly small, with year-round resident populations of a few dozen to a couple hundred people (e.g., Chignik - pop. 128; Pelican - pop. 196; St. Paul - pop. 739), while others could be regarded as small to moderate-sized towns, with populations numbering in the several thousands (e.g., Ketchikan - pop. 8,729; Kenai - pop. 6,950; Petersburg - pop. 3,356).

Community Development Communities

The purpose of the CDQ program was to extend the economic opportunities of the developing fisheries in the Bering Sea and Aleutian Islands (especially pollock) to small, rural communities which had otherwise not benefitted from their proximity to these valuable living marine resources.

As initially envisioned, the proposed program would set aside 7.5 percent of the Bering Sea and Aleutian Island's annual TAC for Alaska pollock for allocation to qualifying rural Alaskan communities. The program was initially proposed to run for a period of four year, lasting from 1992 through 1995, but was subsequently extended for an additional three years, carrying it through 1998. In the intervening period, a CDQ program for BSAI halibut and sablefish was implemented in 1995, a CDQ program for BSAI crab was implemented in 1998, the multi-species groundfish CDQ program will be implemented in late 1998, and the Council recommended extending the pollock CDQ allocations by including pollock in the multi-species groundfish CDQ program.

The purpose of the CDQ program is, essentially, to redistribute a portion of the economic and social benefits deriving from the rich fishery resources of the Bering Sea and Aleutian Islands management areas to coastal communities in western Alaska which have not, to date, benefitted from their proximity

to these fisheries. This is, historically, an economically depressed region of the Nation. By providing CDQ shares to qualifying communities, the expectation is that investment in capital infrastructure, community development projects, training and education of local residents, regionally based commercial fishing or related businesses can be developed and sustained.

CDQ communities are predominantly Alaska Native villages. They are remote, isolated settlements with few natural assets with which to develop and sustain a viable diversified economic base. As a result, unemployment rates are chronically high. This has led to habitual community instability.

While these communities effectively border some of the richest fishing grounds in the world, they have not been able, for the most part, to exploit their advantageous proximity. The full Americanization of these highly valued offshore fisheries has taken place relatively quickly (i.e., the last participation by foreign fishing vessels ended in the Bering Sea in 1990). But the scale of these fisheries (e.g., 2 million mt groundfish TAC), the severe physical conditions within which the fisheries are prosecuted, and the very high capital investment required to compete in the open-access management environment, all contributed to effectively precluding these villages from participating in this development. The CDQ program serves to ameliorate some of these apparent inequities by extending an opportunity to qualifying communities to directly benefit from the exploitation of these publicly owned resources.

The communities which are currently eligible to participate in the CDQ program include 56 coastal Alaska villages, with a combined population estimated at roughly 24,000. The CDQ-qualifying communities have organized themselves into six non-profit groups (with between 1 and 17 villages in each group). The CDQ-villages are geographically dispersed, extending from Atka, on the Aleutian chain, along the Bering coast, to the village of Wales, near the Arctic Circle. The following lists the current CDQ groups.

Aleutian Pribilof Island Community Development Association (APICDA): The six communities represented by APICDA are relatively small and located adjacent to the fishing grounds. Population of the six communities is approximately 730.

Bristol Bay Economic Development Corporation (BBEDC):BBEDC represents 13 villages distributed around the circumference of Bristol Bay, including Dillingham, the second-largest CDQ community with approximately 2,200 residents and the location of BBEDC’s home office. Total population is approximately 3,900.

Central Bering Sea Fisherman’s Association (CBSFA): CBSFA is unusual among CDQ groups in that it represents a single community, St. Paul in the Pribilof Islands.

Coastal Villages Region Fund (CVRF): CVRF manages the CDQ harvest for its 17 member villages. The villages are located along the coast between the southern end of Kuskokwim Bay and Scammon Bay, including Nunivak Island.

Norton Sound Economic Development Corporation (NSEDC): Fifteen villages and approximately 8,700 people make up the region represented by NSEDC, which ranges from St. Michael to Diomede.

Yukon Delta Fisheries Development Association (YDFDA): YDFDA represents the four communities, Alakanuk, Emmonak, Kotlik, and Sheldon Point, containing approximately 1, 750 people.

By design, at the time of implementation, CDQ communities could have no current or historical linkage to the fisheries in question. In fact, if a rural coastal community had such a history, it was precluded from receiving a CDQ allocation. Therefore, to derive economic benefit from their respective allocations, it has been necessary (with the exception of some of the halibut CDQs) for each CDQ group to enter into a relationship with one or more of the commercial fishing companies which participate in the open-access fishery. In this way, the CDQ community brings to the relationship preferential access to the fish and the partnering firm brings the harvesting/processing capacity. The nature of these relationships differs from group to group. In every case, the CDQ community receives royalty payments on apportioned catch shares. Some of the agreements also provide for training and employment of CDQ-community members within the partners' fishing operations, as well as, other community development benefits.

Fishing Communities not Adjacent to the Management Areas

Many of the participants in the BSAI and GOA groundfish fisheries are not from the communities adjacent to the management areas. Therefore, many of the fishing communities that are substantially dependent on or substantially engaged in the harvest or processing of BSAI or GOA groundfish fishery resources are not adjacent to the management areas. This is particularly true for the BSAI fishery because the adjacent communities are small and remote. Even in the case of Unalaska and Akutan, the two BSAI communities with large groundfish processing plants, a large part of the processing plant labor force is accounted for by individuals who are neither local nor Alaska residents. In the GOA, local residents play a substantially larger role in the harvesting and processing sectors of the groundfish industry as well as in the support industries.

Vessels that participated in the BSAI and GOA groundfish fisheries had home ports in nine states other than Alaska. However, only three states had home ports for more than 2 vessels. They were: California with fewer than 20 vessels, Oregon with 42 to 75 vessels, and Washington with 310 to 423 vessels. In 1997, 25 of the 48 vessels with Oregon home ports used trawl gear and the mean vessel length of the Oregon vessels was 75 feet. In 1997, 136 of the 331 vessels with Washington home ports used trawl gear and the mean vessel length of the Washington vessels was 115 feet. In comparison, fewer than 10 percent of the vessels with Alaska home ports used trawl gear in 1997 and their mean length was 49 feet.

Almost all of the non-Alaska home ports had fewer than 10 vessels and many had only a few. Seattle, with typically about 300 vessels, was the only non-Alaska port with more than 50 vessels. Next after Seattle, was Newport with 17 vessels in 1997 and Portland with 19 vessels. For Seattle, 122 of the 282 vessels in 1997 were trawlers and the mean length of all vessels was 122 feet. The comparable numbers for Portland and Newport, respectively, are 5 of 19 and 64 feet and 16 of 17 and 91 feet.

Delete Section 5.0

Delete Section 6.0

Delete Section 7.0

Section 8 is revised as follows:

1. Sections 8.3, 8.4, 8.5, 8.6, and 8.7 and Tables 20, 21, and figures 21, 22, 23, and 24 are deleted.

2. Section 8.1 is renumbered 5.1

3. Section 8.2 is renumbered 5.2

4. Section 8.8 is renumbered 5.3.

5. Section 8.9 is renumbered 5.4.

6. Section 8.10 is renumbered 5.5.
7. Section 8.11 is renumbered 5.6.

8. Section 8.12 is renumbered 5.7.

9. Section 8.13 is renumbered 5.8.

10 Section 8.14 is renumbered 5.9.

11. Section 8.15 is renumbered 5.10.

12. Section 8.16 is renumbered 5.11.

13. Section 8.17 is renumbered 5.12.

14. In the new section 5.11, references to section 8.1 and 8.9.1 are changes to 5.1 and 5.4.1, respectively.

Renumber Section 9 to Section 6

Renumber Section 10 to section 7

The new section 7 is modified as follows:

1. In Section 7.1 the following paragraph is added to the end of the section:

> The groundfish resources off Alaska have been harvested and processed entirely by U. S.-flagged vessels since 1991. Conservation and management measures contained in this FMP apply exclusively to domestic fishing activities. No portion of the annual optimal yield is allocated to foreign harvesters or foreign processors.

2. In Section 7.3, the introductory paragraphs are revised as follows:

   a. Revise the first paragraph to read as follows:

The Secretary, after receiving recommendations from the Council, will determine TACs and apportionments thereof, and reserves for each target species and the "other species" category by January 1 of the new fishing year, or as soon as practicable thereafter, by means of regulations implementing the FMP.

b. In the second paragraph, the reference "13.2.B.2 on page 14-1" is revised to read "8.2.B.2".

c. Revise the third and fourth paragraphs to read as follows:

Prior to making recommendations to the Secretary, the Council will make available to the public for comment as soon as practicable after its February meeting, a preliminary Stock Assessment and Fishery Evaluation (SAFE) report and preliminary specifications of ABC and TAC for each target species and the "other species" category, and apportionments thereof and reserves. At a minimum the SAFE will contain information listed in Section 7.3.1.

At its April meeting, the Council will review comments received. The Council will then make final recommendations to the Secretary.

3. In Section 7.3.1, delete the last sentence.

4. Section 7.3.2 is revised to read as follows:

7.3.2 Reserves

The groundfish reserves at the beginning of each fishing year shall equal the sum of 7.5 % of each target species and the "other species" category TAC, except pollock and hook and line or pot sablefish. When the TAC is determined by the Council, 7.5 % is set aside for the CDQ program as specified under section 8.4.7.3.5.

5. Delete sections 7.3.3, 7.4, 7.5, 7.6, 7.7 and Table 22a.

Delete Section 11.

Delete Section 12

Renumber Section 13 to Section 8.

1. In the new Section 8.2(B)
    a. The reference 4.2.A is revised to read Section 4.0.
    b. In paragraph 1., the reference 14.4.2.F is revised to 9.4.2.F.

2. In the new section 8.4.2 A, the reference to 13.2.B.1 is revised to 8.2.B.1.

3. In the new Section 8.4.2.3,

A. in paragraphs A and B(2), the references to 13.4.2.2 and 13.4.2.2, Part D and 10.3 are revised to read 8.4.2.2 and 8.4.2.2, Part D, and 7.3, respectively.

B. paragraph B(6) is deleted and paragraphs B (1), B(2), B(3), B(4), and B(5) are revised to read as follows:

B. * * *

(1) Prior to the February Council Meeting. The Plan Team will prepare for the Council a preliminary Stock Assessment and Fishery Evaluation (SAFE) report under Section 7.3 which provides the best available information on estimated prohibited species bycatch and mortality rates in the target groundfish fisheries, and estimates of seasonal and annual bycatch rates and amounts. Based on the SAFE report, the Plan Team may provide recommendations for apportionments of PSC limits to target fisheries, seasonal allocations, thereof and an economic analysis of the effects of the PSC limit apportionments or allocations.

(2) February Council Meeting. * * *

(3) Prior to the April Council Meeting. The Plan Team will prepare for the Council a final SAFE report under Section 7.3 which provides the best available information on estimated halibut bycatch rates in the target groundfish fisheries. The Plan Team may provide final recommendations for apportionments of PSC limits among target fisheries, seasonal allocations of fishery bycatch apportionments, and also an economic analysis of the effects of the PSC limit apportionments or seasonal allocations.

(4) April Council Meeting. While recommending final groundfish harvest levels, the Council reviews public comments, takes public testimony, and makes final decisions on apportionments of PSC limits among fisheries and seasons, using the same factors (a) through (g) set forth under Section 8.4.2.3, Part B (seasonal allocations of the PSC limits). The Council also makes final decisions on the exemption of any non-trawl fishery category from halibut bycatch mortality restrictions using the same factors (1) through (8) set forth under Section 8.4.2.2, Part D.

(5) As soon as practicable after the Council's April meeting, the Secretary will publish the Council's final decisions as proposed harvest specifications in the Federal Register. Information on which the final recommendations are based will also be published in the Federal Register or otherwise made available by the Council.

4. In the new paragraph 8.4.2.4, the reference to 13.4.2.2 is revised to 8.4.2.2.

5. In the new paragraph 8.4.7.1.1, the reference to 13.4.7.1 is revised to 8.4.7.1.

6. In the new paragraph 8.4.3, the text "DAP or JVP" is deleted.

7. In the new paragraph 8.4.7.1.5(5), the reference 13.4.8.4(1) is revised to 8.4.8.4(1).

8. In the new paragraph 8.4.7.1.5(5)d., the reference 13.4.7.1.1 is revised to 8.4.7.1.1.

9. In the new paragraph 8.4.7.3.3, the reference 13.4.7.1 is revised to 8.4.7.1.

10. In the new paragraph 8.4.7.3.5, the references 13.4.7.3.3 and 13.4.7.3.4 are revised to 8.4.7.3.3 and 8.4.7.3.4, respectively.

11. In the new paragraph 8.4.8(B), the reference to 13.4.2 is revised to 8.4.2.

12. In the new paragraph 8.4.9.3,
   a. the reference to 13.4.9.2.1 is revised to 8.4.9.2.1.
   b. the reference to 11.3 in the introductory paragraph is revised to 7.3.
   c. In paragraph (a), the reference 13.4.2 is revised to 8.4.2.

13. Delete section 13.5 (Management Measures–Foreign Fisheries)

14. Renumber section 13.6 to 8.5.

15. Renumber section 13.7 to 8.6.

16. Renumber section 13.8 to 8.7.

17. Renumber section 13.9 to 8.8.

Renumber Section 14 to 9

In the second introductory paragraph, reference to Section 14.0 is revised to 9.0.

Renumber Section 15 to 10

Renumber Section 16 to 11

Renumber Section 17 to 12

Add the following references to the new Section 12.1 in alphabetical order:

Alaska Department of Community and Regional Affairs. 1998. "Community Information Summary (CIS)." in Alaska Department of Community and Regional Affairs, P.O. Box 112100, Juneau, AK 99811.

Fredin, R. A. 1987. History of regulation of Alaska groundfish fisheries. National Marine Fisheries Service, NWAFC Processed Report 87-07. 63 p.

Impact Assessment Incorporated. 1998. "Inshore/Offshore 3 - Socioeconomic Description and Social Impact Assessment." in Impact Assessment, Inc, 911 West 8th Avenue, Suite 402, Anchorage, AK.

Megrey, B. A., and V. G. Wespestad. 1990. Alaskan groundfish resources: 10 years of management under the Magnuson Fishery Conservation and Management Act. N. Am. J. Fish. Management 10(2):125-143.

NPFMC. 1994a. "Fishery Management Plan for the Gulf of Alaska Groundfish Fishery." in North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, AK 99501.

NPFMC. 1995. "Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish." in North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, AK 99501.

United States Army Corps of Engineers. 1997. "Navigation improvements: detailed project report and environmental assessment, King Cove, Alaska." in U.S. Army Alaska Engineer District, Anchorage, AK.

United States Army Corps of Engineers. 1998. "Harbor improvements feasibility report and environmental assessment, Sand Point, Alaska." in U.S. Army Alaska Engineer District, Anchorage, AK.

Witherell, D., and Pautzke, C. 1997. "A brief history of bycatch management measures for eastern Bering Sea groundfish fisheries." *Marine Fisheries Review.* 59:15-22.

Renumber Section 18 to 13.

Remove and reserve Annex II and Annex III

Appendix B

Draft Amendment Language for the Fishery Management Plan for Groundfish of the Gulf of Alaska, Implementing Alternative 2 and Options A and B

Section 1, first paragraph is revised to read as follows:

This Fishery Management Plan (FMP) has been developed by the North Pacific Fishery Management Council for the groundfish fishery (excluding halibut) of the Gulf of Alaska. In 1978 it replaced the Preliminary Fishery Management Plan for the management of groundfish in the Gulf of Alaska. Since then, the FMP has been amended over sixty times.

Section 2 is revised as follows:

1. Delete definitions for Domestic annual harvest (DAH), Domestic annual processed catch (DAP), Joint venture processed catch (JVP), and Total allowable level of foreign fishing (TALFF).

2. Revise the definitions of Prohibited Species Catch (PSC) and Total allowable catch (TAC) as follows:

Prohibited Species Catch (PSC) is nonretainable catch. It can take the form of a prohibited or nongroundfish species and/or as a fully utilized groundfish species captured incidentally in groundfish fisheries. Such catch must be recorded and returned to sea with a minimum of injury except as provided in the Prohibited Species Donation Program. A PSC limit is an apportioned, nonretainable amount of fish provided to a fishery for bycatch purposes.

Total allowable catch (TAC) is the harvest quota for a species or species group; the retainable catch. TAC will be apportioned by area.

Section 3 is revised as follows:

1. In the section titled Areas and Stocks Involved, (2) is revised to read as follows:

(2) To all fisheries for all finfish, except salmon, steelhead, halibut, herring, and tuna. Harvest allocations and management are based on the calendar year.

2. The fourth paragraph is revised to read as follows:

Diversity of commercial bottomfish species in the Gulf of Alaska is intermediate between the Bering Sea, where fewer species occur, and the Washington-California region, where more species are present. The most diverse species in the Gulf of Alaska is the rockfish group (genus Sebastes), of which 30 species have been identified in this area. Several species of rockfish have been of significant commercial interest, including the Pacific ocean perch (S. alutus), shortraker rockfish (S. borealis), rougheye rockfish (S. aleutianus), dusky rockfish (S. ciliatus), northern rockfish (S. polyspinus), and yelloweye rockfish (S. ruberrimus). Pacific ocean perch was the subject of a substantial foreign and domestic trawl fishery from the 1960's through mid-1980's. Although Pacific ocean perch is found throughout the Gulf, the biomass and fishery have been concentrated in the Eastern Area. For management purposes rockfish are classified into three distinct assemblages that are based on their habitat and distribution. These assemblages are:

* * * * *

Section 4 is modified as follows:

1. Add the following paragraph to the end of Section 4.1.

* * * * *

The groundfish resources off Alaska have been harvested and processed entirely by U. S.-flagged vessels since 1991. Conservation and management measures contained in this FMP apply exclusively to domestic fishing activities. No portion of the annual optimal yield is allocated to foreign harvesters or foreign processors.

2. Section 4.2.1 is revised as follows:

a. Revise the first paragraph to read as follows:

A procedure has been developed whereby the Council can set annual harvest levels by specifying a total allowable catch (TAC) for each groundfish fishery on an annual basis. The procedure consists of six steps:

b. Delete paragraph (6)

c. Renumber paragraph (7) to (6).

d. In the paragraph following the new (6), the last sentence is revised to read as follows:

Similarly, the attainment of a PSC limit will result in the closure of the appropriate fishery.

e. Section 4.2.1.1 is revised to read as follows:

The Secretary, after receiving recommendations from the Council, will determine TACs and apportionments thereof for each target species and the “other species” category by January 1 of the new fishing year, or as soon as practicable thereafter, by means of regulations implementing the FMP. Notwithstanding designated target species and species groups listed in Section 3.1, the Council may recommend splitting or combining species in the target species category for purposes of establishing a new TAC if such action is desirable based on commercial importance of a species or species group and whether sufficient biological information is available to manage a species or species group on its own merits.

Prior to making recommendations to the Secretary, the Council will make available to the public for comment as soon as practicable after its February meeting, a preliminary Stock Assessment and Fishery Evaluation (SAFE) report and preliminary specifications of ABC and TAC for each target species and the “other species”category, and apportionments thereof. At a minimum the SAFE report will contain information listed in Section 4.2.1.4.

At its April meeting, the Council will review the final SAFE report and comments received. The Council will then make final recommendations to the Secretary.

f. Delete section 4.2.1.3.

g. Renumber section 4.2.1.4 to 4.2.1.3.

h. In the new 4.2.1.3, revised (7) to read as follows:

(7) Information to be used by the Council in establishing prohibited species catch limits (PSCs) for Pacific halibut with supporting justification and rationale.

i. Delete section 4.2.1.5.

3. Delete Section 4.2.2

4. Renumber Section 4.2.3 to 4.2.2., revise the new 4.2.2 as follows:

a. Revise the section reference in the third paragraph from 4.2.3.1 to 4.2.2.1.

b. Revise paragraph 5 as follows:

When a PSC limit is reached, further fishing with specific types of gear or modes of operation during the year is prohibited in an area by those who take their PSC limit in that area. All other users and gear would remain unaffected.

c. Delete paragraph 6.

d. Delete the first sentence of paragraph 7.

e. Renumber paragraph 4.2.3.1 to 4.2.2.1.

f. Revise the section reference in the introductory paragraph of the new 4.2.2.1 from 4.2.3 to 4.2.2.

g. In the new Section 4.2.2.1, delete (3) and revise (1) through the new (5) as follows:

(1) <u>Prior to the February Council Meeting</u>. The Plan Team will prepare for the Council a preliminary Stock Assessment and Fishery Evaluation (SAFE) report under Section 4.2.1 which provides the best available information on estimated halibut bycatch and mortality rates in the target groundfish fisheries, halibut PSCs limits, apportionments and catches thereof by target fisheries and gear types for the previous fishing year.

(2) <u>February Council Meeting</u>. While setting preliminary groundfish harvest levels under Section 4.2.1, the Council will also review the need to control the bycatch of halibut and will, if necessary, recommend preliminary halibut PSC mortality limits (PSCs) and apportionments thereof. The Council will also review the need for seasonal allocations of the halibut PSCs.

* * *

(3) Prior to the April Council Meeting. The Plan Team will prepare for the Council a final SAFE report under Section 4.2.1 which provides the best available information on estimated halibut bycatch rates in the target groundfish fisheries.

(4) April Council Meeting. While recommending final groundfish harvest levels, the Council reviews public comments, takes public testimony, and makes final decisions on annual halibut PSC limits and seasonal allocations, using the same factors (6) through (14) concerning PSC limits, and the same factors, (1) through (7), concerning seasonal allocations of the PSC limits. The Council will recommend its decisions, including no change for the new fishing year, to the Secretary of Commerce for implementation.

(5) As soon as practicable after the Council's April meeting, the Secretary will publish the Council's final decisions as proposed harvest specifications in the Federal Register. Information on which the final recommendations are based will also be published in the Federal Register or otherwise made available by the Council.

5. Renumber section 4.2.4 to 4.2.3. Revise the section reference in the paragraph from 4.2.3.1 to 4.2.2.1.

6. Renumber section 4.2.5 to 4.2.4.

7. Renumber section 4.2.6 to 4.2.5.

8. Delete the title to section 4.3.1

9. Renumber section 4.3.1.1 to section 4.3.1.

10. Renumber section 4.3.1.2 to section 4.3.2

11. Renumber section 4.3.1.2.1 to section 4.3.2.1.

12. Renumber section 4.3.1.2 .2 to section 4.3.2.2.

13. Renumber section 4.3.1.2.3 to section 4.3.2.3

14. Renumber section 4.3.1.3 to section 4.3.3

15. In the new section 4.3.3, delete the fourth paragraph titled Information on processing expectations.

16. Renumber section 4.3.1.4 to section 4.3.4

17. Renumber section 4.3.1.5 to section 4.3.5.

18. Renumber section 4.3.1.6 to section 4.3.6.

19. Renumber section 4.3.1.6.1 to section 4.3.6.1

20. Renumber section 4.3.1.6.2 to section 4.3.6.2.

21. Renumber section 4.3.1.6.3 to section 4.3.6.3.

22. Renumber section 4.3.1.6.4 to section 4.3.6.4.

23. Renumber section 4.3.1.7 to section 4.3.7.

24. Delete section 4.3.2

25. Renumber section 4.3.3 to section 4.3.8.

26. Renumber section 4.3.4. to section 4.3.9.

27. Renumber section 4.3.4.1 to section 4.3.9.1.

28. Renumber section 4.3.4.2 to section 4.3.9.2.

29. Renumber section 4.3.4.3 to section 4.3.9.3.

30. Delete table 4.4 and figures 4.2 and 4.3.

Appendix C

Draft Amendment Language for the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish, Implementing Alternative 3 including Option 2 and Options A and B

Title:

The title of the document is revised to read as follows:

Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area

Section 3.0 is modified as follows:

1. The second introductory paragraph is revised to read as follows:

> One feature of the format of this FMP is that such items as Allowable Biological Catch, Expected Annual Harvest and annual catch statistics which are likely to change from time to time have been arranged in Annexes. This should facilitate both the drafting and review process when such changes are made in the future.

2. In Section 3.3, delete definitions 2. and 3. Delete the number 1. for the first definition.

Section 4.0 is revised to read as follows:

1. Delete "<u>4.1 Areas and Stocks Involved</u>"

2. Renumber section 4.1.1 to 4.1

3. Delete sections 4.1.2 through 4.2.2.3, including all figures and tables.

4. Add sections 4.2, 4.3, and 4.4 to read as follows:

4.2 Species of Fish Targeted

The Bering Sea supports about 300 species of fishes, the majority of which are found near or on the bottom (Wilimovsky 1974). Among the pelagic species are the commercially important, or potentially important groups such as the salmon (<u>Oncorhynchus</u>), herring (<u>Clupea</u>), smelts (<u>Osmerus</u>), and capelin (<u>Mallotus</u>). The fish groups of primary concern in this plan are the bottom or near-bottom dwelling forms--the flounders, rockfish, sablefish, cod, pollock, and Atka mackerel. Although not bottom-dwelling, squids (<u>Cephalopoda</u>) are also included in the plan.

There is a general simplification in the diversity of bottomfish species in the Bering Sea compared to the more southern regions of the Gulf of Alaska and Washington to California. As a result, certain species inhabiting the Bering Sea are some of the largest bottomfish resources found anywhere in the world. Relatively few groundfish species in the eastern Bering Sea and Aleutian Islands are large enough to attract target, or target fisheries: walleye pollock, Pacific cod, Pacific ocean perch, sablefish, Atka mackerel, several species of rockfishes and flatfishes. Since the 1960s, pollock catches have accounted for the majority of the Bering Sea groundfish harvest. Yellowfin sole and rock sole currently dominate the flatfish group and has the longest history of intense exploitation by foreign fisheries. Other flounder species that are known to occur in aggregations large enough to form target species or occasional target species are Greenland turbot, Pacific halibut, rock sole, flathead sole, Alaska plaice, and arrowtooth flounder.

Catch History

Catch statistics since 1954 are shown for the Eastern Bering Sea subarea in **Table 4.1a**. The initial target species was yellowfin sole. During the early period of these fisheries, total catches of groundfish reached a peak of 674,000 metric tons (t) in 1961. Following a decline in abundance of yellowfin sole, other species (principally walleye pollock) were targeted upon, and total catches rose to 2.2 million t in 1972. Catches have since varied from one to two million t as catch restrictions and other management measures were placed on the fishery.

Catches in the Aleutian region have always been much smaller than those in the Eastern Bering Sea. Target species have also been different (**Table 4.1b**): In the Aleutians, Pacific ocean perch (POP) was the initial target species. During the early years of exploitation, overall catches of Aleutian groundfish reached a peak of 112,000 t in 1965. As POP abundance declined, the fishery diversified to other species. Total catches from the Aleutians in recent years have been about 100,000 t annually.

Table 4.1.a. Groundfish and squid catches in the eastern Bering Sea, 1954-2001.

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex	Other Rock Fish	Yellow Fin Sole	Greenland Turbot
1954						12,562	
1955						14,690	
1956						24,697	
1957						24,145	
1958	6,924	171	6			44,153	
1959	32,793	2,864	289			185,321	
1960			1,861	6,100		456,103	36,843
1961			15,627	47,000		553,742	57,348
1962			25,989	19,900		420,703	58,226
1963			13,706	24,500		85,810	31,565
1964	174,792	13,408	3,545	25,900		111,177	33,729
1965	230,551	14,719	4,838	16,800		53,810	9,747
1966	261,678	18,200	9,505	20,200		102,353	13,042
1967	550,362	32,064	11,698	19,600		162,228	23,869
1968	702,181	57,902	4,374	31,500		84,189	35,232
1969	862,789	50,351	16,009	14,500		167,134	36,029
1970	1,256,565	70,094	11,737	9,900		133,079	19,691
1971	1,743,763	43,054	15,106	9,800		160,399	40,464
1972	1,874,534	42,905	12,758	5,700		47,856	64,510
1973	1,758,919	53,386	5,957	3,700		78,240	55,280
1974	1,588,390	62,462	4,258	14,000		42,235	69,654
1975	1,356,736	51,551	2,766	8,600		64,690	64,819
1976	1,177,822	50,481	2,923	14,900		56,221	60,523
1977	978,370	33,335	2,718	2,654	311	58,373	27,708
1978	979,431	42,543	1,192	2,221	2,614	138,433	37,423
1979	913,881	33,761	1,376	1,723	2,108	99,017	34,998
1980	958,279	45,861	2,206	1,097	459	87,391	48,856
1981	973,505	51,996	2,604	1,222	356	97,301	52,921
1982	955,964	55,040	3,184	224	276	95,712	45,805
1983	982,363	83,212	2,695	221	220	108,385	43,443
1984	1,098,783	110,944	2,329	1,569	176	159,526	21,317
1985	1,179,759	132,736	2,348	784	92	227,107	14,698
1986	1,188,449	130,555	3,518	560	102	208,597	7,710
1987	1,237,597	144,539	4,178	930	474	181,429	6,533
1988	1,228,000	192,726	3,193	1,047	341	223,156	6,064
1989	1,230,000	164,800	1,252	2,017	192	153,165	4,061
1990	1,353,000	162,927	2,329	5,639	384	80,584	7,267
1991	1,268,360	165,444	1,128	4,744	396	94,755	3,704
1992	1,384,376	163,240	558	3,309	675	146,942	1,875
1993	1,301,574	133,156	669	3,763	190	105,809	6,330

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex	Other Rock Fish	Yellow Fin Sole	Greenland Turbot
1994	1,362,694	174,151	699	1,907	261	144,544	7,211
1995	1,264,578	228,496	929	1,210	629	124,746	5,855
1996	1,189,296	209,201	629	2,635	364	129,509	4,699
1997	1,115,268	209,475	547	1,060	161	166,681	6,589
1998	1,101,428	160,681	586	1,134	203	101,310	8,303
1999	889,589	134,647	646	609	135	67,307	5,205
2000/d	1,132,736	151,372	742	704	239	84,057	5,888
2001/e	1,381,598	121,357	842	1,144	293	54,325	4,218

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/b	Atka Mackerel	Squid	Other Species	Total (All Species)
1954							12,562
1955							14,690
1956							24,697
1957							24,145
1958						147	51,401
1959						380	221,647
1960	a						500,907
1961	a						673,717
1962	a						524,818
1963	a	35,643					191,224
1964	a	30,604				736	393,891
1965	a	11,686				2,218	344,369
1966	a	24,864				2,239	452,081
1967	a	32,109				4,378	836,308
1968	a	29,647				22,058	967,083
1969	a	34,749				10,459	1,192,020
1970	12,598	64,690				15,295	1,593,649
1971	18,792	92,452				13,496	2,137,326
1972	13,123	76,813				10,893	2,149,092
1973	9,217	43,919				55,826	2,064,444
1974	21,473	37,357				60,263	1,900,092
1975	20,832	20,393				54,845	1,645,232
1976	17,806	21,746				26,143	1,428,565
1977	9,454	14,393			4,926	35,902	1,168,144
1978	8,358	21,040		831	6,886	61,537	1,302,509
1979	7,921	19,724		1,985	4,286	38,767	1,159,547
1980	13,761	20,406		4,955	4,040	34,633	1,221,944
1981	13,473	23,428		3,027	4,182	35,651	1,259,666
1982	9,103	23,809		328	3,838	18,200	1,211,483
1983	10,216	30,454		141	3,470	15,465	1,280,285
1984	7,980	44,286		57	2,824	8,508	1,458,299
1985	7,288	71,179		4	1,611	11,503	1,649,109
1986	6,761	76,328		12	848	10,471	1,633,911
1987	4,380	50,372		12	108	8,569	1,639,121
1988	5,477	137,418		428	414	12,206	1,810,470
1989	3,024	63,452		3,126	300	4,993	1,630,382
1990	2,773	22,568		480	460	5,698	1,644,109

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/b	Atka Mackerel	Squid	Other Species	Total (All Species)
1991	12,748	30,401	46,681	2,265	544	16,285	1,647,455
1992	11,080	34,757	51,720	2,610	819	29,993	1,831,954
1993	7,950	28,812	63,942	201	597	21,413	1,674,406
1994	13,043	29,720	60,276	190	502	23,430	1,818,628
1995	8,282	34,861	54,672	340	364	20,928	1,745,890
1996	13,280	35,390	46,775	780	1,080	19,717	1,653,355
1997	8,580	42,374	67,249	171	1,438	20,997	1,640,590
1998	14,985	39,940	33,221	901	891	23,156	1,486,739
1999	9,827	33,042	39,934	2,008	393	17,045	1,200,387
2000	12,071	36,813	49,186	239	375	23,098	1,497,520
2001	12,244	26,590	28,524	265	1,758	19,127	1,652,285

a/ Arrowtooth flounder included in Greenland turbot catch statistics.
b/ Includes POP shortraker, rougheye, northern and sharpchin.
c/ Rocksole prior to 1991 is included in other flatfish catch statistics.
d/ Data through December 31, 2000.
e/ Data through October 27, 2001. Does not include CDQ.
Note: Numbers don't include fish taken for research.

Table 4.1.b. Groundfish and squid catches in the Aleutian Islands region, 1962-2001.

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex /b	Other Rock Fish	Greenland Turbot	Yellow Fin Sole
1962				200			
1963			664	20,800		7	
1964		241	1,541	90,300		504	
1965		451	1,249	109,100		300	
1966		154	1,341	85,900		63	
1967		293	1,652	55,900		394	
1968		289	1,673	44,900		213	
1969		220	1,673	38,800		228	
1970		283	1,248	66,900		285	
1971		2,078	2,936	21,800		1,750	
1972		435	3,531	33,200		12,874	
1973		977	2,902	11,800		8,666	
1974		1,379	2,477	22,400		8,788	
1975		2,838	1,747	16,600		2,970	
1976		4,190	1,659	14,000		2,067	
1977	7,625	3,262	1,897	8,080	3,043	2,453	
1978	6,282	3,295	821	5,286	921	4,766	
1979	9,504	5,593	782	5,487	4,517	6,411	
1980	58,156	5,788	274	4,700	420	3,697	
1981	55,516	10,462	533	3,622	328	4,400	
1982	57,978	1,526	955	1,014	2,114	6,317	
1983	59,026	9,955	673	280	1,045	4,115	
1984	81,834	22,216	999	631	56	1,803	
1985	58,730	12,690	1,448	308	99	33	
1986	46,641	10,332	3,028	286	169	2,154	
1987	28,720	13,207	3,834	1,004	147	3,066	
1988	43,000	5,165	3,415	1,979	278	1,044	
1989	156,000	4,118	3,248	2,706	481	4,761	
1990	73,000	8,081	2,116	14,650	864	2,353	
1991	78,104	6,714	2,071	2,545	549	3,174	1,380
1992	54,036	42,889	1,546	10,277	3,689	895	4
1993	57,184	34,234	2,078	13,375	495	2,138	0
1994	58,708	22,421	1,771	16,959	301	3,168	0
1995	64,925	16,534	1,119	14,734	220	2,338	6
1996	28,933	31,389	720	20,443	278	1,677	654
1997	26,872	25,166	779	15,687	307	1,077	234
1998	23,821	34,964	595	13,729	385	821	5
1999	965	27,714	565	17,619	630	422	13
2000/c	1,244	39,684	1,048	14,893	601	1,086	13
2001/d	819	33,634	1,033	15,540	605	1,086	15

Table 4.1.b. Continued.

Year	Sole	Rock	Other Flat Fish	Arrow Tooth Flounder	Atka Mackerel	Squid	Other Species	Total (All Species)
1962								200
1963				a				21,471
1964				a			66	92,652
1965				a			768	111,868
1966				a			131	87,589
1967				a			8,542	66,781
1968				a			8,948	56,023
1969				a			3,088	44,009
1970				274	949		10,671	80,610
1971				581			2,973	32,118
1972				1,323	5,907		22,447	79,717
1973				3,705	1,712		4,244	34,006
1974				3,195	1,377		9,724	49,340
1975				784	13,326		8,288	46,553
1976				1,370	13,126		7,053	43,465
1977				2,035	20,975	1,808	16,170	67,348
1978				1,782	23,418	2,085	12,436	61,092
1979				6,436	21,279	2,252	12,934	75,195
1980				4,603	15,533	2,332	13,028	108,531
1981				3,640	16,661	1,763	7,274	104,199
1982				2,415	19,546	1,201	5,167	98,233
1983				3,753	11,585	510	3,675	94,617
1984				1,472	35,998	343	1,670	147,022
1985				87	37,856	9	2,050	113,310
1986				142	31,978	20	1,509	96,259
1987				159	30,049	23	1,155	81,364
1988				406	21,656	3	437	77,383
1989				198	14,868	6	108	186,494
1990				1,459	21,725	11	627	124,886
1991	n/a		88	938	22,258	30	91	117,942
1992	236		68	900	46,831	61	3,081	164,513
1993	318	59		1,348	65,805	85	2,540	179,659
1994	308		55	1,334	69,401	86	1,102	175,614
1995	356		47	1,001	81,214	95	1,273	183,862
1996	371		61	1,330	103,087	87	1,720	190,750
1997	271		39	1,071	65,668	323	1,555	139,049
1998	446		54	694	56,195	25	2,448	134,182
1999	577		53	746	51,636	9	1,633	102,582
2000	480		113	1,157	46,990	8	3,010	110,327
2001	526		96	1,220	61,234	5	3,851	119,664

a/ Arrowtooth flounder included in Greenland turbot catch statistics.
b/ Includes POP shortraker, rougheye, northern and sharpchin rockfish.
c/ Data through December 31, 2000.
d/ Data through October 27, 2001. Does not include CDQ.
Note: Numbers don't include fish taken for research.

4.3 Socioeconomic Characteristics of the Fishery

Subsistence Fishery

The earliest fisheries for groundfish in the eastern Bering Sea and Aleutian Islands were the native subsistence fisheries. The fish and other marine resources remain an important part of the life of native people, and dependence on demersal species of fish may have been critical to their survival in periods of the year when other sources of food were scarce or lacking. Fishing was in near-shore waters utilizing such species as cod, halibut, rockfish, and other species. These small-scale subsistence fisheries have continued to the present time. Although not well estimated, the total catch of groundfish in subsistence fisheries is thought to be minuscule relative to commercial fishery catches.

Recreational Fishery

At this time, there are no essentially recreational fisheries for groundfish species covered under this FMP. Recreational catches of groundfish in the BSAI region would take place in state waters and likely fall under the classification of subsistence fisheries.

Charter Fishery

A limited charter vessel fishery for Pacific halibut is based in Dutch Harbor. Three charter vessels participated in 1999.

Commercial Fishery

The first commercial venture for bottomfish occurred in 1864 when a single schooner fished for Pacific cod in the Bering Sea. This domestic fishery continued until 1950 when demand for cod declined and economic conditions caused the fishery to be discontinued. Fishing areas in the eastern Bering Sea were from north of Unimak Island and the Alaska Peninsula to Bristol Bay. Vessels operated from home ports in Washington and California and from shore stations in the eastern Aleutian Islands. The cod fishery reached its peak during World War I when the demand for cod was high. Numbers of schooners operating in the fishery ranged from 1-16 up to 1914 and increased to 13-24 in the period 1915-20. Estimated catches during the peak of the fishery ranged annually from 12,000-14,000 mt.

Another early fishery targeted Pacific halibut. Halibut were reported as being present in the Bering Sea by United States cod vessels as early as the 1800s. However, halibut from the Bering Sea did not reach North American markets until 1928. Small and infrequent landings of halibut were made by United States and Canadian vessels between 1928 and 1950, but catches were not landed every year until 1952. The catch by North American setline vessels increased sharply between 1958 and 1963 and then declined steadily until 1972.

Several foreign countries conducted large scale groundfish fisheries in the eastern Bering Sea and Aleutian Islands prior to 1991. Vessels from Japan, USSR (Russia), Canada, Korea, Taiwan, and Poland all plied the waters of the North Pacific for groundfish. In the mid 1950's, vessels from Japan and Russia targeted yellowfin sole, and catches peaked at over 550,000 mt in 1961. In the 1960's, Japanese vessels, and to a lesser extent Russian vessels, developed a fishery for Pacific ocean perch, pollock, Greenland turbot, sablefish, and other groundfish. By the early 1970's over 1.7 million mt of pollock was being caught by these two countries in the eastern Bering Sea annually. Korean vessels began to target pollock in 1968. Polish vessels fished briefly in the Bering Sea in 1973. Tiawanese

vessels entered the fishery in 1977. For more information on foreign fisheries in the BSAI, refer to NPFMC (1995), Megrey and Wespestad (1990), and Fredin (1987).

The foreign fleets were phased out in the 1980's. The transition period from foreign to fully domestic groundfish fisheries was stimulated by a quick increase in joint-venture operations. The American Fisheries Promotion Act (the so-called "fish and chips" policy) required that allocations of fish quotas to foreign nations be based on the nations contributions to the development of the U.S. fishing industry. This provided incentive for development of joint-venture operations, with U.S. catcher vessels delivering their catches directly to foreign processing vessels. Joint-venture operations peaked in 1987, giving way to a rapidly developing domestic fleet. By 1991, the entire BSAI groundfish harvest (2,126,600 mt, worth $351 million ex-vessel) was taken by only 391 U.S. vessels.

The commercial groundfish catch off Alaska totaled 1.9 million t in 1998, compared to 2.1 million t in 1997 Based on a preliminary estimate for 1998 that may not be consistent with the estimates for previous years, the ex-vessel value of the catch, excluding the value added by at-sea processing, decreased from $583 million in 1997 to $385 million in 1998. The value of the 1998 catch after primary processing was approximately $1 billion. The groundfish fisheries accounted for the largest share of the ex-vessel value of all commercial fisheries off Alaska in 1998 (40 percent), and approximately 80 percent of this total came from the BSAI management area. The Pacific salmon (*Oncorhynchus* spp.) fishery was second with $243 million or 26 percent of the total Alaska ex-vessel value. The value of the shellfish catch amounted to $219 million or 23 percent of the total for Alaska.

Walleye (Alaska) pollock (*Theragra chalcogramma*) has been the dominant species in the commercial groundfish catch off Alaska. The 1998 pollock catch of 1.25 million t accounted for 67 percent of the total groundfish catch of 1.87 million t. The next major species, Pacific cod (*Gadus macrocephalus*), accounted for 257,900 t or almost 14 percent of the total 1998 groundfish catch. The Pacific cod catch was down about 21 percent from a year earlier. The 1998 catch of flatfish, which includes yellowfin sole (*Pleuronectes asper*), rock sole (*Pleuronectes bilineatus*), and arrowtooth flounder (*Atheresthes stomias*) was 223,100 t in 1998, down almost 35 percent from 1997. Pollock, Pacific cod, and flatfish comprised almost 93 percent of the total 1998 catch. Other important species are sablefish (*Anoplopoma fimbria*), rockfish (*Sebastes and Sebastolobus* spp.), and Atka mackerel (*Pleurogrammus monopterygius*).

Trawl, hook and line (including longline and jigs), and pot gear account for virtually all the catch in the BSAI groundfish fisheries. There are catcher vessels and catcher processor vessels for each of these three gear groups. From 1993-1998, the trawl catch averaged about 91 percent of the total catch, while the catch with hook and line gear accounted for 7.5 percent. Most species are harvested predominately by one type of gear, which typically accounts for 90 percent or more of the catch. The one exception is Pacific cod, where in 1998, 48 percent (123,000 t) was taken by trawls, 43 percent (110,000 t) by hook and line gear, and 9 percent (24,000 t) by pots. During the same period, catcher vessels took 41 percent of the catch and catcher processor vessels took the other 59 percent.

The discards of groundfish in the groundfish fishery have received increased attention in recent years by NMFS, the Council, Congress, and the public at large. The discard rate is the percent of total catch that is discarded. For the BSAI and GOA fisheries as a whole, the annual discard rate for groundfish decreased from 15.1 percent in 1994 to 8.2 percent in 1998 with the vast majority of the reduction occurring in 1998. The 43 percent reduction in the overall discard rate in 1998 is the result of prohibiting pollock and Pacific cod discards in all BSAI and GOA groundfish fisheries beginning in 1998. Total discards decreased by almost 49 percent in 1998 with the aid of a 9.5 percent reduction in

total catch. Estimates of total catch, discarded catch, and discard rates by species, area, gear, and target fishery are provided in the annual Economic SAFE report.

The bycatch of Pacific halibut, crab, Pacific salmon, and Pacific herring (*Clupea pallasi*) has been an important management issues for more than twenty years. The retention of these species was prohibited first in the foreign groundfish fisheries. This was done to ensure that groundfish fishermen had no incentive to target these species. For a review of the history of prohibited species bycatch management, refer to Witherell and Pautzke (1997).

Residents of Alaska and of other states, particularly Washington and Oregon, are active participants in the BSAI groundfish fisheries. For the domestic groundfish fishery as a whole, 92 percent of the 1998 catch was made by vessels with owners who indicated that they were not residents of Alaska.

Estimates of ex-vessel value by area, gear, type of vessel, and species are included in the annual Economic SAFE report. The ex-vessel value of the domestic landings in the combined GOA and BSAI groundfish fisheries, excluding the value added by at-sea processing, increased from $425 million in 1993 to $585 million in 1995, decreased in 1996 to $531 million, and increased to $570 in 1997. The distribution of ex-vessel value by type of vessel differed by area, gear and species. In 1997, catcher vessels accounted for 44 percent of the ex-vessel value of the groundfish landings compared to 42 percent of the total catch because catcher vessels take larger percentages of higher priced species such as sablefish which was $2.25 per pound in 1997. Similarly, trawl gear accounted for only 67 percent of the total ex-vessel value compared to 90 percent of the catch because much of the trawl catch is of low priced species such as pollock which was about $0.10 per pound in 1997.

For the BSAI and GOA combined, 82.5 percent of the 1997 ex-vessel value was accounted for by vessels with owners who indicated that they were not residents of Alaska. Vessels with owners who indicated that they were residents of Alaska accounted for 15.5 percent of the total and the remaining 2.0 percent was taken by vessels for which the residence of the owner was not known. The vessels owned by residents of Alaska accounted for a much larger share of the ex-vessel value than of catch (15.5% compared to 8.5%) because these vessels accounted for relatively large shares of the higher priced species such as sablefish.

Employment data for at-sea processors (but not including inshore processors) indicate that in 1998, the crew weeks totaled 106,365 with the majority of them (101,064) occurring in the BSAI groundfish fishery. In 1998, the maximum monthly employment (18,864) occurred in October. Much of this was accounted for by the BSAI pollock fishery.

There are a variety of at least partially external factors that affect the economic performance of the BSAI and GOA groundfish fisheries. They include landing market prices in Japan, wholesale prices in Japan, U.S. imports of groundfish products, U.S. per capita consumption of seafood, U.S. consumer and producer price indexes, foreign exchange rates, and U.S. cold storage holdings of groundfish. Exchange rates and world supplies of fishery products play a major role in international trade. Exchange rates change rapidly and can significantly affect the economic status of the groundfish fisheries.

4.4 Description of Fishing Communities

Traditionally, the dependence of BSAI and GOA coastal communities on the groundfish fisheries and fisheries affected by the groundfish fisheries has resulted from these communities being one or more of the following: 1) the home ports of vessels that participate in these fisheries; 2) the residence of participants in the harvesting or processing sectors of these fisheries; 3) the port of landings for these fisheries; 4) the location of processing plants; and 5) a service or transportation center for the fisheries. With the creation of the pollock, sablefish and halibut community development quota (CDQ) programs for the BSAI in the early to mid-1990s and with the expansion of those programs into the multispecies CDQ program with the addition of all BSAI groundfish and crab by the late 1990s, the dependence now includes the participation of coastal, Western Alaska, Native communities in the CDQ program. The CDQ program has provided the following for the CDQ communities: 1) additional employment in the harvesting and processing sectors of these fisheries; 2) training; and 3) royalty income when the CDQs are used by a fishing company. In many cases, those royalties have been used to increase the ability of the residents of the CDQ communities to participate in the regional commercial fisheries.

Almost 100 Alaskan communities are listed as home ports. For the vast majority of the Alaska home ports, trawl vessels account for none or a very small part of the vessels and the mean length is less than 50 feet. Many of the Alaska home ports had fewer than 5 vessels. The Alaska home ports with typically more than 50 fishing vessels are as follows: Homer (100+), Juneau (200+), Kodiak (100+), Petersburg (50+), and Sitka (100+). For these five home ports, all but Kodiak had non-trawl vessels account for at least 90 percent of the vessels, and in Petersburg and Sitka almost 100 percent were non-trawl vessels. In 1997, the mean vessel lengths were as follow: Homer, 52 feet; Juneau, 54 feet; Kodiak, 61 feet; Petersburg, 52 feet; and Sitka, 44 feet. Sand Point, which typically had more than 30 vessels and a mean vessel length of 47 feet in 1997, was unique among Alaska home ports in that typically trawl vessels accounted for more than 50 percent of its vessels.

From 1991 to 1997, the number of fishing vessels in the BSAI and GOA groundfish fisheries owned by Alaska residents decreased from 1,511 to 916, with most of the decrease occurring in 1992, and the mean length increased from 45 feet to 49 feet. Trawl vessels accounted for fewer than 10 percent of the total in any year and for fewer than 2 percent of the overall decrease in the number of vessels between 1991 and 1997.

The vast majority of the groundfish fishing vessels owned by Alaska residents use hook-and-line gear and operate only in the GOA. For example, of the 894 Alaskan owned fishing vessels that participated in the BSAI and GOA groundfish fisheries in 1996, 852 fished in the GOA compared to only 115 in the BSAI and 752 used hook-and-line gear compared to either 140 for pot gear or 75 for trawl gear. This is explained by the following: 1) the small size of most of the Alaska vessels; 2) the ability of small vessels to use hook-and-line gear effectively and safely, particularly in the GOA; and 3) the greater proximity of GOA fishing grounds to the home ports and owners’ residences for the vast majority of the Alaska vessels.

With respect to groundfish fisheries, the hook-and-line vessels owned by Alaska residents have been involved almost exclusively in the sablefish, Pacific cod, and rockfish fisheries. Trawlers owned by Alaska residents principally have been involved in the pollock, Pacific cod and flatfish fisheries. In 1996, 20 of the 75 Alaska owned trawlers participated in the BSAI groundfish fishery compared to 69 of the 752 Alaskan hook-and-line vessels, and 40 of the 140 Alaskan pot boats.

Vessels of residents of Alaska account for a larger percent of the ex-vessel value of the catch than of the weight of the catch. For example, in 1996, these vessels accounted for only 7.9 percent of the BSAI and GOA groundfish catch, but 14.5 percent of its ex-vessel value. This occurs because a larger percent of the catch of these vessels consists of higher priced groundfish species that are taken with hook-and-line gear. These species include sablefish, some of the higher priced rockfish, and Pacific cod .

When the fishing ports are ranked, from highest to lowest, on the basis of their 1997 groundfish landings and value, the first five ports account for in excess of 95 percent of the total Alaska groundfish landings. These are, in rank order:

Port & Ranking	Metric Tons*	Value	Number of Processors
1. Dutch Harbor/Unalaska	224,000	$59,774,500	6
2. Akutan	<120,000	NA	1
3. Kodiak	84,000	$33,488,800	9
4. Sand Point	<45,000	NA	1
5. King Cove	<25,000	NA	1

* estimated total groundfish landings
NA - data cannot be reported due to “confidentiality” constraints

For reference, in 1997, the sixth ranked Alaska groundfish landings port was Seward, Alaska. The total quantity of groundfish landed in Seward was approximately one-third that of King Cove, by far the smallest of the top five Alaska groundfish landings ports, and was dominated by sablefish, the only BSAI and GOA groundfish species managed under an ITQ program. Furthermore, much of the Seward groundfish catch comes from State waters (e.g., Prince William Sound). After Seward, the quantities of groundfish landings drop off even more sharply for the remaining ports. For these reasons, a natural break occurs between the top five ports and the remaining ports. Therefore, the balance of this section will focus on the five primary groundfish ports, listed above.

Dutch Harbor/Unalaska and Akutan are located on the Bering Sea side of the Alaska Peninsula/Aleutian Island chain, while Sand Point and King Cove are on the Gulf of Alaska side and Kodiak Island, where the port and City of Kodiak are located, is in the Gulf. Nonetheless, a substantial portion of the groundfish processed in Sand Point and King Cove is harvested in the Bering Sea, as is a somewhat lesser share of that landed in Kodiak. Historically, relatively small amounts of groundfish harvested in the GOA have been delivered for processing in Dutch Harbor/Unalaska and Akutan.

At present, pollock and Pacific cod are the primary groundfish species landed and/or processed in these five ports. Alaska Department of Fish and Game fish ticket data indicate that in Dutch Harbor/Unalaska and Akutan, pollock represented 83 percent and 76 percent, respectively, of the 1997 total groundfish landings in these ports, with Pacific cod making up virtually all of the balance. In the case of Sand Point, pollock and Pacific cod, respectively, accounted for 69 percent and 29 percent of the total, with fractional percentages of other groundfish species accounting for the rest. In King Cove, this relationship was reversed, with pollock catch-share at 31 percent and Pacific cod at 69 percent of the groundfish total. Kodiak presented the most diversified species complex, with pollock representing 43 percent, Pacific cod 36 percent, assorted flatfishes at 14 percent, and a mix of other groundfish species making up the balance of the total.

Dutch Harbor/Unalaska

Dutch Harbor/Unalaska is located approximately 800 miles southwest of Anchorage and 1,700 miles northwest of Seattle. Unalaska is the 11th largest city in Alaska, with a reported year-round population of just over 4,000. The name Dutch Harbor is often applied to the portion of the City of Unalaska located on Amaknak Island, which is connected to Unalaska Island by a bridge. Dutch Harbor is fully contained within the boundaries of the City of Unalaska, which encompasses 115.8 square miles of land and 98.6 square miles of water (Alaska Department of Community and Regional Affairs 1998).

Unalaska is primarily non-Native, although the community is culturally diverse. Subsistence activities remain important to the Aleut community and many long-time non-Native residents, as well. Salmon, Pacific cod, Dolly Varden, Pacific halibut, sea bass, pollock and flounders are the most important marine species, according to Alaska Department of Fish and Game reports. Sea urchins, razor and butter clams, cockles, mussels, limpets, chiton, crabs, and shrimps make up the shellfish and invertebrates most commonly harvested by subsistence users. Marine mammals traditionally harvested include sea lions, harbor and fur seals, and porpoises. Local residents also harvested reindeer, ducks, geese, sea gull eggs and other bird eggs in great numbers in previous years (NPFMC 1994a).

According to the 1990 U.S. Census, 682 total housing units existed and 107 were vacant. More than 2,500 jobs were estimated to be in the community. The official unemployment rate at that time was 1.0 percent, with 7.8 percent of the adult population not in the work force. The median household income was reportedly $56,215, and 15.3 percent of residents were living below the poverty level.

The majority of homes in the community are served by the City's piped water and sewer system. Sewage receives primary treatment before being discharged into Unalaska Bay. Approximately 90 percent of households are plumbed. Two schools are located in the community, serving 415 students.

Dutch Harbor/Unalaska has been called the most prosperous stretch of coastline in Alaska. With 27 miles of ports and harbors, several hundred local businesses, most servicing, supporting, or relying on the seafood industry, this city is the center of the Bering Sea fisheries.

Dutch Harbor is not only the top ranked fishing port in terms of landings in Alaska, but has held that distinction for the Nation, as a whole, each year since 1989. In addition, it ranked at or near the top in terms of the ex-vessel value of landings over the same period.

Virtually the entire local economic base in Dutch/Unalaska is fishery-related, including fishing, processing, and fishery support functions (e.g., fuel, supply, repairs and maintenance, transshipment, cold storage, etc.). Indeed, Dutch Harbor/Unalaska is unique among Alaska coastal communities in the degree to which it provides basic support services for a wide range of Bering Sea fisheries (Impact Assessment Incorporated 1998). It has been reported that over 90 percent of the population of this community considers itself directly dependent upon the fishing industry, in one form or another (NPFMC 1994a).

Historically, Dutch Harbor/Unalaska was principally dependent upon non-groundfish (primarily king and Tanner crab) landings and processing for the bulk of its economic activity. These non-groundfish species continue to be important components of a diverse processing complex in Dutch Harbor/Unalaska. In 1997, for example, nearly 2 million pounds of salmon, more than 1.7 million pounds of herring, and 34 million pounds of crabs were reportedly processed in this port.

Nonetheless, since the mid-1980s, groundfish has accounted for the vast majority of total landings in Dutch Harbor/Unalaska. Again, utilizing 1997 catch data, over 93.5 percent of total pounds landed and processed in this port were groundfish.

While well over 90 percent of this total tonnage was groundfish, a significantly smaller percentage of the attributable ex-vessel value of the catch is comprised of groundfish. While equivalent processed product values for non-groundfish production are not readily available, Alaska fish ticket data indicate that the ex-vessel value of these species landed in Dutch Harbor/Unalaska was nearly $43 million, in 1997; or about 60 percent of the reported gross product value of the groundfish output. If the value added through processing of these non-groundfish species were fully accounted for, the total would obviously exceed the ex-vessel value of the raw catch.

As suggested, transshipping is an integral component of the local service-based economy of this community, as well. The port serves as a hub for movement of cargo throughout the Pacific Rim. Indeed, the Great Circle shipping route from major U.S. west coast ports to the Pacific Rim passes within 50 miles of Unalaska. The Port of Dutch Harbor is among the busiest ports on the west coast. The port reportedly serves more than 50 domestic and foreign transport ships per month. Seafood products, with an estimated first wholesale value substantially in excess of a billion dollars, cross the port's docks each year and are carried to markets throughout the world.

The facilities and related infrastructure in Dutch Harbor/Unalaska support fishing operations in both the BSAI and GOA management areas. Processors in this port receive and process fish caught in both areas, and the wider community is linked to, and substantially dependent upon serving both the on-shore and at-sea sectors of the groundfish industry.

In a profile of regional fishing communities, published by the NPFMC in 1994, the local economy of Unalaska was characterized in the following way:

> If it weren't for the seafood industry, Unalaska would not be what it is today ... In 1991, local processors handled 600 million lbs. of seafood onshore, and 3 billion lbs. of seafood were processed offshore aboard floating processors that use Dutch Harbor as a land base. Seven shore-based and many floating processors operate within municipal boundaries.

While these figures presumably include both groundfish and non-groundfish species, and current sources identify at least eight shore-based processing facilities, they are indicative of the scope of this community's involvement in, and dependence upon, seafood harvesting and processing.

Because of this high level of economic integration between Dutch Harbor/Unalaska and the fishing industry, any action which significantly reduced the total allowable catch of groundfish from the Bering Sea/Aleutian Islands (and to a lesser extent Gulf of Alaska) management areas would be expected to have a severely negative impact on the port and surrounding community.

While the port continues to be actively involved in support operations for crab, salmon, and herring fisheries, these resources do not hold the potential to offset economic impacts which would be associated with a significant reduction in (especially pollock and Pacific cod) groundfish TACs. Indeed, the newest and largest of the processing facilities in Dutch Harbor/Unalaska are dedicated to pollock surimi production, and could not readily shift production to an alternative species or product form, even if such an opportunity were to exist.

Detailed data on costs, net earnings, capital investment and debt service for the harvesting, processing, and fisheries support sectors in Dutch Harbor/Unalaska are not available. Therefore, it is not possible to quantify the probable net economic impacts on this community attributable to a significant reduction in groundfish TACs for the Bering Sea and Aleutian Islands or Gulf of Alaska management areas. It is apparent, however, that no alternative fisheries exist into which the port might diversify, in order to offset such a reduction in groundfish activity (crab resources remain biologically depressed and those fisheries are fully subscribed. The herring and salmon fisheries are managed by the State of Alaska with limited entry programs. Neither are there prospects (at least in the foreseeable future) for non-fishery related economic activity in Dutch Harbor/Unalaska that could substantially mitigate impacts from a significant reduction in groundfish fishing activity.

While Dutch Harbor has been characterized as one of the world's best natural harbors, it offers few alternative opportunities for economic activity beyond fisheries and fisheries support. Its remote location, limited and specialized infrastructure and transportation facilities, and high cost make attracting non-fishery related industrial and/or commercial investment doubtful (at least in the short-run). Sea floor minerals exploration, including oil drilling, in the region have been discussed. No such development seems likely in the short run, however. Unalaska, also, reportedly expected nearly 6,000 cruise ship visitors in 1996.

Without the present level of fishing and processing activities, it is probable that many of the current private sector jobs in this groundfish landings port could be lost, or at the very least, would revert to highly seasonal patterns, with the accompanying implications for community stability observed historically in this and other Alaska seafood processing locations dependent upon transient, seasonal work forces. It is likely, for example, that the number of permanent, year-round residents of Dutch Harbor/Unalaska would decline significantly. This would, in turn, alter the composition and character of the community and place new, and different, demands on local government.

The municipal government of the City of Unalaska is substantially dependent upon the tax revenues which are generated from fishing and support activities. While a detailed treatment of municipal tax accounts is beyond the scope of this assessment, it is clear that, between the State of Alaska's Fisheries Business Tax and Fishery Resource Landings Tax revenues (both of which are shared on a 50/50 basis with the community of origin), local raw fish sales tax, real property tax (on fishery related property), and permits and fees revenues associated with fishing enterprises, the City of Unalaska derives a substantial portion of its operating, maintenance, and capital improvement budget from fishing, and especially groundfish fishing, related business activities. Should the groundfish harvest in the BSAI management area be substantially reduced, the municipality could experience a very significant reduction in its tax base and revenues (depending upon the species and size of the reduction). Potentially, the magnitude of these revenue reductions could be such that they could not readily be compensated for by the municipal government.

The local private business infrastructure which has developed to support the needs and demands of the fishery-based population of Dutch Harbor/Unalaska would very clearly suffer severe economic dislocation, should the number of employees in the local plants and fishing fleets decline in response to substantial TAC reductions. While insufficient cost and investment data exist with which to estimate the magnitude of probable net losses to these private sector businesses, it seems certain that a substantial number would fail. With no apparent economic development alternative available to replace groundfish harvesting and processing in Dutch Harbor/Unalaska (at least in the short run), there would be virtually no market value associated with these stranded assets.

<u>Akutan</u>

Akutan is located on Akutan Island in the eastern Aleutian Islands, one of the Krenitzin Islands of the Fox Island group. The community is approximately 35 miles east of Unalaska and 766 air miles southwest of Anchorage. Akutan is surrounded by steep, rugged mountains reaching over 2,000 feet in height. The village sits on a narrow bench of flat, treeless terrain. The small harbor is ice-free year-round, but frequent storms occur in winter and fog in summer. The community is reported to have a population of 414 persons, although the population can swell to well over 1,000 during peak fish processing months.

During the 1990 U.S. Census, 34 total housing units existed and 3 were vacant. 527 jobs were estimated to be in the community. The official unemployment rate at that time was .4 percent, with 7.4 percent of all adults not in the work force. The median household income was $27,813, and 16.6 percent of the residents were living below the poverty level. One school is in the community, serving 24 students.

Water is supplied from local streams, treated, and piped into homes. The seafood processing plant operates its own water treatment facility.

Akutan ranks as the second most significant landings port for groundfish on the basis of tons delivered and has been characterized as a unique community in terms of its relationship to these BSAI fisheries. According to a recent social impact assessment, prepared for the NPFMC, while Akutan is the site of one of the largest of the shoreside groundfish processing plants in the region, the community is geographically and socially separate from the plant facility.

Indeed, while the village of Akutan was initially judged to be ineligible to participate in the State of Alaska's CDQ program, based largely upon its being associated with "... a previously developed harvesting and processing capability sufficient to support substantial groundfish participation in the BSAI ...", it was subsequently determined that the community of Akutan was discrete and distinct from the Akutan groundfish processing complex.

As a result, Akutan has a very different relationship to the region's groundfish fisheries than does, for example, Dutch Harbor/Unalaska or Kodiak. While the community of Akutan derives economic benefits from its proximity to the large Trident Seafoods shore plant (and a smaller permanently moored processing vessel, operated by Deep Sea Fisheries, which does only crab), the entities have not been integrated in the way other landings ports and communities on the list have.

As a CDQ community, the community of Akutan enjoys access to the BSAI groundfish resource independently of direct participation in the fishery. The CDQ communities as a group will receive CDQs equal to 7.5 percent of each BSAI groundfish TAC, except for the fixed gear sablefish TACs. The CDQ communities will receive 20 percent of the fixed gear sablefish TACs for the eastern Bering Sea and the Aleutian Islands areas. Therefore, the CDQs available to the CDQ group to which Akutan is a member will change as the BSAI TACs change. As TACs decrease, the value per unit of CDQ would be expected to increase and at least partially offset the effect of the decrease in quantity. However, it is not known whether the total value of the CDQs would increase or decrease if TACs and, therefore, CDQs decrease. Similarly, the economic benefits the community derives from the local 1 percent raw fish tax from landings at the nearby plant are dependent on BSAI groundfish TACs and the resulting ex-vessel value of groundfish landings. As with the value of CDQs, typically decreases in TACs and landings would be expected to be at least partially offset by increases in ex-vessel prices.

Although this conclusion pertains to the community of Akutan, implications for the groundfish landings port of Akutan are quite different. The Trident plant is the principal facility in the Akutan port and, historically, a number of smaller, mobile processing vessels have operated seasonally out of the port of Akutan. Therefore, a substantial decrease in groundfish landings in this region, in response to decreases in TACs being assessed in this document, could have profoundly negative implications. Akutan does not have a boat harbor or an airport in the community. Beyond the limited services provided by the plant, no an opportunity exists in Akutan to provide a support base for other major commercial fisheries. Indeed, alternative economic opportunities of any kind are extremely limited.

While crab processing was a major source of income for the Akutan plant during the boom years of the late 1970s and early 1980s, with the economic collapse of this resource base in the early 1980s, groundfish processing became the primary source of economic activity. In 1997, for example, State of Alaska and NMFS catch records indicate that, while landings of herring and crabs were reported for the Akutan plant, more than 98 percent of the total pounds landed were groundfish, and these made up more than 80 percent of the estimated total value.

An obvious alternative to groundfish processing which could be developed to offset a significant reduction in groundfish landings in Akutan does not appear. Fisheries for crabs, halibut, salmon, and herring, while important sources of income to the region, are fully developed. Therefore, should the groundfish TAC be significantly reduced, most of the jobs held by employees of the plant would likely disappear (or at a minimum, become seasonal) and people would leave the area (although the exact number is unknown).

No data on cost, net revenues, capital investment and debt structure are available with respect to Trident Seafood’s Akutan plant complex. It is not possible, therefore, to quantify probable attributable net impacts to plant owners/operators of a potential reductions in groundfish catches, although as noted above, the Akutan facility is almost completely dependent upon pollock and Pacific cod deliveries. Should TACs for these two species decline significantly, the impacts would be greater than if TACs for other groundfish species were reduced. While some adjustment to alternative groundfish species might be possible, in response to a sharp decline in pollock and/or Pacific cod TACs, the fact that the plant has not become more involved with other groundfish species during the times of the year in which pollock and Pacific cod are not available suggests that the economic viability of such alternatives is limited and certainly inferior for the plant.

While the distribution of impacts across ports would not be expected to be uniform, should, in particular, pollock and/or Pacific cod TACs be reduced, it is likely that there could be substantial stranded capital costs and job losses in the port of Akutan. The size and rate of such losses is largely an empirical question.

Whereas the 1990 U.S. Census reported the population of Akutan at just under 600 (and the Alaska Department of Community and Regional Affairs CIS data places the figure at 414, in 1997), the local resident population is estimated at 80, with the remaining individuals being regarded as non-resident employees of the plant.

The permanent residents of the village are, reportedly, almost all Aleut. While some are directly involved in the cash economy (e.g., a small boat near-shore commercial fishery), many depend upon subsistence activities or other non-cash economic activities to support themselves and their families. The species important for subsistence users reportedly include: salmon, halibut, Pacific cod, pollock, flounders, Dolly Varden, greenling, sea lions, harbor and fur seals, reindeer, ducks and geese and their eggs, as well as intertidal creatures (e.g., clams, crabs, mussels). Berries and grasses are also collected as part of the subsistence harvest (NPFMC 1994a). These activities would be expected to be largely unaffected by any action to reduce the BSAI groundfish TAC.

Kodiak

The groundfish landings port of Kodiak is located near the eastern tip of Kodiak Island, southeast of the Alaska Peninsula, in the Gulf of Alaska. The City of Kodiak is the sixth largest city in Alaska, with a population of 6,869 (Alaska Department of Community and Regional Affairs 1998). The City of Kodiak is 252 air miles south of Anchorage. The port and community are highly integrated, both geographically and structurally. The port and community are the de facto center of fishing activity for the western and central Gulf of Alaska.

Kodiak is primarily non-Native, and the majority of the Native population are Sugpiaq Eskimos and Aleuts. Filipinos are a large subculture in Kodiak due to their work in the canneries. During the 1990 U.S. Census, 2,177 total housing units existed and 126 were vacant. An estimated 3,644 jobs were in the community. The official unemployment rate at that time was 4.4 percent, with 23 percent of the adult population not in the work force. The median household income was $46,050, and 6.2 percent of residents were living below the poverty level. Pillar Creek Reservoir and Monashka Reservoir provide water to the community, which is piped throughout the area. Piped sewage is processed in a secondary treatment plant. All homes are fully plumbed. Eight schools are located in the community, serving 2,252 students.

Kodiak supports at least nine processing operations which receive groundfish harvested from the GOA and, to a lesser extent, the BSAI management areas, and four more which process exclusively non-groundfish species. The port also supports several hundred commercial fishing vessels, ranging in size from small skiffs to large catcher/processors.

According to data supplied by the City:

> The Port of Kodiak is home port to 770 commercial fishing vessels. Not only is Kodiak the state's largest fishing port, it is also home to some of Alaska's largest trawl, longline, and crab vessels.

Unlike Akutan, or even Dutch Harbor/Unalaska, Kodiak has a more generally diversified seafood processing sector. The port historically was very active in the crab fisheries and, although these fisheries have declined from their peak in the late 1970s and early 1980s, Kodiak continues to support shellfish fisheries, as well as significant harvesting and processing operations for Pacific halibut, herring, groundfish, and salmon.

Kodiak processors, like the other onshore operations profiled in this section, are highly dependent on pollock and Pacific cod landings, with these species accounting for 43 percent and 36 percent of total groundfish deliveries, by weight, respectively. The port does, however, participate in a broader range of groundfish fisheries than any of the other ports cited. Most of this activity centers on the numerous flatfish species which are present in the GOA, but also includes relatively significant rockfish and sablefish fisheries.

In fact, Kodiak often ranks near the top of the list of U.S. fishing ports, on the basis of landed value, and is frequently regarded as being involved in a wider variety of North Pacific fisheries than any other community on the North Pacific coast.

In 1997, for example, the port recorded salmon landings of just under 44 million pounds, with an estimated ex-vessel value of over $12 million. Approximately 4.3 million pounds of Pacific herring were landed in Kodiak with an ex-vessel value of more than $717 thousand. Crab landings exceeded 1.1 million pounds and were valued at ex-vessel at more than $2.7 million.

While comparable product value estimates are not currently available for groundfish and non-groundfish production (i.e., first wholesale value), it may be revealing to note that groundfish landings accounted for 79 percent of the total tons of fish and shellfish landed in this port, in 1997.

In addition to seafood harvesting and processing, the Kodiak economy includes sectors such as transportation (being regarded as the transportation hub for southwest Alaska), federal/state/local government, tourism, and timber. The forest products industry, based upon Sitka spruce, is an important and growing segment of the Kodiak economy.

The community is, also, home to the largest U.S. Coast Guard base in the Nation. Located a few miles outside of the city center-proper, it contributes significantly to the local economic base. The University of Alaska, in conjunction with the National Marine Fisheries Service, operates a state-of-the-art fishery utilization laboratory and fishery industrial technology center in Kodiak, as well.

While Kodiak appears to be a much more mature and diversified economy that those of any other of the five primary groundfish landings ports in Alaska, it is likely that a substantial reduction in groundfish TAC in the Gulf, Aleutian Islands, and/or Bering Sea management area(s) could impose significant adverse economic impacts on Kodiak.

The absence of detailed cost, net revenue, capital investment and debt structure data for the Kodiak groundfish fishing and processing sectors precludes a quantitative analysis of the probable net economic impacts of such a TAC change. Nonetheless, one may draw insights from history, as when in the early-1980s king crab landings declined precipitously and Kodiak suffered a severe community-wide economic decline. It was largely the development of the groundfish fisheries which reinvigorated the local economy.

Unfortunately, an alternative fishery resource available to Kodiak fishermen and processors which could ameliorate significant reductions in groundfish landing does not appear. Neither do non-fishery based opportunities appear, at least in the short run, which could be developed to reduce the adverse economic impacts of such a change in groundfish harvesting and processing.

Sand Point and King Cove

These are two independent and geographically separate groundfish ‘landings ports’ (lying approximately 160 miles from one another), but because each has only a single processor and each community is small and remote, they are described jointly in this section.

Alaska CIS data place Sand Point’s 1998 population at 808, while King Cove’s population is listed as 897. Sand Point is located on Humboldt Harbor, Popof Island, 570 air miles from Anchorage. Sand Point is described by the Alaska Department of Community and Regional Affairs as "a mixed Native and non-Native community," with a large transient population of fish processing workers. During the April 1990 U.S. Census, 272 total housing units were in existence and 30 of these were vacant. A total of 438 jobs were estimated to be in the community. The official unemployment rate at that time was 2.9 percent, with 32.1 percent of all adults not in the work force. The median household income was $42,083, and 12.5 percent of the residents were living below the poverty level. One school is located in Sand Point, attended by 145 students.

King Cove is located on the Gulf of Alaska side of the Alaska Peninsula, 625 miles southwest of Anchorage. The community is characterized as a mixed non-Native and Aleut village. In the 1990

U.S. Census, 195 total housing units were in existence, with 51 of these vacant. The community had an estimated 276 jobs, with an official unemployment rate of 1.8 percent and 24.0 percent of all adults not in the work force. The median household income was $53,631, and 10 percent of the residents were living below the poverty level. One school is located in the community, attended by 140 students.

Sand Point and King Cove, like Akutan, are part of the Aleutians East Borough. Unlike Akutan, however, neither Sand Point nor King Cove qualify as a CDQ community. Indeed, both Sand Point and King Cove have had extensive historical linkages to commercial fishing and fish processing, and currently support resident commercial fleets delivering catch to local plants. These local catches are substantially supplemented by deliveries from large, highly mobile vessels, based outside of the two small Gulf of Alaska communities.

King Cove boasts a deep water harbor which provides moorage for approximately 90 vessels of various sizes, in an ice-free port. Sand Point, with a 25 acre/144 slip boat harbor and marine travel-lift, is home port to what some have called, “the largest fishing fleet in the Aleutian Islands” (NPFMC 1994a).

For decades, the two communities have principally concentrated on their respective area’s salmon fisheries. In 1997, for example, Sand Point and King Cove recorded salmon landings of several million pounds, each. State of Alaska data confidentiality requirements preclude reporting actual quantities and value when fewer than four independent operations are included in a category. Sand Point and King Cove each have one processor reporting catch and production data. In addition, King Cove had significant deliveries of Pacific herring and crabs. Recently, each community has actively sought to diversify its fishing and processing capability, with groundfish being key to these diversification plans.

According to a recent report presented to the Council (Impact Assessment Incorporated 1998):

> In terms of employment, 87 percent of Sand Point’s workforce is employed full time in the commercial fishery; for King Cove this figure is more than 80 percent (United States Army Corps of Engineers 1997, and 1998). In both cases, fishing employment is followed by local government (borough and local) and then by private businesses. Seafood processing ranks after each of these other employers, meaning that the vast majority of the workforce at the shore plants are not counted as community residents.

By any measure, these two communities are fundamentally dependent upon fishing and fish processing. In recent years, groundfish resources have supplanted salmon, herring, and crabs as the primary target species-group, becoming the basis for much of each community’s economic activity and stability.

Few alternatives to commercial fishing and fish processing exist, within the cash-economy, in these communities by which to make a living. However, subsistence harvesting is an important source of food, as well as a social activity, for local residents in both Sand Point and King Cove. Salmon and caribou are reportedly among the most important subsistence species, but crabs, herring, shrimps, clams, sea urchins, halibut and cod are also harvested by subsistence users. It is reported that Native populations in these communities also harvest seals and sea lions for meat and oil (Impact Assessment Incorporated 1998).

Any action which significantly diminishes the harvest of GOA and BSAI groundfish resources (especially those of pollock and Pacific cod) would be expected to adversely impact these two communities. King Cove is somewhat unique among the five key groundfish ports insofar as it is relatively more dependent upon Pacific cod than pollock, among the groundfish species landed (69 percent and 31 percent, respectively). Sand Point follows the more typical pattern with 69 percent of its groundfish landings being composed of pollock and 29 percent of Pacific cod (in 1997).

Because neither port has significant vessel support capabilities, their links to other groundfish fisheries is less direct than, say, either Kodiak or Dutch Harbor/Unalaska. This may suggest that reductions in TACs for species other than pollock and Pacific cod would have little or no direct impact on these two ports. However, because both compete with the larger ports for deliveries of these two groundfish species, structural changes in one or more of the other principal groundfish landings ports, attributable to TAC reductions for other than pollock and Pacific cod could, indirectly, affect King Cove and Sand Point. This is, however, largely an empirical question.

No data on cost, net revenues, capital investment and debt structure are available with respect to the Sand Point or King Cove plant complexes. It is not possible, therefore, to quantify probable attributable net impacts to plant owners/operators of the potential reductions in groundfish catches and deliveries to these landings ports.

Other Alaska Groundfish Fishing Communities

As noted above, the remaining 5 percent or so of the total groundfish landings made to Alaska fishing ports is distributed over more than twenty different locations (Table 3-44). Very few common characteristics are shared by all these remaining ports. Like virtually every settlement in Alaska (with the exception of Anchorage, population 254,269, in 1998), these landings ports are all relatively small communities. Some are exceedingly small, with year-round resident populations of a few dozen to a couple hundred people (e.g., Chignik - pop. 128; Pelican - pop. 196; St. Paul - pop. 739), while others could be regarded as small to moderate-sized towns, with populations numbering in the several thousands (e.g., Ketchikan - pop. 8,729; Kenai - pop. 6,950; Petersburg - pop. 3,356).

Community Development Communities

The purpose of the CDQ program was to extend the economic opportunities of the developing fisheries in the Bering Sea and Aleutian Islands (especially pollock) to small, rural communities which had otherwise not benefitted from their proximity to these valuable living marine resources.

As initially envisioned, the proposed program would set aside 7.5 percent of the Bering Sea and Aleutian Island's annual TAC for Alaska pollock for allocation to qualifying rural Alaskan communities. The program was initially proposed to run for a period of four year, lasting from 1992 through 1995, but was subsequently extended for an additional three years, carrying it through 1998. In the intervening period, a CDQ program for BSAI halibut and sablefish was implemented in 1995, a CDQ program for BSAI crab was implemented in 1998, the multi-species groundfish CDQ program will be implemented in late 1998, and the Council recommended extending the pollock CDQ allocations by including pollock in the multi-species groundfish CDQ program.

The purpose of the CDQ program is, essentially, to redistribute a portion of the economic and social benefits deriving from the rich fishery resources of the Bering Sea and Aleutian Islands management areas to coastal communities in western Alaska which have not, to date, benefitted from their proximity

to these fisheries. This is, historically, an economically depressed region of the Nation. By providing CDQ shares to qualifying communities, the expectation is that investment in capital infrastructure, community development projects, training and education of local residents, regionally based commercial fishing or related businesses can be developed and sustained.

CDQ communities are predominantly Alaska Native villages. They are remote, isolated settlements with few natural assets with which to develop and sustain a viable diversified economic base. As a result, unemployment rates are chronically high. This has led to habitual community instability.

While these communities effectively border some of the richest fishing grounds in the world, they have not been able, for the most part, to exploit their advantageous proximity. The full Americanization of these highly valued offshore fisheries has taken place relatively quickly (i.e., the last participation by foreign fishing vessels ended in the Bering Sea in 1990). But the scale of these fisheries (e.g., 2 million mt groundfish TAC), the severe physical conditions within which the fisheries are prosecuted, and the very high capital investment required to compete in the open-access management environment, all contributed to effectively precluding these villages from participating in this development. The CDQ program serves to ameliorate some of these apparent inequities by extending an opportunity to qualifying communities to directly benefit from the exploitation of these publicly owned resources.

The communities which are currently eligible to participate in the CDQ program include 56 coastal Alaska villages, with a combined population estimated at roughly 24,000. The CDQ-qualifying communities have organized themselves into six non-profit groups (with between 1 and 17 villages in each group). The CDQ-villages are geographically dispersed, extending from Atka, on the Aleutian chain, along the Bering coast, to the village of Wales, near the Arctic Circle. The following lists the current CDQ groups.

> Aleutian Pribilof Island Community Development Association (APICDA): The six communities represented by APICDA are relatively small and located adjacent to the fishing grounds. Population of the six communities is approximately 730.
>
> Bristol Bay Economic Development Corporation (BBEDC):BBEDC represents 13 villages distributed around the circumference of Bristol Bay, including Dillingham, the second-largest CDQ community with approximately 2,200 residents and the location of BBEDC’s home office. Total population is approximately 3,900.
>
> Central Bering Sea Fisherman’s Association (CBSFA): CBSFA is unusual among CDQ groups in that it represents a single community, St. Paul in the Pribilof Islands.
>
> Coastal Villages Region Fund (CVRF): CVRF manages the CDQ harvest for its 17 member villages. The villages are located along the coast between the southern end of Kuskokwim Bay and Scammon Bay, including Nunivak Island.
>
> Norton Sound Economic Development Corporation (NSEDC): Fifteen villages and approximately 8,700 people make up the region represented by NSEDC, which ranges from St. Michael to Diomede.

Yukon Delta Fisheries Development Association (YDFDA): YDFDA represents the four communities, Alakanuk, Emmonak, Kotlik, and Sheldon Point, containing approximately 1, 750 people.

By design, at the time of implementation, CDQ communities could have no current or historical linkage to the fisheries in question. In fact, if a rural coastal community had such a history, it was precluded from receiving a CDQ allocation. Therefore, to derive economic benefit from their respective allocations, it has been necessary (with the exception of some of the halibut CDQs) for each CDQ group to enter into a relationship with one or more of the commercial fishing companies which participate in the open-access fishery. In this way, the CDQ community brings to the relationship preferential access to the fish and the partnering firm brings the harvesting/processing capacity. The nature of these relationships differs from group to group. In every case, the CDQ community receives royalty payments on apportioned catch shares. Some of the agreements also provide for training and employment of CDQ-community members within the partners' fishing operations, as well as, other community development benefits.

Fishing Communities not Adjacent to the Management Areas

Many of the participants in the BSAI and GOA groundfish fisheries are not from the communities adjacent to the management areas. Therefore, many of the fishing communities that are substantially dependent on or substantially engaged in the harvest or processing of BSAI or GOA groundfish fishery resources are not adjacent to the management areas. This is particularly true for the BSAI fishery because the adjacent communities are small and remote. Even in the case of Unalaska and Akutan, the two BSAI communities with large groundfish processing plants, a large part of the processing plant labor force is accounted for by individuals who are neither local nor Alaska residents. In the GOA, local residents play a substantially larger role in the harvesting and processing sectors of the groundfish industry as well as in the support industries.

Vessels that participated in the BSAI and GOA groundfish fisheries had home ports in nine states other than Alaska. However, only three states had home ports for more than 2 vessels. They were: California with fewer than 20 vessels, Oregon with 42 to 75 vessels, and Washington with 310 to 423 vessels. In 1997, 25 of the 48 vessels with Oregon home ports used trawl gear and the mean vessel length of the Oregon vessels was 75 feet. In 1997, 136 of the 331 vessels with Washington home ports used trawl gear and the mean vessel length of the Washington vessels was 115 feet. In comparison, fewer than 10 percent of the vessels with Alaska home ports used trawl gear in 1997 and their mean length was 49 feet.

Almost all of the non-Alaska home ports had fewer than 10 vessels and many had only a few. Seattle, with typically about 300 vessels, was the only non-Alaska port with more than 50 vessels. Next after Seattle, was Newport with 17 vessels in 1997 and Portland with 19 vessels. For Seattle, 122 of the 282 vessels in 1997 were trawlers and the mean length of all vessels was 122 feet. The comparable numbers for Portland and Newport, respectively, are 5 of 19 and 64 feet and 16 of 17 and 91 feet.

Delete Section 5.0

Delete Section 6.0

Delete Section 7.0

Section 8 is revised as follows:

1. Sections 8.3, 8.4, 8.5, 8.6, and 8.7 and Tables 20, 21, and figures 21, 22, 23, and 24 are deleted.

2. Section 8.1 is renumbered 5.1

3. Section 8.2 is renumbered 5.2

4. Section 8.8 is renumbered 5.3.

5. Section 8.9 is renumbered 5.4.

6. Section 8.10 is renumbered 5.5.
7. Section 8.11 is renumbered 5.6.

8. Section 8.12 is renumbered 5.7.

9. Section 8.13 is renumbered 5.8.

10 Section 8.14 is renumbered 5.9.

11. Section 8.15 is renumbered 5.10.

12. Section 8.16 is renumbered 5.11.

13. Section 8.17 is renumbered 5.12.

14. In the new section 5.11, references to section 8.1 and 8.9.1 are changes to 5.1 and 5.4.1, respectively.

Renumber Section 9 to Section 6

Renumber Section 10 to section 7

The new section 7 is modified as follows:

1. In Section 7.1 the following paragraph is added to the end of the section:

> The groundfish resources off Alaska have been harvested and processed entirely by U. S.-flagged vessels since 1991. Conservation and management measures contained in this FMP apply exclusively to domestic fishing activities. No portion of the annual optimal yield is allocated to foreign harvesters or foreign processors.

2. In Section 7.3, the introductory paragraphs are revised as follows:

   a. Revise the first paragraph to read as follows:

The Secretary, after receiving recommendations from the Council, will determine TACs and apportionments thereof, and reserves for each target species and the "other species" category by July 1 of the new fishing year, or as soon as practicable thereafter, by means of regulations implementing the FMP.

b. In the second paragraph, the reference "13.2.B.2 on page 14-1" is revised to read "8.2.B.2".

c. Revise the third paragraph to read as follows:

Prior to making recommendations to the Secretary, the Council will make available to the public for comment as soon as practicable after its October meeting, a preliminary Stock Assessment and Fishery Evaluation (SAFE) report and preliminary specifications of ABC and TAC for each target species and the "other species" category, and apportionments thereof and reserves. At a minimum the SAFE will contain information listed in Section 7.3.1.

d. If Option 2 is adopted, revise the fourth paragraph to read as follows:

At its January meeting , the Council will review the final SAFE and comments received. The Council will then make final recommendations to the Secretary.

3. In Section 7.3.1, delete the last sentence.

4. Section 7.3.2 is revised to read as follows:

7.3.2 Reserves

The groundfish reserves at the beginning of each fishing year shall equal the sum of 7.5 % of each target species and the "other species" category TAC, except pollock and hook and line or pot sablefish. When the TAC is determined by the Council, 7.5 % is set aside for the CDQ program as specified under section 8.4.7.3.5.

5. Delete sections 7.3.3, 7.4, 7.5, 7.6, 7.7 and Table 22a.

Delete Section 11.

Delete Section 12

Renumber Section 13 to Section 8.

1. In the new Section 8.2(B),
    a. the reference to "4.2 A in the introductory paragraph is revised to read "Section 4.0"
    b. In paragraph 1., the reference 14.4.2.F is revised to 9.4.2.F.

2. In the new section 8.4.2 A, the reference to 13.2.B.1 is revised to 8.2.B.1.

3. In the new Section 8.4.2.3,

A. in paragraphs A and B(2), the reference to 13.4.2.2 and 13.4.2.2, Part D and 10.3 are revised to read 8.4.2.2 and 8.4.2.2, Part D and 7.3, respectively.

B. paragraph B(6) is deleted and paragraphs B (1), B(2), B(3), B(4), and B(5) are revised to read as follows:

B. * * *

(1) <u>Prior to the October Council Meeting</u>. The Plan Team will prepare for the Council a preliminary Stock Assessment and Fishery Evaluation (SAFE) report under Section 7.3 which provides the best available information on estimated prohibited species bycatch and mortality rates in the target groundfish fisheries, and estimates of seasonal and annual bycatch rates and amounts. Based on the SAFE report, the Plan Team may provide recommendations for apportionments of PSC limits to target fisheries, seasonal allocations, thereof and an economic analysis of the effects of the PSC limit apportionments or allocations.

(2) <u>October Council Meeting</u>. * * *

(3) <u>Prior to the December Council Meeting</u>. The Plan Team will prepare for the Council a final SAFE report under Section 7.3 which provides the best available information on estimated halibut bycatch rates in the target groundfish fisheries. The Plan Team may provide final recommendations for apportionments of PSC limits among target fisheries, seasonal allocations of fishery bycatch apportionments, and also an economic analysis of the effects of the PSC limit apportionments or seasonal allocations.

(4) <u>December Council Meeting</u>. While recommending final groundfish harvest levels, the Council reviews public comments, takes public testimony, and makes final decisions on apportionments of PSC limits among fisheries and seasons, using the same factors (a) through (g) set forth under Section 8.4.2.3, Part B (seasonal allocations of the PSC limits). The Council also makes final decisions on the exemption of any non-trawl fishery category from halibut bycatch mortality restrictions using the same factors (1) through (8) set forth under Section 8.4.2.2, Part D.

(5) As soon as practicable after the Council's December meeting, the Secretary will publish the Council's final decisions as proposed harvest specifications in the <u>Federal Register</u>. Information on which the final recommendations are based will also be published in the <u>Federal</u> <u>Register</u> or otherwise made available by the Council.

C. If Option 2 is adopted, revised the "December" to " January" in paragraphs B(3), B(4), and B(5) above.

4. In the new paragraph 8.4.2.4, the reference to 13.4.2.2 is revised to 8.4.2.2.

5. In the new paragraph 8.4.3.4, the text "DAP or JVP" is deleted.

6. In the new paragraph 8.4.7.1.1, the reference to 13.4.7.1 is revised to 8.4.7.1.

7. In the new paragraph 8.4.7.1.5(5), the reference 13.4.8.4(1) is revised to 8.4.8.4(1).

8. In the new paragraph 8.4.7.1.5(5)d., the reference 13.4.7.1.1 is revised to 8.4.7.1.1.

9. In the new paragraph 8.4.7.3.5, the references to 13.4.7.3.3 and 13.4.7.3.4 are revised to 8.4.7.3.3 and 8.4.7.3.4, respectively.

10. In the new paragraph 8.4.7.3.3, the reference 13.4.7.1 is revised to 8.4.7.1.

11. In the new paragraph 8.4.8(B), the reference to 13.4.2 is revised to 8.4.2.

12. In the new paragraph 8.4.9.3,
    a. the reference to 13.4.9.2.1 is revised to 8.4.9.2.1.
    b. the reference to 11.3 in the introductory paragraph is revised to 7.3.
    c. In paragraph (a), the reference 13.4.2 is revised to 8.4.2.

13. Delete section 13.5 (Management Measures–Foreign Fisheries)

14. Renumber section 13.6 to 8.5.

15. Renumber section 13.7 to 8.6.

16. Renumber section 13.8 to 8.7.

17. Renumber section 13.9 to 8.8.

Renumber Section 14 to 9

In the second introductory paragraph, reference to Section 14.0 is revised to 9.0.

Renumber Section 15 to 10

Renumber Section 16 to 11

Renumber Section 17 to 12

Add the following references to the new Section 12.1 in alphabetical order:

Alaska Department of Community and Regional Affairs. 1998. "Community Information Summary (CIS)." in Alaska Department of Community and Regional Affairs, P.O. Box 112100, Juneau, AK 99811.

Fredin, R. A. 1987. History of regulation of Alaska groundfish fisheries. National Marine Fisheries Service, NWAFC Processed Report 87-07. 63 p.

Impact Assessment Incorporated. 1998. "Inshore/Offshore 3 - Socioeconomic Description and Social Impact Assessment." in Impact Assessment, Inc, 911 West 8th Avenue, Suite 402, Anchorage, AK.

Megrey, B. A., and V. G. Wespestad. 1990. Alaskan groundfish resources: 10 years of management under the Magnuson Fishery Conservation and Management Act. N. Am. J. Fish. Management 10(2):125-143.

NPFMC. 1994a. "Fishery Management Plan for the Gulf of Alaska Groundfish Fishery." in North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, AK 99501.

NPFMC. 1995. "Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish." in North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, AK 99501.

United States Army Corps of Engineers. 1997. "Navigation improvements: detailed project report and environmental assessment, King Cove, Alaska." in U.S. Army Alaska Engineer District, Anchorage, AK.

United States Army Corps of Engineers. 1998. "Harbor improvements feasibility report and environmental assessment, Sand Point, Alaska." in U.S. Army Alaska Engineer District, Anchorage, AK.

Witherell, D., and Pautzke, C. 1997. "A brief history of bycatch management measures for eastern Bering Sea groundfish fisheries." *Marine Fisheries Review.* 59:15-22.

Renumber Section 18 to 13.

Remove and reserve Annex II and Annex III

Appendix D

Draft Amendment Language for the Fishery Management Plan for Groundfish of the Gulf of Alaska, Implementing Alternative 3, including Option 2 and Options A and B

Section 1, first paragraph is revised to read as follows:

This Fishery Management Plan (FMP) has been developed by the North Pacific Fishery Management Council for the groundfish fishery (excluding halibut) of the Gulf of Alaska. In 1978 it replaced the Preliminary Fishery Management Plan for the management of groundfish in the Gulf of Alaska. Since then, the FMP has been amended over sixty times.

Section 2 is revised as follows:

1. Delete definitions for Domestic annual harvest (DAH), Domestic annual processed catch (DAP), Joint venture processed catch (JVP), and Total allowable level of foreign fishing (TALFF).

2. Revise the definitions of Prohibited Species Catch (PSC) and Total allowable catch (TAC) as follows:

Prohibited Species Catch (PSC) is nonretainable catch. It can take the form of a prohibited or nongroundfish species and/or as a fully utilized groundfish species captured incidentally in groundfish fisheries. Such catch must be recorded and returned to sea with a minimum of injury except as provided in the Prohibited Species Donation Program. A PSC limit is an apportioned, nonretainable amount of fish provided to a fishery for bycatch purposes.

Total allowable catch (TAC) is the harvest quota for a species or species group; the retainable catch. TAC will be apportioned by area.

Section 3 is revised as follows:

1. In the section titled Areas and Stocks Involved, (2) is revised to read as follows:

(2) To all fisheries for all finfish, except salmon, steelhead, halibut, herring, and tuna. Harvest allocations and management are based on the calendar year.

2. The fourth paragraph is revised to read as follows:

Diversity of commercial bottomfish species in the Gulf of Alaska is intermediate between the Bering Sea, where fewer species occur, and the Washington-California region, where more species are present. The most diverse species in the Gulf of Alaska is the rockfish group (genus Sebastes), of which 30 species have been identified in this area. Several species of rockfish have been of significant commercial interest, including the Pacific ocean perch (S. alutus), shortraker rockfish (S. borealis), rougheye rockfish (S. aleutianus), dusky rockfish (S. ciliatus), northern rockfish (S. polyspinus), and yelloweye rockfish (S. ruberrimus). Pacific ocean perch was the subject of a substantial foreign and domestic trawl fishery from the 1960's through mid-1980's. Although Pacific ocean perch is found throughout the Gulf, the biomass and fishery have been concentrated in the Eastern Area. For management purposes rockfish are classified into three distinct assemblages that are based on their habitat and distribution. These assemblages are:

* * * * *

Section 4 is modified as follows:

1. Add the following paragraph to the end of Section 4.1.

* * * * *

The groundfish resources off Alaska have been harvested and processed entirely by U. S.-flagged vessels since 1991. Conservation and management measures contained in this FMP apply exclusively to domestic fishing activities. No portion of the annual optimal yield is allocated to foreign harvesters or foreign processors.

2. Section 4.2.1 is revised as follows:

a. Revise the first paragraph to read as follows:

A procedure has been developed whereby the Council can set annual harvest levels by specifying a total allowable catch (TAC) for each groundfish fishery on an annual basis. The procedure consists of six steps:

b. Delete paragraph (6)

c. Renumber paragraph (7) to (6).

d. In the paragraph following the new (6), the last sentence is revised to read as follows:

Similarly, the attainment of a PSC limit will result in the closure of the appropriate fishery.

e. (i) Section 4.2.1.1 is revised to read as follows:

The Secretary, after receiving recommendations from the Council, will determine TACs and apportionments thereof for each target species and the "other species" category by July 1 of the new fishing year, or as soon as practicable thereafter, by means of regulations implementing the FMP. Notwithstanding designated target species and species groups listed in Section 3.1, the Council may recommend splitting or combining species in the target species category for purposes of establishing a new TAC if such action is desirable based on commercial importance of a species or species group and whether sufficient biological information is available to manage a species or species group on its own merits.

Prior to making recommendations to the Secretary, the Council will make available to the public for comment as soon as practicable after its October meeting, a preliminary Stock Assessment and Fishery Evaluation (SAFE) report and preliminary specifications of ABC and TAC for each target species and the "other species"category, and apportionments thereof. At a minimum the SAFE report will contain information listed in Section 4.2.1.4.

At its December meeting, the Council will review the final SAFE report and comments received. The Council will then make final recommendations to the Secretary.

e. (ii) If Option 2 is adopted, in Section 4.2.1.1, “December” is revised to “January” in the revision specified in e.(i) above.

f. Delete section 4.2.1.3.

g. Renumber section 4.2.1.4 to 4.2.1.3.

h. In the new 4.2.1.3, revised (7) to read as follows:

(7) Information to be used by the Council in establishing prohibited species catch limits (PSCs) for Pacific halibut with supporting justification and rationale.

i. Delete section 4.2.1.5.

3. Delete Section 4.2.2

4. Renumber Section 4.2.3 to 4.2.2., revise the new 4.2.2 as follows:

a. Revise the section reference in the third paragraph from 4.2.3.1 to 4.2.2.1.

b. Revise paragraph 5 as follows:

When a PSC limit is reached, further fishing with specific types of gear or modes of operation during the year is prohibited in an area by those who take their PSC limit in that area. All other users and gear would remain unaffected.

c. Delete paragraph 6.

d. Delete the first sentence of paragraph 7.

e. Renumber paragraph 4.2.3.1 to 4.2.2.1.

f. Revise the section reference in the introductory paragraph of the new 4.2.2.1 from 4.2.3 to 4.2.2.

g. In the new Section 4.2.2.1, delete (3) and revise (1) through the new (5) as follows:

(1) Prior to the October Council Meeting. The Plan Team will prepare for the Council a preliminary Stock Assessment and Fishery Evaluation (SAFE) report under Section 4.2.1 which provides the best available information on estimated halibut bycatch and mortality rates in the target groundfish fisheries, halibut PSCs limits, apportionments and catches thereof by target fisheries and gear types for the previous fishing year.

(2) October Council Meeting. While setting preliminary groundfish harvest levels under Section 4.2.1, the Council will also review the need to control the bycatch of halibut and will, if necessary, recommend preliminary halibut PSC mortality limits (PSCs) and apportionments thereof. The Council will also review the need for seasonal allocations of the halibut PSCs.

* * *

(3) Prior to the December Council Meeting. The Plan Team will prepare for the Council a final SAFE report under Section 4.2.1 which provides the best available information on estimated halibut bycatch rates in the target groundfish fisheries.

(4) December Council Meeting. While recommending final groundfish harvest levels, the Council reviews public comments, takes public testimony, and makes final decisions on annual halibut PSC limits and seasonal allocations, using the same factors (6) through (14) concerning PSC limits, and the same factors, (1) through (7), concerning seasonal allocations of the PSC limits. The Council will recommend its decisions, including no change for the new fishing year, to the Secretary of Commerce for implementation.

(5) As soon as practicable after the Council's December meeting, the Secretary will publish the Council's final decisions as proposed harvest specifications in the Federal Register. Information on which the final recommendations are based will also be published in the Federal Register or otherwise made available by the Council.

h. If Option 2 is adopted, revise the new section 4.2.2.1 as specified in g. above, except revise "December" to "January" in paragraphs (3), (4) and (5).

5. Renumber section 4.2.4 to 4.2.3. Revise the section reference in the paragraph from 4.2.3.1 to 4.2.2.1.

6. Renumber section 4.2.5 to 4.2.4.

7. Renumber section 4.2.6 to 4.2.5.

8. Delete the title to section 4.3.1

9. Renumber section 4.3.1.1 to section 4.3.1.

10. Renumber section 4.3.1.2 to section 4.3.2

11. Renumber section 4.3.1.2.1 to section 4.3.2.1.

12. Renumber section 4.3.1.2 .2 to section 4.3.2.2.

13. Renumber section 4.3.1.2.3 to section 4.3.2.3

14. Renumber section 4.3.1.3 to section 4.3.3

15. In the new section 4.3.3, delete the fourth paragraph titled Information on processing expectations.

16. Renumber section 4.3.1.4 to section 4.3.4

17. Renumber section 4.3.1.5 to section 4.3.5.
18. Renumber section 4.3.1.6 to section 4.3.6.

19. Renumber section 4.3.1.6.1 to section 4.3.6.1

20. Renumber section 4.3.1.6.2 to section 4.3.6.2.

21. Renumber section 4.3.1.6.3 to section 4.3.6.3.

22. Renumber section 4.3.1.6.4 to section 4.3.6.4.

23. Renumber section 4.3.1.7 to section 4.3.7.

24. Delete section 4.3.2

25. Renumber section 4.3.3 to section 4.3.8.

26. Renumber section 4.3.4. to section 4.3.9.

27. Renumber section 4.3.4.1 to section 4.3.9.1.

28. Renumber section 4.3.4.2 to section 4.3.9.2.

29. Renumber section 4.3.4.3 to section 4.3.9.3.

30. Delete table 4.4 and figures 4.2 and 4.3.

Appendix E

Draft Amendment Language for the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish, Implementing Alternative 5 including Option and Options A and B

Title:

The title of the document is revised to read as follows:

Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area

Section 3.0 is modified as follows:

1. The second introductory paragraph is revised to read as follows:

> One feature of the format of this FMP is that such items as Allowable Biological Catch, Expected Annual Harvest and annual catch statistics which are likely to change from time to time have been arranged in Annexes. This should facilitate both the drafting and review process when such changes are made in the future.

2. In Section 3.3, delete definitions 2. and 3. Delete the number 1. for the first definition.

Section 4.0 is revised to read as follows:

1. Delete "<u>4.1 Areas and Stocks Involved</u>"

2. Renumber section 4.1.1 to 4.1

3. Delete sections 4.1.2 through 4.2.2.3, including all figures and tables.

4. Add sections 4.2, 4.3, and 4.4 to read as follows:

4.2 Species of Fish Targeted

The Bering Sea supports about 300 species of fishes, the majority of which are found near or on the bottom (Wilimovsky 1974). Among the pelagic species are the commercially important, or potentially important groups such as the salmon (<u>Oncorhynchus</u>), herring (<u>Clupea</u>), smelts (<u>Osmerus</u>), and capelin (<u>Mallotus</u>). The fish groups of primary concern in this plan are the bottom or near-bottom dwelling forms--the flounders, rockfish, sablefish, cod, pollock, and Atka mackerel. Although not bottom-dwelling, squids (<u>Cephalopoda</u>) are also included in the plan.

There is a general simplification in the diversity of bottomfish species in the Bering Sea compared to the more southern regions of the Gulf of Alaska and Washington to California. As a result, certain species inhabiting the Bering Sea are some of the largest bottomfish resources found anywhere in the world. Relatively few groundfish species in the eastern Bering Sea and Aleutian Islands are large enough to attract target, or target fisheries: walleye pollock, Pacific cod, Pacific ocean perch, sablefish, Atka mackerel, several species of rockfishes and flatfishes. Since the 1960s, pollock catches have accounted for the majority of the Bering Sea groundfish harvest. Yellowfin sole and rock sole currently dominate the flatfish group and has the longest history of intense exploitation by foreign fisheries. Other flounder species that are known to occur in aggregations large enough to form target species or occasional target species are Greenland turbot, Pacific halibut, rock sole, flathead sole, Alaska plaice, and arrowtooth flounder.

Catch History

Catch statistics since 1954 are shown for the Eastern Bering Sea subarea in **Table 4.1a**. The initial target species was yellowfin sole. During the early period of these fisheries, total catches of groundfish reached a peak of 674,000 metric tons (t) in 1961. Following a decline in abundance of yellowfin sole, other species (principally walleye pollock) were targeted upon, and total catches rose to 2.2 million t in 1972. Catches have since varied from one to two million t as catch restrictions and other management measures were placed on the fishery.

Catches in the Aleutian region have always been much smaller than those in the Eastern Bering Sea. Target species have also been different (**Table 4.1b**): In the Aleutians, Pacific ocean perch (POP) was the initial target species. During the early years of exploitation, overall catches of Aleutian groundfish reached a peak of 112,000 t in 1965. As POP abundance declined, the fishery diversified to other species. Total catches from the Aleutians in recent years have been about 100,000 t annually.

Table 4.1.a. Groundfish and squid catches in the eastern Bering Sea, 1954-2001.

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex	Other Rock Fish	Yellow Fin Sole	Greenland Turbot
1954						12,562	
1955						14,690	
1956						24,697	
1957						24,145	
1958	6,924	171	6			44,153	
1959	32,793	2,864	289			185,321	
1960			1,861	6,100		456,103	36,843
1961			15,627	47,000		553,742	57,348
1962			25,989	19,900		420,703	58,226
1963			13,706	24,500		85,810	31,565
1964	174,792	13,408	3,545	25,900		111,177	33,729
1965	230,551	14,719	4,838	16,800		53,810	9,747
1966	261,678	18,200	9,505	20,200		102,353	13,042
1967	550,362	32,064	11,698	19,600		162,228	23,869
1968	702,181	57,902	4,374	31,500		84,189	35,232
1969	862,789	50,351	16,009	14,500		167,134	36,029
1970	1,256,565	70,094	11,737	9,900		133,079	19,691
1971	1,743,763	43,054	15,106	9,800		160,399	40,464
1972	1,874,534	42,905	12,758	5,700		47,856	64,510
1973	1,758,919	53,386	5,957	3,700		78,240	55,280
1974	1,588,390	62,462	4,258	14,000		42,235	69,654
1975	1,356,736	51,551	2,766	8,600		64,690	64,819
1976	1,177,822	50,481	2,923	14,900		56,221	60,523
1977	978,370	33,335	2,718	2,654	311	58,373	27,708
1978	979,431	42,543	1,192	2,221	2,614	138,433	37,423
1979	913,881	33,761	1,376	1,723	2,108	99,017	34,998
1980	958,279	45,861	2,206	1,097	459	87,391	48,856
1981	973,505	51,996	2,604	1,222	356	97,301	52,921
1982	955,964	55,040	3,184	224	276	95,712	45,805
1983	982,363	83,212	2,695	221	220	108,385	43,443
1984	1,098,783	110,944	2,329	1,569	176	159,526	21,317
1985	1,179,759	132,736	2,348	784	92	227,107	14,698
1986	1,188,449	130,555	3,518	560	102	208,597	7,710
1987	1,237,597	144,539	4,178	930	474	181,429	6,533
1988	1,228,000	192,726	3,193	1,047	341	223,156	6,064
1989	1,230,000	164,800	1,252	2,017	192	153,165	4,061
1990	1,353,000	162,927	2,329	5,639	384	80,584	7,267
1991	1,268,360	165,444	1,128	4,744	396	94,755	3,704
1992	1,384,376	163,240	558	3,309	675	146,942	1,875
1993	1,301,574	133,156	669	3,763	190	105,809	6,330
1994	1,362,694	174,151	699	1,907	261	144,544	7,211

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex	Other Rock Fish	Yellow Fin Sole	Greenland Turbot
1995	1,264,578	228,496	929	1,210	629	124,746	5,855
1996	1,189,296	209,201	629	2,635	364	129,509	4,699
1997	1,115,268	209,475	547	1,060	161	166,681	6,589
1998	1,101,428	160,681	586	1,134	203	101,310	8,303
1999	889,589	134,647	646	609	135	67,307	5,205
2000/d	1,132,736	151,372	742	704	239	84,057	5,888
2001/e	1,381,598	121,357	842	1,144	293	54,325	4,218

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/b	Atka Mackerel	Squid	Other Species	Total (All Species)
1954							12,562
1955							14,690
1956							24,697
1957							24,145
1958						147	51,401
1959						380	221,647
1960	a						500,907
1961	a						673,717
1962	a						524,818
1963	a	35,643					191,224
1964	a	30,604				736	393,891
1965	a	11,686				2,218	344,369
1966	a	24,864				2,239	452,081
1967	a	32,109				4,378	836,308
1968	a	29,647				22,058	967,083
1969	a	34,749				10,459	1,192,020
1970	12,598	64,690				15,295	1,593,649
1971	18,792	92,452				13,496	2,137,326
1972	13,123	76,813				10,893	2,149,092
1973	9,217	43,919				55,826	2,064,444
1974	21,473	37,357				60,263	1,900,092
1975	20,832	20,393				54,845	1,645,232
1976	17,806	21,746				26,143	1,428,565
1977	9,454	14,393			4,926	35,902	1,168,144
1978	8,358	21,040		831	6,886	61,537	1,302,509
1979	7,921	19,724		1,985	4,286	38,767	1,159,547
1980	13,761	20,406		4,955	4,040	34,633	1,221,944
1981	13,473	23,428		3,027	4,182	35,651	1,259,666
1982	9,103	23,809		328	3,838	18,200	1,211,483
1983	10,216	30,454		141	3,470	15,465	1,280,285
1984	7,980	44,286		57	2,824	8,508	1,458,299
1985	7,288	71,179		4	1,611	11,503	1,649,109
1986	6,761	76,328		12	848	10,471	1,633,911
1987	4,380	50,372		12	108	8,569	1,639,121
1988	5,477	137,418		428	414	12,206	1,810,470
1989	3,024	63,452		3,126	300	4,993	1,630,382
1990	2,773	22,568		480	460	5,698	1,644,109

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/b	Atka Mackerel	Squid	Other Species	Total (All Species)
1991	12,748	30,401	46,681	2,265	544	16,285	1,647,455
1992	11,080	34,757	51,720	2,610	819	29,993	1,831,954
1993	7,950	28,812	63,942	201	597	21,413	1,674,406
1994	13,043	29,720	60,276	190	502	23,430	1,818,628
1995	8,282	34,861	54,672	340	364	20,928	1,745,890
1996	13,280	35,390	46,775	780	1,080	19,717	1,653,355
1997	8,580	42,374	67,249	171	1,438	20,997	1,640,590
1998	14,985	39,940	33,221	901	891	23,156	1,486,739
1999	9,827	33,042	39,934	2,008	393	17,045	1,200,387
2000	12,071	36,813	49,186	239	375	23,098	1,497,520
2001	12,244	26,590	28,524	265	1,758	19,127	1,652,285

a/ Arrowtooth flounder included in Greenland turbot catch statistics.
b/ Includes POP shortraker, rougheye, northern and sharpchin.
c/ Rocksole prior to 1991 is included in other flatfish catch statistics.
d/ Data through December 31, 2000.
e/ Data through October 27, 2001. Does not include CDQ.
Note: Numbers don’t include fish taken for research.

Table 4.1.b. Groundfish and squid catches in the Aleutian Islands region, 1962-2001.

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex /b	Other Rock Fish	Greenland Turbot	Yellow Fin Sole
1962				200			
1963			664	20,800		7	
1964		241	1,541	90,300		504	
1965		451	1,249	109,100		300	
1966		154	1,341	85,900		63	
1967		293	1,652	55,900		394	
1968		289	1,673	44,900		213	
1969		220	1,673	38,800		228	
1970		283	1,248	66,900		285	
1971		2,078	2,936	21,800		1,750	
1972		435	3,531	33,200		12,874	
1973		977	2,902	11,800		8,666	
1974		1,379	2,477	22,400		8,788	
1975		2,838	1,747	16,600		2,970	
1976		4,190	1,659	14,000		2,067	
1977	7,625	3,262	1,897	8,080	3,043	2,453	
1978	6,282	3,295	821	5,286	921	4,766	
1979	9,504	5,593	782	5,487	4,517	6,411	
1980	58,156	5,788	274	4,700	420	3,697	
1981	55,516	10,462	533	3,622	328	4,400	
1982	57,978	1,526	955	1,014	2,114	6,317	
1983	59,026	9,955	673	280	1,045	4,115	
1984	81,834	22,216	999	631	56	1,803	
1985	58,730	12,690	1,448	308	99	33	
1986	46,641	10,332	3,028	286	169	2,154	
1987	28,720	13,207	3,834	1,004	147	3,066	
1988	43,000	5,165	3,415	1,979	278	1,044	
1989	156,000	4,118	3,248	2,706	481	4,761	
1990	73,000	8,081	2,116	14,650	864	2,353	
1991	78,104	6,714	2,071	2,545	549	3,174	1,380
1992	54,036	42,889	1,546	10,277	3,689	895	4
1993	57,184	34,234	2,078	13,375	495	2,138	0
1994	58,708	22,421	1,771	16,959	301	3,168	0
1995	64,925	16,534	1,119	14,734	220	2,338	6
1996	28,933	31,389	720	20,443	278	1,677	654
1997	26,872	25,166	779	15,687	307	1,077	234
1998	23,821	34,964	595	13,729	385	821	5
1999	965	27,714	565	17,619	630	422	13
2000/c	1,244	39,684	1,048	14,893	601	1,086	13
2001/d	819	33,634	1,033	15,540	605	1,086	15

Table 4.1.b. Continued.

Year	Sole	Rock	Other Flat Fish	Arrow Tooth Flounder	Atka Mackerel	Squid	Other Species	Total (All Species)
1962								200
1963				a				21,471
1964				a			66	92,652
1965				a			768	111,868
1966				a			131	87,589
1967				a			8,542	66,781
1968				a			8,948	56,023
1969				a			3,088	44,009
1970				274	949		10,671	80,610
1971				581			2,973	32,118
1972				1,323	5,907		22,447	79,717
1973				3,705	1,712		4,244	34,006
1974				3,195	1,377		9,724	49,340
1975				784	13,326		8,288	46,553
1976				1,370	13,126		7,053	43,465
1977				2,035	20,975	1,808	16,170	67,348
1978				1,782	23,418	2,085	12,436	61,092
1979				6,436	21,279	2,252	12,934	75,195
1980				4,603	15,533	2,332	13,028	108,531
1981				3,640	16,661	1,763	7,274	104,199
1982				2,415	19,546	1,201	5,167	98,233
1983				3,753	11,585	510	3,675	94,617
1984				1,472	35,998	343	1,670	147,022
1985				87	37,856	9	2,050	113,310
1986				142	31,978	20	1,509	96,259
1987				159	30,049	23	1,155	81,364
1988				406	21,656	3	437	77,383
1989				198	14,868	6	108	186,494
1990				1,459	21,725	11	627	124,886
1991	n/a		88	938	22,258	30	91	117,942
1992	236		68	900	46,831	61	3,081	164,513
1993	318	59		1,348	65,805	85	2,540	179,659
1994	308		55	1,334	69,401	86	1,102	175,614
1995	356		47	1,001	81,214	95	1,273	183,862
1996	371		61	1,330	103,087	87	1,720	190,750
1997	271		39	1,071	65,668	323	1,555	139,049
1998	446		54	694	56,195	25	2,448	134,182
1999	577		53	746	51,636	9	1,633	102,582
2000	480		113	1,157	46,990	8	3,010	110,327
2001	526		96	1,220	61,234	5	3,851	119,664

a/ Arrowtooth flounder included in Greenland turbot catch statistics.
b/ Includes POP shortraker, rougheye, northern and sharpchin rockfish.
c/ Data through December 31, 2000.
d/ Data through October 27, 2001. Does not include CDQ.
Note: Numbers don't include fish taken for research.

4.3 Socioeconomic Characteristics of the Fishery

Subsistence Fishery

The earliest fisheries for groundfish in the eastern Bering Sea and Aleutian Islands were the native subsistence fisheries. The fish and other marine resources remain an important part of the life of native people, and dependence on demersal species of fish may have been critical to their survival in periods of the year when other sources of food were scarce or lacking. Fishing was in near-shore waters utilizing such species as cod, halibut, rockfish, and other species. These small-scale subsistence fisheries have continued to the present time. Although not well estimated, the total catch of groundfish in subsistence fisheries is thought to be minuscule relative to commercial fishery catches.

Recreational Fishery

At this time, there are no essentially recreational fisheries for groundfish species covered under this FMP. Recreational catches of groundfish in the BSAI region would take place in state waters and likely fall under the classification of subsistence fisheries.

Charter Fishery

A limited charter vessel fishery for Pacific halibut is based in Dutch Harbor. Three charter vessels participated in 1999.

Commercial Fishery

The first commercial venture for bottomfish occurred in 1864 when a single schooner fished for Pacific cod in the Bering Sea. This domestic fishery continued until 1950 when demand for cod declined and economic conditions caused the fishery to be discontinued. Fishing areas in the eastern Bering Sea were from north of Unimak Island and the Alaska Peninsula to Bristol Bay. Vessels operated from home ports in Washington and California and from shore stations in the eastern Aleutian Islands. The cod fishery reached its peak during World War I when the demand for cod was high. Numbers of schooners operating in the fishery ranged from 1-16 up to 1914 and increased to 13-24 in the period 1915-20. Estimated catches during the peak of the fishery ranged annually from 12,000-14,000 mt.

Another early fishery targeted Pacific halibut. Halibut were reported as being present in the Bering Sea by United States cod vessels as early as the 1800s. However, halibut from the Bering Sea did not reach North American markets until 1928. Small and infrequent landings of halibut were made by United States and Canadian vessels between 1928 and 1950, but catches were not landed every year until 1952. The catch by North American setline vessels increased sharply between 1958 and 1963 and then declined steadily until 1972.

Several foreign countries conducted large scale groundfish fisheries in the eastern Bering Sea and Aleutian Islands prior to 1991. Vessels from Japan, USSR (Russia), Canada, Korea, Taiwan, and Poland all plied the waters of the North Pacific for groundfish. In the mid 1950’s, vessels from Japan and Russia targeted yellowfin sole, and catches peaked at over 550,000 mt in 1961. In the 1960’s, Japanese vessels, and to a lesser extent Russian vessels, developed a fishery for Pacific ocean perch, pollock, Greenland turbot, sablefish, and other groundfish. By the early 1970’s over 1.7 million mt of pollock was being caught by these two countries in the eastern Bering Sea annually. Korean vessels began to target pollock in 1968. Polish vessels fished briefly in the Bering Sea in 1973. Tiawanese

vessels entered the fishery in 1977.   For more information on foreign fisheries in the BSAI, refer to NPFMC (1995), Megrey and Wespestad (1990), and Fredin (1987).

The foreign fleets were phased out in the 1980's. The transition period from foreign to fully domestic groundfish fisheries was stimulated by a quick increase in joint-venture operations. The American Fisheries Promotion Act (the so-called "fish and chips" policy) required that allocations of fish quotas to foreign nations be based on the nations contributions to the development of the U.S. fishing industry. This provided incentive for development of joint-venture operations, with U.S. catcher vessels delivering their catches directly to foreign processing vessels. Joint-venture operations peaked in 1987, giving way to a rapidly developing domestic fleet. By 1991, the entire BSAI groundfish harvest (2,126,600 mt, worth $351 million ex-vessel) was taken by only 391 U.S. vessels.

The commercial groundfish catch off Alaska totaled 1.9 million t in 1998, compared to 2.1 million t in 1997 Based on a preliminary estimate for 1998 that may not be consistent with the estimates for previous years, the ex-vessel value of the catch, excluding the value added by at-sea processing, decreased from $583 million in 1997 to $385 million in 1998. The value of the 1998 catch after primary processing was approximately $1 billion. The groundfish fisheries accounted for the largest share of the ex-vessel value of all commercial fisheries off Alaska in 1998 (40 percent), and approximately 80 percent of this total came from the BSAI management area. The Pacific salmon (*Oncorhynchus* spp.) fishery was second with $243 million or 26 percent of the total Alaska ex-vessel value. The value of the shellfish catch amounted to $219 million or 23 percent of the total for Alaska.

Walleye (Alaska) pollock (*Theragra chalcogramma*) has been the dominant species in the commercial groundfish catch off Alaska. The 1998 pollock catch of 1.25 million t accounted for 67 percent of the total groundfish catch of 1.87 million t. The next major species, Pacific cod (*Gadus macrocephalus*), accounted for 257,900 t or almost 14 percent of the total 1998 groundfish catch. The Pacific cod catch was down about 21 percent from a year earlier. The 1998 catch of flatfish, which includes yellowfin sole (*Pleuronectes asper*), rock sole (*Pleuronectes bilineatus*), and arrowtooth flounder (*Atheresthes stomias*) was 223,100 t in 1998, down almost 35 percent from 1997. Pollock, Pacific cod, and flatfish comprised almost 93 percent of the total 1998 catch. Other important species are sablefish (*Anoplopoma fimbria*), rockfish (*Sebastes and Sebastolobus* spp.), and Atka mackerel (*Pleurogrammus monopterygius*).

Trawl, hook and line (including longline and jigs), and pot gear account for virtually all the catch in the BSAI groundfish fisheries. There are catcher vessels and catcher processor vessels for each of these three gear groups. From 1993-1998, the trawl catch averaged about 91 percent of the total catch, while the catch with hook and line gear accounted for 7.5 percent. Most species are harvested predominately by one type of gear, which typically accounts for 90 percent or more of the catch. The one exception is Pacific cod, where in 1998, 48 percent (123,000 t) was taken by trawls, 43 percent (110,000 t) by hook and line gear, and 9 percent (24,000 t) by pots. During the same period, catcher vessels took 41 percent of the catch and catcher processor vessels took the other 59 percent.

The discards of groundfish in the groundfish fishery have received increased attention in recent years by NMFS, the Council, Congress, and the public at large. The discard rate is the percent of total catch that is discarded. For the BSAI and GOA fisheries as a whole, the annual discard rate for groundfish decreased from 15.1 percent in 1994 to 8.2 percent in 1998 with the vast majority of the reduction occurring in 1998. The 43 percent reduction in the overall discard rate in 1998 is the result of prohibiting pollock and Pacific cod discards in all BSAI and GOA groundfish fisheries beginning in 1998. Total discards decreased by almost 49 percent in 1998 with the aid of a 9.5 percent reduction in

total catch. Estimates of total catch, discarded catch, and discard rates by species, area, gear, and target fishery are provided in the annual Economic SAFE report.

The bycatch of Pacific halibut, crab, Pacific salmon, and Pacific herring (*Clupea pallasi*) has been an important management issues for more than twenty years. The retention of these species was prohibited first in the foreign groundfish fisheries. This was done to ensure that groundfish fishermen had no incentive to target these species. For a review of the history of prohibited species bycatch management, refer to Witherell and Pautzke (1997).

Residents of Alaska and of other states, particularly Washington and Oregon, are active participants in the BSAI groundfish fisheries. For the domestic groundfish fishery as a whole, 92 percent of the 1998 catch was made by vessels with owners who indicated that they were not residents of Alaska.

Estimates of ex-vessel value by area, gear, type of vessel, and species are included in the annual Economic SAFE report. The ex-vessel value of the domestic landings in the combined GOA and BSAI groundfish fisheries, excluding the value added by at-sea processing, increased from $425 million in 1993 to $585 million in 1995, decreased in 1996 to $531 million, and increased to $570 in 1997. The distribution of ex-vessel value by type of vessel differed by area, gear and species. In 1997, catcher vessels accounted for 44 percent of the ex-vessel value of the groundfish landings compared to 42 percent of the total catch because catcher vessels take larger percentages of higher priced species such as sablefish which was $2.25 per pound in 1997. Similarly, trawl gear accounted for only 67 percent of the total ex-vessel value compared to 90 percent of the catch because much of the trawl catch is of low priced species such as pollock which was about $0.10 per pound in 1997.

For the BSAI and GOA combined, 82.5 percent of the 1997 ex-vessel value was accounted for by vessels with owners who indicated that they were not residents of Alaska. Vessels with owners who indicated that they were residents of Alaska accounted for 15.5 percent of the total and the remaining 2.0 percent was taken by vessels for which the residence of the owner was not known. The vessels owned by residents of Alaska accounted for a much larger share of the ex-vessel value than of catch (15.5% compared to 8.5%) because these vessels accounted for relatively large shares of the higher priced species such as sablefish.

Employment data for at-sea processors (but not including inshore processors) indicate that in 1998, the crew weeks totaled 106,365 with the majority of them (101,064) occurring in the BSAI groundfish fishery. In 1998, the maximum monthly employment (18,864) occurred in October. Much of this was accounted for by the BSAI pollock fishery.

There are a variety of at least partially external factors that affect the economic performance of the BSAI and GOA groundfish fisheries. They include landing market prices in Japan, wholesale prices in Japan, U.S. imports of groundfish products, U.S. per capita consumption of seafood, U.S. consumer and producer price indexes, foreign exchange rates, and U.S. cold storage holdings of groundfish. Exchange rates and world supplies of fishery products play a major role in international trade. Exchange rates change rapidly and can significantly affect the economic status of the groundfish fisheries.

4.4 Description of Fishing Communities

Traditionally, the dependence of BSAI and GOA coastal communities on the groundfish fisheries and fisheries affected by the groundfish fisheries has resulted from these communities being one or more of the following: 1) the home ports of vessels that participate in these fisheries; 2) the residence of participants in the harvesting or processing sectors of these fisheries; 3) the port of landings for these fisheries; 4) the location of processing plants; and 5) a service or transportation center for the fisheries. With the creation of the pollock, sablefish and halibut community development quota (CDQ) programs for the BSAI in the early to mid-1990s and with the expansion of those programs into the multispecies CDQ program with the addition of all BSAI groundfish and crab by the late 1990s, the dependence now includes the participation of coastal, Western Alaska, Native communities in the CDQ program. The CDQ program has provided the following for the CDQ communities: 1) additional employment in the harvesting and processing sectors of these fisheries; 2) training; and 3) royalty income when the CDQs are used by a fishing company. In many cases, those royalties have been used to increase the ability of the residents of the CDQ communities to participate in the regional commercial fisheries.

Almost 100 Alaskan communities are listed as home ports. For the vast majority of the Alaska home ports, trawl vessels account for none or a very small part of the vessels and the mean length is less than 50 feet. Many of the Alaska home ports had fewer than 5 vessels. The Alaska home ports with typically more than 50 fishing vessels are as follows: Homer (100+), Juneau (200+), Kodiak (100+), Petersburg (50+), and Sitka (100+). For these five home ports, all but Kodiak had non-trawl vessels account for at least 90 percent of the vessels, and in Petersburg and Sitka almost 100 percent were non-trawl vessels. In 1997, the mean vessel lengths were as follow: Homer, 52 feet; Juneau, 54 feet; Kodiak, 61 feet; Petersburg, 52 feet; and Sitka, 44 feet. Sand Point, which typically had more than 30 vessels and a mean vessel length of 47 feet in 1997, was unique among Alaska home ports in that typically trawl vessels accounted for more than 50 percent of its vessels.

From 1991 to 1997, the number of fishing vessels in the BSAI and GOA groundfish fisheries owned by Alaska residents decreased from 1,511 to 916, with most of the decrease occurring in 1992, and the mean length increased from 45 feet to 49 feet. Trawl vessels accounted for fewer than 10 percent of the total in any year and for fewer than 2 percent of the overall decrease in the number of vessels between 1991 and 1997.

The vast majority of the groundfish fishing vessels owned by Alaska residents use hook-and-line gear and operate only in the GOA. For example, of the 894 Alaskan owned fishing vessels that participated in the BSAI and GOA groundfish fisheries in 1996, 852 fished in the GOA compared to only 115 in the BSAI and 752 used hook-and-line gear compared to either 140 for pot gear or 75 for trawl gear. This is explained by the following: 1) the small size of most of the Alaska vessels; 2) the ability of small vessels to use hook-and-line gear effectively and safely, particularly in the GOA; and 3) the greater proximity of GOA fishing grounds to the home ports and owners' residences for the vast majority of the Alaska vessels.

With respect to groundfish fisheries, the hook-and-line vessels owned by Alaska residents have been involved almost exclusively in the sablefish, Pacific cod, and rockfish fisheries. Trawlers owned by Alaska residents principally have been involved in the pollock, Pacific cod and flatfish fisheries. In 1996, 20 of the 75 Alaska owned trawlers participated in the BSAI groundfish fishery compared to 69 of the 752 Alaskan hook-and-line vessels, and 40 of the 140 Alaskan pot boats.

Vessels of residents of Alaska account for a larger percent of the ex-vessel value of the catch than of the weight of the catch. For example, in 1996, these vessels accounted for only 7.9 percent of the BSAI and GOA groundfish catch, but 14.5 percent of its ex-vessel value. This occurs because a larger percent of the catch of these vessels consists of higher priced groundfish species that are taken with hook-and-line gear. These species include sablefish, some of the higher priced rockfish, and Pacific cod .

When the fishing ports are ranked, from highest to lowest, on the basis of their 1997 groundfish landings and value, the first five ports account for in excess of 95 percent of the total Alaska groundfish landings. These are, in rank order:

Port & Ranking	Metric Tons*	Value	Number of Processors
1. Dutch Harbor/Unalaska	224,000	$59,774,500	6
2. Akutan	<120,000	NA	1
3. Kodiak	84,000	$33,488,800	9
4. Sand Point	<45,000	NA	1
5. King Cove	<25,000	NA	1

* estimated total groundfish landings
NA - data cannot be reported due to "confidentiality" constraints

For reference, in 1997, the sixth ranked Alaska groundfish landings port was Seward, Alaska. The total quantity of groundfish landed in Seward was approximately one-third that of King Cove, by far the smallest of the top five Alaska groundfish landings ports, and was dominated by sablefish, the only BSAI and GOA groundfish species managed under an ITQ program. Furthermore, much of the Seward groundfish catch comes from State waters (e.g., Prince William Sound). After Seward, the quantities of groundfish landings drop off even more sharply for the remaining ports. For these reasons, a natural break occurs between the top five ports and the remaining ports. Therefore, the balance of this section will focus on the five primary groundfish ports, listed above.

Dutch Harbor/Unalaska and Akutan are located on the Bering Sea side of the Alaska Peninsula/Aleutian Island chain, while Sand Point and King Cove are on the Gulf of Alaska side and Kodiak Island, where the port and City of Kodiak are located, is in the Gulf. Nonetheless, a substantial portion of the groundfish processed in Sand Point and King Cove is harvested in the Bering Sea, as is a somewhat lesser share of that landed in Kodiak. Historically, relatively small amounts of groundfish harvested in the GOA have been delivered for processing in Dutch Harbor/Unalaska and Akutan.

At present, pollock and Pacific cod are the primary groundfish species landed and/or processed in these five ports. Alaska Department of Fish and Game fish ticket data indicate that in Dutch Harbor/Unalaska and Akutan, pollock represented 83 percent and 76 percent, respectively, of the 1997 total groundfish landings in these ports, with Pacific cod making up virtually all of the balance. In the case of Sand Point, pollock and Pacific cod, respectively, accounted for 69 percent and 29 percent of the total, with fractional percentages of other groundfish species accounting for the rest. In King Cove, this relationship was reversed, with pollock catch-share at 31 percent and Pacific cod at 69 percent of the groundfish total. Kodiak presented the most diversified species complex, with pollock representing 43 percent, Pacific cod 36 percent, assorted flatfishes at 14 percent, and a mix of other groundfish species making up the balance of the total.

Dutch Harbor/Unalaska

Dutch Harbor/Unalaska is located approximately 800 miles southwest of Anchorage and 1,700 miles northwest of Seattle. Unalaska is the 11th largest city in Alaska, with a reported year-round population of just over 4,000. The name Dutch Harbor is often applied to the portion of the City of Unalaska located on Amaknak Island, which is connected to Unalaska Island by a bridge. Dutch Harbor is fully contained within the boundaries of the City of Unalaska, which encompasses 115.8 square miles of land and 98.6 square miles of water (Alaska Department of Community and Regional Affairs 1998).

Unalaska is primarily non-Native, although the community is culturally diverse. Subsistence activities remain important to the Aleut community and many long-time non-Native residents, as well. Salmon, Pacific cod, Dolly Varden, Pacific halibut, sea bass, pollock and flounders are the most important marine species, according to Alaska Department of Fish and Game reports. Sea urchins, razor and butter clams, cockles, mussels, limpets, chiton, crabs, and shrimps make up the shellfish and invertebrates most commonly harvested by subsistence users. Marine mammals traditionally harvested include sea lions, harbor and fur seals, and porpoises. Local residents also harvested reindeer, ducks, geese, sea gull eggs and other bird eggs in great numbers in previous years (NPFMC 1994a).

According to the 1990 U.S. Census, 682 total housing units existed and 107 were vacant. More than 2,500 jobs were estimated to be in the community. The official unemployment rate at that time was 1.0 percent, with 7.8 percent of the adult population not in the work force. The median household income was reportedly $56,215, and 15.3 percent of residents were living below the poverty level.

The majority of homes in the community are served by the City's piped water and sewer system. Sewage receives primary treatment before being discharged into Unalaska Bay. Approximately 90 percent of households are plumbed. Two schools are located in the community, serving 415 students.

Dutch Harbor/Unalaska has been called the most prosperous stretch of coastline in Alaska. With 27 miles of ports and harbors, several hundred local businesses, most servicing, supporting, or relying on the seafood industry, this city is the center of the Bering Sea fisheries.

Dutch Harbor is not only the top ranked fishing port in terms of landings in Alaska, but has held that distinction for the Nation, as a whole, each year since 1989. In addition, it ranked at or near the top in terms of the ex-vessel value of landings over the same period.

Virtually the entire local economic base in Dutch/Unalaska is fishery-related, including fishing, processing, and fishery support functions (e.g., fuel, supply, repairs and maintenance, transshipment, cold storage, etc.). Indeed, Dutch Harbor/Unalaska is unique among Alaska coastal communities in the degree to which it provides basic support services for a wide range of Bering Sea fisheries (Impact Assessment Incorporated 1998). It has been reported that over 90 percent of the population of this community considers itself directly dependent upon the fishing industry, in one form or another (NPFMC 1994a).

Historically, Dutch Harbor/Unalaska was principally dependent upon non-groundfish (primarily king and Tanner crab) landings and processing for the bulk of its economic activity. These non-groundfish species continue to be important components of a diverse processing complex in Dutch Harbor/Unalaska. In 1997, for example, nearly 2 million pounds of salmon, more than 1.7 million pounds of herring, and 34 million pounds of crabs were reportedly processed in this port.

Nonetheless, since the mid-1980s, groundfish has accounted for the vast majority of total landings in Dutch Harbor/Unalaska. Again, utilizing 1997 catch data, over 93.5 percent of total pounds landed and processed in this port were groundfish.

While well over 90 percent of this total tonnage was groundfish, a significantly smaller percentage of the attributable ex-vessel value of the catch is comprised of groundfish. While equivalent processed product values for non-groundfish production are not readily available, Alaska fish ticket data indicate that the ex-vessel value of these species landed in Dutch Harbor/Unalaska was nearly $43 million, in 1997; or about 60 percent of the reported gross product value of the groundfish output. If the value added through processing of these non-groundfish species were fully accounted for, the total would obviously exceed the ex-vessel value of the raw catch.

As suggested, transshipping is an integral component of the local service-based economy of this community, as well. The port serves as a hub for movement of cargo throughout the Pacific Rim. Indeed, the Great Circle shipping route from major U.S. west coast ports to the Pacific Rim passes within 50 miles of Unalaska. The Port of Dutch Harbor is among the busiest ports on the west coast. The port reportedly serves more than 50 domestic and foreign transport ships per month. Seafood products, with an estimated first wholesale value substantially in excess of a billion dollars, cross the port's docks each year and are carried to markets throughout the world.

The facilities and related infrastructure in Dutch Harbor/Unalaska support fishing operations in both the BSAI and GOA management areas. Processors in this port receive and process fish caught in both areas, and the wider community is linked to, and substantially dependent upon serving both the on-shore and at-sea sectors of the groundfish industry.

In a profile of regional fishing communities, published by the NPFMC in 1994, the local economy of Unalaska was characterized in the following way:

> If it weren't for the seafood industry, Unalaska would not be what it is today ... In 1991, local processors handled 600 million lbs. of seafood onshore, and 3 billion lbs. of seafood were processed offshore aboard floating processors that use Dutch Harbor as a land base. Seven shore-based and many floating processors operate within municipal boundaries.

While these figures presumably include both groundfish and non-groundfish species, and current sources identify at least eight shore-based processing facilities, they are indicative of the scope of this community's involvement in, and dependence upon, seafood harvesting and processing.

Because of this high level of economic integration between Dutch Harbor/Unalaska and the fishing industry, any action which significantly reduced the total allowable catch of groundfish from the Bering Sea/Aleutian Islands (and to a lesser extent Gulf of Alaska) management areas would be expected to have a severely negative impact on the port and surrounding community.

While the port continues to be actively involved in support operations for crab, salmon, and herring fisheries, these resources do not hold the potential to offset economic impacts which would be associated with a significant reduction in (especially pollock and Pacific cod) groundfish TACs. Indeed, the newest and largest of the processing facilities in Dutch Harbor/Unalaska are dedicated to pollock surimi production, and could not readily shift production to an alternative species or product form, even if such an opportunity were to exist.

Detailed data on costs, net earnings, capital investment and debt service for the harvesting, processing, and fisheries support sectors in Dutch Harbor/Unalaska are not available. Therefore, it is not possible to quantify the probable net economic impacts on this community attributable to a significant reduction in groundfish TACs for the Bering Sea and Aleutian Islands or Gulf of Alaska management areas. It is apparent, however, that no alternative fisheries exist into which the port might diversify, in order to offset such a reduction in groundfish activity (crab resources remain biologically depressed and those fisheries are fully subscribed. The herring and salmon fisheries are managed by the State of Alaska with limited entry programs. Neither are there prospects (at least in the foreseeable future) for non-fishery related economic activity in Dutch Harbor/Unalaska that could substantially mitigate impacts from a significant reduction in groundfish fishing activity.

While Dutch Harbor has been characterized as one of the world's best natural harbors, it offers few alternative opportunities for economic activity beyond fisheries and fisheries support. Its remote location, limited and specialized infrastructure and transportation facilities, and high cost make attracting non-fishery related industrial and/or commercial investment doubtful (at least in the short-run). Sea floor minerals exploration, including oil drilling, in the region have been discussed. No such development seems likely in the short run, however. Unalaska, also, reportedly expected nearly 6,000 cruise ship visitors in 1996.

Without the present level of fishing and processing activities, it is probable that many of the current private sector jobs in this groundfish landings port could be lost, or at the very least, would revert to highly seasonal patterns, with the accompanying implications for community stability observed historically in this and other Alaska seafood processing locations dependent upon transient, seasonal work forces. It is likely, for example, that the number of permanent, year-round residents of Dutch Harbor/Unalaska would decline significantly. This would, in turn, alter the composition and character of the community and place new, and different, demands on local government.

The municipal government of the City of Unalaska is substantially dependent upon the tax revenues which are generated from fishing and support activities. While a detailed treatment of municipal tax accounts is beyond the scope of this assessment, it is clear that, between the State of Alaska's Fisheries Business Tax and Fishery Resource Landings Tax revenues (both of which are shared on a 50/50 basis with the community of origin), local raw fish sales tax, real property tax (on fishery related property), and permits and fees revenues associated with fishing enterprises, the City of Unalaska derives a substantial portion of its operating, maintenance, and capital improvement budget from fishing, and especially groundfish fishing, related business activities. Should the groundfish harvest in the BSAI management area be substantially reduced, the municipality could experience a very significant reduction in its tax base and revenues (depending upon the species and size of the reduction). Potentially, the magnitude of these revenue reductions could be such that they could not readily be compensated for by the municipal government.

The local private business infrastructure which has developed to support the needs and demands of the fishery-based population of Dutch Harbor/Unalaska would very clearly suffer severe economic dislocation, should the number of employees in the local plants and fishing fleets decline in response to substantial TAC reductions. While insufficient cost and investment data exist with which to estimate the magnitude of probable net losses to these private sector businesses, it seems certain that a substantial number would fail. With no apparent economic development alternative available to replace groundfish harvesting and processing in Dutch Harbor/Unalaska (at least in the short run), there would be virtually no market value associated with these stranded assets.

<u>Akutan</u>

Akutan is located on Akutan Island in the eastern Aleutian Islands, one of the Krenitzin Islands of the Fox Island group. The community is approximately 35 miles east of Unalaska and 766 air miles southwest of Anchorage. Akutan is surrounded by steep, rugged mountains reaching over 2,000 feet in height. The village sits on a narrow bench of flat, treeless terrain. The small harbor is ice-free year-round, but frequent storms occur in winter and fog in summer. The community is reported to have a population of 414 persons, although the population can swell to well over 1,000 during peak fish processing months.

During the 1990 U.S. Census, 34 total housing units existed and 3 were vacant. 527 jobs were estimated to be in the community. The official unemployment rate at that time was .4 percent, with 7.4 percent of all adults not in the work force. The median household income was $27,813, and 16.6 percent of the residents were living below the poverty level. One school is in the community, serving 24 students.

Water is supplied from local streams, treated, and piped into homes. The seafood processing plant operates its own water treatment facility.

Akutan ranks as the second most significant landings port for groundfish on the basis of tons delivered and has been characterized as a unique community in terms of its relationship to these BSAI fisheries. According to a recent social impact assessment, prepared for the NPFMC, while Akutan is the site of one of the largest of the shoreside groundfish processing plants in the region, the community is geographically and socially separate from the plant facility.

Indeed, while the village of Akutan was initially judged to be ineligible to participate in the State of Alaska's CDQ program, based largely upon its being associated with "... a previously developed harvesting and processing capability sufficient to support substantial groundfish participation in the BSAI ...", it was subsequently determined that the community of Akutan was discrete and distinct from the Akutan groundfish processing complex.

As a result, Akutan has a very different relationship to the region's groundfish fisheries than does, for example, Dutch Harbor/Unalaska or Kodiak. While the community of Akutan derives economic benefits from its proximity to the large Trident Seafoods shore plant (and a smaller permanently moored processing vessel, operated by Deep Sea Fisheries, which does only crab), the entities have not been integrated in the way other landings ports and communities on the list have.

As a CDQ community, the community of Akutan enjoys access to the BSAI groundfish resource independently of direct participation in the fishery. The CDQ communities as a group will receive CDQs equal to 7.5 percent of each BSAI groundfish TAC, except for the fixed gear sablefish TACs. The CDQ communities will receive 20 percent of the fixed gear sablefish TACs for the eastern Bering Sea and the Aleutian Islands areas. Therefore, the CDQs available to the CDQ group to which Akutan is a member will change as the BSAI TACs change. As TACs decrease, the value per unit of CDQ would be expected to increase and at least partially offset the effect of the decrease in quantity. However, it is not known whether the total value of the CDQs would increase or decrease if TACs and, therefore, CDQs decrease. Similarly, the economic benefits the community derives from the local 1 percent raw fish tax from landings at the nearby plant are dependent on BSAI groundfish TACs and the resulting ex-vessel value of groundfish landings. As with the value of CDQs, typically decreases in TACs and landings would be expected to be at least partially offset by increases in ex-vessel prices.

Although this conclusion pertains to the community of Akutan, implications for the groundfish landings port of Akutan are quite different. The Trident plant is the principal facility in the Akutan port and, historically, a number of smaller, mobile processing vessels have operated seasonally out of the port of Akutan. Therefore, a substantial decrease in groundfish landings in this region, in response to decreases in TACs being assessed in this document, could have profoundly negative implications. Akutan does not have a boat harbor or an airport in the community. Beyond the limited services provided by the plant, no an opportunity exists in Akutan to provide a support base for other major commercial fisheries. Indeed, alternative economic opportunities of any kind are extremely limited.

While crab processing was a major source of income for the Akutan plant during the boom years of the late 1970s and early 1980s, with the economic collapse of this resource base in the early 1980s, groundfish processing became the primary source of economic activity. In 1997, for example, State of Alaska and NMFS catch records indicate that, while landings of herring and crabs were reported for the Akutan plant, more than 98 percent of the total pounds landed were groundfish, and these made up more than 80 percent of the estimated total value.

An obvious alternative to groundfish processing which could be developed to offset a significant reduction in groundfish landings in Akutan does not appear. Fisheries for crabs, halibut, salmon, and herring, while important sources of income to the region, are fully developed. Therefore, should the groundfish TAC be significantly reduced, most of the jobs held by employees of the plant would likely disappear (or at a minimum, become seasonal) and people would leave the area (although the exact number is unknown).

No data on cost, net revenues, capital investment and debt structure are available with respect to Trident Seafood’s Akutan plant complex. It is not possible, therefore, to quantify probable attributable net impacts to plant owners/operators of a potential reductions in groundfish catches, although as noted above, the Akutan facility is almost completely dependent upon pollock and Pacific cod deliveries. Should TACs for these two species decline significantly, the impacts would be greater than if TACs for other groundfish species were reduced. While some adjustment to alternative groundfish species might be possible, in response to a sharp decline in pollock and/or Pacific cod TACs, the fact that the plant has not become more involved with other groundfish species during the times of the year in which pollock and Pacific cod are not available suggests that the economic viability of such alternatives is limited and certainly inferior for the plant.

While the distribution of impacts across ports would not be expected to be uniform, should, in particular, pollock and/or Pacific cod TACs be reduced, it is likely that there could be substantial stranded capital costs and job losses in the port of Akutan. The size and rate of such losses is largely an empirical question.

Whereas the 1990 U.S. Census reported the population of Akutan at just under 600 (and the Alaska Department of Community and Regional Affairs CIS data places the figure at 414, in 1997), the local resident population is estimated at 80, with the remaining individuals being regarded as non-resident employees of the plant.

The permanent residents of the village are, reportedly, almost all Aleut. While some are directly involved in the cash economy (e.g., a small boat near-shore commercial fishery), many depend upon subsistence activities or other non-cash economic activities to support themselves and their families. The species important for subsistence users reportedly include: salmon, halibut, Pacific cod, pollock, flounders, Dolly Varden, greenling, sea lions, harbor and fur seals, reindeer, ducks and geese and their eggs, as well as intertidal creatures (e.g., clams, crabs, mussels). Berries and grasses are also collected as part of the subsistence harvest (NPFMC 1994a). These activities would be expected to be largely unaffected by any action to reduce the BSAI groundfish TAC.

Kodiak

The groundfish landings port of Kodiak is located near the eastern tip of Kodiak Island, southeast of the Alaska Peninsula, in the Gulf of Alaska. The City of Kodiak is the sixth largest city in Alaska, with a population of 6,869 (Alaska Department of Community and Regional Affairs 1998). The City of Kodiak is 252 air miles south of Anchorage. The port and community are highly integrated, both geographically and structurally. The port and community are the de facto center of fishing activity for the western and central Gulf of Alaska.

Kodiak is primarily non-Native, and the majority of the Native population are Sugpiaq Eskimos and Aleuts. Filipinos are a large subculture in Kodiak due to their work in the canneries. During the 1990 U.S. Census, 2,177 total housing units existed and 126 were vacant. An estimated 3,644 jobs were in the community. The official unemployment rate at that time was 4.4 percent, with 23 percent of the adult population not in the work force. The median household income was $46,050, and 6.2 percent of residents were living below the poverty level. Pillar Creek Reservoir and Monashka Reservoir provide water to the community, which is piped throughout the area. Piped sewage is processed in a secondary treatment plant. All homes are fully plumbed. Eight schools are located in the community, serving 2,252 students.

Kodiak supports at least nine processing operations which receive groundfish harvested from the GOA and, to a lesser extent, the BSAI management areas, and four more which process exclusively non-groundfish species. The port also supports several hundred commercial fishing vessels, ranging in size from small skiffs to large catcher/processors.

According to data supplied by the City:

> The Port of Kodiak is home port to 770 commercial fishing vessels. Not only is Kodiak the state's largest fishing port, it is also home to some of Alaska's largest trawl, longline, and crab vessels.

Unlike Akutan, or even Dutch Harbor/Unalaska, Kodiak has a more generally diversified seafood processing sector. The port historically was very active in the crab fisheries and, although these fisheries have declined from their peak in the late 1970s and early 1980s, Kodiak continues to support shellfish fisheries, as well as significant harvesting and processing operations for Pacific halibut, herring, groundfish, and salmon.

Kodiak processors, like the other onshore operations profiled in this section, are highly dependent on pollock and Pacific cod landings, with these species accounting for 43 percent and 36 percent of total groundfish deliveries, by weight, respectively. The port does, however, participate in a broader range of groundfish fisheries than any of the other ports cited. Most of this activity centers on the numerous flatfish species which are present in the GOA, but also includes relatively significant rockfish and sablefish fisheries.

In fact, Kodiak often ranks near the top of the list of U.S. fishing ports, on the basis of landed value, and is frequently regarded as being involved in a wider variety of North Pacific fisheries than any other community on the North Pacific coast.

In 1997, for example, the port recorded salmon landings of just under 44 million pounds, with an estimated ex-vessel value of over $12 million. Approximately 4.3 million pounds of Pacific herring were landed in Kodiak with an ex-vessel value of more than $717 thousand. Crab landings exceeded 1.1 million pounds and were valued at ex-vessel at more than $2.7 million.

While comparable product value estimates are not currently available for groundfish and non-groundfish production (i.e., first wholesale value), it may be revealing to note that groundfish landings accounted for 79 percent of the total tons of fish and shellfish landed in this port, in 1997.

In addition to seafood harvesting and processing, the Kodiak economy includes sectors such as transportation (being regarded as the transportation hub for southwest Alaska), federal/state/local government, tourism, and timber. The forest products industry, based upon Sitka spruce, is an important and growing segment of the Kodiak economy.

The community is, also, home to the largest U.S. Coast Guard base in the Nation. Located a few miles outside of the city center-proper, it contributes significantly to the local economic base. The University of Alaska, in conjunction with the National Marine Fisheries Service, operates a state-of-the-art fishery utilization laboratory and fishery industrial technology center in Kodiak, as well.

While Kodiak appears to be a much more mature and diversified economy that those of any other of the five primary groundfish landings ports in Alaska, it is likely that a substantial reduction in groundfish TAC in the Gulf, Aleutian Islands, and/or Bering Sea management area(s) could impose significant adverse economic impacts on Kodiak.

The absence of detailed cost, net revenue, capital investment and debt structure data for the Kodiak groundfish fishing and processing sectors precludes a quantitative analysis of the probable net economic impacts of such a TAC change. Nonetheless, one may draw insights from history, as when in the early-1980s king crab landings declined precipitously and Kodiak suffered a severe community-wide economic decline. It was largely the development of the groundfish fisheries which reinvigorated the local economy.

Unfortunately, an alternative fishery resource available to Kodiak fishermen and processors which could ameliorate significant reductions in groundfish landing does not appear. Neither do non-fishery based opportunities appear, at least in the short run, which could be developed to reduce the adverse economic impacts of such a change in groundfish harvesting and processing.

<u>Sand Point and King Cove</u>

These are two independent and geographically separate groundfish ‘landings ports’ (lying approximately 160 miles from one another), but because each has only a single processor and each community is small and remote, they are described jointly in this section.

Alaska CIS data place Sand Point’s 1998 population at 808, while King Cove’s population is listed as 897. Sand Point is located on Humboldt Harbor, Popof Island, 570 air miles from Anchorage. Sand Point is described by the Alaska Department of Community and Regional Affairs as "a mixed Native and non-Native community," with a large transient population of fish processing workers. During the April 1990 U.S. Census, 272 total housing units were in existence and 30 of these were vacant. A total of 438 jobs were estimated to be in the community. The official unemployment rate at that time was 2.9 percent, with 32.1 percent of all adults not in the work force. The median household income was $42,083, and 12.5 percent of the residents were living below the poverty level. One school is located in Sand Point, attended by 145 students.

King Cove is located on the Gulf of Alaska side of the Alaska Peninsula, 625 miles southwest of Anchorage. The community is characterized as a mixed non-Native and Aleut village. In the 1990 U.S. Census, 195 total housing units were in existence, with 51 of these vacant. The community had an estimated 276 jobs, with an official unemployment rate of 1.8 percent and 24.0 percent of all adults not in the work force. The median household income was $53,631, and 10 percent of the residents were living below the poverty level. One school is located in the community, attended by 140 students.

Sand Point and King Cove, like Akutan, are part of the Aleutians East Borough. Unlike Akutan, however, neither Sand Point nor King Cove qualify as a CDQ community. Indeed, both Sand Point and King Cove have had extensive historical linkages to commercial fishing and fish processing, and currently support resident commercial fleets delivering catch to local plants. These local catches are substantially supplemented by deliveries from large, highly mobile vessels, based outside of the two small Gulf of Alaska communities.

King Cove boasts a deep water harbor which provides moorage for approximately 90 vessels of various sizes, in an ice-free port. Sand Point, with a 25 acre/144 slip boat harbor and marine travel-lift, is home port to what some have called, "the largest fishing fleet in the Aleutian Islands" (NPFMC 1994a).

For decades, the two communities have principally concentrated on their respective area's salmon fisheries. In 1997, for example, Sand Point and King Cove recorded salmon landings of several million pounds, each. State of Alaska data confidentiality requirements preclude reporting actual quantities and value when fewer than four independent operations are included in a category. Sand Point and King Cove each have one processor reporting catch and production data. In addition, King Cove had significant deliveries of Pacific herring and crabs. Recently, each community has actively sought to diversify its fishing and processing capability, with groundfish being key to these diversification plans.

According to a recent report presented to the Council (Impact Assessment Incorporated 1998):

> In terms of employment, 87 percent of Sand Point's workforce is employed full time in the commercial fishery; for King Cove this figure is more than 80 percent (United States Army Corps of Engineers 1997, and 1998). In both cases, fishing employment is followed by local government (borough and local) and then by private businesses. Seafood processing ranks after each of these other employers, meaning that the vast majority of the workforce at the shore plants are not counted as community residents.

By any measure, these two communities are fundamentally dependent upon fishing and fish processing. In recent years, groundfish resources have supplanted salmon, herring, and crabs as the primary target species-group, becoming the basis for much of each community's economic activity and stability.

Few alternatives to commercial fishing and fish processing exist, within the cash-economy, in these communities by which to make a living. However, subsistence harvesting is an important source of food, as well as a social activity, for local residents in both Sand Point and King Cove. Salmon and caribou are reportedly among the most important subsistence species, but crabs, herring, shrimps, clams, sea urchins, halibut and cod are also harvested by subsistence users. It is reported that Native populations in these communities also harvest seals and sea lions for meat and oil (Impact Assessment Incorporated 1998).

Any action which significantly diminishes the harvest of GOA and BSAI groundfish resources (especially those of pollock and Pacific cod) would be expected to adversely impact these two communities. King Cove is somewhat unique among the five key groundfish ports insofar as it is relatively more dependent upon Pacific cod than pollock, among the groundfish species landed (69 percent and 31 percent, respectively). Sand Point follows the more typical pattern with 69 percent of its groundfish landings being composed of pollock and 29 percent of Pacific cod (in 1997).

Because neither port has significant vessel support capabilities, their links to other groundfish fisheries is less direct than, say, either Kodiak or Dutch Harbor/Unalaska. This may suggest that reductions in TACs for species other than pollock and Pacific cod would have little or no direct impact on these two ports. However, because both compete with the larger ports for deliveries of these two groundfish species, structural changes in one or more of the other principal groundfish landings ports, attributable to TAC reductions for other than pollock and Pacific cod could, indirectly, affect King Cove and Sand Point. This is, however, largely an empirical question.

No data on cost, net revenues, capital investment and debt structure are available with respect to the Sand Point or King Cove plant complexes. It is not possible, therefore, to quantify probable attributable net impacts to plant owners/operators of the potential reductions in groundfish catches and deliveries to these landings ports.

Other Alaska Groundfish Fishing Communities

As noted above, the remaining 5 percent or so of the total groundfish landings made to Alaska fishing ports is distributed over more than twenty different locations (Table 3-44). Very few common characteristics are shared by all these remaining ports. Like virtually every settlement in Alaska (with the exception of Anchorage, population 254,269, in 1998), these landings ports are all relatively small communities. Some are exceedingly small, with year-round resident populations of a few dozen to a couple hundred people (e.g., Chignik - pop. 128; Pelican - pop. 196; St. Paul - pop. 739), while others could be regarded as small to moderate-sized towns, with populations numbering in the several thousands (e.g., Ketchikan - pop. 8,729; Kenai - pop. 6,950; Petersburg - pop. 3,356).

Community Development Communities

The purpose of the CDQ program was to extend the economic opportunities of the developing fisheries in the Bering Sea and Aleutian Islands (especially pollock) to small, rural communities which had otherwise not benefitted from their proximity to these valuable living marine resources.

As initially envisioned, the proposed program would set aside 7.5 percent of the Bering Sea and Aleutian Island's annual TAC for Alaska pollock for allocation to qualifying rural Alaskan communities. The program was initially proposed to run for a period of four year, lasting from 1992 through 1995, but was subsequently extended for an additional three years, carrying it through 1998. In the intervening period, a CDQ program for BSAI halibut and sablefish was implemented in 1995, a CDQ program for BSAI crab was implemented in 1998, the multi-species groundfish CDQ program will be implemented in late 1998, and the Council recommended extending the pollock CDQ allocations by including pollock in the multi-species groundfish CDQ program.

The purpose of the CDQ program is, essentially, to redistribute a portion of the economic and social benefits deriving from the rich fishery resources of the Bering Sea and Aleutian Islands management areas to coastal communities in western Alaska which have not, to date, benefitted from their proximity

to these fisheries. This is, historically, an economically depressed region of the Nation. By providing CDQ shares to qualifying communities, the expectation is that investment in capital infrastructure, community development projects, training and education of local residents, regionally based commercial fishing or related businesses can be developed and sustained.

CDQ communities are predominantly Alaska Native villages. They are remote, isolated settlements with few natural assets with which to develop and sustain a viable diversified economic base. As a result, unemployment rates are chronically high. This has led to habitual community instability.

While these communities effectively border some of the richest fishing grounds in the world, they have not been able, for the most part, to exploit their advantageous proximity. The full Americanization of these highly valued offshore fisheries has taken place relatively quickly (i.e., the last participation by foreign fishing vessels ended in the Bering Sea in 1990). But the scale of these fisheries (e.g., 2 million mt groundfish TAC), the severe physical conditions within which the fisheries are prosecuted, and the very high capital investment required to compete in the open-access management environment, all contributed to effectively precluding these villages from participating in this development. The CDQ program serves to ameliorate some of these apparent inequities by extending an opportunity to qualifying communities to directly benefit from the exploitation of these publicly owned resources.

The communities which are currently eligible to participate in the CDQ program include 56 coastal Alaska villages, with a combined population estimated at roughly 24,000. The CDQ-qualifying communities have organized themselves into six non-profit groups (with between 1 and 17 villages in each group). The CDQ-villages are geographically dispersed, extending from Atka, on the Aleutian chain, along the Bering coast, to the village of Wales, near the Arctic Circle. The following lists the current CDQ groups.

> Aleutian Pribilof Island Community Development Association (APICDA): The six communities represented by APICDA are relatively small and located adjacent to the fishing grounds. Population of the six communities is approximately 730.
>
> Bristol Bay Economic Development Corporation (BBEDC):BBEDC represents 13 villages distributed around the circumference of Bristol Bay, including Dillingham, the second-largest CDQ community with approximately 2,200 residents and the location of BBEDC's home office. Total population is approximately 3,900.
>
> Central Bering Sea Fisherman's Association (CBSFA): CBSFA is unusual among CDQ groups in that it represents a single community, St. Paul in the Pribilof Islands.
>
> Coastal Villages Region Fund (CVRF): CVRF manages the CDQ harvest for its 17 member villages. The villages are located along the coast between the southern end of Kuskokwim Bay and Scammon Bay, including Nunivak Island.
>
> Norton Sound Economic Development Corporation (NSEDC): Fifteen villages and approximately 8,700 people make up the region represented by NSEDC, which ranges from St. Michael to Diomede.

Yukon Delta Fisheries Development Association (YDFDA): YDFDA represents the four communities, Alakanuk, Emmonak, Kotlik, and Sheldon Point, containing approximately 1, 750 people.

By design, at the time of implementation, CDQ communities could have no current or historical linkage to the fisheries in question. In fact, if a rural coastal community had such a history, it was precluded from receiving a CDQ allocation. Therefore, to derive economic benefit from their respective allocations, it has been necessary (with the exception of some of the halibut CDQs) for each CDQ group to enter into a relationship with one or more of the commercial fishing companies which participate in the open-access fishery. In this way, the CDQ community brings to the relationship preferential access to the fish and the partnering firm brings the harvesting/processing capacity. The nature of these relationships differs from group to group. In every case, the CDQ community receives royalty payments on apportioned catch shares. Some of the agreements also provide for training and employment of CDQ-community members within the partners' fishing operations, as well as, other community development benefits.

Fishing Communities not Adjacent to the Management Areas

Many of the participants in the BSAI and GOA groundfish fisheries are not from the communities adjacent to the management areas. Therefore, many of the fishing communities that are substantially dependent on or substantially engaged in the harvest or processing of BSAI or GOA groundfish fishery resources are not adjacent to the management areas. This is particularly true for the BSAI fishery because the adjacent communities are small and remote. Even in the case of Unalaska and Akutan, the two BSAI communities with large groundfish processing plants, a large part of the processing plant labor force is accounted for by individuals who are neither local nor Alaska residents. In the GOA, local residents play a substantially larger role in the harvesting and processing sectors of the groundfish industry as well as in the support industries.

Vessels that participated in the BSAI and GOA groundfish fisheries had home ports in nine states other than Alaska. However, only three states had home ports for more than 2 vessels. They were: California with fewer than 20 vessels, Oregon with 42 to 75 vessels, and Washington with 310 to 423 vessels. In 1997, 25 of the 48 vessels with Oregon home ports used trawl gear and the mean vessel length of the Oregon vessels was 75 feet. In 1997, 136 of the 331 vessels with Washington home ports used trawl gear and the mean vessel length of the Washington vessels was 115 feet. In comparison, fewer than 10 percent of the vessels with Alaska home ports used trawl gear in 1997 and their mean length was 49 feet.

Almost all of the non-Alaska home ports had fewer than 10 vessels and many had only a few. Seattle, with typically about 300 vessels, was the only non-Alaska port with more than 50 vessels. Next after Seattle, was Newport with 17 vessels in 1997 and Portland with 19 vessels. For Seattle, 122 of the 282 vessels in 1997 were trawlers and the mean length of all vessels was 122 feet. The comparable numbers for Portland and Newport, respectively, are 5 of 19 and 64 feet and 16 of 17 and 91 feet.

Delete Section 5.0

Delete Section 6.0

Delete Section 7.0

Section 8 is revised as follows:

1. Sections 8.3, 8.4, 8.5, 8.6, and 8.7 and Tables 20, 21, and figures 21, 22, 23, and 24 are deleted.

2. Section 8.1 is renumbered 5.1

3. Section 8.2 is renumbered 5.2

4. Section 8.8 is renumbered 5.3.

5. Section 8.9 is renumbered 5.4.

6. Section 8.10 is renumbered 5.5.
7. Section 8.11 is renumbered 5.6.

8. Section 8.12 is renumbered 5.7.

9. Section 8.13 is renumbered 5.8.

10 Section 8.14 is renumbered 5.9.

11. Section 8.15 is renumbered 5.10.

12. Section 8.16 is renumbered 5.11.

13. Section 8.17 is renumbered 5.12.

14. In the new section 5.11, references to section 8.1 and 8.9.1 are changes to 5.1 and 5.4.1, respectively.

Renumber Section 9 to Section 6

Renumber Section 10 to section 7

The new section 7 is modified as follows:

1. In Section 7.1 the following paragraph is added to the end of the section:

> The groundfish resources off Alaska have been harvested and processed entirely by U. S.-flagged vessels since 1991. Conservation and management measures contained in this FMP apply exclusively to domestic fishing activities. No portion of the annual optimal yield is allocated to foreign harvesters or foreign processors.

2. In Section 7.3, the introductory paragraphs are revised as follows:

    a. Revise the first paragraph to read as follows:

The Secretary, after receiving recommendations from the Council, will determine up to 2 years of TACs and apportionments thereof, and reserves for each target species and the “other species” category by January 1 of the new fishing year, or as soon as practicable thereafter, by means of regulations implementing the FMP.

b. In the second paragraph, the reference “13.2.B.2 on page 14-1" is revised to read “8.2.B.2".

c. Revise the third paragraph to read as follows:

Prior to making recommendations to the Secretary, the Council will make available to the public for comment as soon as practicable after its October meeting, a preliminary Stock Assessment and Fishery Evaluation (SAFE) report and preliminary specifications of ABC and TAC for each target species and the “other species” category, and apportionments thereof and reserves. At a minimum the SAFE will contain information listed in Section 7.3.1.

3. In Section 7.3.1, delete the last sentence.

4. Section 7.3.2 is revised to read as follows:

7.3.2 Reserves

The groundfish reserves at the beginning of each fishing year shall equal the sum of 7.5 % of each target species and the “other species” category TAC, except pollock and hook and line or pot sablefish. When the TAC is determined by the Council, 7.5 % is set aside for the CDQ program as specified under section 8.4.7.3.5.

5. Delete sections 7.3.3, 7.4, 7.5, 7.6, 7.7 and Table 22a.

Delete Section 11.

Delete Section 12

Renumber Section 13 to Section 8.

1. In the new Section 8.2(B),
   a. the reference to “4.2 A in the introductory paragraph is revised to read “Section 4.0"
   b. In paragraph 1., the reference 14.4.2.F is revised to 9.4.2.F.

2. In the new section 8.4.2 A, the reference to 13.2.B.1 is revised to 8.2.B.1.

3. In the new Section 8.4.2.3,

A. in paragraphs A and B(2), the reference to 13.4.2.2 and 13.4.2.2, Part D and 10.3 are revised to read 8.4.2.2 and 8.4.2.2, Part D and 7.3, respectively.

B. paragraph B(6) is deleted and paragraphs B (1), B(2), B(3), B(4), and B(5) are revised to read as follows:

B. * * *

(1) Prior to the October Council Meeting. The Plan Team will prepare for the Council a preliminary Stock Assessment and Fishery Evaluation (SAFE) report under Section 7.3 which provides the best available information on estimated prohibited species bycatch and mortality rates in the target groundfish fisheries, and estimates of seasonal and annual bycatch rates and amounts. Based on the SAFE report, the Plan Team may provide recommendations for apportionments of PSC limits to target fisheries, seasonal allocations, thereof and an economic analysis of the effects of the PSC limit apportionments or allocations.

(2) October Council Meeting. * * *

(3) Prior to the December Council Meeting. The Plan Team will prepare for the Council a final SAFE report under Section 7.3 which provides the best available information on estimated halibut bycatch rates in the target groundfish fisheries. The Plan Team may provide final recommendations for apportionments of PSC limits among target fisheries, seasonal allocations of fishery bycatch apportionments, and also an economic analysis of the effects of the PSC limit apportionments or seasonal allocations.

(4) December Council Meeting. While recommending final groundfish harvest levels, the Council reviews public comments, takes public testimony, and makes final decisions on apportionments of PSC limits among fisheries and seasons, using the same factors (a) through (g) set forth under Section 8.4.2.3, Part B (seasonal allocations of the PSC limits). The Council also makes final decisions on the exemption of any non-trawl fishery category from halibut bycatch mortality restrictions using the same factors (1) through (8) set forth under Section 8.4.2.2, Part D.

(5) As soon as practicable after the Council's December meeting, the Secretary will publish the Council's final decisions as final harvest specifications in the Federal Register. Information on which the final recommendations are based will also be published in the Federal Register or otherwise made available by the Council.

4. In the new paragraph 8.4.2.4, the reference to 13.4.2.2 is revised to 8.4.2.2.

5. In the new paragraph 8.4.3.4, the text "DAP or JVP" is deleted.

6. In the new paragraph 8.4.7.1.1, the reference to 13.4.7.1 is revised to 8.4.7.1.

7. In the new paragraph 8.4.7.1.5(5), the reference 13.4.8.4(1) is revised to 8.4.8.4(1).

8. In the new paragraph 8.4.7.1.5(5)d., the reference 13.4.7.1.1 is revised to 8.4.7.1.1.

9. In the new paragraph 8.4.7.3.5, the references to 13.4.7.3.3 and 13.4.7.3.4 are revised to 8.4.7.3.3 and 8.4.7.3.4, respectively.

10. In the new paragraph 8.4.7.3.3, the reference 13.4.7.1 is revised to 8.4.7.1.

11. In the new paragraph 8.4.8(B), the reference to 13.4.2 is revised to 8.4.2.

12. In the new paragraph 8.4.9.3,
    a. the reference to 13.4.9.2.1 is revised to 8.4.9.2.1.
    b. the reference to 11.3 in the introductory paragraph is revised to 7.3.
    c. In paragraph (a), the reference 13.4.2 is revised to 8.4.2.

13. Delete section 13.5 (Management Measures–Foreign Fisheries)

14. Renumber section 13.6 to 8.5.

15. Renumber section 13.7 to 8.6.

16. Renumber section 13.8 to 8.7.

17. Renumber section 13.9 to 8.8.

Renumber Section 14 to 9

In the second introductory paragraph, reference to Section 14.0 is revised to 9.0.

Renumber Section 15 to 10

Renumber Section 16 to 11

Renumber Section 17 to 12

Add the following references to the new Section 12.1 in alphabetical order:

Alaska Department of Community and Regional Affairs. 1998. "Community Information Summary (CIS)." in Alaska Department of Community and Regional Affairs, P.O. Box 112100, Juneau, AK 99811.

Fredin, R. A. 1987. History of regulation of Alaska groundfish fisheries. National Marine Fisheries Service, NWAFC Processed Report 87-07. 63 p.

Impact Assessment Incorporated. 1998. "Inshore/Offshore 3 - Socioeconomic Description and Social Impact Assessment." in Impact Assessment, Inc, 911 West 8th Avenue, Suite 402, Anchorage, AK.

Megrey, B. A., and V. G. Wespestad. 1990. Alaskan groundfish resources: 10 years of management under the Magnuson Fishery Conservation and Management Act. N. Am. J. Fish. Management 10(2):125-143.

NPFMC. 1994a. "Fishery Management Plan for the Gulf of Alaska Groundfish Fishery." in North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, AK 99501.

NPFMC. 1995. "Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish." in North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, AK 99501.

United States Army Corps of Engineers. 1997. "Navigation improvements: detailed project report and environmental assessment, King Cove, Alaska." in U.S. Army Alaska Engineer District, Anchorage, AK.

United States Army Corps of Engineers. 1998. "Harbor improvements feasibility report and environmental assessment, Sand Point, Alaska." in U.S. Army Alaska Engineer District, Anchorage, AK.

Witherell, D., and Pautzke, C. 1997. "A brief history of bycatch management measures for eastern Bering Sea groundfish fisheries." *Marine Fisheries Review.* 59:15-22.

Renumber Section 18 to 13.

Remove and reserve Annex II and Annex III

Appendix F

Draft Amendment Language for the Fishery Management Plan for Groundfish of the Gulf of Alaska, Implementing Alternative 5, including Option, and Options A and B

Section 1, first paragraph is revised to read as follows:

This Fishery Management Plan (FMP) has been developed by the North Pacific Fishery Management Council for the groundfish fishery (excluding halibut) of the Gulf of Alaska. In 1978 it replaced the Preliminary Fishery Management Plan for the management of groundfish in the Gulf of Alaska. Since then, the FMP has been amended over sixty times.

Section 2 is revised as follows:

1. Delete definitions for <u>Domestic annual harvest (DAH)</u>, <u>Domestic annual processed catch (DAP)</u>, <u>Joint venture processed catch (JVP)</u>, and <u>Total allowable level of foreign fishing (TALFF)</u>.

2. Revise the definitions of <u>Prohibited Species Catch (PSC)</u> and <u>Total allowable catch (TAC)</u> as follows:

<u>Prohibited Species Catch (PSC)</u> is nonretainable catch. It can take the form of a prohibited or nongroundfish species and/or as a fully utilized groundfish species captured incidentally in groundfish fisheries. Such catch must be recorded and returned to sea with a minimum of injury except as provided in the <u>Prohibited Species Donation Program</u>. A PSC limit is an apportioned, nonretainable amount of fish provided to a fishery for bycatch purposes.

<u>Total allowable catch (TAC)</u> is the harvest quota for a species or species group; the retainable catch. TAC will be apportioned by area.

Section 3 is revised as follows:

1. In the section titled Areas and Stocks Involved, (2) is revised to read as follows:

(2) To all fisheries for all finfish, except salmon, steelhead, halibut, herring, and tuna. Harvest allocations and management are based on the calendar year.

2. The fourth paragraph is revised to read as follows:

Diversity of commercial bottomfish species in the Gulf of Alaska is intermediate between the Bering Sea, where fewer species occur, and the Washington-California region, where more species are present. The most diverse species in the Gulf of Alaska is the rockfish group (genus <u>Sebastes</u>), of which 30 species have been identified in this area. Several species of rockfish have been of significant commercial interest, including the Pacific ocean perch (<u>S</u>. <u>alutus</u>), shortraker rockfish (<u>S</u>. <u>borealis</u>), rougheye rockfish (<u>S</u>. <u>aleutianus</u>), dusky rockfish (<u>S</u>. <u>ciliatus</u>), northern rockfish (<u>S</u>. <u>polyspinus</u>), and yelloweye rockfish (<u>S</u>. <u>ruberrimus</u>). Pacific ocean perch was the subject of a substantial foreign and domestic trawl fishery from the 1960's through mid-1980's. Although Pacific ocean perch is found throughout the Gulf, the biomass and fishery have been concentrated in the eastern area. For management purposes rockfish are classified into three distinct assemblages that are based on their habitat and distribution. These assemblages are:

* * * * *

Section 4 is modified as follows:

1. Add the following paragraph to the end of Section 4.1.

* * * * *

The groundfish resources off Alaska have been harvested and processed entirely by U. S.-flagged vessels since 1991. Conservation and management measures contained in this FMP apply exclusively to domestic fishing activities. No portion of the annual optimal yield is allocated to foreign harvesters or foreign processors.

2. Section 4.2.1 is revised as follows:

a. Revise the first paragraph to read as follows:

A procedure has been developed whereby the Council can set annual harvest levels by specifying a total allowable catch (TAC) for each groundfish fishery on an annual basis. Up to two years of harvest specifications may be established during the annual harvest specifications process. The procedure consists of the following steps:

b. Delete paragraph (4)

c. Renumber paragraph (5) to (4).

d. In the paragraph following the new (4), the last sentence is revised to read as follows:

Similarly, the attainment of a PSC limit will result in the closure of the appropriate fishery.

e. (i) Section 4.2.1.1 is revised to read as follows:

The Secretary, after receiving recommendations from the Council, will determine up to two years of TACs and apportionments thereof for each target species and the “other species” category by January 1 of the new fishing year, or as soon as practicable thereafter, by means of regulations implementing the FMP. Notwithstanding designated target species and species groups listed in Section 3.1, the Council may recommend splitting or combining species in the target species category for purposes of establishing a new TAC if such action is desirable based on commercial importance of a species or species group and whether sufficient biological information is available to manage a species or species group on its own merits.

Prior to making final recommendations to the Secretary, the Council will make available to the public for comment as soon as practicable after its October meeting, a preliminary Stock Assessment and Fishery Evaluation (SAFE) report and preliminary specifications of ABC and TAC for each target species and the “other species”category, and apportionments thereof. At a minimum the SAFE report will contain information listed in Section 4.2.1.4.

The Council will provide to the Secretary proposed recommendations for harvest specifications at its October meeting including detailed information on the development of each proposed specification and any future information that is expected to affect the final specifications. As soon as practicable after the October meeting, the Secretary will publish in the Federal Register proposed harvest specifications based on the Council's October recommendations and make available for public review and comment all information regarding the development of the specifications, identifying specifications that are likely to change, and possible reasons for changes, from the proposed to final specifications.

At its December meeting, the Council will review the final SAFE report and comments received. The Council will then make final recommendations to the Secretary.

f. Delete section 4.2.1.3.

g. Renumber section 4.2.1.4 to 4.2.1.3.

h. In the new 4.2.1.3, revised (7) to read as follows:

(7) Information to be used by the Council in establishing prohibited species catch limits (PSCs) for Pacific halibut with supporting justification and rationale.

i. Delete section 4.2.1.5.

3. Delete Section 4.2.2

4. Renumber Section 4.2.3 to 4.2.2., revise the new 4.2.2 as follows:

a. Revise the section reference in the third paragraph from 4.2.3.1 to 4.2.2.1.

b. Revise paragraph 5 as follows:

When a PSC limit is reached, further fishing with specific types of gear or modes of operation during the year is prohibited in an area by those who take their PSC limit in that area. All other users and gear would remain unaffected.

c. Delete paragraph 6.

d. Delete the first sentence of paragraph 7.

e. Renumber paragraph 4.2.3.1 to 4.2.2.1.

f. Revise the section reference in the introductory paragraph of the new 4.2.2.1 from 4.2.3 to 4.2.2.

g. In the new Section 4.2.2.1, delete (3) and revise (1) through the new (5) as follows:

(1) Prior to the October Council Meeting. The Plan Team will prepare for the Council a preliminary Stock Assessment and Fishery Evaluation (SAFE) report under Section 4.2.1

which provides the best available information on estimated halibut bycatch and mortality rates in the target groundfish fisheries, halibut PSCs limits, apportionments and catches thereof by target fisheries and gear types for the previous fishing year.

(2) October Council Meeting. While setting preliminary groundfish harvest levels under Section 4.2.1, the Council will also review the need to control the bycatch of halibut and will, if necessary, recommend preliminary halibut PSC mortality limits (PSCs) and apportionments thereof. The Council will also review the need for seasonal allocations of the halibut PSCs.

* * *

(3) Prior to the December Council Meeting. The Plan Team will prepare for the Council a final SAFE report under Section 4.2.1 which provides the best available information on estimated halibut bycatch rates in the target groundfish fisheries.

(4) December Council Meeting. While recommending final groundfish harvest levels, the Council reviews public comments, takes public testimony, and makes final decisions on annual halibut PSC limits and seasonal allocations, using the same factors (6) through (14) concerning PSC limits, and the same factors, (1) through (7), concerning seasonal allocations of the PSC limits. The Council will recommend its decisions, including no change for the new fishing year, to the Secretary of Commerce for implementation.

(5) As soon as practicable after the Council's December meeting, the Secretary will publish the Council's final decisions as final harvest specifications in the Federal Register. Information on which the final recommendations are based will also be published in the Federal Register or otherwise made available by the Council.

5. Renumber section 4.2.4 to 4.2.3. Revise the section reference in the paragraph from 4.2.3.1 to 4.2.2.1.

6. Renumber section 4.2.5 to 4.2.4.

7. Renumber section 4.2.6 to 4.2.5.

8. Delete the title to section 4.3.1

9. Renumber section 4.3.1.1 to section 4.3.1.

10. Renumber section 4.3.1.2 to section 4.3.2

11. Renumber section 4.3.1.2.1 to section 4.3.2.1.

12. Renumber section 4.3.1.2 .2 to section 4.3.2.2.

13. Renumber section 4.3.1.2.3 to section 4.3.2.3

14. Renumber section 4.3.1.3 to section 4.3.3

15. In the new section 4.3.3, delete the fourth paragraph titled <u>Information on processing expectations.</u>

16. Renumber section 4.3.1.4 to section 4.3.4

17. Renumber section 4.3.1.5 to section 4.3.5.
18. Renumber section 4.3.1.6 to section 4.3.6.

19. Renumber section 4.3.1.6.1 to section 4.3.6.1

20. Renumber section 4.3.1.6.2 to section 4.3.6.2.

21. Renumber section 4.3.1.6.3 to section 4.3.6.3.

22. Renumber section 4.3.1.6.4 to section 4.3.6.4.

23. Renumber section 4.3.1.7 to section 4.3.7.

24. Delete section 4.3.2

25. Renumber section 4.3.3 to section 4.3.8.

26. Renumber section 4.3.4. to section 4.3.9.

27. Renumber section 4.3.4.1 to section 4.3.9.1.

28. Renumber section 4.3.4.2 to section 4.3.9.2.

29. Renumber section 4.3.4.3 to section 4.3.9.3.

30. Delete table 4.4 and figures 4.2 and 4.3.

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mnbrown 4/30/01, 4/26/02, 8/23/02, 4/24/03, 8/11/03
jIanelli: 5/8/02, 6/25/03
bmuse: 5/9/02 , 8/28/02, 8/26/03
jgharret: 7/7/03
j DiCosimo: 8/13/03