Draft for Secretarial Review

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

For Amendments 48/48 for 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 for establishing annual harvest specifications and would update the fishery management plan language to reflect current conditions and practices of Alaska's 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. Harvest specifications would continue to be assessed under separate EA/RIR/IRFAs prior to agency approval of final harvest specifications.

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Appendix B

Draft Amendment Language for the Fishery Management Plan for Groundfish of the Gulf of Alaska, Implementing Alternative 5 and Options B and C . . . . . Appen. B-1

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 on the proposed specifications and published in the *Federal Register* in December, and are superseded by the final specifications.

The existing harvest specification process is problematic for several reasons. The public is notified of and given opportunity to comment on, proposed specifications that often are outdated by the time they are published. Stock assessment revisions between approval of the proposed and interim specifications and the final specifications may 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 may be provided due to the need to adhere to a strict schedule 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), the Advisory Panel (AP), and the 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, taking the regulatory actions necessary to set interim, proposed, and final specifications entails staff work that is duplicative and inefficient. 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 the 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 (Preferred): Establish harvest specifications effective for up to two years (Year 1 and part or all of Year 2).

Option (Preferred). Set pot and hook-and-line sablefish harvest specifications annually for Year 1.

Stand Alone Options:

Option A: Abolish certain TAC Reserves

Option B (Preferred) : Update FMPs to reflect nature of fishing activities and harvest specifications process.

Option C (Preferred): 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, individual fishing quota (IFQ) fisheries, and American Fisheries Act (AFA) fisheries. State and AFA fisheries are potentially affected by the shifting of the fishing year under Alternative 3. Possible difficulties in achieving the B season pollock TAC may be experienced by the AFA fisheries in years of high TAC. However, actions could be taken by the State and the pollock industry that would mitigate these effects. Option 1 to Alternative 3, which would 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. Even though the sablefish stocks are not likely to be affected by management based on projections, the industry may experience revenue losses with the conservative setting of a projected harvest amount.

Table ES-1 provides a summary of the anticipated effects of the alternatives on certain environmental components compared to Alternative 1 (the status quo). The effects of Alternative 5 are expected to be similar to the effects of the status quo, because the use of information and timing of rulemaking are similar. Results from a simulation model and retrospective analysis indicated that under alternatives 2, 3, and 4, groundfish harvests would be lower and the biomass of several target species would be higher than under alternatives 1 or 5. This was due to increased uncertainty, as harvest levels are projected further into the future for alternatives 2, 3, and 4, than for Alternative 5 and the status quo. Alternative 3 is likely to provide less biomass variability and more likelihood of setting the TAC below the OFL than alternatives 2 or 4. A number of factors were not accounted for in the retrospective analysis and simulation model. The full Council process itself can have a substantial effect on the final TAC and has historically been more conservative than predicted by the groundfish analysis presented in Section 4.1 of this document. Potential overfishing and excessive seasonal harvest identified by the Groundfish Plan Team 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 that 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 would be insignificant according to the results of our analysis (Section 4.1), and using 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 any of these alternative is salmon, under Alternative 3. The shifting of the fishing year would provide 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, the projected first seasonal apportionment could potentially exceed the Steller sea lion protection measures. Inseason actions or emergency rulemaking may be used to reduce the first seasonal apportionment and possibly to mitigate any potential effects on Steller sea lions. However, such effects could be mitigated through conservative setting of TAC and regulatory action, so 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	More potential for indirect effect from harvest uncertainty than Alt. 1, 3, and 5. Temporal harvest of prey 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. 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 harvest specifications 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 establishing harvest specifications. 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. Because 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 shifting the start date from January 1 to July 1 would cause little disruption to many fisheries, with the important exception of the sablefish IFQ fishery in the GOA and BSAI. 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. The season could theoretically be delayed to start on July 1, but the administration of the individual quotas in this fishery requires a long closure between the end of one fishing season and the start of the next. This closed period is best in the wintertime when fishing conditions aren't as good, and when 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 early March through the end of June instead of mid-November through mid-March. Option 1 to Alternative 3, under which the sablefish TAC would continue 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 seven months, because the first three months of the year are managed under interim specifications (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 in the cycle (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, because 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 were to decline, as suggested by some modeling results, revenues to industry would also decline, all things being equal. 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 would 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 could mitigate these adverse impacts, and explains why these alternatives were not chosen. 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) of 1996.

This IRFA uses the Small Business Administration (SBA) definitions of small entities. Under these definitions, small fishing entities are those that gross less than $3.5 million (annually), and small shoreside processing entities are those that employ fewer than 500 persons. NOAA Fisheries has adopted a policy which defines catcher/processors as "fishing operations" for purposes of RFA, and therefore utilizes the fishing vessel gross revenue criterion in evaluating this sector. Non-profit entities are, in general, also considered small, as are governmental jurisdictions with populations of 50,000 or fewer (see IRFA for details of these criteria). The SBA also requires that an entity's affiliations be considered when determining its size.

Large numbers of small entities would be regulated by this action. These include an estimated 1,211 small groundfish catcher vessels, 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 small entities, although this result is uncertain. Estimating the size of the impacts on the small entities is not possible, although the potential impacts among these three alternatives may 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, among these three alternatives, 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 the status quo. The analysis was unable to determine whether or not there would be a disproportionate impact on small entities, in comparison to the impact on 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, because they provide for more informed public notice and comment.

The preferred alternative (Alternative 5 with the sablefish option) provides the least burden on small entities compared to alternatives 2, 3, and 4.

If the preferred alternative is adopted, environmental impacts and socioeconomic impacts resulting from changing fishing patterns as a result of the preferred alternative will be assessed annually in the EA/RIR/IRFA that accompanies the final harvest specifications.

Comparison of Alternatives and Options and Selection of a Preferred Alternative and Options

In October 2003, the Council recommended Alternative 5, together with the pot and hook-and-line sablefish option and stand alone options B and C. Alternative 1 was not considered, because of the difficulty of complying with the Administrative Procedure Act in developing the interim specifications. Although Alternatives 2 and 4 meet all of the objectives of the action, these alternatives were not recommended due to their potential adverse effects on management of short-lived groundfish target species and on fishing revenues. Alternative 3 has less potential for effects on the management of short-lived groundfish target species than Alternatives 2 and 4, and ensures a process which meets the objectives of this action, but the Council decided that the potential problems entailed in shifting the fishing year would outweigh the advantages of an improved administrative process.

Although Alternative 5 establishes a more complex administrative process, the Council decided that the benefits of maintaining the current timing of the harvest specifications (when the best information is available and the start of the fishery is based on that information) outweighed the additional administrative burden. Alternative 5 poses no adverse effects on the human environment beyond those already analyzed under the status quo. Adopting the sablefish option together with Alternative 5 will ensure that the IFQ sablefish fishery is conducted based on the best available information and concurrent with the IFQ halibut fishery, reducing administrative burdens and reducing the potential waste of halibut or sablefish.

Option A was not recommended by the Council in October 2003, due to industry testimony indicating that the nonspecified reserves in the BSAI are still useful. Options B and C were recommended. Option B proposes to update the groundfish FMPs; it is a housekeeping option with no effect on the human environment. Option C would set biennial harvest specifications for certain GOA species and species groups. It would have no effect on the human environment and would provide savings in NMFS staff resources in developing some GOA stock assessments and harvest specifications.

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 (FMPs) 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 to the harvest specifications process 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 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 and the public. 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 EA with a finding of no significant impact or an environmental impact statement (EIS) 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 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 harvest specifications 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 recently revised draft programmatic SEIS (PSEIS) (NMFS 2003b).

1.1 Project Area

This proposed action applies 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, Canadian, and international waters. Harvest specifications and fishery management measures affect groundfish fishing throughout the BSAI and GOA management areas.

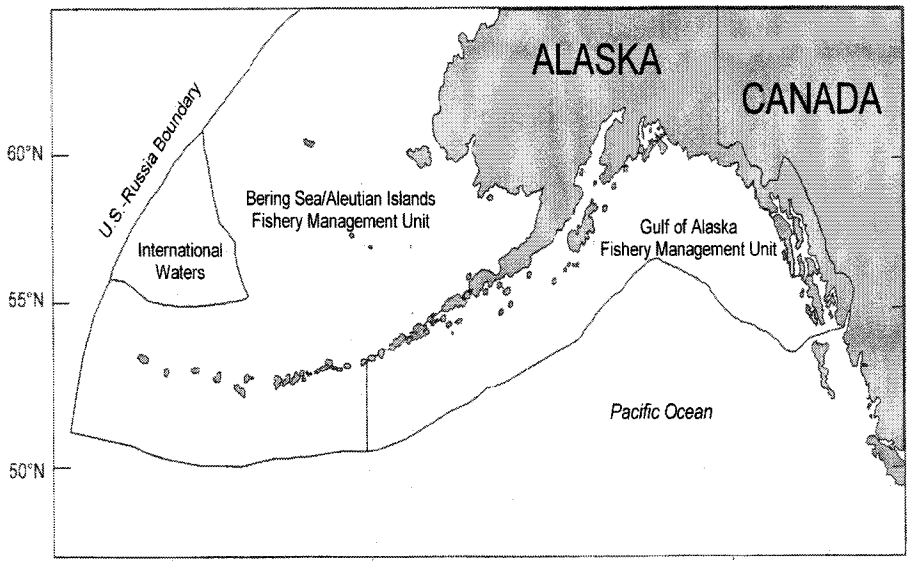

Figure 1.1 Federal Fisheries Off Alaska.

[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 analyzing the data for Council consideration are the Council's Groundfish Plan Teams (Plan Teams). These teams include NMFS scientists and managers, Alaska, Oregon, and Washington fisheries management agencies' scientists, and university faculty. Using stock assessments prepared annually by NMFS and by the Alaska Department of Fish and Game (ADF&G), Plan Teams calculate 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. Plan Team meetings are held in September to review potential model changes and are used for proposed ABC recommendations. In November, the Plan Teams' rationale, models, and resulting ABC and OFL calculations 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. Periodically, an independent expert panel reviews the assumptions used in the stock assessments for a selected species or species group and provides recommendations 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 harvest specifications based on the information about the condition of groundfish stocks in the BSAI and GOA fishing areas. The harvest specifications recommended by the Council for the upcoming year's harvest quotas, therefore, are based on scientific information, including projected biomass trends, information on assumed distribution of stock biomass, and revised technical methods used to calculate stock biomass.

Specification of the upcoming year's harvest levels is currently a three-step process. First, proposed harvest specifications, including ABCs, TACs, and PSC limits[2], are recommended by the Council at its October meeting and published in November or December in the *Federal Register* for public review and comment. In October, most current year stock assessments are not yet available. Since 2002, the proposed harvest specifications for a number of target species have been based on projections from the current SAFE reports, rather than rollovers of the current year's harvest specifications used for species with little stock assessment information, which had been the previous practice. This provided for a more scientifically based proposed harvest level for those species for which there is enough information available to allow for projections.

For most BSAI target species, the initial TAC (ITAC) is calculated as 85 percent of the proposed TAC (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 stand alone Option A in this analysis. See section 1.4 for more information. In the GOA, ITACs equal the full TAC, except for pollock, Pacific cod, flatfish, and the "other" species category. 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 stand alone Option A.

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[2]BSAI crab, halibut, salmon, and herring bycatch 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, and the fishery allocations and seasonal apportionments.

In the second step, NMFS annually publishes interim specifications to manage the fisheries from January 1 until they are superseded by the final specifications. As specified in 50 CFR 679.20(c)(2), interim specifications are one-fourth of each proposed TAC and apportionment thereof, one-fourth of each proposed PSC allowance, and the first seasonal allowance of GOA and BSAI pollock and Pacific cod, and BSAI Atka mackerel.

The interim PSC limits are one quarter of the annual limit and PSC reserves. Seven and one-half percent of the PSC limits are set aside to establish the prohibited species quotas (PSQs) for the CDQ program (50 CFR 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 are established as an interim value until final specifications are adopted.

NMFS publishes the interim specifications in the *Federal Register* as soon as practicable after the October Council 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.

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 thereof, 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 ABCs to Council.
October	Council recommends proposed harvest specifications based on Plan Team, SSC, and AP recommendations.
November	Proposed specifications are published[1]. Interim specifications are published[1]. Plan Teams provide final groundfish ABC recommendations in SAFE reports.
December	Council recommends final groundfish specifications to NMFS.
January	Non-trawl groundfish fisheries open January 1 and trawl fisheries open January 20 under 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 the Council, the public, and the management agencies.

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, but has not been required for harvest specification notices, as further explained below. 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 substantial amounts of time and effort from a number of analysts in the NMFS Alaska Region 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, the Regional Economist, 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 NMFS Headquarters, the Office of Sustainable Fisheries in Silver Spring, Maryland, where it undergoes reviews within NMFS before being 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. After the rule has been cleared, it is forwarded to the Office of the Federal Register. This final 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 specifications. 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. The Secretary is required by the Administrative Procedure Act (APA) to provide opportunity for public review and comment on proposed rules. NMFS, on behalf of the Secretary, is the final decision maker for approval and implementation of fishery 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 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 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 SAFE reports, models to run, emerging ecosystem issues
September	Staff start drafting proposed and interim harvest specifications notices and EA/IRFA based on current year's specifications or current SAFE report projections.	None	Proposed specifications initially 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 proposed specifications, highlights of differences seen in recent surveys and ecosystem from past years. Council recommends proposed specifications.	Open Public Meeting. *Federal Register* Notice of initial action on next year's harvest specifications as an agenda item	Council recommends proposed harvest specifications.
November	NMFS reviews interim and proposed specifications	None	NMFS publishes proposed and interim specs.
November	November Plan Team Meetings. Staff start drafting EA/IRFA for final specs. Finalize SAFE Reports. Initiation of informal Section 7 Consultation on final specs., if needed.	Open Public Meetings. *Federal Register* Notice of Plan Teams' Meetings	Plan Teams make their ABC recommendations. Determination of whether Section 7 Consultation is needed and if it needs to be formal or informal.
November - December	File proposed and interim specification rules with *Federal Register.* Interim specs. EA completed.	Written comments accepted on for 30 days comment period for proposed 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 Jan. 1 or date of publication if after Jan. 1. 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.

Time	Activity	Opportunity for Public Involvement	Decision Points
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. Agenda includes next year's harvest specifications. Last meaningful opportunity for comments on the next year's quotas.	Determine amount to nearest mt of next year's TAC and PSC quotas.
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.	ESA Section 7 and EFH consultation concluded on final specifications. FONSI determination..
February of **subject fishing year**	Submit final rule to Secretary for filing with Office of Federal Register.	None	Secretarial determination whether to approve 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 effectiveness.

1.3 Problem Statement for Harvest Specifications

The existing harvest specifications process is problematic due to a number of factors. NMFS must balance using the best available scientific information, meeting all the statutory rulemaking requirements, and having the final specifications in place, as soon as possible, in the new fishing year. This 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 the Council's final recommendation and publishes final specifications after consider public comment.

Under the current harvest specifications process, 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. The APA requires that the final rule is a logical outgrowth of the proposed rule, otherwise a new proposed rule should be published for comment or waiver of prior notice and public comment may be considered under certain circumstances. The current process also requires routine waiver of prior public notice and comment for generic reasons related to timing and availability of information, which raises serious legal concerns (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. One statute determines the process used for rulemaking (the APA) and four statutes require various types of analysis of the action (Magnuson-Stevens Act, NEPA, ESA, and RFA).

The 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:

§ 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 actions which may affect a listed species or its critical habitat. 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).

The current Alaska groundfish specifications process requires approximately six months from the date the Council recommendation is made to when the final specifications are effective. The time period can be significantly longer depending on the complexity of the rules, 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 cannot 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.

Harvest specifications proposed by the Council must be accompanied by NEPA and RFA analyses. NMFS staff prepares the *Federal Register* notice of proposed harvest specifications that describes and justifies the proposed specifications. 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. 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 must be a logical outgrowth of a proposed rule or an additional proposed rule with opportunity for public review and comment is required. Alternatively, a final rule with a good cause waiver of prior public review and comment may be used in appropriate circumstances. 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 as those 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 may differ from the final specifications.

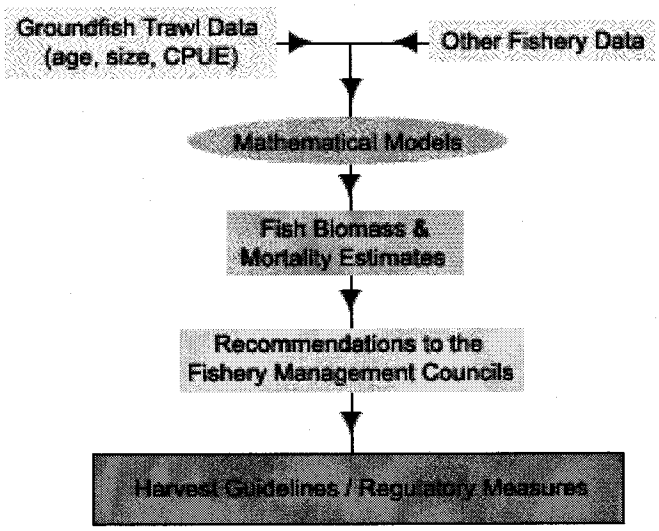
1.3.2 Availability of New Information

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 measures 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 (BS) summer bottom trawl survey on eastern BS shelf
Biennial	Bering Sea summer bottom trawl slope survey (first year is 2000) in the eastern BS even years
Annual	Winter pollock spawning survey in Shelikof and Bogoslof

Biennial	AI and GOA summer trawl surveys: GOA odd years; AI even years
Biennial	Summer acoustic surveys in BS and GOA: GOA shelf/slope odd years; eastern BS 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 fin fish and crab stocks in the eastern BS, AI, and GOA. 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 BS. This survey was initiated in 1971 and has been conducted annually since 1979. Major triennial surveys have been conducted for groundfish resources in the AI region, and in portions of the eastern BS 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 2004, 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 above 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 AI are not available until late October or later. BS 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 Teams 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, for a number of groundfish target species. In previous years, the proposed TACs were based on rolling over the previous year's TACs. The intent of this methodological 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] The natural mortality of the species will influence the dependability of the projections. Shorter-lived species will 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 contained 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 amount. 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.

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

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 TACs and the use of projections for proposing TACs 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
	C	5,430	5,900	6,440	proposed
	WYAK	1,940	2,110	2,320	proposed

SPECIES	Area	2002 TAC rollover	Proposed 2003 TAC	Final TAC	Proposed or rollover closer to final TAC?
	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 for 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 always a good indication of what the final TACs and apportionments would be, at least for that year. 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
	WYAK	2,110	2,320	10.0
	SEO	3,490	3,560	2.0
	TOTAL	13,930	14,890	6.9

SPECIES	Area	Proposed 2003 TAC	Final 2003 TAC	Percent change
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 might be better 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 the 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 BS changed 50 percent from the proposed to the final TAC. This was due to increased biomass and increased numbers 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 was 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 that the final specifications be a logical outgrowth of the proposed rule, making an additional proposed rule unnecessary. Under the current process, the *Federal Register* publication of proposed specifications, therefore, may not meet the intended purpose of prior public notification and comment under the APA. The publication of proposed specifications in a particular year could confuse the public,

because incomplete and possibly erroneous information in relation to the final harvest specifications might be provided due to the need to adhere to a strict timeline.

1.3.4 Problems with Interim Specifications .

Because the interim specifications are based on the proposed specifications, their publication precedes the recommendations contained in the Plan Team's final SAFE reports in November or the recommendations coming from public testimony, the SSC, the AP, and the Council at their December meeting. In addition, the interim specifications allocate 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 BS 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. In certain situations, the interim specifications could 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 non-specified reserves.

(2) 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) and the Consolidated Appropriations Act of 2004, BSAI pollock is fully allocated among different sectors of the fishing industry, including AFA "Inshore" and "Offshore" sectors, CDQ Groups, and the Aleut Corporation. Any AI pollock allocation is mandated to be provide to the Aleut Corporation. Ten percent of the EBS 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 TAC 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 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 non-specified reserves for a number of target species were released with the setting of final TAC for BSAI (68 FR 9907, March 3, 2003).

The non-specified 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.

In testimony during the October 2003 Council meeting, industry representatives requested that the non-specified reserves in the BSAI be retained. Apparently, these reserves are important to certain industry sectors during annual negotiations for the distribution of harvest amounts within the 2 million mt optimal yield cap in the BSAI for the harvest specifications. As an example, fishermen harvesting flatfish were

anticipating the use of the non-specified reserves to increase the flatfish TAC to the ABC level. This may not have been worthwhile considering the flatfish fishery is usually constrained by its halibut PSC amount and not necessarily by its TAC. Other methods of managing by ABC and TAC amounts could be developed to deal with the under-utilization of flatfish, but this type of change would require an FMP amendment. Until a method is available to deal with individual target species harvest optimization, the non-specified reserves could be used to allow for additional harvest of a species up to the ABC for that species.

1.4.2 GOA Groundfish Reserves

In the GOA, 20 percent of the TACs for pollock, Pacific cod, flatfish, and "other species" are set aside as reserves at the beginning of the fishing 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 experiences 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 may require 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 almost 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, for example, FMPs that continue to describe detailed conservation and management measures for the nonexistent foreign fishery participants. References to foreign fishing under objectives and conservation measures should be revised 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 currently are set on an annual basis for all species, regardless of the frequency of the collection of data or of the type of 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 natural variability in biomass levels, making projections of harvest less uncertain than shorter-lived species. TAC amounts 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 Council's October 2003 recommended proposed action would change the process for establishing harvest specifications, update the language in the FMPs to match current fishing practices and to make the documents more concise, alter FMP language dealing with Plan Team responsibilities, and set biennial specifications for some GOA species/complexes. Its objectives are: (1) to manage fisheries based on the 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 the 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 the data are 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, RFA, and NEPA documents ideally incorporate 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 also should be available to the public during the proposed rule comment period to allow review of information that the Secretary uses to make a decision.

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. Over time, 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.

Once the comment period on the proposed specifications is over, NMFS must develop the final specifications, including responses to comments and repeat the agency 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, although 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, and the Department of Commerce. 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, for which the public review and comment period ended November 6, 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), the EA/FRFA for the 2003 Total Allowable Catch Specifications for the Alaska Groundfish (NMFS 2003a), and the EA/FRFA for the 2004 harvest specifications (NMFS 2004). 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 and 2004 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. 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.

Based on the Council's recommendations to add a new alternative, the EA/RIR/IRFA was further revised during 2003. The September 2003 version of the draft EA/RIR/IRFA was presented to the Plan Teams in September 2003 and to the Council in October 2003 for final action. This version was also posted on the NMFS Alaska Region website at www.fakr.noaa.gov. All Council and Plan Team meetings were open to the public.

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)
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)
12) The use of nonspecified reserves in the BSAI for industry negotiations, (Section 1.4.1) and
13) Harvest specifications process for the hook-and-line and pot gear sablefish fishery, (Section 2.1)

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 1.7 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 are 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 certain 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 2.3.

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.

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 Plan Teams' information reviewed in October under Alternative 1. An additional benefit would occur as the preliminary SAFE report presentation to the SSC, which frequently includes new stock assessment and ecosystem model trials, 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 members 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 fishing 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.

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.	
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.

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.

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.

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 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
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

	Year 1*									Year 2	Year 3
	Jan	**Feb**	**April**	**May**	**June-July**	**Aug.**	**Sept.**	**Oct.-Nov.**	**Dec.**	**Jan.-Dec**	**Jan-Dec.**
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 (Preferred Alternative): Harvest specifications effective for up to 2 years with December Rulemaking Decision (Year 1 and part or all of Year 2).

Option: Establish TAC for pot and hook-and-line sablefish for 12 month time period (Year 1), by separate rulemaking, if needed.

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 from MCA 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 its original range of a 15 to 18 months effective period for harvest specifications, up to 2 years. For this analysis, the public comment period will be assumed to be 15 days, allowing for public review of the proposed specifications. The Council identified this alternative as the preferred alternative in October 2003.

Under this alternative, Alaska groundfish harvest specifications would authorize fishing in the year in which they are specified and also for the beginning of and perhaps all of the next year. As described under status quo, NMFS would prepare the notice of proposed specifications after the October Council meeting, based on 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 may either (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 on 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 notice of final specifications waiving for good cause 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 could 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.

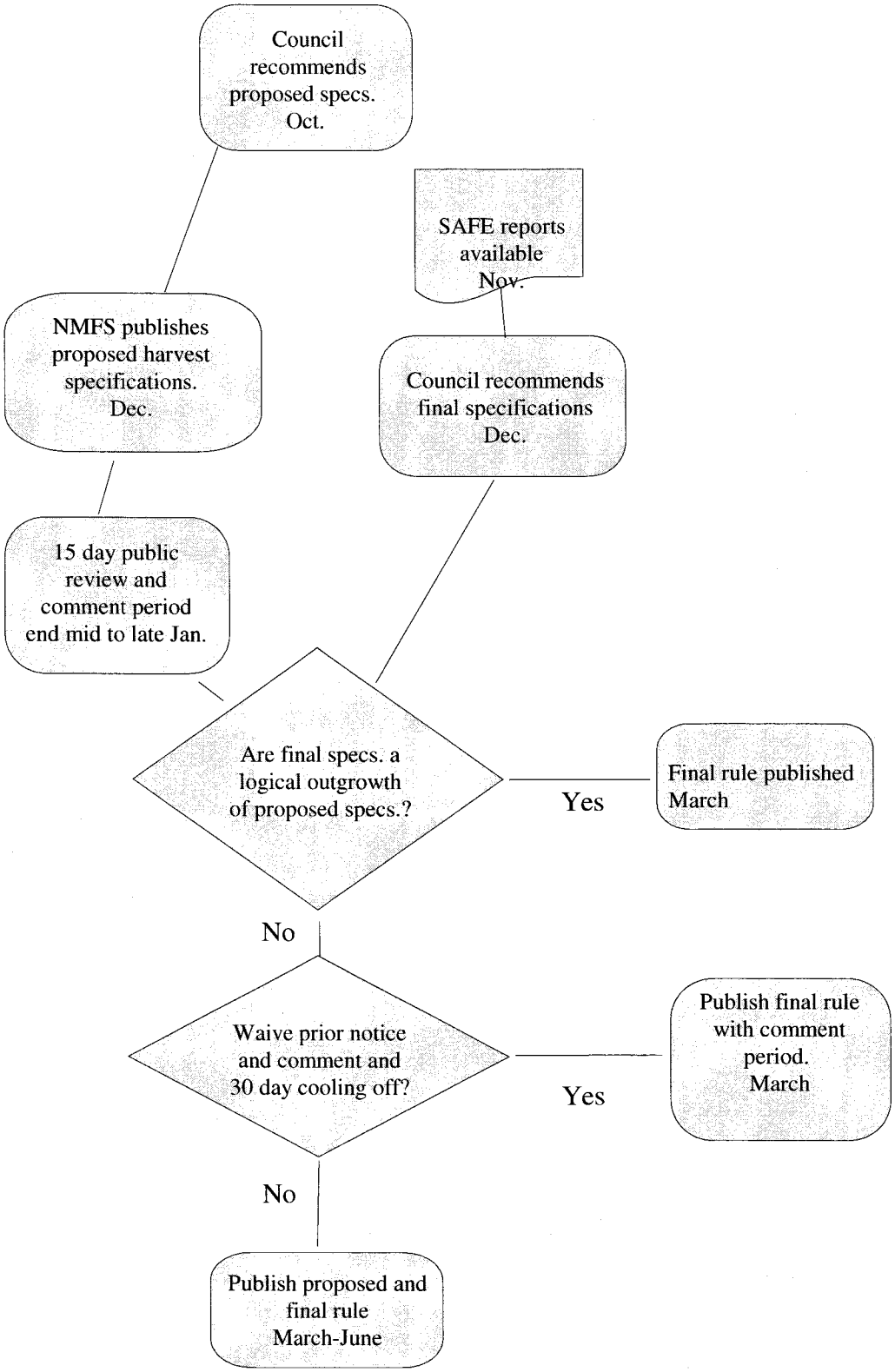

Figure 2.1 **Alternative 5 Flowchart**

An option to Alternative 5 would provide for a method of ensuring that IFQ sablefish fishery specifications do not change during the fishing year. Under this option, harvest specifications would include pot and hook-and-line sablefish specifications for all of year 1 (See Table 2.5). If a second proposed rule is needed for the harvest specifications, pot and hook-and-line sablefish specifications will be implemented by separate rulemaking to ensure management measures are in place in time for the March fishery. This option would ensure the management of IFQ sablefish would be parallel to the IFQ halibut fishery and that quotas would not have to be recalculated during the calendar year. Trawl sablefish specifications will be done in the same manner as other BSAI target species.

Previous drafts of this EA based sablefish management on the projection of TAC one year forward to Year 2. During public testimony at the Plan Teams and Council meetings in September and October 2003, industry and scientists expressed concern over the potential economic effects of managing the sablefish fishery on a projected TAC. By using a projected value, it was likely that TAC would be set conservatively, leading to a potential loss in revenue in this high-value fishery. Due to this concern, this method of management was replaced by the method described above.

See appendices A and B for draft FMP amendment language for this alternative with the sablefish option and stand alone options B and C.

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 or TAC reserves in the GOA. 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 BS pollock, 20 percent of the fixed gear sablefish allocation and no AI pollock). Option A could be implemented with alternatives 1 through 5 to promote administrative efficiency while minimizing public confusion regarding TAC specifications.

Option B (Preferred): Update 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 revise references to foreign fishing and allocations to foreign fishing; update the description of the harvest specification process, including the Plan Teams' responsibilities regarding PSC limits apportionments and allocations; and update fishing participants' information. Appendices A and B to this EA/RIR/IRFA contain draft amendment language for the BSAI and GOA FMPs, implementing Alternative 5 and this option.

The groundfish fisheries in the U.S. EEZ, off the coast of Alaska, have shifted from exclusively foreign fisheries in the 1970's, to exclusively American fisheries by 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 groundfish fishing is no longer authorized in the U.S. EEZ off Alaska . 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' responsibilities to recommend PSC limit 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". References to the Plan Teams providing recommended PSC limit apportionments and allocations and economic analyses will be changed to an optional part of the information provided, upon request by the Council.

Appendices A and B contain the draft FMP amendment language for implementation of Alternative 5 and the updates previously described in this section for the BSAI and GOA FMPs. Language describing the Council process for developing and recommending harvest specifications would be amended to reflect the schedule specified in Alternative 5. This option adds the additional amendments 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. 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 (50 CFR 679.2). The title for the BSAI FMP would 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, this option is a housekeeping procedure. Updating language in the FMP will not change the management or nature of the groundfish fisheries in the U.S. EEZ off Alaska, and 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 the U.S. EEZ off Alaska and to revise the title of the BSAI FMP, this option is 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). Therefore, it will not be further analyzed in this EA and is categorically excluded from NEPA analysis.

Option C (Preferred): 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 species on a biennial survey schedule in the GOA and 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, skates, and Atka mackerel.

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 by incorporating recent survey results into the assessment).

Table 2.4 shows that 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 in the Gulf 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 with 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 the "other species" complex. For these stocks, annual specifications should 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 on results from winter surveying effort in 2002 (NMFS 2003b, Appendix B). Annual nearshore trawl surveys of crab and groundfish by the ADF&G are also considered in estimating pollock biomass 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. Even though 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.

Limited information exists on stock status for the GOA "other species" complex, 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. The "other species" complex includes sharks, sculpins, octopus, and squid. Skates were removed from the "other species" complex in February 2004 by Amendment 63 to the GOA FMP. Because skates are long-lived and surveyed on a biennial basis, they are included in the list of species to be assessed biennially. Until additional information is known about the status of the "other species" 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" complex. 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 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 Teams 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 APA public review and comment on the specifications, 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 analyzed further 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 and December Plan Teams, SSC, and Council deliberations.

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

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 APA notice and public comment on harvest specifications and is, therefore, not further analyzed in this EA/RIR/IRFA.

Rollover existing specifications until superseded 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 Teams 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 Teams 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. The use of rollovers in option 2 is also not using the best available scientific information for managing the fisheries compared to the use of projections. 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, 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 in the Ninth Circuit (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 cannot 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. Stand alone 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 or with limited stock assessment information.

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 to Alternative 4, using projected values, would require NMFS and/or the State to provide projections of BSAI 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 to Alternative 4, 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, 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.

Projected Sablefish Management Option under Alternative 5

Previous versions of this EA/RIR/IRFA contained an option under Alternative 5 for managing the pot and hook-and-line (IFQ) sablefish fishery based on a one year projection. Even though it was found that managing sablefish on a projected value would have little effect on the stock, there was concern expressed during the Plan Teams and Council meetings in September and October 2003, regarding the potential economic impacts. If the fishery were managed on a projection, the TAC may be set more conservatively, which may result in less harvest and potentially less revenue for participants in the sablefish fishery. Small changes in harvest amounts can result in large changes in revenue in this high value fishery. To maximize the harvesting potential, the IFQ sablefish management option to Alternative 5 was modified to allow for the use of the best information available in November, before the start of the March fishery. See section 2.1 for more information.

2.4 Implementation Process for Alternative 5

Implementation of the preferred alternative and options (Alternative 5 with sablefish option and stand alone Option C) would require FMP and regulatory amendments in 2004, to change the harvest specifications process in time for the 2005 fishing year. The regulations would need to be changed to allow the setting of TAC for up to two years.

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, for most species and all of 2005 and 2006 for certain GOA species. 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 proposed and final rulemaking for 2006, and the first half of 2007, for most species and for all of 2007 and 2008 for certain GOA species. No interim specifications would be needed because specifications would be in place from final specifications for 2005 and the first half of 2006. Development of harvest specifications for GOA species on a biennial schedule will not be required in 2006 and the following even years. See Table 2.5 for an implementation schedule for Alternative 5 with the sablefish option and Option C.

If the option to Alternative 5 is implemented, the IFQ sablefish specifications developed in 2004 would apply to 2005 only. In the following years, the harvest specifications for most species will be

implemented for up to two years and the harvest specifications for IFQ sablefish will be needed for only the first year, as separate rulemaking would be used to ensure the IFQ specifications are in place by the beginning of the fishery in March, if necessary. For example, harvest specifications recommended for the groundfish fisheries, except IFQ sablefish, in 2005 would be implemented for 2006 and half of 2007. IFQ sablefish harvest specifications developed in 2005 would only need to cover 2006.

Table 2.5 Alternative 5 and Option C Implementation Schedule

Council Recommendation Year	Council Recommends	Annual Harvest Specifications, except sablefish	Biennial Harvest Specifications.	IFQ Sablefish Specifications
2004 (initial year)	proposed , interim and final harvest specs.	2005 and Jan-June 2006	2005 and 2006	2005
2005	proposed and final harvest specs.	2006 and Jan-June 2007	2007 and 2008	2006
2006	proposed and final harvest specs.	2007 and Jan-June 2008		2007
2007	proposed and final harvest specs.	2008 and Jan-June 2009	2009 and 2010	2008
2008	proposed and final harvest specs.	2009 and Jan-June 2010		2009

2.5 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 only on unforseen, serious fishery conservation or management problems (62 FR 44421, August 21, 1997).

Alternatively, an inseason action pursuant to current regulations 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. Because the SSC is involved in the review and approval of the scientific output from the Plan Teams, it is likely that NMFS will wait for the Council to complete its review and approval of the data at the December Council meeting. 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, likely 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 an APA 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 may 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).

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 for which 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 a component beyond status quo, and require further analysis. Potential impacts on marine mammals are related to Steller sea lions and groundfish 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 analyses.

Table 3.1 Resources Potentially Affected by an Alternative or Stand Alone Option 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
Option A	N	N	N	N	N	N	N	Y
Option C	N	N	Y	N	N	N	N	Y

N = no impact beyond status quo anticipated by the alternative or option on the component.
Y = an impact beyond status quo is possible if the alternative or option 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 2004, appendices A and B). The SAFE reports for the 2004 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 2004, 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 2003, to finalize the SAFE reports and to forward 2004 ABC and OFL recommendations to the Council for action at its December 2003 meeting. The ABC, OFL, and TAC amounts for each target species or species group for 2004 were specified in final rules (69 FR 9242 and 9261, February 27, 2004). Tables 3.2 and 3.3 show the 2004 OFL, ABC, and TAC amounts for the BSAI and GOA groundfish fisheries, respectively.

TABLE 3.2.–2004 OVERFISHING LEVEL (OFL), ACCEPTABLE BIOLOGICAL CATCH (ABC), TOTAL ALLOWABLE CATCH (TAC), INITIAL TAC (ITAC), AND COMMUNITY DEVELOPMENT QUOTA (CDQ) RESERVE ALLOCATION OF GROUNDFISH IN THE BSAI[1] [Amounts are in metric tons]

Species	Area	OFL	ABC	TAC	ITAC[2]	CDQ reserve[3]
Pollock[4]	Bering Sea (BS)	2,740,000	2,560,000	1,492,000	1,342,800	149,200
	Aleutian Islands (AI)	52,600	39,400	1,000	1,000	.....
	Bogoslof District	39,600	2,570	50	50	.....
Pacific cod	BSAI	350,000	223,000	215,500	183,175	16,163
Sablefish[5]	BS	4,020	3,000	2,900	2,393	399
	AI	4,620	3,450	3,100	2,519	523
Atka mackerel	Total	78,500	66,700	63,000	53,550	4,725
	Western AI	.....	24,360	20,660	17,561	1,550
	Central AI	.....	31,100	31,100	26,435	2,333
	Eastern AI/BS	.....	11,240	11,240	9,554	843
Yellowfin sole	BSAI	135,000	114,000	86,075	73,164	6,456
Rock sole	BSAI	166,000	139,000	41,000	34,850	3,075
Greenland turbot	Total	19,300	4,740	3,500	2,975	263
	BS	.....	3,162	2,700	2,295	203
	AI	.....	1,578	800	680	60
Arrowtooth flounder	BSAI	142,000	115,000	12,000	10,200	900
Flathead sole	BSAI	75,200	61,900	19,000	16,150	1,425
Other flatfish[6]	BSAI	18,100	13,500	3,000	2,550	225
Alaska plaice	BSAI	258,000	203,000	10,000	8,500	750
Pacific ocean perch	BSAI	15,800	13,300	12,580	10,693	944
	BS	.....	2,128	1,408	1,197	106
	AI Total	.....	11,172	11,172	9,496	838
	Western AI	.....	5,187	5,187	4,409	389
	Central AI	.....	2,926	2,926	2,487	219
	Eastern AI	.....	3,059	3,059	2,600	229

Northern rockfish	BSAI	8,140	6,880	5,000	4,250	375
Shortraker rockfish	BSAI	701	526	526	447	39
Rougheye rockfish	BSAI	259	195	195	166	15
Other rockfish[7]	BS	1,280	960	460	391	35
	AI	846	634	634	539	48
Squid	BSAI	2,620	1,970	1,275	1,084	96
Other species[8]	BSAI	81,150	46,810	27,205	23,124	2,040
TOTAL		4,193,736	3,620,535	2,000,000	1,774,570	187,696

[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, squid, 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] Under § 679.20(a)(5)(i)(A)(1), the annual Bering Sea pollock TAC, after subtraction for the CDQ reserve - 10 percent and the ICA - 3.0 percent, is further allocated by sector as directed fishing allowances as follows: inshore - 50 percent; catcher/processor - 40 percent; and motherships - 10 percent. The entire Aleutian Islands and Bogoslof District pollock ITAC is allocated as an incidental catch allowance.

[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 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 2004 ABCs, TACs, and Overfishing Levels 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 Gulf of Alaska. (Values are in metric tons)

	ABC	TAC	Overfishing	Species Area[1]
Pollock[2]				
Shumagin	(610)	22,930	22,930	
Chirikof	(620)	26,490	26,490	
Kodiak	(630)	14,040	14,040	
WYK	(640)	1,280	1,280	
Subtotal	W/C/WYK	64,740	64,740	91,060
SEO	(650)	6,520	6,520	8,690
Total		71,260	71,260	99,750
Pacific cod[3]	W	22,610	16,957	
	C	35,800	27,116	
	E	4,400	3,960	
Total		62,810	48,033	102,000
Flatfish[4]	W	310	310	
(deep-water)	C	2,970	2,970	
	WYK	1,880	1,880	
	SEO	910	910	
Total		6,070	6,070	8,010
Rex sole	W	1,680	1,680	
	C	7,340	7,340	
	WYK	1,340	1,340	
	SEO	2,290	2,290	
Total		12,650	12,650	16,480
Flathead sole	W	13,410	2,000	
	C	34,430	5,000	
	WYK	3,430	3,430	
	SEO	450	450	
Total		51,270	10,880	64,750
Flatfish[5]	W	21,580	4,500	
(shallow-water)	C	27,250	13,000	
	WYK	2,030	2,030	
	SEO	1,210	1,210	
Total		52,070	20,740	63,840
Arrowtooth	W	23,590	8,000	
flounder	C	151,840	25,000	
	WYK	10,590	2,500	
	SEO	8,910	2,500	
Total		194,930	38,000	228,130
Sablefish[6]	W	2,930	2,930	

	C	7,300	7,300	
	WYK	2,550	2,550	
	SEO	3,770	3,770	
Subtotal	E	6,320	6,320	
Total		16,550	16,550	22,160
Pacific ocean[7] perch	W	2,520	2,520	2,990
	C	8,390	8,390	9,960
	WYK	830	830	
	SEO	1,600	1,600	
Subtotal	E			2,890
Total		13,340	13,340	15,840
Shortraker/ rougheye[8]	W	254	254	
	C	656	656	
	E	408	408	
Total		1,318	1,318	2,510
Other rockfish [9,10]	W	40	40	
	C	300	300	
	WYK	130	130	
	SEO	3,430	200	
Total		3,900	670	5,150
Northern Rockfish[10,12,15]	W	770	770	
	C	4,100	4,100	
	E	N/A	N/A	
Total		4,870	4,870	5,790
Pelagic shelf rockfish[13]	W	370	370	
	C	3,010	3,010	
	WYK	210	210	
	SEO	880	880	
Total		4,470	4,470	5,570
Thornyhead rockfish	W	410	410	
	C	1,010	1,010	
	E	520	520	
Total		1,940	1,940	2,590
Demersal shelf rockfish[11]	SEO	450	450	690
Atka mackerel	GW	600	600	6,200
Other species[14]	GW	N/A	12,592	N/A
TOTAL[16]		498,948	264,433	649,460

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

[2]Pollock is apportioned in the Western and Central Regulatory areas among three statistical areas. During the A season, the apportionment is based upon an adjusted estimate of the relative distribution of pollock biomass at 23.62 percent, 56.9 percent, and 19.48 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 23.62 percent, 64.47 percent, and 8.91 percent in Statistical Areas 610, 620, and 630, respectively. During the C and D seasons, pollock is apportioned based on the relative distribution of pollock biomass at 48.64 percent, 21.3 percent, and 30.6 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 the A season and 40 percent to the 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 deepsea 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 and OFL is the sum of the ABCs and OFLs 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 2004, 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 or allowed by other applicable law.

3.3 Forage Species and Nonspecified Species

Forage fish species are abundant fishes that are preyed on by marine mammals, seabirds, and commercially important fish 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 a 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 2004 (NMFS 2004, 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 marine 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, and 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 FMPs (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 seal (*Callorhinus ursinus)* 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 U.S. 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 adjacent 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 six species breed at other locations in Alaska. In addition, up to 50 million shearwaters and three albatross species feed in waters adjacent to the Alaska coastline 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.

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

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 bird's 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 listing of a species under the ESA 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, 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 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. 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 likely to adversely affect listed species or critical habitat. Formal consultations, resulting in biological opinions, are conducted for Federal actions that may have an adverse effect 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

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

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

Common Name	Scientific Name	ESA Status
Blue Whale	*Balaenoptera musculus*	Endangered
Bowhead Whale	*Balaena mysticetus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Right Whale	*Balaena glacialis*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Steller Sea Lion (Western population)[2]	*Eumetopias jubatus*	Endangered
Steller Sea Lion (Eastern Population)	*Eumetopias jubatus*	Threatened
Chinook Salmon (Puget Sound)	*Oncorhynchus tshawytscha*	Threatened
Chinook Salmon (Lower Columbia R.)	*Oncorhynchus tshawytscha*	Threatened
Chinook Salmon (Upper Columbia R. Spring)	*Oncorhynchus tshawytscha*	Endangered
Chinook Salmon (Upper Willamette .)	*Oncorhynchus tshawytscha*	Threatened
Chinook Salmon (Snake River Spring/Summer)	*Oncorhynchus tshawytscha*	Threatened
Chinook Salmon (Snake River Fall)	*Oncorhynchus tshawytscha*	Threatened
Sockeye Salmon (Snake River)	*Oncorhynchus nerka*	Endangered
Steelhead (Upper Columbia River)	*Onchorynchus mykiss*	Endangered
Steelhead (Middle Columbia River)	*Onchorynchus mykiss*	Threatened
Steelhead (Lower Columbia River)	*Onchorynchus mykiss*	Threatened
Steelhead (Upper Willamette River)	*Onchorynchus mykiss*	Threatened
Steelhead (Snake River Basin)	*Onchorynchus mykiss*	Threatened
Steller's Eider [1]	*Polysticta stelleri*	Threatened
Short-tailed Albatross [1]	*Phoebaotria albatrus*	Endangered
Spectacled Eider[1]	*Somateria fishcheri*	Threatened
Kittlitz Murrelet[1]	*Brachyramphus brevirostris*	candidate
Northern Sea Otter[1]	*Enhydra lutris*	Candidate

[1]The Steller's eider, short-tailed albatross, spectacled eider, and Northern sea otter are species under the management 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). The Kittlitz murrelet has been proposed as a candidate species by USFWS (69 FR 24875, May 4, 2004).

[2]Informal consultation on this action has been completed October 16, 2003, by memorandum from P. Michael Payne, Assistant Region Administrator for Protected Resources to Sue Salveson, Assistant Region Administrator for Sustainable Fisheries (Payne 2003).

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. ESA consultation was not needed for the 2004 harvest specifications based on previous consultation for the groundfish fisheries, and none of the criteria for reinitiating consultation were met. 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 fisheries for three groundfish species 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, were 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 SSC, the Council's AP, 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 2001BiOp 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 evolutionary significant units (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 practicable 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 coded 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 were estimated to have been taken in the BSAI groundfish fisheries[9]. In the GOA, the tagged fish were primarily taken near Kodiak Island. The maximum number of tagged fish taken in the groundfish fisheries in a year was (approximately) 89 Upper Willamette River salmon in 1999.

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

[9]Adrian Celewycz, NMFS, Auke Bay Lab, Personal Communication regarding CWT database, October 30, 2003.

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 BiOp, 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 hook-and-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 2004. 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 completed new BiOps on the effects of the FMPs and the effects of the harvest specifications on listed seabirds in September 2003 (USFWS 2003a and 2003b). USFWS concurred with NMFS determination that the groundfish fisheries were not likely to adversely affect listed seabird species or their critical habitat.

3.8 Ecosystem Considerations

Ecosystem considerations for the BSAI and GOA groundfish fisheries are explained in detail in *Ecosystem Considerations for 2004* (NMFS 2004, 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.

3.9.2 Economic Aspects of the Fishery

The most recent description of the economic aspects of the groundfish fishery is contained in the 2002 Economic SAFE report (NMFS 2004, 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 COAR 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 2004 annual groundfish harvest specifications (NMFS 2004). 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 and Option C follows. 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 due to the time delay for using survey data being 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 up to 24-month projected value will be mostly used if a second proposed rule is needed, requiring the fishery to be conducted base upon data of a similar nature 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.

Option C, setting harvest specifications biennially for certain GOA species, would have the same results as Alternative 4 and also is not separately analyzed in 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, AI 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 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:

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

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 implications of the BSAI 2 million mt OY were not explicitly 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 (50 CFR 679.20(d)(4)) 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**

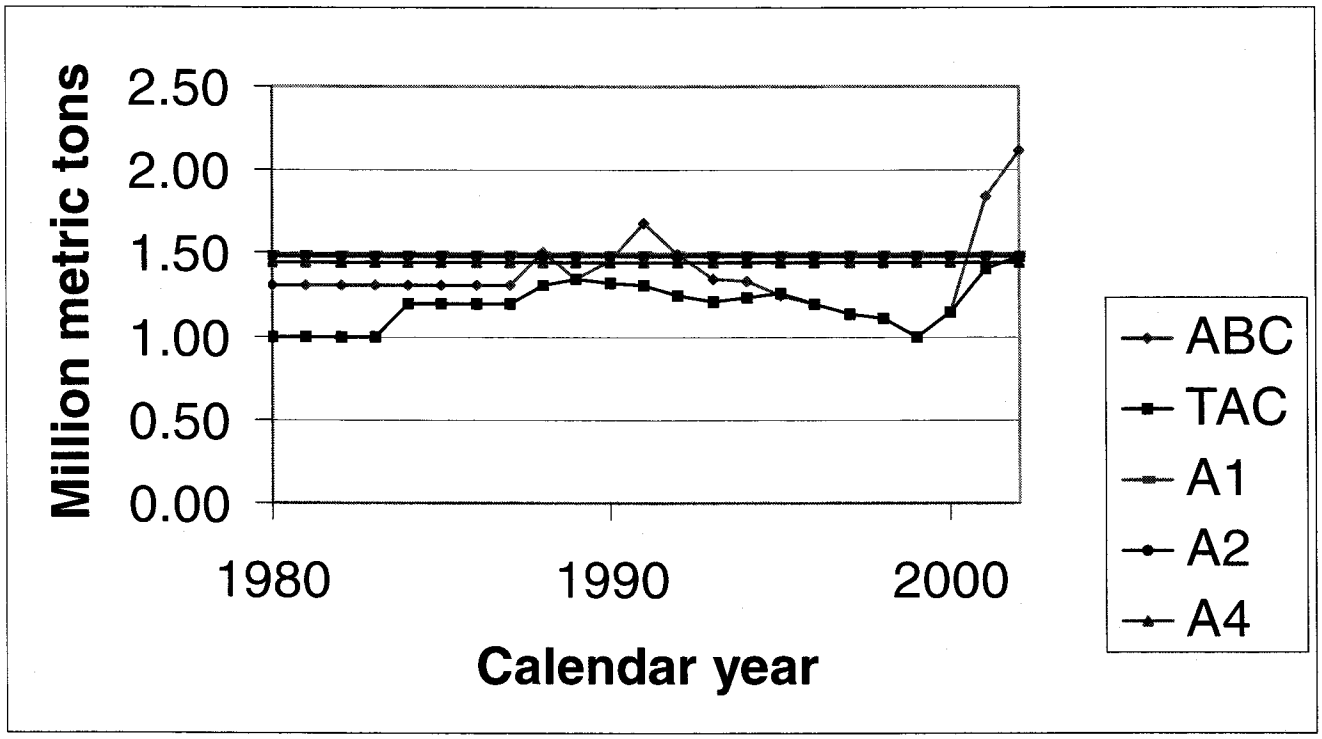
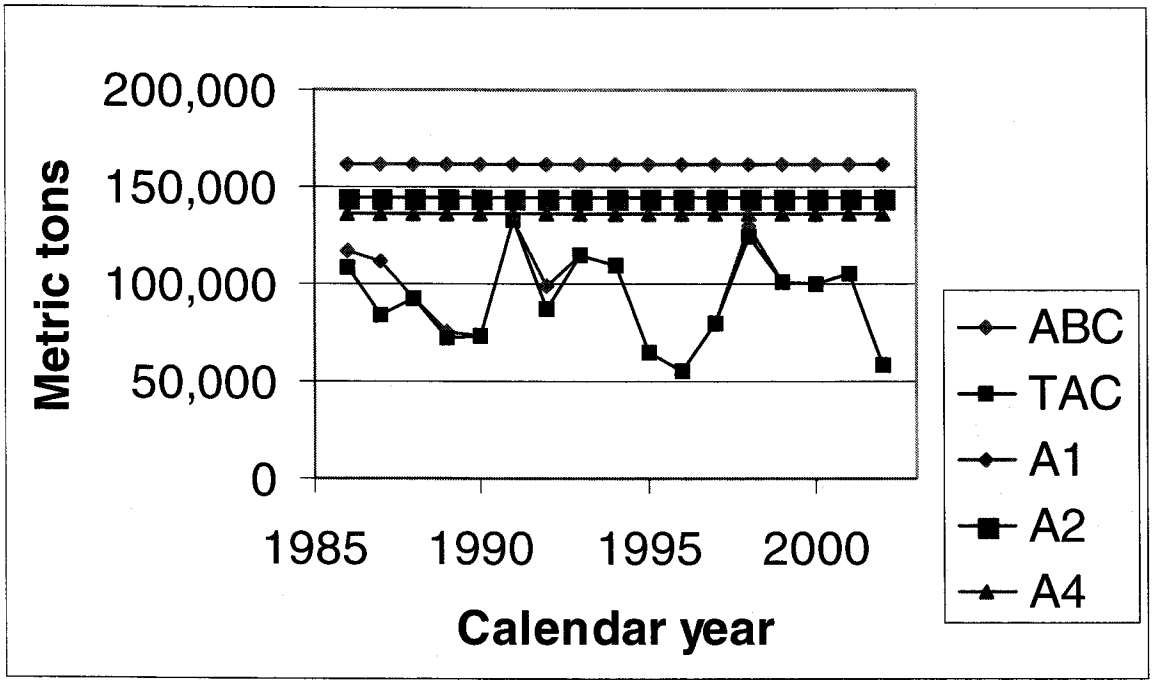


Figure 4.2 GOA pollock TAC and ABC, 1980 to 2002, compared to mean Alternative 1, 2, and 4 ABC projections from the simulation model



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 mt whereas for Alternative 1 it was 1.13 million mt. 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 2million mt 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 GOA 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 NMFS set TACs conservatively. Added variability with Alternatives 2 and 4 would likely be small in

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

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 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 (under Alternative 3). The current

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

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.).

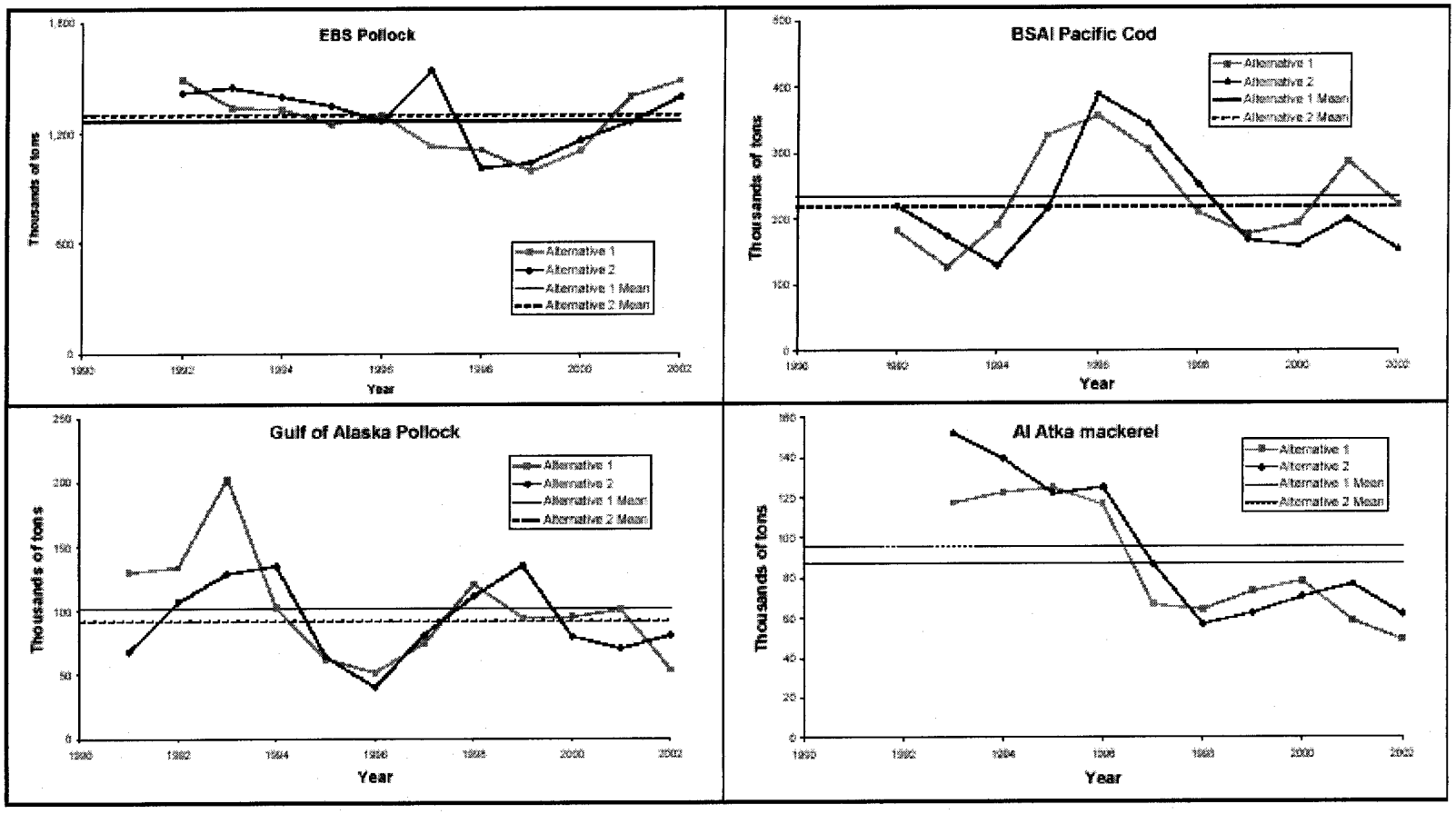


Figure 4.3 Comparison of Alternatives 1 and 2 TAC (or ABC) recommendations for some key groundfish species in the North Pacific. Alternative 2 values were derived from historical stock assessment projections as done historically.

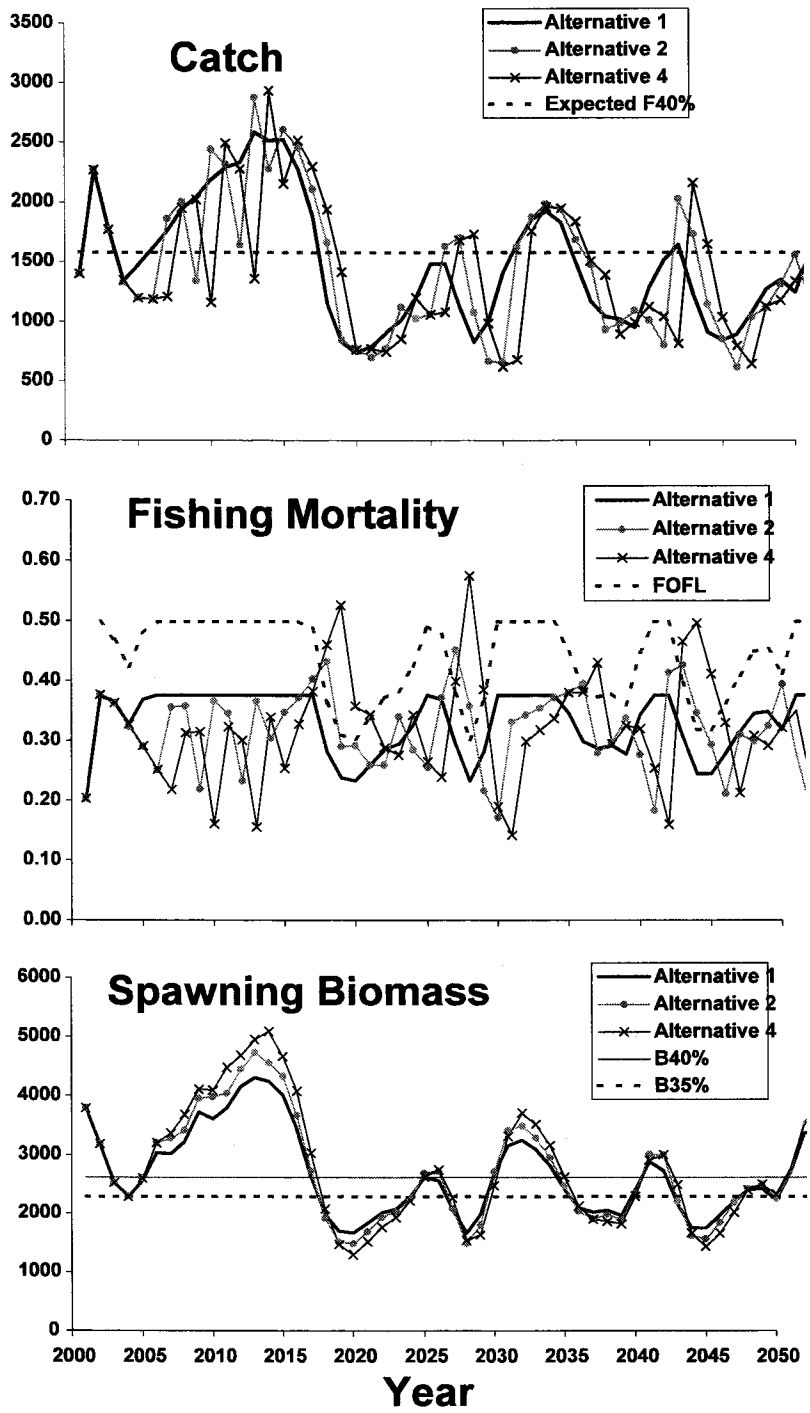


Figure 4.4 Simulated Eastern Bering Sea pollock trajectory showing the first 50 year of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in thousands of metric tons.

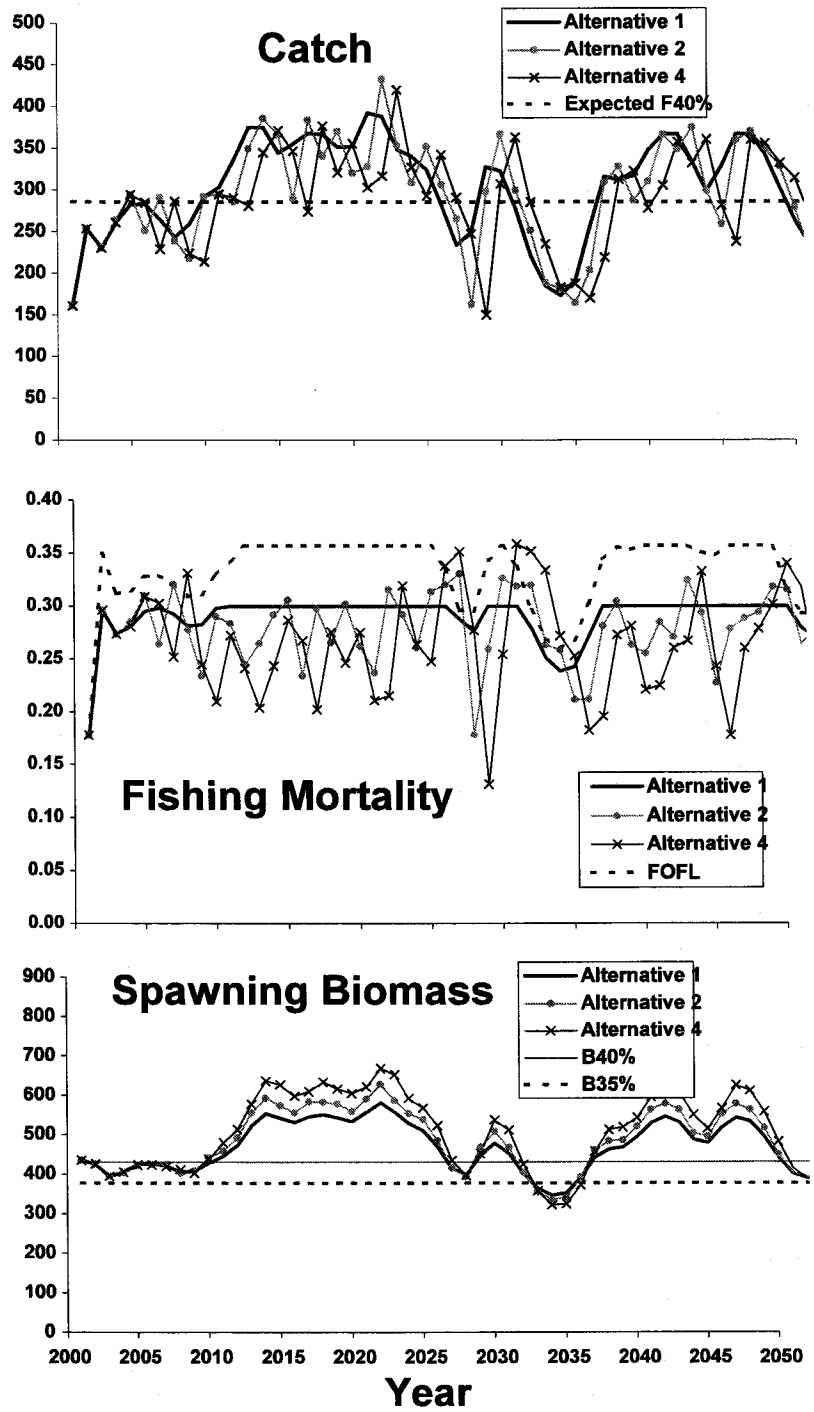


Figure 4.5 Simulated Aleutian Islands/Eastern Bering Sea Pacific cod trajectory showing the first 50 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in thousands of metric tons.

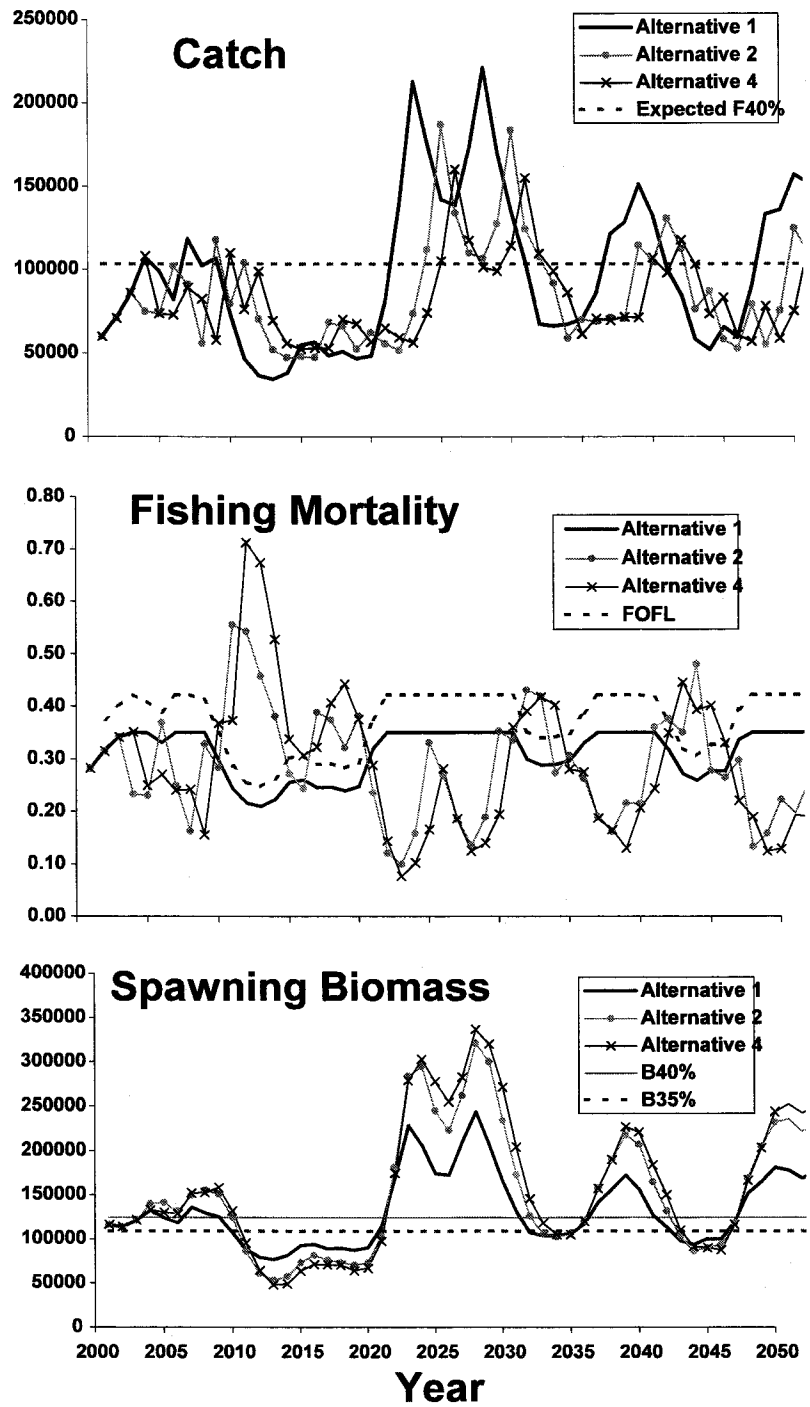


Figure 4.6 Simulated Aleutian Islands atka mackerel trajectory showing the first 50 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in metric tons.

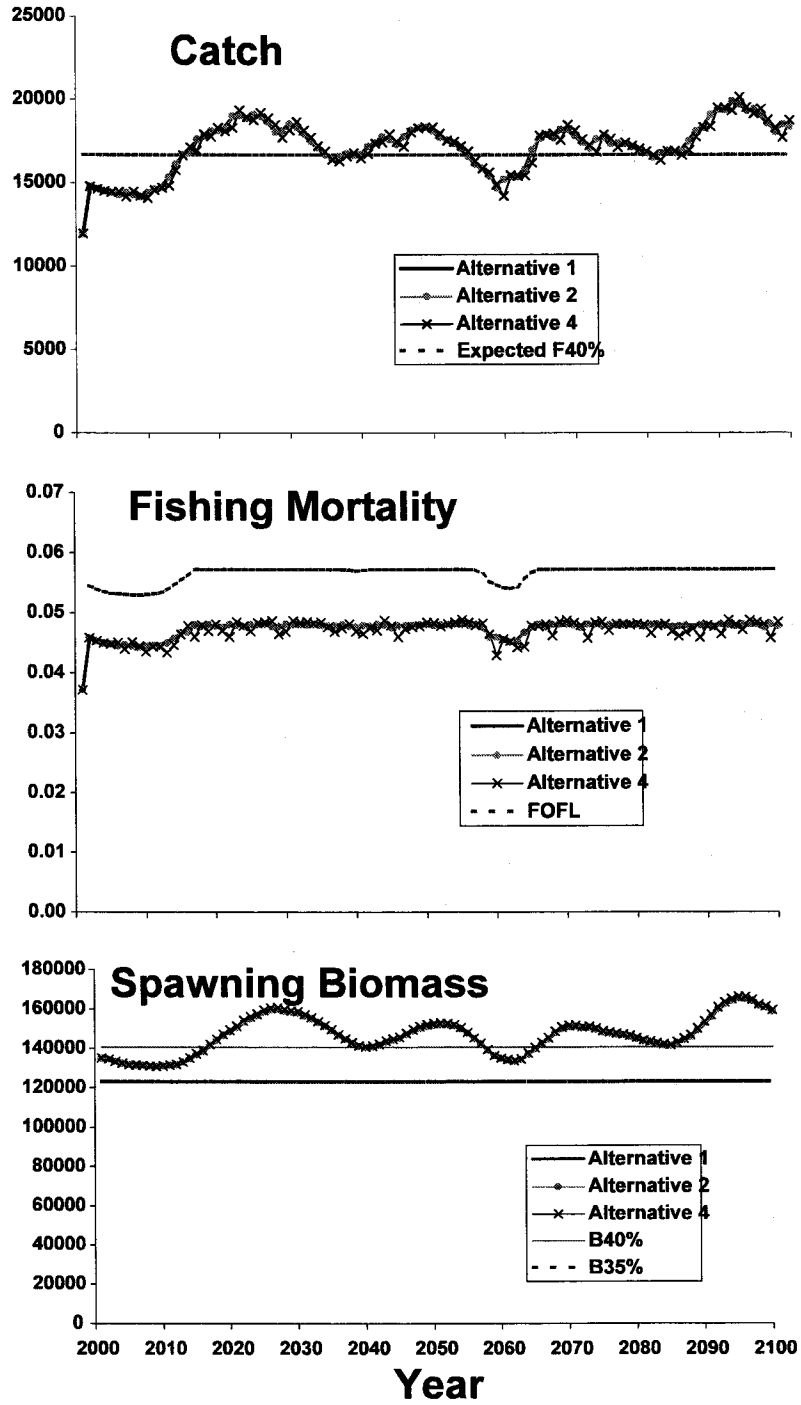


Figure 4.7 Simulated Aleutian Islands/Eastern Bering Sea Pacific ocean perch trajectory showing the first 100 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in metric tons.

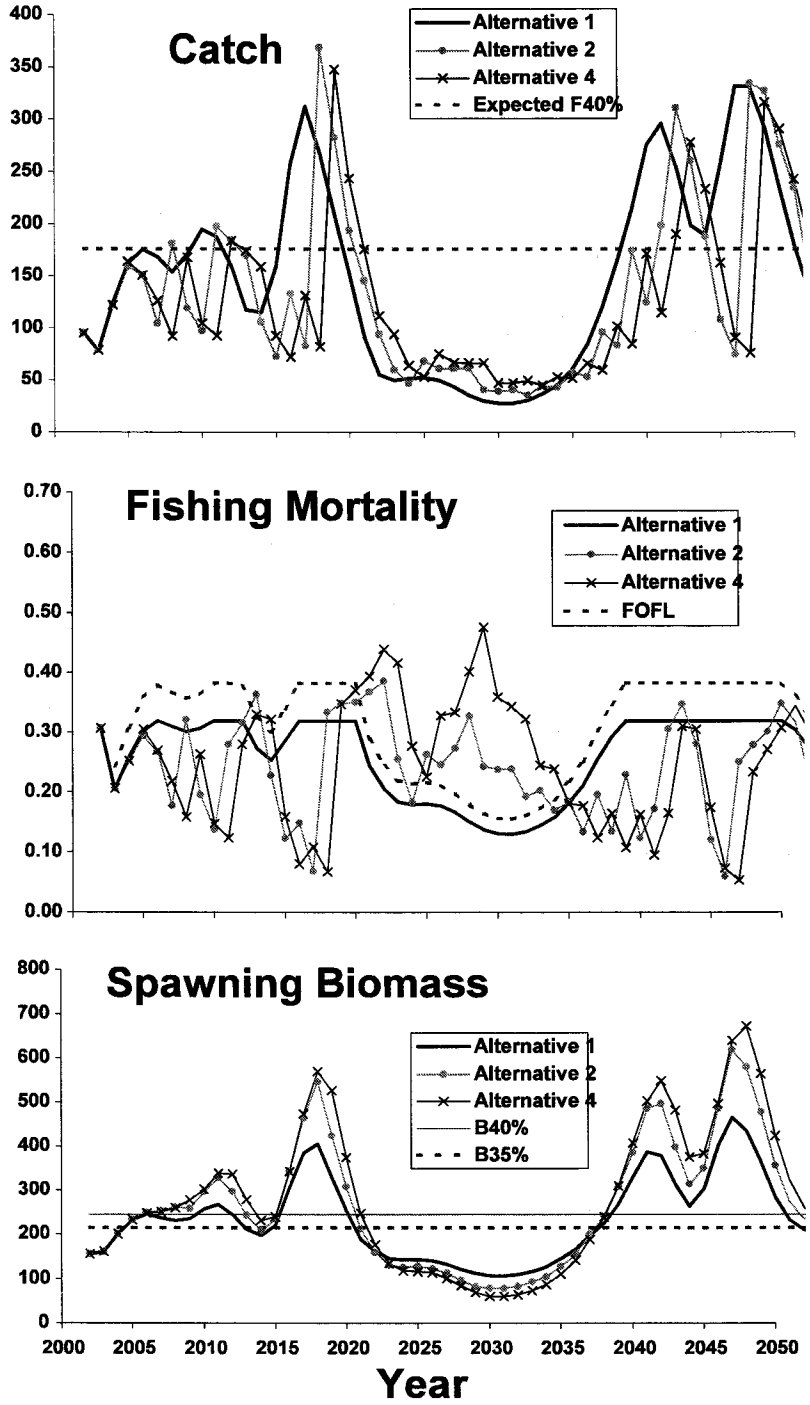


Figure 4.8 Simulated Gulf of Alaska pollock trajectory showing the first 50 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in thousands of metric tons.

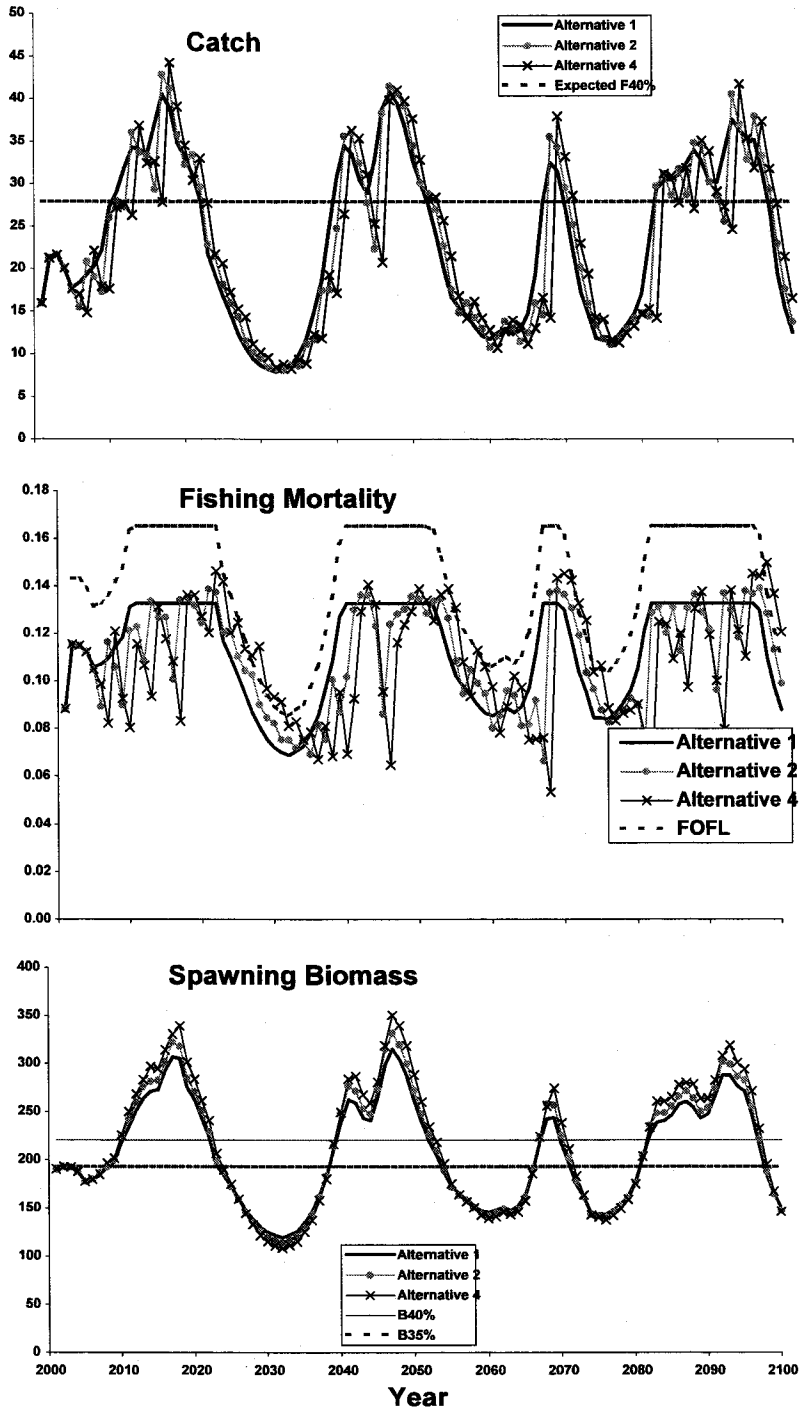


Figure 4.9 Simulated sablefish trajectory showing the first 100 years of catches (top), fishing mortality rates (middle) and spawning biomass under different alternatives relative to some reference points. Catch and biomass are in thousands of metric tons, spawning biomass includes males and females.

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 and 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 years 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

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 AI 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 the 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. 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 effect 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 time lag would 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. Alternative 3 will have quota changing between June and July as compared with status quo, when 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 may 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 time 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 because 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 are 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 inappropriate, 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. 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 AI 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 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

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[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

[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

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: Harvest Specifications for up to 2 years with December Rulemaking Decision (Year 1 and part or all of Year 2)

Option: Set hook-and-line and pot sablefish TAC for 12 months (Year 1)

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 pot and hook-and-line sablefish TAC for the first year would allow the sablefish IFQ fishery to be managed with the halibut IFQ fishery. The effect of setting this ABC for year 1 under Alternative 5 will be the same as effects under Alternative 1.

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 are 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 and Stand Alone Options on Target Species

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Option A: Abolish Reserves	Option C: 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 2004 TACs for the groundfish fisheries off Alaska analyzed the effects of setting the 2004 TACs over a range of levels on prohibited species in Section 4.4 (NMFS 2004). 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 2004). An additional indirect effect of the groundfish fisheries is a potential change to the prey composition (salmon and herring) 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 (i.e., 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 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 to be 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

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[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

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

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 experienced in June, compared to October. The average pollock harvest during the June 10 through July 1 time period for 2001 and 2002 was 35, 896 mt. If the harvest of this amount of pollock was made up during October, when the bycatch rates are high (averaging .25 fish/mt of pollock during October 2001), the additional bycatch of chinook salmon may number up to 5,815 fish.[18] The potential additional amount of bycatch might be reduced if the industry was able to limit the amount of pollock harvest in October, especially towards the end of the month, although annual variability in salmon bycatch has been high historically. Whether there would be an effect on the amount of salmon bycatch is dependent, in large part, 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: Harvest Specifications effective for up to 2 years with December Rulemaking Decision

Option for Pot and Hook-and-Line Sablefish Fishery for Year 1.

The effects of Alternative 5 on prohibited species are primarily related to the projection of PSC limits to up to 24 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 up to 24 months

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

portion of the PSC limit are not 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
  - 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 (NMFS 2001).

In this EA/RIR/IRFA, potential cumulative effect on prohibited species are 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 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 effects 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 may 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 may translate to marine mammal fitness or mortality are largely unknown at this time. In all cases in the groundfish fisheries, levels of direct incidental take are low, relative to each marine mammal stock's Potential Biological Removal. 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 effects are incidental take and vessel strikes; and the indirect effects are prey availability, benthic habitat disturbances, and processing waste and offal discharge. Two short-tailed albatross were taken in 1998, in the BSAI 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 in 2004 (68 FR 6386, February 7, 2003). The alternatives and option C will have no effects beyond those described in the PSEIS, because there will be no changes in fishing practices that would alter the direct or indirect effects. No change in the potential effects 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 been known to occur 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. However, surrogate tagging studies of evolutionarily significant units of endangered salmon have estimated 0 to 2 endangered fish being taken in the 2002 groundfish fishery.[19] 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).

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 completed on October 16, 2003 (Payne 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 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

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[19]Adrian Celewycz, pers. comm. October 30, 2003.CWT database, NMFS, Auke Bay Laboratory, Juneau, AK 99801.

- Pollution - includes effects from the 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
- 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 or Option C, 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 harvesting, or 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. However, potential effects are possible over competition for prey resources under a couple of scenarios (see discussion below).

The direct and indirect effects of the pollock, Pacific cod, and Atka mackerel fisheries were analyzed in the Steller Sea Lion Protection Measures SEIS, Section 4.1.1 (NMFS 2001). The revised draft PSEIS (NMFS 2003b) established significance criteria for the harvest of prey species as a change of 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 Alternative 2 nor Alternative 4 resulted in more than a 20 percent increase in the fishing mortality rate compared to Alternative 1. Alternatives 3 and 5 are considered to have fishing mortality rates between Alternatives 1 and 2. None of the alternatives are expected to have fishing mortality rates greater than Alternative ,1 and are therefore, expected to have insignificant effects on the harvest of prey species. Biennial harvest specifications of groundfish under Option C does not apply to Steller sea lion prey species and therefore, Option C has no effect on the harvest of prey species. 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 the competition between the groundfish fishery and the western distinct population segment (DPS) of Steller sea lions (see regulatory changes at 68 FR 204; January 2, 2003). The protection measures modify the existing harvest control rule to ensure that biomass levels (of important prey species for sea lions) are not adversely modified by fisheries. The strategy employs the protection of key foraging areas (i.e., 0-10 nm from rookeries and haulouts), distribution of catch seasonally, and in some cases catch limitations by area in order to avoid localized depletion of especially vulnerable prey species (e.g. Atka mackerel). None of the alternatives considered here would affect the spatial dispersion elements of the conservation strategy. Additional information on Section 7 consultations under the ESA 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 June 19, 2003 supplement) and in the FMP BiOp (NMFS 2000).

One potential for adverse impacts to Steller sea lions (from alternatives 2, 3, 4, and 5) would arise from a scenario in which the target species (e.g., pollock, Pacific cod, and Atka mackerel) showed a sharp decline that was not anticipated from a previous stock assessment. GOA pollock is an example of a stock with uncertain stock dynamics resulting in difficulties in obtaining accurate stock projections. In recent years, there has been a more rapid decline in stock size than projected by assessments, mostly due to an apparently strong 1994 year class that was not measured in large numbers in the fishery or in subsequent surveys. This resulted in actual fishery harvest rates higher than expected, nearly reaching the OFL limit in 2001. Although the assessment has numerous risk-averse approaches built in, historically this stock has been difficult to assess accurately. Recent reviews (i.e., CIE review at http://www.afsc.noaa.gov/refm/docs/2003/Godo%20GOA%20Pollock%20review%20report%20.pdf and the Marine Stewardship Council, September 26, 2003 draft report at www.msc.org) support the argument that this fishery is assessed in a risk-averse manner, yet it is possible that poorly understood changes in the environment or the ecosystem are having an effect on stock dynamics not built into the assessment. Uncertainty in the ABC projection increases rapidly each further year that is projected forward.

Moving to a strategy that employs using stock assessment data that are older than one year and fishing on TACs which are based on a two-year projection may result in an over-harvest of the target species in the first half of the year (under the scenario described above for GOA pollock), unless TACs are set conservatively. From a single-species fishery perspective, this may not pose a substantial problem unless the stock is being affected by high fishing rates on the spawning aggregation. Any overage in the first season would be "made up" by decreasing the harvest in the second half of the year. However, from a Steller sea lion perspective, this is not ideal, as the current conservation strategy is to spread catch out through the year in an effort to reduce harvest rates in the first half of the year and avoid seasonally compressed fisheries. Additionally, directed fishing is not allowed for pollock, Pacific cod, or Atka mackerel when the female spawning biomass declines below 20% of the theoretical unfished level (50 CFR 679.20(d)(4)). Managers would become aware of this potential problem in November or December, before the fishery starts in January of the next year. At this point, NMFS would have new survey information and new assessments which more accurately assess the appropriate harvest amount for the next year (based on the most recent information), or whether the stock was too low to allow a harvest.

In December, the Council and NMFS would have a couple of options. First, NMFS would need to assess whether the change in the stock assessment is substantial and would require a change to the TACs. In other words, based on the new information, is the difference in the TAC from what is currently in place (from the two year projection) likely to adversely affect Steller sea lions. Two scenarios are likely in which adverse impacts would accrue to the western DPS of Steller sea lions: (1) if the TAC is above the

revised OFL limit from the new assessment, and (2) if the female spawning biomass is determined to be below the 20% level. If either scenario occurs (or any other scenario in which the Council or NMFS determine is substantially adverse), then NMFS would need to rapidly promulgate an emergency rule in order to modify the TAC for that particular stock in order to avoid causing negative effects to the western DPS of Steller sea lions. Under this scenario, the customary public comment period on the TAC modification would likely be waived for good cause, as immediate implementation would be necessary to avert significant adverse effects on Steller sea lions and/or their critical habitat. Therefore, public comment is especially requested on this aspect of the proposed action. This process is a necessary fail-safe for the preferred alternative to insure that Steller sea lions are not jeopardized or their critical habitat adversely modified (as described under the conservation strategy in the 2001 BiOp). Without the ability by NMFS to rapidly respond to unpredictable changes in the natural environment, this action could potentially result in substantial adverse impacts to the endangered western DPS of Steller sea lions. Therefore, that ability is critical to the implementation of this action.

In summary, this action in itself does not result in any new adverse impacts to Steller sea lions that have not already been considered under the FMP BiOp and the 2001 BiOp (and supplement). However, unpredicted biomass declines may occur which could result in substantial adverse impacts to Steller sea lions or their critical habitat. In such circumstances, the emergency rulemaking provision of the Magnuson-Stevens Act authorizes NMFS to alter the TAC sufficiently to avoid those adverse impacts. The Sustainable Fisheries Division initiated informal Section 7 consultation with the Protected Resources Division for this action on July 7, 2003. On October 16, 2003, the Protected Resources Assistant Regional Administrator concurred with the finding that the preferred alternative is not likely to adversely affect Steller sea lions or their critical habitat beyond those adverse affects already analyzed.

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 2003), 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 cannot be reflected in the interim TAC. Because of this, the interim TAC may 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 TACs 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 a 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 the 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 specification 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 for Tier 1-3 species may be based on a scientifically derived value, rather than rollovers of the previous year's harvest level. For example, proposed ABCs may 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 (as seen for selection of proposed 2004 GOA pollock ABC). 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, economic, 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 TACs 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 recommend proposed and final TAC in the future cannot 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. An increased potential exists 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 optimally 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 may 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 December 2002, the Regional Administrator could have 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 December is not likely to be completed before the start of the fishing year, as seen in 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 under 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 cannot be predicted, and inseason and emergency actions 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 non-trawl fisheries are not affected because halibut PSC amounts are not apportioned during the June 10 through August 15 time period. Therefore, Pacific cod non-trawl fisheries activities would not overlap fishing years. The C season for the BSAI Pacific cod trawl fishery begins on June 10 and would overlap fishing years under Alternative 3. Adjustments to the seasons to,

for example, avoid 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.[20] With a later fishing year start date, 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 the possibility that the quota being managed at that point in time may not be set optimally for the current biomass. This potential is the same as the interim specifications under Alternative 1, the last 6 months of the portion of harvest specifications under Alternative 5, and Alternative 2, but less potential than Alternative 4 with a two year harvest specifications cycle. 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 were finalized and fished, the removals may 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 TACs 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 for use 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 less likely 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

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

The potential effects of Alternative 4 on Steller sea lions is similar to Alternative 2, only potentially more adverse. 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 adverse 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 may be reduced over time 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 species 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. . If more recent information indicates that the level of TAC is set 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 under Alternative 1 or Alternative 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.

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 cannot 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: Harvest Specifications for up to 2 years with December Rulemaking Decision. Option: Establish Pot and Hook-and-line Sablefish TAC for 12 months (Year 1).

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 specification that were implemented in the previous harvest specifications cycle. 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 species 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 extrapolations used in the status quo. In Alternative 5, the second year's specifications likely will be based on survey information that is 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 second year 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 time lag 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 harvest in the second year 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 the risk of overharvest may be reduced .

Because the actions of the Council to set proposed and final TAC in the future cannot be predicted, and given 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 (i.e., to establish pot and hook-and-line sablefish TACs for 12 months) affects only the sablefish fishery. Sablefish is not a major prey species of Steller sea lions, and this option, therefore, 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 commercial 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, additional cumulative effects for each alternative, beyond those previously described, 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 (NMFS 2000) show that Atka mackerel is not a major prey species for Steller sea lions in the western and central GOA between 1990 and 1998. This species 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 through5, 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.

Because this action is limited to changes in procedures for establishing harvest specifications, no direct, indirect, or cumulative effects by any alternative or option 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, or fishing 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. NMFS will send a letter to the appropriate State agency to notify them of this proposed action and to request concurrence in this finding.

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 groundfish harvest specifications[21] 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 (i.e., the pollock, Pacific cod, and Atka mackerel fisheries run in state waters concurrent with the seasons, and constrained by the 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 affected 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.

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

The effects on the State of Alaska state managed and parallel fisheries for groundfish were analyzed over a range of TAC levels in Section 4.9 of the final EA for the 2004 harvest specifications for the groundfish fisheries off Alaska (NMFS 2004). In NMFS 2004, 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 eliminated harvest levels of groundfish in 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 2004). 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 2004).

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 on 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 November 3, 2003.

Table 4.8-1 Ending Dates for Harvest (or Status) of State Pacific Cod Fisheries in 2003 through November 3, 2003 (ADF&G, 2003)

Gear Type	PWS	Cook Inlet	Kodiak	Chignik	S. Alaska Peninsula
Pot	Open	2/27 closed, reopened 9/1	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 closure 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 the fishing year ended on 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. Directed fishing for DSR is then prohibited for the remainder of the IFQ fishery, until November 1, so that the halibut fishery will not be constrained by the

harvest of DSR approaching the TAC for DSR. 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. Nonetheless, due to potential changes in fishing effort (seasonally and spatially), any 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, as discussed in Section 4.1 of this EA. The State conducts biennial surveys of GOA pollock resource during the summer months of odd numbered years, most recently in 2003. 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 was 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 was 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.[22] Alternative 4 and its options for setting PSC limits would have no additional direct or indirect effects on state managed fisheries.

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[22]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: Harvest Specifications Effective for up to 2 years with December Rulemaking Decision.

Option for Pot and Hook-and-Line Sablefish Specifications for 12 Months (Year 1).

Alternative 5 and the option to set sablefish specifications for 12 months 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 condition of 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, DSR and parallel fisheries, cumulative effects of Alternative 3 on these fisheries are also unknown.

Option A: Abolish TAC Reserves

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

Table 4.8-2 Effects of Alternatives and Options 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 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 to move the date even earlier (Leaman, Williams, and Gilroy 2003). The halibut and pot and hook-and-line sablefish fisheries are conducted concurrently to reduce the amount of discards of both species and for fishing efficiency. Conducting both fisheries at the same time also reduces the resource needs for NMFS Office of Enforcement and the Restricted Access Management Division.

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 U.S. and Canadian governmental approval and publication of the halibut regulations established by the IPHC. 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 after, 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; an interval between the fishing years during which no fishing may occur. 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 were best; and the safety issues at a minimum. If the sablefish season was intended to start concurrently 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 was not concurrent with the halibut IFQ (and CDQ) season, waste and discard of halibut would occur in the sablefish fishery; and the same for 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[23]. 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 may 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 harvests in excess of that amount had already occurred. There is also a potential for exceeding an area allocation, on the same basis.

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. Multi-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.

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.

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

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 reduce this potential problem by ensuring rulemaking for pot and hook-and-line sablefish is completed before the March 1 fishery date, based on the Council's final recommendation in December. Considering the stability of the projections of the sablefish fishery, as seen in Section 4.1, it is possible that the final sablefish TAC will not change from the Council's recommended final TAC . 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 Secretarial review and approval of the Council's final recommendation, it will not result in the need to adjust TAC, so no effects are expected on the sablefish fishery.

Cumulative Effects on IFQ Fisheries

One foreseeable 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.

The time available between the Council's final recommendation and the beginning of the March sablefish fishery is already barely enough to complete the administrative process and rulemaking for the sablefish IFQ fishery under Alternative 5's sablefish option. If the halibut fishery was moved to an earlier time in the year, leaving less than 6 weeks for processing, there would be the potential that the sablefish IFQ fishery could not be started concurrently with halibut IFQ, resulting in potentially increased sablefish bycatch (discards).

Because it is not possible to determine if the IPHC will extend the halibut fishing year up to 12 months, the cumulative effects under Alternatives 3 and 5 are unknown.

4.10 Effects on the American Fisheries Act Fisheries and the Consolidated Appropriations Act of 2004

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 and the Consolidated Appropriations Act of 2004, close to 100 percent of the EBS directed pollock fishery has been allocated to fishery cooperatives, and 100 percent of any future AI

pollock fishery will be allocated to the Aleut Corporation. The Aleut Corporation pollock fishery is scheduled for implementation in 2005. In all three sectors of the BSAI pollock fishery, cooperatives, CDQ Groups, and, in the future, the Aleut Corporation function as a form of economic rationalization (in the latter case, a privately-operated individual fishing quota program).

Within each of the AFA cooperatives, 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 AFA catcher/processor and mothership sector cooperatives operate at the sector level in that NMFS makes a single allocation to each respective 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.

The Aleut Corporation will authorize individual vessels to participate in the harvest (and processing) of the AI pollock quota. These vessels will either be AFA vessels, or vessels 60 feet or less in length overall. NMFS will provide an allocation to the Aleut Corporation, which will distribute the quota among the authorized affiliated vessels. Currently, the AI directed pollock fishery is closed, but it is likely to open in 2005, and will be managed as described above. Effects on the AFA fishery are likely to be the same for the Aleut Corporation pollock fishery, because of the similarities in management of the pollock resource.

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 metric tons of his/her pollock allocation . 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. These effects may be similar for the Aleut Corporation pollock fishery, because the pollock harvest will be managed in a similar manner and Steller sea lion protection measures also apply.

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 AFA co-op or Aleut Corporation allocations could be established prior to the start of the fishing year. Participants 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.
QQQ

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

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 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. Because the Aleut Corporation pollock fishery regulations are in development, the program could be developed to work within the time frame of this alternative, making the effects less likely compared to the AFA fishery management.

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. Because of the Steller sea lion protection measures, unharvested amounts from the B season may not be available to rollover into the A season, the high value roe season. This may result in the loss of opportunity to fully harvest the annual TAC, especially during a time when the fish are more valuable.

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 and Aleut Corporation pollock fisheries are likely to be the same as for Alternative 2.

Alternative 5: Harvest Specifications Effective for up to 2 years 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, Alternative 5 requires the BSAI pollock fisheries participants to begin the year on TAC values that could potentially change with the implementation of the final specifications. While participants 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 or Aleut Corportion fisheries because it is restricted to the sablefish fishery.

Option A. Abolish TAC Reserves

The AFA and the Consolidated Appropriations Act provide for the full allocation of the pollock TAC, and therefore, this option will have no effect on these pollock fisheries.

Option C: Biennial GOA specifications for some species/complexes

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

Cumulative Effects on AFA and Aleut Corporation Fisheries

The AFA and Aleut Corporation fisheries are focused on the harvest of pollock in the eastern Bering Sea and Aleutian Islands, respectively, 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 these fisheries. In Section 4.1, no conditionally significant cumulative effects were identified for pollock. External effects that may impact the BSAI pollock 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 BSAI pollock fisheries. Option 1 to

Alternative 3 and the option to Alternative 5 would prevent potential effects on the sablefish IFQ and halibut IFQ fisheries. No effects were identified for marine mammals, seabirds, other ESA listed species, essential fish habitat, biodiversity and ecosystems beyond those effects previously analyzed for the status quo (NMFS 2001 and NMFS 2003b).

Groundfish Target Species: The effects of alternatives 2 through 5 and on fishing mortality, biomass, and temporal harvest of groundfish target species are insignificant. No indirect or spatial effects were identified for target species from alternative 2 through 5. No effects on target species were seen for options A and C. 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.

Prohibited Species, State and BSAI Pollock Fisheries: Effects on prohibited species, State fisheries and the BSAI pollock fisheries were seen only under Alternative 3 (change in fishing year). Alternative 3 could alter fishing patterns which has unknown effects for the prohibited species (salmon in the pollock fishery). The shifted fishing year may pose difficulties to the BSAI pollock fisheries in times of high TAC, regarding meeting the B season allocations, potential loss of opportunity to harvest unharvested pollock, 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.

The effects of Alternative 3 on the State GOA Pacific cod and AI sablefish fishery, demersal shelf rockfish fishery and the parallel seasons in the BSAI and GOA for Atka mackerel, Pacific cod and pollock are unknown. Potential changes in fishing effort seasonally and spatially could be mitigated by Council or Board of Fish action in setting fishing seasons and PSC apportionments for the federal and State groundfish fisheries.

Steller sea lions: Because the harvest of groundfish species may have an indirect effect on Steller sea lions, effects on Steller sea lions were identified from the overall harvest of prey species under alternatives 2 through 5, and from temporal dispersion of harvest 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 on Steller sea lions or their critical habitat 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 and options, except Alternative 3, have no new, additional effects on public health and safety, than what has already been identified under status quo (NMFS 2003b). All alternatives and options, except Alternative 3, do not change fishing practices which may lead to a change in the level of safety for participants in the groundfish fisheries. 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 or option considered with this action, beyond those already identified under previous analysis (NMFS 2003b).

4. This action is not **controversial**. The Council unanimously recommended Alternative 5 with the sablefish option and Options B and C. Public testimony at the October 2003 Council meeting fully supported the Council's recommendation.

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. The establishment of the Aleut Corporation pollock fishery in 2005 has been analyzed with the AFA fisheries. Similar effects for the two pollock fisheries are expected because the management structures are expected to be similar (See section 4.10 of the EA).

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 Protection Measures 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 Protection Measures 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 Protection Measures 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 establishing annual harvest specifications. The implementation of the Aleut Corporation pollock fishery is also a potentially forseeable action but effects are likely to be similar to those seen for the AFA fishery because of the similarity in the management of the pollock fisheries.

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 because none are found in the action area.

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 and options, 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 of this analysis. 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 target species 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 on 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.

On July 7, 2003, the Division of Sustainable Fisheries 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). On October 16, 2003, the Protected Resources Division Assistant Regional Administrator concurred with the finding that the preferred alternative is not likely to adversely affect the western distinct population segment of Steller sea lions or its critical habitat, beyond those adverse affects already analyzed.

10. This action poses **no known violation of Federal, State, or local laws or requirements for the protection of the environment**. Section 1.8 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 was available for public review in September 2003 with the comment period closing November 6, 2003. This action will be conducted in a manner consistent with the enforceable provisions of the Alaska Coastal Zone Management Act of 1972 and its implementing regulations.

11. This action imposes **no effects on the introduction or spread of nonindigenous species** into the BSAI and GOA, beyond those already identified in previous analysis (NMFS 2003b). The action involves the change of an administrative process and not actual fishing practices that may lead to the introduction of nonindigenous species.

Comparison of Alternatives and Options and Selection of a Preferred Alternative and Options

In October 2003, the Council recommended Alternative 5 with the pot and hook-and-line sablefish option and stand alone options B and C. Alternative 1 was not considered for selection due to difficulties of the interim specifications portion of the process complying with the Administrative Procedure Act. Although Alternatives 2 and 4 met all of the objective of the action, these alternatives were not recommended due to the potential effects on the management of short-lived groundfish target species and potential impacts on fishing revenues. Alternative 3 had less potential for effects on the management of short-lived groundfish target species compared to Alternatives 2 and 4 and ensured a process that met the objectives of this action, but the potential problems of managing a shifting of the fishing year was considered to outweigh any advantages gained in improving the administrative process.

Though Alternative 5 establishes a more complex administrative process, maintaining the current timing of the harvest specifications (when the best information is available and the start of the fishery is base on that information) outweighed the additional administrative burden that may be experienced in the annual harvest specifications process. Alternative 5 poses no additional effects on the human environment beyond those already analyzed under the status quo. The sablefish option with Alternative 5 will ensure that the IFQ sablefish fishery is conducted based on the best available information and concurrent with the IFQ halibut fishery, reducing administrative burdens and reducing potential waste of halibut or sablefish.

Option A was not recommended by the Council in October 2003, due to industry testimony indicating that there is still a use for the non-specified reserves in the BSAI. Option B for updating the groundfish FMPs is a housekeeping option with no effect on the human environment. Option C to set biennial harvest specifications for certain GOA species and species groups has no effect on the human environment and will provide savings in NMFS staff resources in developing some GOA stock assessments and harvest specifications.

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 acceptable 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 BSAI and 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.[24]

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

[24]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.

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 and 2.2. While the reader should refer to these sections for detailed descriptions of the alternatives and options, 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[25].

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 mackerel. 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).

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 Groundfish 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 these 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

[25] 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.

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: Up to 2 year projected specifications

This alternative, with the pot and hook-and-line sablefish option, was recommended by the Council at its October 2003 meeting. Under Alternative 5, specifications would authorize fishing for up to 2 years. Thus, the specifications that governed harvests in 2003, would also cover the first part or all 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.

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 prior notice and comment for "good cause", pursuant to the APA, and directly publish final specifications with a post-effectiveness public comment period.

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 superseded by the new specifications.

An option under Alternative 5 would provide a method of ensuring that pot and hook-and-line sablefish fishery specifications do not change during the fishing year. Under this option, harvest specifications would include pot and hook-and-line sablefish specifications for all of year 1. If a second proposed rule is needed for the harvest specifications, the pot and hook-and-line sablefish specifications will be completed by a separate final rulemaking after the December Council meeting. This option would ensure that the management of IFQ sablefish would be parallel to the IFQ 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).[26]

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 in the BSAI 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

[26]Even though Alternative 1 is the no action alternative, the adoption of Options A, B, and/or C is not expected to cause significant changes to the harvest specifications process beyond current practices, and nothing in these options would be in conflict with the elements of Alternative 1.

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, for 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, 2002" (NMFS, 2004, Appendix D), also known as the "2003 Economic SAFE Report." This document is produced by NMFS and updated annually. The 2003 edition contains 49 historical tables summarizing a wide range of fishery information through the year 2002. Due to time constraints in the completion of this action, the following economic data are based on the 2002 Groundfish Economic SAFE report and are not updated with information from the 2003 report.

In 2001, the most recent year covered by the 2002 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 GOA. 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.[27] 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.)

[27]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.

At the first wholesale level, the gross revenue generated by the groundfish fisheries off Alaska were estimated to be in excess of $1.39 billion. Over half of this, $574.1 million, came from catcher/processors. 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 benefit-cost analysis

The stocks of groundfish in the waters off 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.[28] 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 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, AP, 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 predetermined. 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.

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[28]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 which accrue 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. REPETITIOUS

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.[29] (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.

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 time available is the same under Alternatives 1, 3, and 5. If Option 2 is adopted along with Alternative 3, there would be one additional month, compared to Alternatives 1 and 5. Four additional months are available under Alternatives 2 and 4, as compared to the status quo .

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

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

Alt.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1 and 5 (Status quo and up to 24 month projected specifica-tions)	Summer survey	Survey data starts to become available; Prelimina ry Plan Team Meeting.	Survey data available; Draft EA/ IRFA; Council's proposed specs. Prelim. SAFE	Final Plan team meeting	Final SAFE; Draft EA/RIR/ IRFA; Council's final specs.				
2 (One year projected specifica-tions)	Summer survey	Survey data starts to become available in September. Data analysis and model review				Plan Team Meeting. Prelim. SAFE; Draft EA/RIR/ IRFA	Council's proposed specs. Revisions to EA/RIR/IRFA	Plan Team Meeting	Final SAFE; Council's final specs.
3 (New fishing year)	Summer survey	Survey data starts to become available; Prelimina ry Plan Team Meeting.	Survey data available; Prelim. SAFE; Draft EA/IRFA; Council's proposed specs.	Final Plan team meeting	Final SAFE; Draft EA/RIR/ IRFA; Council final specs.	**Option 2:** Final SAFE; Draft EA/RIR/ IRFA; Council final specs.			
4 (Two year projected specifica-tions)	Summer survey	Survey data starts to become available in September. Data analysis and model review				Plan Team meeting. Prelim. SAFE; Draft EA/RIR/ IRFA	Council's proposed specs. Revisions to EA/RIR/IRFA	Plan Team Meeting	Final SAFE; Council's final specs.

Notes: Based on Tables 2.2 and 2.3, and the description of Alternative 3 in this EA/RIR/IRFA.

RACE survey data likely 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) Alternative 3 with Option 2 , 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, or 5. However, because RACE is currently able to provide carefully audited data in a timely manner, these potential 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 Teams' November meeting.

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 Alternative 3 with Option 2 , 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 because 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, economic, and sociologic analyses 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 economic, socio-economic, and sociologic 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, economic, 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 may, therefore, 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 Teams' 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, including 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 economic and socio-economic analyses

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 or 4.

Alternatives 2 and 4 lengthen the time available for analyses considerably. If the Plan Teams' 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, sociologic , 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 upon 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 Teams' 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, economic, 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 a less harried consideration by the Council about what it wanted to adopt and

associated analyses should be of a higher 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 Teams' meetings would still take place in November, this would extend the time between the Plan Teams' meetings and the Council's meeting by one month. The Plan Teams' meetings are public meetings and are attended by members of the public, including representatives of industry and environmental groups. The one month delay in the Council's meeting therefore, will 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 not a logical outgrowth of 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 should 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 its careful 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 inseason management actions during the second 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 those data will approximate the lag under Alternative 3). Assuming that the most recent data are the best available data, an increase in the time period increases the uncertainty of biomass forecasts for the specifications year. The increase in the time period will be least for Alternative 5 (from no increase if there is no second proposed rule, up to (possibly) 6 months if there is), somewhat greater for Alternative 3 (6 months) and 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 5.8-1 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 5.8-1 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, some part of the year is managed using the last portion of the 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 new 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 Teams' meetings in November 2005. In early December 2005, the Plan Teams' reports would be reviewed by the SSC, the AP, and the Council at the Council's 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 November or December. 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 November or December) 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 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 July 1, 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).

Alt.	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 calendar 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, with unharvested amount not allowed to be rolled over into the more lucrative roe fishery in the A season because of the Steller sea lion protection measures. Otherwise a change to July 1 may not impose a serious burden on the fishermen.

Species	Seasons
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 PSC allowance is actually released on June 10, so no fishing takes place. The next actual halibut PSC 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. As with the pollock fisheries, the trawl and fixed gear operations may experience problems with unharvested amounts of Pacific cod not being available to rollover into the January fishery, as prohibited by the Steller sea lion protection measures.
Sablefish	This fishery is managed under IFQs. The fishing season opens March 1and 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, exempting sablefish IFQ from the fishing year change, 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.

Species	Seasons
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 limits. 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.
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 limits. 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 this condition 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.

Species	Seasons
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, exempting sablefish IFQ from the fishing year change, 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	
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 pot and hook-and-line 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 these fisheries 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 U.S. and Canadian 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. 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 closure would occur during some of the best weather conditions of the year, when fishing is productive and safety issues are at a minimum. Moreover, this would create a winter fishery from November through February, when halibut are found in deeper waters and there is 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[30].

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 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

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

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 associated with processing all of the TAC available in the second season, if the markets for surimi and fillets are not strong, and/or the plants would operate less efficiently by simultaneously processing these pollock products, along with other species which traditionally occupy the processing facilities and labor force during this time. For example, many of the pollock processing facilities are also used for crab processing, which begins in mid October, so it may be desirable to have the pollock fishery completed before the crab fishery begins.[31]

"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 inseason 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 represent revenues which are effectively lost to the firm. These fish obviously continue to grow, reproduce, incur natural mortality, etc., and, in aggregate, contribute to the available biomass when the new fishing year begins in the following January. Whether the present value of the future available biomass meets or exceeds the value of the foregone catch in the present period is an empirical question that cannot readily be evaluated, *a priori*.

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 to do rollovers. These species are assumed to be unusually important to the Steller sea lions, and to fishermen as well, 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 in the case of pollock have an unusually high value for the fishermen due to their high roe content at this time. Pacific cod are found in highly concentrated spawning aggregations, making harvesting this species much more efficient, as compared to

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

later periods of the year, after they disperse. 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 allow harvest of fish rolled over from the previous season under Alternative 3, may cause adverse impacts to Steller sea lions and could not be considered without reinitiation of Sec. 7 Endangered Species Act consultation.

As previously discussed, 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, near the end of the important directed pollock roe season, and if the AFA sectors do not fully use the "rolled back" ICA, it may be lost.

In the BSAI Pacific cod fishery the rollover occurs from trawl and 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 first half of the calendar year occur in March and April, when the Pacific cod are concentrated for spawning, 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 catch may be foregone, because amounts not harvested cannot be further rolled over into the following fishing year starting in July. 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 bycatch 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. Under status quo, Atka mackerel not harvested in the fall cannot be rolled over into the following fishing year so the effect of having unharvested fish in the fall is likely to be the same as status quo.

In the Gulf of Alaska pollock fishery, the August and October fisheries occur first under Alternative 3. Managers may have either more fish than expected in the January or March fishery, or less, depending on the inseason 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) cannot be allowed because of the 25 percent annual limit established for the "A" 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 adverse 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% in the January-June period, because it would be necessary to set aside some of the TAC for incidental catch through the end of June (i.e., to balance the books, so to speak, at the close of the fishing year). 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 possible that unused Pacific cod quota in the fall can be used for bycatch in the January through June time period.

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 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, the NMFS Regional Economist, 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 and regulatory impact review (which can take up to 90 days) before the proposed rule can be published.

A 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. 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 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 cannot 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 Pacific 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.

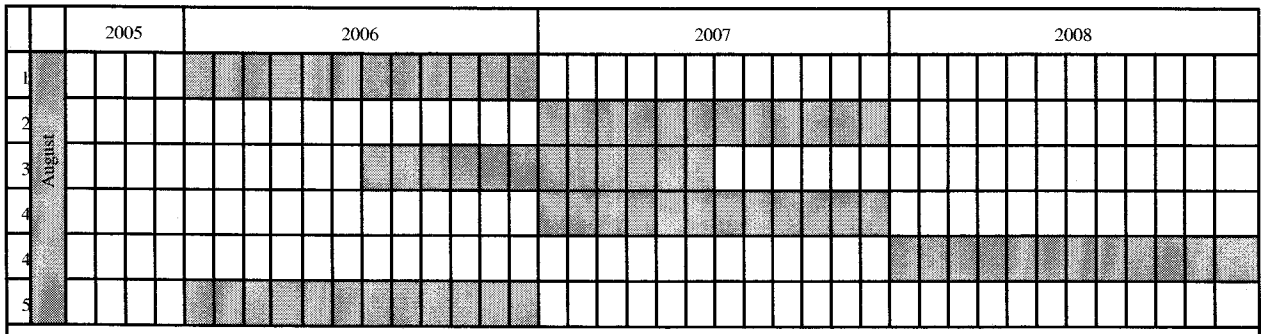
Under the status quo, PSC limits (which can result in closure of fisheries with resulting social and economic impacts) may bind during the interim period, particularly in the BSAI rock sole fishery which operates early in the fishing year. If the interim PSC limitations restrict fisheries, fishermen 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, for example, would underlie specifications in 2006.[32] Under Alternative 2, 2005 surveys would underlie the specifications for the 2007 fishing season, under Alternative 3, the 2005 surveys would underlie 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.

[32] 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 time 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. As the time 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. Because ABCs and TACs adjust to biomass fluctuations with a time 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 shorter 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[33] suggest that these theoretical considerations may have practical implications for the alternatives (Section 4.1). 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.[34] 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

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[33]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.

[34]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 may. Moreover, these second year projections are the assessment authors' projections, and do not reflect changes that might have been made in the SSC's and the Council's recommendations.

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).[35]

Some results of this comparison are summarized in Table 5.10-2 below.[36] 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.			

[35]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).

[36]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.

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.[37] A net impact of this size is so 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 may provide useful insights . 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[38]

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 would be expected to 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 would be expected to be the same, since the two alternatives share the same information and fishery start 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.

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

[38]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.

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).

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.[39]

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.

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[39]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 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.

The simulations suggest that mean spawning biomass fluctuates more as the time 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 1 and 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 those data. Average ABCs were largest for Alternative 1, smaller for Alternative 2, and smallest for Alternative 4. Alternative 3, which has a time 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 could be off by shifts in product prices, depending on a number of market factors. 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 could 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 would be lower than those under Alternative 1, and that Alternative 4 harvests would be 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[40], 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.[41] [42] 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 exceed the overfishing (OFL) level more often. While the OFL level may also be exceeded inadvertently under Alternative 1[43], 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 may 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

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[40]The first wholesale prices used to produce these revenue estimates were described in a footnote to the discussion of the retrospective model.

[41]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.

[42]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.

[43]One shortcoming of the simulation model is that it cannot identify the instances when the OFL would be exceeded under Alternative 1.

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 show 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 sort of action tends to offset the impact of the time 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. Because fewer fish are expected to be 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 and 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 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 may 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, because 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 and could reduce overall product quality. 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 welfare loss and may trigger costly ESA actions.

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, and has the advantage of providing assessment authors and Plan Teams with more time to prepare their ABC and OFL recommendations for the Council. AFSC 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 could require considerable adjustment on the part of the Council community, and would also 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 pot and hook-and-line sablefish fishery specifications do not change during the fishing year. Under this option, harvest specifications would include pot and hook-and-line sablefish specifications for all of year 1. This option would ensure that the management of IFQ sablefish would be parallel to the IFQ 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 five 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, and 1.4.2 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 status quo system itself can increase confusion regarding which numbers are currently available for harvest and increase the administrative burden on fisheries managers. Testimony at the October 2003 Council meeting, indicated that members of the industry depend on the existence of the nonspecified reserves

during annual harvest specifications negotiations for the BSAI TAC among industry sectors. Based on this, the Council did not recommend this stand alone option.

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. The Council recommended this option at its October 2003 meeting.

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 or fishery revenues. The Council recommended this option at its October 2003 meeting.

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.[44] 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 5.12.[45]

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[44]This is an important difference between a benefit-cost analysis required under E.O. 12866, and a NEPA EA assessment. A NEPA EA or EIS 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.

[45]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 5.13, 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 Benefits and Costs 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 up to 24 months. Option for annual pot and hook-and-line sablefish*
To what extent do the alternatives meet action objectives? These objectives 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 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.

	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 July 1*	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 up to 24 months. Option for annual pot and hook-and-line sablefish*
Private sector planning horizons (from Section 5.8)	Status quo and baseline (less than one month)	About nine months	Six or seven months			About nine months for first year, almost 21 for second year	Less than one month
Fishing year induced changes in fishing behavior (from Section 5.9)	Baseline and status quo	None	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.			None	None
Impact on projected harvests (from Section 5.10)	Baseline and status quo	Possibility of reduction in mean harvests and increased variability in harvests.	Possibility of reduction in mean harvests and increased variability in harvests. These impacts would be **smaller than those for Alternative 2.**			Possibility of reduction in mean harvests and increased variability in harvests. These impacts would be **greater than those for Alternative 2.**	None if second proposed rule is not required.
Impact on projected biomass (from Section 5.10)	Baseline and status quo	Possibility of increased mean spawning biomass with increased variability in spawning biomass	Possibility of increased mean spawning biomass with increased variability in spawning biomass. These impacts would be **smaller than those for Alternative 2.**			Possibility of increased mean spawning biomass with increased variability in spawning biomass. These impacts would be **greater than those for Alternative 2.**	None if second proposed rule is not required.
Net benefits	Baseline and status quo Not possible to monetize net benefits. This alternative does not appear to meet the objectives of the proposed action.	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.	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			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.	Not possible to monetize net benefits. This alternative improves notice and comment, but without the costs of forgone harvests associated with Alternatives 2, 3, and 4, if a second proposed rule is not required.
E.O. 12866 significance (from Section 5.13)	Baseline and status quo	Impact appears to be less than $100 million.	Impact appears to be less than $100 million.			Impact appears to be less than $100 million.	Impact appears to be less than $100 million.

5.13 Summary of E.O. 12866 significance criteria

The E.O. 12866 significance criteria were listed in Section 5.2

The proposals evaluated in this RIR do not appear to have the potential to result in an annual effect on the economy of $100 million or more, or the potential to 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[46] was about $1.36 billion 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 do not 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 be expected to have the potential to "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 be expected to have the potential to: (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."

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.

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[46]The first wholesale level means the first sale of processed product by onshore processors, catcher/processor vessels, or motherships.

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" on 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) small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a 'small business' as having the same meaning as 'small business concern' which is defined under Section 3 of the Small Business Act. 'Small business' or 'small business concern' includes any firm that is independently owned and operated and not 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 relationships, 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.[47] The management alternatives are:

Alternative 1. Status Quo (No action alternative).

[47]Alternatives considered, but not analyzed in this EA/RIR/IRFA are listed in Section 2.3.

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: **(Preferred)** Same as status quo, except set harvest specifications for periods of up to 24 months. Periods overlap, the fishery for a new period beginning between the 12th and 24th month of the previous period. Option (Preferred): Establish TAC for pot and hook-and-line sablefish for 12 month time period (Year 1)

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 (Preferred): Update FMP language to incorporate new harvest specifications administrative process and to remove references to foreign fishing.

Option C (Preferred): Biennial harvest specifications for certain GOA target species/complexes.

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. Meaningful prior APA public review and comment on the proposed and interim specifications is not possible under the current process. 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 NMFS manages the U.S. groundfish fisheries of the Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands management areas (BSAI) 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[48]

What are the directly regulated entities

The entities regulated by this action are those that commercially harvest federally managed 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 reasoning behind these estimates is summarized in the paragraphs which follow the table.

Table 6.8-1 Estimated numbers of regulated entities in the BSAI and GOA groundfish fisheries

Fleet segment	Number small entities	Number large entities	Total number of entities
Catcher vessels	832-838	7-13 (81-87 vessels)	839-925
Catcher processors	30-33	54-57	87
CDQ groups	6	0	6

Notes: In some cases, the number of entities is smaller than the number of vessels - indicating that at least some entities have multiple vessels. The estimated numbers of vessels have been placed in parentheses. Catcher vessel and catcher/processor estimates prepared from fish tickets, weekly processor reports, product price files, and intent-to-operate listing. The methodology used probably overstates the numbers of small entities. All CDQ groups are non-profits and are therefore treated as small.

[48]This overview of the number and description of small commercial fishing entities in the BSAI and GOA groundfish fisheries uses the most complete and comprehensive available published summary data on small and large commercial fishing entities in the BSAI and GOA. These are the data in Table 26 of the 2002 Economic SAFE document. This table is built from a data set using groundfish revenues in federal fisheries off of Alaska to distinguish between large and small entities. However, these revenues are also known to be an incomplete measure of gross revenues for distinguishing between large and small entities. The distinction between small and large entities should be made using a comprehensive measure of revenues, including revenues from fisheries for other species, revenues from non-fishing activities, revenues from fishing activities outside of Alaska, and revenues from affiliated firms. A fully comprehensive data set is not currently available, and given the difficulties in measuring revenues for affiliated operations, may never be.

Fishing vessels, both catcher vessels and catcher/processors, are "small entities" if they gross less than $3.5 million in a year, when all their affiliated elements are taken together. 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.[49] Catcher-vessel gross revenues are measured at the ex-vessel level, catcher-processor revenues are the first wholesale value of the processed product. Estimates of the numbers of vessels are provided by year and gear type from 1997 to 2002. 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.

Catcher-vessels

Table 6.8-2 indicates that, in 2002, there were 781 small catcher vessels active in groundfish harvesting in the GOA and 251 in the BSAI. There were 913 small groundfish catcher vessels in total. These numbers suggest that 119 vessels must have operated in both the BSAI and the GOA.[50] Table 6.8-2 implies that each of the small catcher vessels is treated as a separate small entity. This likely overstates the number of separate entities, since there is probably not a strict one-to-one correspondence between vessels and entities; (i.e., some persons or firms are known to own more than one vessel).

Table 6.8-3 indicates that there were six large catcher vessels in Alaska in 2002. All of these operated in the BSAI. In addition, seven inshore cooperatives, with 81 affiliated catcher vessels (in 2001), were permitted by NMFS Alaska Region in 2001. The six large catcher vessels (assuming they were not AFA vessels) and the seven inshore cooperatives, would have created 13 large catcher vessel entities representing 87 vessels.

Consideration of vessels affiliations with American Fisheries Act (AFA) pollock fishery cooperatives in the BSAI pollock fishery makes it possible to "fine tune" these estimates somewhat. In 2001, 81 catcher-vessels delivered AFA pollock through the cooperatives. If all 81 of these catcher vessels had gross groundfish revenues under $3.5 million, they would have been treated as small above, since their AFA affiliation was ignored. Since, after consideration of their AFA affiliation they must be considered large, the number of small entities estimated in the preceding paragraph is too large, and would have to be

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[49]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 (e.g., crab, salmon,and/or halibut) or from fishing in other areas. In addition, the SBA small entity criteria state an entities 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.

[50]Table 6.8-2 duplicates data in Table 26.2 in the Economic SAFE document included as an appendix to this EA. The Economic SAFE notes that this year the Alaska Fisheries Science Center has improved its "estimates of the numbers of vessels participating in federally-managed groundfish fisheries by excluding those vessels that fished only under either sablefish permits in the inside waters of southeast Alaska or non-groundfish gear operator permits. This change affects Tables 26-33 and results in significant reductions in the numbers of vessels counted compared to the numbers published in last year's report." The data from last year's Economic SAFE report was used in the September and October versions of this document. The use of the newer information from this year's Economic SAFE in this version has led changes in estimates of large and small vessels, and especially to significant reductions in the estimates of catcher-vessels.

reduced by 81. The new estimate (reported in Table 6.8-1) is 832. On the other hand, there were six large catcher vessel trawlers in the BSAI in 2002; these might have been AFA vessels. If they were, the number of vessels grossing less than $3.5 million that were actually large because of their AFA affiliations was only 75, and the estimate of small entities would be 838.

Table 6.8-3 shows that there were six large trawl catcher vessels operating in the BSAI in 2002. One or more of these might have been AFA vessels. If the six catcher vessels grossing over $3.5 million had been affiliated with AFA cooperatives, the number of large catcher vessel entities might have been as low as 7 (instead of 13) with 81 vessels (instead of 87).

Catcher-processors

Table 6.8-2 indicates that, in 2002, there were 20 small catcher/processors in the GOA and 32 in the BSAI. There were 33 small catcher/processors in total. These numbers suggest that 19 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 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 (i.e., some persons or firms are known to own more than one vessel).

A consideration of AFA affiliations makes it possible to improve this small vessel estimate somewhat. Three of small BSAI catcher-processors were trawlers. Sixteen catcher-processors made deliveries to AFA cooperatives; given their affiliations, these operations must be considered large. Since, from Table 6.8-2, only three BSAI small catcher-processors were trawlers, no more than three of the sixteen might have been small without this affiliation. If these three were small, the total number of small catcher-processors would be 30. Thus, the number of small catcher-processors might range between 30 and 33 vessels.

Table 6.8-3 indicates that there were 54 large catcher-processors fishing in the EEZ off of Alaska in 2002. All of these operated in the BSAI. As noted above, up to three catcher-processor trawlers with groundfish gross revenues under $3.5 million in 2002, might have been large by affiliation with AFA cooperatives. Therefore, the number of large catcher-processors might range from 54 (from Table 6.8-3) up to 57 (if all of the six with groundfish gross revenues under $3.5 million are large by affiliation).

CDQ groups

The six Community Development Quota (CDQ) groups are non-profit entities supporting the community development objectives of 65 Western Alaska communities and, as such, are small entities, consistent with SBA definitions.

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
1998									
All gear	915	21	936	232	41	273	998	41	1,039
Hook & line	658	15	673	62	29	91	676	29	705
Pot	180	1	181	71	7	78	225	7	232
Trawl	167	5	172	115	7	122	205	7	212
1999									
All gear	889	29	918	277	31	308	1,010	34	1,044
Hook & line	625	17	642	67	19	86	651	22	673
Pot	201	10	211	90	11	101	256	11	267
Trawl	154	3	157	126	4	130	202	4	206
2000									
All gear	991	16	1,007	278	30	308	1,143	32	1,175
Hook & line	719	8	727	79	17	96	749	18	767
Pot	252	5	257	91	11	102	302	12	314
Trawl	127	3	130	114	5	119	206	6	212
2001									
All gear	853	21	874	280	43	323	1,013	44	1,057
Hook & line	650	15	665	92	31	123	681	31	712
Pot	154	4	158	74	7	81	212	9	221
Trawl	120	4	124	118	6	124	196	7	203
2002									
All gear	781	20	801	251	32	283	913	33	946
Hook & line	619	13	632	78	24	102	633	24	657
Pot	127	4	131	59	5	64	169	6	175
Trawl	107	3	110	118	3	121	186	3	189

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 process	Total	Catcher Vessels	Catcher process	Total	Catcher Vessels	Catcher process	Total
1998								
All gear	26	26	0	58	58	0	58	58
Hook & line	7	7	0	14	14	0	14	14
Pot	0	0	0	1	1	0	1	1
Trawl	19	19	0	44	44	0	44	44
1999								
All gear	29	29	1	57	58	1	57	58
Hook & line	13	13	0	22	22	0	22	22
Pot	1	1	0	3	3	0	3	3
Trawl	15	15	1	36	37	1	36	37
2000								
All gear	28	28	4	58	62	4	58	62
Hook & line	13	13	0	26	26	0	26	26
Pot	0	0	0	2	2	0	2	2
Trawl	15	15	4	34	38	4	34	38
2001								
All gear	19	19	5	47	52	5	47	52
Hook & line	5	5	0	14	14	0	14	14
Trawl	14	14	5	33	38	5	33	38
2002								
All gear	23	23	6	54	60	6	54	60
Hook & line	10	10	0	18	18	0	18	18
Trawl	13	13	6	36	42	6	36	42

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.

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.[51] Considering activity in both the BSAI and the GOA, small catcher vessels grossed an average of about $230,000 in 2002. This average conceals variation by fishery management area and gear type. Small hook and line gear vessels (longline and jig) in the GOA had the smallest average gross revenues at about $100,000, while small trawlers in the BSAI had the largest at $1,070,000. The overall average gross revenues for all small vessels active in the GOA groundfish fisheries were $140,000, while the overall average gross revenues for all small vessels active in the BSAI groundfish fisheries was $600,000. 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, types of products, and vessel size. The 44 small catcher/processor vessels had first wholesale gross revenues of about $78 million in 2001; average revenues were about $1.8 million. The 47 large catcher/processor vessels had first wholesale gross revenues of about $612 million in 2001; average revenues were about $13 million.

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.

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

[51]These data are derived from the same source as the data used for the vessel count analysis: Appendix D to the 2003 Specifications EA/IRFA (NMFS 2003a). As noted earlier, this data set only include revenues vessels receive from groundfish fishing. Since these estimates only include information on gross revenues from groundfish fishing, these are low estimates of the total gross revenues for these entities., many of which are known to participate in non-groundfish harvesting, or other "fishing" activities, such as tendering for the salmon fisheries. Indeed, some operations participate in fisheries outside of the Alaska region (e.g., Pacific Northwest whiting). Revenues from all such activities should, ideally, be included in the decision as to whether an entity qualifies as "small", under the RFA. At present, however, data limitations do not permit a full and complete accounting of activities beyond the Alaska groundfish fisheries.

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
1998									
All gear	.14	1.77	.18	.43	1.63	.61	.16	1.63	.22
Hook & line	.07	1.59	.10	.12	1.57	.58	.07	1.57	.13
Pot	.11	-	.12	.24	.84	.29	.15	.84	.17
Trawl	.50	2.40	.56	.76	2.58	.86	.53	2.58	.59
1999									
All gear	.20	1.44	.24	.53	1.51	.63	.21	1.38	.25
Hook & line	.09	1.48	.12	.14	1.79	.50	.08	1.55	.13
Pot	.17	1.23	.22	.15	1.16	.26	.16	1.16	.20
Trawl	.75	-	.77	1.00	1.59	1.02	.73	1.59	.75
2000									
All gear	.16	1.33	.18	.65	1.34	.72	.24	1.34	.27
Hook & line	.11	1.24	.12	.23	1.60	.47	.10	1.53	.14
Pot	.16	1.03	.18	.16	.63	.21	.17	.75	.19
Trawl	.56	-	.60	1.33	1.72	1.34	.89	1.83	.92
2001									
All gear	.13	1.76	.17	.48	1.76	.65	.20	1.77	.26
Hook & line	.10	1.82	.14	.16	1.91	.60	.09	1.91	.17
Pot	.12	1.73	.16	.13	.86	.19	.12	1.17	.16
Trawl	.37	1.80	.42	.93	1.93	.98	.66	1.95	.70
2002									
All gear	.14	1.70	.18	.60	1.81	.74	.23	1.76	.29
Hook & line	.10	1.89	.14	.19	1.96	.61	.10	1.96	.17
Pot	.15	.38	.16	.19	.62	.23	.15	.52	.16
Trawl	.40	-	.46	1.07	-	1.11	.76	-	.79

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
1998								
All gear	6.41	6.41	-	8.64	8.64	-	8.64	8.64
Hook & line	4.46	4.46	-	4.51	4.51	-	4.51	4.51
Trawl	7.12	7.12	-	9.95	9.95	-	9.95	9.95
1999								
All gear	5.53	5.53	-	10.09	10.00	-	10.09	10.00
Hook & line	4.69	4.69	-	4.70	4.70	-	4.70	4.70
Trawl	6.36	6.36	-	13.23	13.00	-	13.23	13.00
2000								
All gear	6.57	6.57	4.66	10.72	10.33	4.66	10.72	10.33
Hook & line	4.82	4.82	-	5.09	5.09	-	5.09	5.09
Trawl	8.09	8.09	4.66	14.87	13.80	4.66	14.87	13.80
2001								
All gear	7.54	7.54	4.29	13.02	12.18	4.29	13.02	12.18
Hook & line	4.97	4.97	-	4.66	4.66	-	4.66	4.66
Trawl	8.45	8.45	4.29	16.57	14.95	4.29	16.57	14.95
2002								
All gear	6.96	6.96	4.22	12.76	11.91	4.22	12.76	11.91
Hook & line	4.28	4.28	-	4.25	4.25	-	4.25	4.25
Trawl	9.03	9.03	4.22	17.02	15.19	4.22	17.02	15.19

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 cost 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[52]

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 reduce the likelihood of lawsuits, inter-agency administrative actions,

[52]The following non-adverse impacts are introduced to provide a full summary of the impacts on small regulated entities. There is no implication that they do, or do not, offset the adverse impacts.

etc., that may disrupt fishery management actions (e.g., openings, annual spec. setting), this would also be a benefit to small entities.

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, 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 estimated impact on directly regulated small entities.

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, potentially higher average revenues for small entities.	This alternative fails to achieve the objectives of the proposed action, i.e., does not provide prior opportunity for public review and comment on interim specifications and does not provide meaningful opportunity to comment on the proposed specifications to the Secretary of Commerce. Not better for directly regulated small entities compared to Alt. 5
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 could reduce small entity revenues; it is not clear if there would be a disproportionate impact on small entities.	The management of fisheries on projected harvest amounts may lead to potential reduction in harvest and impact on fishing revenues. These potential adverse effects outweigh the enhanced rulemaking process in the alternative. Not better for directly regulated small entities compared to Alt. 5
Alt 3	Opt. 1	Use status quo time line. Eliminate interim specs. Issue proposed and final specs. Begin fishing year in July. Sablefish 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.	Not better for directly regulated small entities compared to Alt. 5. Potential reduction in harvest revenue outweighs the enhanced rulemaking process. Administrative process to convert to a different fishing year may be burdensome to small entities.
	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 could reduce small entity revenues, but it is not clear if there would be a disproportionate impact on small entities.	The management of fisheries on projected harvest amounts may lead to potential reduction in harvest and impact on fishing revenues. These potential adverse effects outweigh the enhanced rulemaking process in the alternative. Not better for directly regulated small entities compared to Alt. 5
Alt 5 (Preferred)		Set specifications for up to 24 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.	Preferred Alternative
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 up to 24 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 up to 24 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 may be affected by the change in fishing year.	Income impacts could affect CDQ groups and communities.	No impacts

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10.0 LITERATURE CITED

Alaska Department of Community and Economic Development, 2001. Western Alaska Community Development Quota Handbook, May 5, 2001, P. O. Box 110809, Juneau, AK 99811

Alaska Department of Fish and Game. 2001. Commercial catch data through December 26, 2000. Division of Commercial Fisheries. 1255 W. 8th Street, Juneau, AK 99801

Frulla, D. E. 2002. Letter from Brand & Frulla 923 15th Street, NW Washington, D.C. 20005 to David Benton of NPFMC regarding the draft environmental assessment/regulatory impact review (EA/RIR) for amending the annual Gulf of Alaska/Bering Sea Aleutian Islands harvest specification process. September 25, 2002. National Marine Fisheries Service, P. O. Box 15700, Seattle, WA 98115-0070.

Frulla, D. E. 2003. Letter from Brand & Frulla 923 15th Street, NW Washington, D.C. 20005 to Lisa Lindeman, NOAA General Counsel regarding MCA's proposed alternatives for the Gulf of Alaska/Bering Sea Aleutian Islands harvest specification process in light of the Ninth Circuit's opinion in *Natural Resources Defense Council v. Evans*. February 24, 2003. National Marine Fisheries Service, P. O. Box 15700, Seattle, WA 98115-0070.

Hiatt, T. 2001. 1999 Weight and Value data. National Marine Fisheries Service, P. O. Box 15700, Seattle, WA 98115-0070.

Ianelli, J. N., T. Buckley, T. Honkalehto, G. Walters, and N. Williamson. 2001. Eastern Bering Sea Walleye Pollock Stock Assessment. November 16, 2001. Alaska Fisheries Science Center. National Marine Fisheries Service, P. O. Box 15700, Seattle, WA 98115-0070.

Kurland, J. 2002. Memorandum from Jon Kurland, Assistant Regional Administrator, Habitat Conservation Division to Sue Salveson, Assistant Regional Administrator, Sustainable Fisheries Division, regarding Essential Fish Habitat (EFH) Consultation on the Environmental Assessment for the Total Allowable Catch Specifications for the Year 2003 Alaska Groundfish Fisheries. December 3, 2002. National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

Leaman, B. M., G. H. Williams, and H. L. Gilroy. 2003. "Progress report on the examination of alternate approaches to halibut management." Int. Pac. Halibut Comm. Report of Assessment and Research Activities, 2002: pp. 55-62.

Lincoln, J. M. and Conway, G. A. 1999. "Preventing commercial fishing deaths in Alaska." Occup. Environ. Med. 56, pp. 691-695.

National Marine Fisheries Service (NMFS) 2004. Environmental Assessment for the Annual Harvest Specifications for the Year 2004 Alaska Groundfish Fisheries. January 2004. DOC, NOAA, National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS. 2003a. Environmental Assessment for the Total Allowable Catch Specifications for the Year 2003 Alaska Groundfish Fisheries. January 2003. DOC, NOAA, National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS. 2003b. Revised Draft Programmatic Supplemental Environmental Impact Statement For Alaska Groundfish Fisheries Implemented Under the Authority of The Fishery Management Plans for the Groundfish Fishery of the Gulf of Alaska and the Groundfish of the Bering Sea and Aleutian Islands Area. September 2003. National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS. 2002. Final Environmental Impact Statement for American Fisheries Act Amendments 61/61/13/8. February 2002. National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS. 2001. Steller sea lion protection measures supplemental environmental impact statement. November 2001. DOC, NOAA National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS 2000. ESA Section 7 Consultation Biological Opinion and Incidental Take Statement. Activities Considered: Authorization of Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish and Authorization of the Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska. November 30, 2000. NMFS Alaska Region, P. O. Box 21668, Juneau, Alaska 99802. Also available at http://www.nmfs.noaa.gov/steller/fmp_sec07-NOV30_2000_FINAL.pdf.

NMFS. 1999. Endangered Species act Section 7 Consultation - Biological Opinion for Take of Listed Salmon in Groundfish fisheries Conducted under the BSAI and GOA FMPs. December 22, 1999. Available from National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS 1998a. Final Supplemental Environmental Impact Statement: Groundfish Total Allowable Catch Specifications and Prohibited Species Catch Limits 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. December 1998. National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802. 692 pp + Appendices and Comments.

NMFS 1998b. Environmental Assessment and Regulatory Impact Review for Amendment 36 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands area and Amendment 39 to the Fishery Management Plan for Groundfish of the Gulf of Alaska to Create and Manage a Forage Fish Species Category. January 1998. National Marine Fisheries Service, Alaska Region, P.O. Box 21668, Juneau, AK 99802.

North Pacific Fishery Management Council (NPFMC). 1999a. Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish (updated). June 1999. NPFMC, 605 W. 4th St., Suite 406, Anchorage, AK 99501, 410 pp.

NPFMC. 1999b. Fishery Management Plan for the Gulf of Alaska Groundfish (updated). July 1999. NPFMC, 605 W. 4th St., Suite 406, Anchorage, AK 99501, 325 pp.

NPFMC. 1979. "Fishery Management Plan for the Groundfish Fishery in the Bering Sea/Aleutian Islands Area." In National Marine Fisheries Service, Alaska Region, P. O. Box 21668, Juneau, AK 99802.

NPFMC. 1978. "Fishery Management Plan and Environmental Impact Statement for the Gulf of Alaska Groundfish During 1978." In National Marine Fisheries Service, Alaska Region, P. O. Box 21668, Juneau, AK 99802.

Payne, P. Michael. 2003. Memorandum from Michael Payne to Sue Salveson regarding consultation for listed species under the ESA for the implementation of the revision to the harvest specifications process for the groundfish fisheries of the BSAI and GOA. October 16, 2003. NMFS Protected Resources Division, P. O. Box 21109, Juneau, AK 99802.

Payne, P. Michael. 2002. Memorandum from Michael Payne to Sue Salveson regarding consultation for listed species under the ESA for the implementation of the annual harvest specifications for the 2003 groundfish fisheries of the BSAI and GOA. November 29, 2002. NMFS Protected Resources Division, P. O. Box 21109, Juneau, AK 99802.

Pollard, Jonathan. 2003a. Memorandum from Jonathan Pollard to David Benton regarding summary of rulemaking requirements applicable to the development and implementation of Alaska groundfish fishery specifications. March 21, 2003. NMFS Office of General Counsel, P. O. Box 21109, Juneau, AK 99802.

Pollard, Jonathan. 2003b. Memorandum from Jonathan Pollard to David Benton regarding review of Marine Conservation Alliance's options for revisions to the Alaska groundfish annual fishery specifications procedure. March 28, 2003. NMFS Office of General Counsel, P. O. Box 21109, Juneau, AK 99802.

Salveson, S. 2003. Memorandum from Sue Salveson to Michael Payne regarding consultation for listed species under the ESA for Amendment 48/48 to the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and for the Groundfish of the Gulf of Alaska, harvest specifications process revision. July 7, 2003. NMFS Sustainable Fisheries Division, P. O. Box 21109, Juneau, AK 99802.

Salveson, S. 2002. Memorandum from Sue Salveson to Michael Payne regarding consultation for listed species under the ESA for the implementation of the annual harvest specifications for the 2003 groundfish fisheries of the BSAI and GOA. November 29, 2002. NMFS Sustainable Fisheries Division, P. O. Box 21109, Juneau, AK 99802.

United States Fish and Wildlife Service (USFWS). 2003a. Biological Opinion on the Effects of the Total Allowable Catch (TAC)-Setting Process for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) Groundfish Fisheries to the Endangered Short-tailed Albatross (*Phoebastria albatrus*) and Threatened Steller's Eider (*Polysticta stelleri*). Issued September 2003. U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, Alaska 99503-6199.

USFWS. 2003b. Programmatic Biological Opinion on the Effects of the Fishery Management Plans (FMPs) for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) Groundfish Fisheries on the Endangered Short-tailed Albatross (*Phoebastria albatrus*) and Threatened Steller's Eider (*Polysticta stelleri*). Issued September 2003. U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, Alaska 99503-6199.

USFWS. 1999. Endangered Species Act Formal Section 7 Consultation for 1999-2000 Hook-and-Line Groundfish Fisheries of the Gulf of Alaska and Bering Sea and Aleutian Islands Area (Short-tailed Albatross.) Issued March 19, 1999. U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, Alaska 99503-6199. 36pp + Tables and Figures.

Appendix A

Draft Amendment Language for the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish, Implementing Alternative 5 and Options B and C

* * * * * means the text that either precedes or follows the revision remains unchanged.

The title is revised 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 acceptable 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 3.2, in the secondary objectives list, the first sentence of item 5 is revised as follows:

Management measures should contain a margin of safety in recommending acceptable biological catches when the quality of information concerning the resource and ecosystem is questionable.

3. In Section 3.3, Delete the number "1." for the first definition. Delete definitions 2. and 3.

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 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, 1954-2003.

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex/b	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
1995	1,264,578	228,496	929	1,210	629	124,746	5,855

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex/b	Other Rock Fish	Yellow Fin Sole	Greenland Turbot
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	1,132,736	151,372	742	704	239	84,057	5,888
2001	1,387,452	142,452	863	1,148	296	63,563	4,252
2002	1,481,815	166,552	1,143	858	401	74,956	3,150
2003/d	1,340,801	159,420	896	1,313	324	74,408	2,467

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/c	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/c	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	12,836	27,693	28,949	264	1,761	23,148	1,694,678
2002	10,821	30,229	40,700	572	1,334	26,639	1,839,169
2003/d	11,911	26,231	34,382	5,286	1,198	23,957	1,682,593

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/ Does not include CDQ harvest, except in ICA
pollock and squid.

Note: Numbers don't include fish taken for research.

Table 4.1.b. Groundfish and squid catches in the Aleutian Islands region, 1962-2003.

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	

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex / b	Other Rock Fish	Greenland Turbot	Yellow Fin Sole
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	1,244	39,684	1,048	14,893	601	1,086	13
2001	824	34,207	1,074	15,588	610	1,060	15
2002	1,177	30,801	1,118	14,996	551	485	29
2003/c	1,653	32,158	1,009	17,573	401	960	0

Table 4.1.b. Continued.

Year	Rock Sole	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

Year	Sole	Rock	Other Flat Fish	Arrow Tooth Flounder	Atka Mackerel	Squid	Other Species	Total (All Species)
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		97	1,220	61,296	5	4,029	120,551
2002	1,165		150	1,032	44,722	10	1,980	98,215
2003/c	961		76	911	48,918	36	1,344	106,000

a/ Arrowtooth flounder included in Greenland turbot catch statistics.
b/ Includes POP shortraker, rougheye, northern and sharpchin rockfish.
c/ Does not include CDQ except for ICA pollock and squid.
Note: Numbers do not 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 nation's 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 million 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 IFQ 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.

Akutan

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 and pollock. The CDQ communities will receive 20 percent of the fixed gear sablefish TACs for the eastern Bering Sea and the Aleutian Islands areas and 10 percent of the eastern Bering Sea pollock allocation. 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 other 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.

<u>Other Alaska Groundfish Fishing Communities</u>

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. 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; and 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 was 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. In the new section 5.11, references to sections 8.1 and 8.9.1 are changes to 5.1 and 5.4.1, respectively.

14. Section 8.17 is renumbered 5.12.

Renumber Section 9 to Section 6

Renumber Section 10 to Section 7

The new Section 7 is revised 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 entirely by U. S.-flagged vessels since 1991 and processed entirely by U. S. processors. 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 as follows:

In consultation with the Council, the Secretary will establish harvest specifications, including 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 published in the Federal Register. Harvest specifications may be effective for up to two fishing years.

b. In the second paragraph, the reference "13.2B.2 on page 14-1" is revised to "8.2.B.2".

c. Revise the third paragraph as follows:

As soon as practicable after its October meeting, the Council will recommend proposed harvest specifications to the Secretary. The Council's recommendation will include proposed ABC and TAC amounts for each target species and the "other species" category, PSC limits, apportionments, TAC reserves, the basis for each proposed harvest specification, and a descriptions of developing information that may be relevant to the final harvest specifications. As soon as practicable after the October meeting and after considering the Council's recommended proposed harvest specifications, the Secretary will publish in the Federal Register a notice of proposed harvest specifications and make available for public review and comment all information regarding the basis for the harvest specifications. The notice of proposed harvest specifications will identify whether and how harvest specifications are likely to be affected by developing information unavailable at the time the notice is published. The prior public review and comment period on the notice of proposed harvest specifications will be a minimum of 15 days.

d. The last paragraph is revised and a paragraph is added as follows:

At its December meeting, the Council will review the final SAFE reports, recommendations from the Groundfish Plan Team, SSC, AP, and comments received. The Council will make final harvest specifications recommendations to the Secretary. As soon as practicable thereafter and after considering the Council's recommendation, the Secretary will publish final harvest specifications for the groundfish fishery. New final harvest specifications will supercede current harvest specifications on the effective date of the new harvest specifications. However, if the Secretary determines that the notice of final specifications would not be "a logical outgrowth" of the notice of proposed harvest specifications (i.e., the notice of proposed harvest specifications was inadequate to afford the public opportunity to comment meaningfully on the issues involved), the Secretary will either: (1) publish a revised notice of proposed harvest specifications in the Federal Register, solicit public comment thereon, and publish a notice of final harvest specifications, as soon as is practicable; or (2) if "good cause" pursuant to the Administrative Procedure Act exists, waive the requirements for notice and comment and 30-day delayed effectiveness and directly publish a notice of final harvest specifications with a post-effectiveness public comment period of 15 to 30 days.

3. In Section 7.3.1, delete the last sentence.

4. Section 7.3.2 is revised as follows:

7.3.2 Reserves

The groundfish reserves at the beginning of each fishing year shall equal the sum of 15 % of each target species and the "other species" category TACs, except for pollock and the hook-and-line and pot gear allocation of sablefish. When the TACs for the groundfish complex is determined by the Council, 15 % of TACs is set aside as a reserve, except for pollock and hook-and-line and pot gear allocations of sablefish. This reserve is used for: (a) unexpected expansion of the fishery, (b) correction of operational problems in the fishing fleets, promoting full and efficient use of groundfish resources, (c) adjustment of species TACs according to the condition of stocks during the fishing year, and (d) apportionments.

The reserve is not designated by species or species groups and will be apportioned to the fishery during the fishing year by the Regional Administrator in amounts and by species that he/she determines to be appropriate. The apportionment of the reserve to target species or to the "other species" category must be consistent with the most recent assessments of resource conditions unless the Regional Administrator finds that the socioeconomic considerations listed above or specified fishery operational problems dictate otherwise. Except as provided for in the National Standard Guidelines for Fishery Conservation and Management, the Regional Administrator must also find that the apportionment of reserves will not result in overfishing as defined in the guidelines. The Regional Administrator may withhold reserves for conservation reasons.

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 8.

1. The new Section 8.1 is revised as follows:

Four priority objectives dictate the philosophy of management for the groundfish fishery in the region:

(1) Provide for rational and optimal use, in a biological and socioeconomic sense, of the region's fishery resources as a whole;
(2) Minimize the impact of groundfish fisheries on prohibited species and continue the rebuilding of the Pacific halibut resource;
(3) Provide for the opportunity and orderly development of domestic groundfish fisheries, consistent with (1) and (2) above; and
(4) Seek to maintain the productive capacity of the habitat required to support the Bering Sea/Aleutian Islands groundfish fishery.

2. In the new Section 8.2B.,

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 8.4.2.F.

3. In the new Section 8.4.2

a. In paragraph A., the reference to 13.2.B.1 is revised to 8.2.B.1.

b. Paragraph E. is revised as follows:

E. <u>PSC Limits and Time/Area Closures for Groundfish Fisheries</u>

The PSC limits and area closures for groundfish fisheries will be reviewed each year to determine whether changes in prohibited species stock abundance or other factors justify consideration of alternative PSC limits or time/area closures.

4. In the new Section 8.4.2.3,

a. In paragraphs A, the reference to "13.4.2.2" is revised to "8.4.2.2".

b. Paragraphs B (1) through B(6) are revised as follows:

B. * * *

(1) <u>Prior to the October Council Meeting</u>. The Plan Team will provide the Council 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.

(2) <u>October Council Meeting</u>. During its development of recommendations for proposed groundfish harvest levels under Section 7.3, the Council will also review the need to control the bycatch of prohibited species and will recommend appropriate apportionments of PSC limits to fishery categories as bycatch allowances. Fishery

bycatch allowances are intended to optimize total groundfish harvest under established PSC limits, taking into consideration the anticipated amounts of incidental catch of prohibited species in each fishery category. The Council may recommend exempting specified nontrawl fishery categories from the non-trawl halibut bycatch mortality limit restrictions, after considering the same factors (1) through (8) set forth under Section 8.4.2.2, Part D. The Council will also review the need for seasonal apportionments of fishery bycatch allowances. The Council will consider the best available information when recommending fishery apportionments of PSC limits and seasonal allocation of those apportionments. Types of information that the Council will consider relevant to seasonal allocation of fishery bycatch quotas include:

(a) Seasonal distribution of prohibited species;
(b) Seasonal distribution of target groundfish species relative to prohibited species distribution,
(c) Expected prohibited species bycatch needs on a seasonal basis relevant to changes in prohibited species biomass and expected catches of target groundfish species,
(d) Expected bycatch rates on a seasonal basis,
(e) Expected changes in directed groundfish fishing seasons,
(f) Expected start of fishing effort, and
(g) Economic effects of establishing seasonal halibut allocations on segments of the target groundfish industry.

(3) As soon as practicable after the Council's October meeting and after considering the Council's recommendations, the Secretary will publish proposed PSC apportionments in the Federal Register as part of the notice of proposed harvest specifications published under section 7.3. Information on which the recommendations are based also will be published in the Federal Register or otherwise made available. Public comments will be invited by means specified in regulations implementing the FMP.

(4) 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 prohibited species bycatch rates in the target groundfish fisheries and recommendations for halibut PSCs. If the Council requests, the Plan Team also may provide PSC apportionments and allocations among the target fisheries and gear types, and an economic analysis of effects of the apportionments.

(5) December Council Meeting. During its development of recommendations for final groundfish harvest levels, the Council will review public comments, take public testimony, and develop final recommendations 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 will develop final recommendations 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.

(6) As soon as practicable after the Council's December meeting, following the harvest specifications process described in section 7.3, and after considering the Council's recommendations, the Secretary will publish final PSC apportionments in the Federal Register as part of the notice of final harvest specifications published under section 7.3. Information on

which the final recommendations are based will also be published in the Federal Register or otherwise made available.

4. In the new Section 8.4.2.4, the reference "13.4.2.2" is revised to "8.4.2.2".

5. In the new Section 8.4.3.4, the text "DAP or JVP" is deleted.

6. In the new Section 8.4.5,

   a. The text "NOAA Fisheries" in the first and second paragraphs is revised to "NMFS".

   b. Delete the paragraph titled Information on processing expectations.

   c. Paragraph B. is revised as follows:

   B. Processor Reports

   All processors of groundfish shall report information necessary for the management of groundfish fishery resources. The regulation implementing this plan specify the information to be reported and the time schedule for reporting.

   d. Delete paragraph C.

   e. Redesignate paragraph D. to paragraph C.

   f. In the new paragraphs C. 1., C. 2., and C.3., the text "Director" is revised to " Administrator".

7. In the new paragraph 8.4.7.1.1, the reference to 13.4.7.1 is revised to 8.4.7.1.

8. In the new paragraph 8.4.7.1.5(5), the reference 13.4.8.4(1) is revised to 8.4.7.1.4.

9. 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.

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 8.4.7.3.5, 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

12. In the new Section 8.4.8, in paragraphs 1, 3, 7, 8, 10, 12, and 13 the text "Director" is revised to "Administrator".

13. In the new paragraph 8.4.8(B), the reference to 13.4.2 is revised to 8.4.2.

14. In the new paragraph 8.4.9.2.2, the reference 13.4.9.2.1 is revised to 8.4.9.2.1.

15. In the new paragraph 8.4.9.2.3, the reference to 13.4.9.2.1 is revised to 8.4.9.2.1.

16. In the new Section 8.4.9.3

a. the reference to 11.3 in the introductory paragraph is revised to 7.3.

b. In paragraph (a), the reference 13.4.2 is revised to 8.4.2.

17. In the new Section 8.4.10, in the first paragraph, the text "Director" is revised to " Administrator"
.

18. Delete Section 13.5 (Management Measures–Foreign Fisheries)

19. Delete Section 13.6.

20. Renumber Section 13.7 to 8.5.

21. Renumber Section 13.8 to 8.6.

22. Renumber Section 13.9 to 8.7.

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 5 and Options B and C

* * * * * means the text that either precedes or follows the revision remains unchanged.

Section 1, first paragraph is revised 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. Revise the first paragraph of section 2.1 as follows:

The North Pacific Fishery Management Council (NPFMC or the Council) is committed to develop long-range plans for managing the Gulf of Alaska groundfish fisheries that will promote a stable planning environment for the seafood industry and will maintain the health of the resource and environment. In developing allocations and harvesting systems, the Council will give overriding considerations to maximizing economic benefits to the United States. Such management will:

* * * * *

2. In section 2.2,

a) 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>.

b) 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.

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 3.0 titled Areas and Stocks Involved,

a) (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.

b) The fourth paragraph is revised 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:

* * * * *

2. In section 3.1,

a) Revise the first sentence of the introductory paragraph as follows:

Five categories of species or species groups are likely to be taken by the groundfish fishery (target species, other species, forage fish, prohibited species, and non-specified species).

* * * * *

b) Remove the reference to foreign fishing under the prohibited species category so that the Prohibited Species category is revised as follows:

> Prohibited Species
> -Pacific halibut
> -Pacific herring
> -Pacific salmon
> -Steelhead

-King crab
-Tanner crab

Section 4 is revised as follows:

1. Add the following paragraph to the end of section 4.1.

* * * * *

The groundfish resources off Alaska have been harvested entirely by U. S.-flagged vessels since 1991 and processed entirely by U. S. processors. 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 as follows:

Groundfish fishery specifications (including total allowable catch (TAC) amounts for each groundfish fishery) are established each year pursuant to this FMP and its implementing regulations. Fishery specifications may be effective for up to two fishing years. The procedure consists of the following 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:

In consultation with the Council, the Secretary will establish harvest specifications, including 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 published in the Federal Register. Harvest specifications may be effective for up to two fishing years. 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.

As soon as practicable after its October meeting, the Council will recommend proposed harvest specifications to the Secretary. The Council's recommendations will include proposed ABC and TAC amounts for each target species and the "other species" category, PSC limits, apportionments, TAC reserves, the basis for each proposed harvest specification, and a description of developing information that may be relevant to the final harvest specifications. As soon as practicable after the October meeting and after considering the Council's recommended proposed harvest specifications, the Secretary will publish in the Federal Register a notice of proposed harvest specifications and make available for public review and comment all information regarding the basis for the harvest specifications. The notice of proposed harvest specifications will identify whether and how harvest specifications may be affected by developing information unavailable at the time the notice is published. The prior public review and comment period on the notice of proposed harvest specifications will be a minimum of 15 days.

At its December meeting, the Council will review the final SAFE reports, recommendations from the Groundfish Plan Team, SSC, AP, and comments received. The Council will recommend final harvest specifications to the Secretary. As soon as practicable thereafter and after considering the Council's recommendations, the Secretary will publish final harvest specifications for the groundfish fishery. New final harvest specifications will supercede current harvest specifications on the effective date of the new harvest specifications.

However, if the Secretary determines that the notice of final harvest specifications would not be "a logical outgrowth" of the notice of proposed harvest specifications (i.e., the notice of proposed harvest specifications was inadequate to afford the public opportunity to comment meaningfully on the issues involved), the Secretary will either: (1) publish a revised notice of proposed harvest specifications in the Federal Register, solicit public comment thereon, and publish a notice of final harvest specifications, as soon as is practicable; or (2) if "good cause" pursuant to the Administrative Procedure Act exists, waive the requirements for notice and comment and 30-day delayed effectiveness, and directly publish a notice of final harvest specifications with a post-effectiveness public comment period of 15 to 30 days.

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) as follows:

(7) Information to be used by the Council in establishing prohibited species catch limits (PSCs) for Pacific halibut and fully utilized species with supporting justification and rationale.

i. Renumber section 4.2.1.5 to 4.2.1.4.

j. Revise the new section 4.2.1.4 as follows:

Reserves are set at 20% of the TAC of pollock, Pacific cod, flatfish, and other species. At any time, the Regional Administrator may assess these fisheries and apportion to them any amounts from the reserves that is determined will be harvested.

Any additional in-season allocation from reserves may carry with it an additional PSC limit amount proportional to that reserve release and the respective bycatch rates in the affected fisheries.

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 the first word of paragraph 4 from "of" to "if".

c) 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.

d) Revise paragraph 6 as follows:

However, when the fishery to which a PSC limit applies has caught an amount of prohibited species equal to that PSC limit, the Secretary may, by notice, permit some or all of those vessel in the fishery to continue to engage in fishing for groundfish in the applicable regulatory area, under specified conditions. These conditions may include the avoidance of certain areas of prohibited species concentrations and will be determined on a case-by-case basis.

e) Delete the first sentence of paragraph 7.

f) Renumber paragraph 4.2.3.1 to 4.2.2.1.

g) Revise the section reference in the introductory paragraph of the new 4.2.2.1 from 4.2.3 to 4.2.2.

h) In the new Section 4.2.2.1, revise (1) - (6) as follows:

(1) Prior to the October Council Meeting. The Plan Team will provide to the Council the best available information on estimated halibut bycatch and mortality rates in the target groundfish fisheries.

(2) October Council Meeting. While developing proposed 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 proposed halibut PSC mortality limits and apportionments thereof among the target fisheries. The Council will also review the need for seasonal allocations of the halibut PSCs.

The Council will make proposed recommendations to the Secretary about some or all of the following:

(1) The regulatory areas and districts for which PSCs might be established;
(2) PSCs for particular target fisheries and gear types;
(3) Seasonal allocations by target fisheries, gear types and/or regulatory areas and district;
(4) PSC allocations to individual operations; and
(5) Types of gear or modes of fishing operations that might be prohibited once a PSC is reached.

The Council will consider the best available information in doing so. Types of information that the Council will consider relevant to recommending proposed PSCs include:

(1) Estimated change in biomass and stock condition of halibut;
(2) Potential impact on halibut stocks;
(3) Potential impacts on the halibut fishery;
(4) Estimated bycatch in years prior to that for which the halibut PSC is being established;
(5) Expected change in target groundfish catch;
(6) Estimated change in target groundfish biomass;
(7) Methods available to reduce halibut bycatch;
(8) The cost of reducing halibut bycatch; and
(9) Other biological and socioeconomic factors that affect the appropriateness of specific bycatch measures in term of objectives.

Types of information that the Council will consider in recommending seasonal allocations of halibut include:

(1) Seasonal distribution of halibut;
(2) Seasonal distribution of target groundfish species relative to halibut distribution;
(3) Expected halibut bycatch needs on a seasonal basis relevant to changes in halibut biomass and expected catches of target groundfish species;
(4) Expected bycatch rates on a seasonal basis;

(5) Expected changes in directed groundfish fishing seasons;
(6) Expected actual start of fishing effort; and
(7) Economic effects of establishing seasonal halibut allocations on segments of the target groundfish industry.

(3) As soon as practicable after the Council's October meeting, the Secretary will publish the Council's recommendations as a notice in the Federal Register. Information on which the recommendations are based will also be published in the Federal Register or otherwise made available by the Council. Public comments will be invited by means specified in regulations implementing the FMP for a minimum of 15 days.

(4) Prior to the December Council Meeting. The Plan Team will prepare for the Council a final Stock Assessment and Fishery Evaluation (SAFE) report under Section 4.2.1 which provides the best available information on estimated halibut bycatch rates in the target groundfish fisheries, recommendations for halibut PSCs. If the Council requests, the Plan Team also may provide PSC apportionments and allocations among the target fisheries and gear types and an economic analysis of effects of the apportionments.

(5) 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 above relevant to recommending proposed PSC limits, and the same factors above relevant to recommending seasonal allocations of the PSC limits. The Council will provide recommendations, including no change for the new fishing year, to the Secretary of Commerce for review and implementation.

(6) As soon as practicable after the Council's December meeting and following the specifications process described in section 4.2.1.1, the Secretary will publish the Council's final recommendations as a notice of final harvest specifications in the Federal Register. Information on which the final harvest specifications 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.

Section 5 is revised as follows:

In Section 5.1.1.20 the table is unchanged but the text is revised as follows:

5.1.1.20 Skates

Management Plan and Area(s): BSAI and GOA groundfish

Species Representatives:

The following skate species were identified during the 1999 Alaska Fisheries Science Center GOA bottom trawl survey:

Alaska skate (*Bathyraja parmifera)*
Aleutian skate (*Bathyraja aleutica)*
Bering skate or sandpaper skate (*Bathyraja interrupta)*
Mud skate (*Bathyraja tanaretzi)*
Black or roughtail skate (*Bathyraja trachura)*
Commander skate (*Bathyraja lindberghi)*
Whiteblotched skate (*Bathyraja maculata)*
Big skate (*Raja binoculata*)
Longnose skate (*Raja rhina*)

Based on the GOA 1999 survey results, the majority of the skate biomass is big skate (50%) and longnose skate (33%).

Life History and General Distribution:

Skates (Rajidae) that occur in the BSAI and GOA are grouped into two genera: *Bathyraja sp.*, or soft-nosed species (rostral cartilage slender and snout soft and flexible), and *Raja* sp., or hard-nosed species (rostral cartilage is thick making the snout rigid). They are dorso-ventrally compressed (flat) animals with large pectoral wings attached to the sides of the head, and long, narrow whiplike tails. Skates are long-lived and have low fecundity. Reproduction is oviparous; fertilization is internal and eggs (usually one in each case, except for 1-7 in big skate egg cases) are deposited in horny cases for incubation.

Skates, as a group, represent the highest proportion of estimated non-target species catch weight (28 percent) during 1997 to 1999) in both the BSAI and GOA combined. The biomass of all skate species combined as estimated by the Alaska Fisheries Science Center (AFSC) bottom trawl surveys has generally increased in both areas over the past 15 to 20 years, although it has declined somewhat from the 1990 peak in the eastern Bering Sea (NMFS 1999). Little is known of their habitat requirements for growth or reproduction, nor of any seasonal movements.

Skate species distributions from Meckelenburg, Mecklenburg, and Thorsteinson 2002:

Alaska skate: mostly 90-250 m on shelf in eastern Bering Sea (EBS) and Aleutian Islands (AI) and western Gulf of Alaska (GOA);
Aleutian skate: throughout EBS, AI, and GOA, 100-1400 m;
Bering skate: throughout EBS, AI, and GOA, 90-460 m;

Mud skate: Not confirmed to occur in the GOA;
Black skate: In AI, EBS and GOA, 400-1500 m;
Commander skate: EBS, AI and not confirmed in the GOA, 120-2000 m;
Whiteblotched skate: EBS and AI, not confirmed in the GOA, 100-1100 m;
Big skate: EBS, AI, and GOA, 22-190 m; and
Longnose skate: EBS, AI and GOA 20-650 m.

Fishery:

Skates are caught as bycatch in both longline and trawl fisheries, primarily in the Pacific cod, rex sole and sablefish fisheries. They generally are discarded (and may survive depending on catch handling practices), although skates caught incidentally are sometimes retained and processed. Markets for skate products are currently limited in the North Pacific, but skates are subject to directed fisheries in other areas (e.g., Martin and Zorzi 1993, Agnew et al. 1998).

In 2003, a directed fishery for skates developed in the GOA. Skates were removed from the "other species" list in the FMP in 2004 under Amendment 63 to allow for separate management for the directed fishery. Skates are primarily directly fished during the closure of the longline or trawl Pacific cod directed fisheries.

Relevant Trophic Information: feed on bottom invertebrates (crustaceans, molluscs, and polychaetes) and
fish.

What is the approximate upper size limit of juvenile fish (in cm): Unknown for most species. For big skates, age and length at maturity are 8-12 years and 109-130 cm. For longnose skates, age and length at maturity are 7-10 years and 74-100 cm. (Zeiner and Wolf 1993).

Source of Additional Data:
William Raschi, Bucknell University

Habitat and Biological Associations (if known) Narrative:
Egg/Spawning: Deposit eggs in horny cases on shelf and slope.
Juveniles and Adults: After hatching, juveniles probably remain in shelf and slope waters, but distribution is unknown. Adults found across wide areas of shelf and slope; surveys found most skates at depths <500 m in the GOA and EBS, but >500 m in the AI. In the GOA, most skates found between 4-7°C, but data are limited.

Literature:

Allen, M. J., and G.B. Smith. 1988. Atlas and zoogeography of common fishes in the Bering Sea and Northeastern Pacific. U.S. Dep. Commerc., NOAA Tech. Rept. NMFS 66, 151 p.

Agnew, D.J., C.P. Nolan, J. R. Beddington, and R. Baranowski, 2000. Approaches to the assessment and management of multispecies skate and ray fisheries using the Falkland Islands fishery as an example. Can. J. Fish. Aquat. Sci. 57: 429-440.

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Hart, J. L. 1973. Pacific fishes of Canada. Fisheries Res. Bd. Canada Bull. 180. Ottawa. 740 p.

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Mecklenburg, C. W., T. A. Mecklenburg, and L. K. Thorsteinson. 2002. Fishes of Alaska. American Fisheries Society. Bethesda, Maryland.

NMFS. (1999). Environmental Assessment for the Total Allowable Catch Specifications for the Year 2000 Alaska Groundfish Fisheries. Appendix C, NMFS P.O. Box 21668, Juneau, AK 99801.

Teshima, K., and T. K. Wilderbuer. 1990. Distribution and abundance of skates in the eastern Bering Sea, Aleutian Islands region, and the Gulf of Alaska. Pp. 257-267 *in* H.L. Pratt, Jr., S.H.

Zeiner, S. J. and P. Wolf. 1993. Growth characteristics and estimates of age at maturity of two species of skates (*Raja binoculata* and *Raja rhina*) from Monterey Bay, California. In Conservation Biology of elasmbranchs (S. Branstetter. ed.), p. 39-52. NOAA Technical Report NMFS 115.

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mnbrown 4/30/01, 4/26/02, 8/23/02, 4/24/03, 8/11/03, 11/4/03, 3/8/04, 3/15/04 added skates to option C
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
nmollett: 12/03
lqueirolo: 3/3/04, 3/8/04, 3/15/04
jpollard: 6/23/04

Amendment 48 for the Fishery Management Plan for Groundfish of the Gulf of Alaska

* * * * * means the text that either precedes or follows the revision remains unchanged.

Section 1, first paragraph is revised 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. Revise the first paragraph of section 2.1 as follows:

The North Pacific Fishery Management Council (NPFMC or the Council) is committed to develop long-range plans for managing the Gulf of Alaska groundfish fisheries that will promote a stable planning environment for the seafood industry and will maintain the health of the resource and environment. In developing allocations and harvesting systems, the Council will give overriding considerations to maximizing economic benefits to the United States. Such management will:

* * * * *

2. In section 2.2,

a) 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).

b) 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 3.0 titled Areas and Stocks Involved,

a) (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.

b) The fourth paragraph is revised 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:

* * * * *

2. In section 3.1,

a) Revise the first sentence of the introductory paragraph as follows:

> Five categories of species or species groups are likely to be taken by the groundfish fishery (target species, other species, forage fish, prohibited species, and non-specified species).

* * * * *

b) Remove the reference to foreign fishing under the prohibited species category so that the Prohibited Species category is revised as follows:

> Prohibited Species
> -Pacific halibut
> -Pacific herring
> -Pacific salmon
> -Steelhead

-King crab
-Tanner crab

Section 4 is revised as follows:

1. Add the following paragraph to the end of section 4.1.

* * * * *

The groundfish resources off Alaska have been harvested entirely by U. S.-flagged vessels since 1991 and processed entirely by U. S. processors. 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 as follows:

Groundfish fishery specifications (including total allowable catch (TAC) amounts for each groundfish fishery) are established each year pursuant to this FMP and its implementing regulations. Fishery specifications may be effective for up to two fishing years. The procedure consists of the following 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:

In consultation with the Council, the Secretary will establish harvest specifications, including 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 published in the Federal Register. Harvest specifications may be effective for up to two fishing years. 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.

As soon as practicable after its October meeting, the Council will recommend proposed harvest specifications to the Secretary. The Council's recommendations will include proposed ABC and TAC amounts for each target species and the "other species" category, PSC limits, apportionments, TAC reserves, the basis for each proposed harvest specification, and a description of developing information that may be relevant to the final harvest specifications. As soon as practicable after the October meeting and after considering the Council's recommended proposed harvest specifications, the Secretary will publish in the Federal Register a notice of proposed harvest specifications and make available for public review and comment all information regarding the basis for the harvest specifications. The notice of proposed harvest specifications will identify whether and how harvest specifications may be affected by developing information unavailable at the time the notice is published. The prior public review and comment period on the notice of proposed harvest specifications will be a minimum of 15 days.

At its December meeting, the Council will review the final SAFE reports, recommendations from the Groundfish Plan Team, SSC, AP, and comments received. The Council will recommend final harvest specifications to the Secretary. As soon as practicable thereafter and after considering the Council's recommendations, the Secretary will publish final harvest specifications for the groundfish fishery. New final harvest specifications will supercede current harvest specifications on the effective date of the new harvest specifications.

However, if the Secretary determines that the notice of final harvest specifications would not be "a logical outgrowth" of the notice of proposed harvest specifications (i.e., the notice of proposed harvest specifications was inadequate to afford the public opportunity to comment meaningfully on the issues involved), the Secretary will either: (1) publish a revised notice of proposed harvest specifications in the Federal Register, solicit public comment thereon, and publish a notice of final harvest specifications, as soon as is practicable; or (2) if "good cause" pursuant to the Administrative Procedure Act exists, waive the requirements for notice and comment and 30-day delayed effectiveness, and directly publish a notice of final harvest specifications with a post-effectiveness public comment period of 15 to 30 days.

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) as follows:

(7) Information to be used by the Council in establishing prohibited species catch limits (PSCs) for Pacific halibut and fully utilized species with supporting justification and rationale.

i. Renumber section 4.2.1.5 to 4.2.1.4.

j. Revise the new section 4.2.1.4 as follows:

Reserves are set at 20% of the TAC of pollock, Pacific cod, flatfish, and other species. At any time, the Regional Administrator may assess these fisheries and apportion to them any amounts from the reserves that is determined will be harvested.

Any additional in-season allocation from reserves may carry with it an additional PSC limit amount proportional to that reserve release and the respective bycatch rates in the affected fisheries.

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 the first word of paragraph 4 from "of" to "if".

c) 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.

d) Revise paragraph 6 as follows:

However, when the fishery to which a PSC limit applies has caught an amount of prohibited species equal to that PSC limit, the Secretary may, by notice, permit some or all of those vessel in the fishery to continue to engage in fishing for groundfish in the applicable regulatory area, under specified conditions. These conditions may include the avoidance of certain areas of prohibited species concentrations and will be determined on a case-by-case basis.

e) Delete the first sentence of paragraph 7.

f) Renumber paragraph 4.2.3.1 to 4.2.2.1.

g) Revise the section reference in the introductory paragraph of the new 4.2.2.1 from 4.2.3 to 4.2.2.

h) In the new Section 4.2.2.1, revise (1) - (6) as follows:

(1) Prior to the October Council Meeting. The Plan Team will provide to the Council the best available information on estimated halibut bycatch and mortality rates in the target groundfish fisheries.

(2) October Council Meeting. While developing proposed 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 proposed halibut PSC mortality limits and apportionments thereof among the target fisheries. The Council will also review the need for seasonal allocations of the halibut PSCs.

The Council will make proposed recommendations to the Secretary about some or all of the following:

(1) The regulatory areas and districts for which PSCs might be established;
(2) PSCs for particular target fisheries and gear types;
(3) Seasonal allocations by target fisheries, gear types and/or regulatory areas and district;
(4) PSC allocations to individual operations; and
(5) Types of gear or modes of fishing operations that might be prohibited once a PSC is reached.

The Council will consider the best available information in doing so. Types of information that the Council will consider relevant to recommending proposed PSCs include:

(1) Estimated change in biomass and stock condition of halibut;
(2) Potential impact on halibut stocks;
(3) Potential impacts on the halibut fishery;
(4) Estimated bycatch in years prior to that for which the halibut PSC is being established;
(5) Expected change in target groundfish catch;
(6) Estimated change in target groundfish biomass;
(7) Methods available to reduce halibut bycatch;
(8) The cost of reducing halibut bycatch; and
(9) Other biological and socioeconomic factors that affect the appropriateness of specific bycatch measures in term of objectives.

Types of information that the Council will consider in recommending seasonal

allocations of halibut include:

(1) Seasonal distribution of halibut;
(2) Seasonal distribution of target groundfish species relative to halibut distribution;
(3) Expected halibut bycatch needs on a seasonal basis relevant to changes in halibut biomass and expected catches of target groundfish species;
(4) Expected bycatch rates on a seasonal basis;
(5) Expected changes in directed groundfish fishing seasons;
(6) Expected actual start of fishing effort; and
(7) Economic effects of establishing seasonal halibut allocations on segments of the target groundfish industry.

(3) As soon as practicable after the Council's October meeting, the Secretary will publish the Council's recommendations as a notice in the Federal Register. Information on which the recommendations are based will also be published in the Federal Register or otherwise made available by the Council. Public comments will be invited by means specified in regulations implementing the FMP for a minimum of 15 days.

(4) Prior to the December Council Meeting. The Plan Team will prepare for the Council a final Stock Assessment and Fishery Evaluation (SAFE) report under Section 4.2.1 which provides the best available information on estimated halibut bycatch rates in the target groundfish fisheries, recommendations for halibut PSCs. If the Council requests, the Plan Team also may provide PSC apportionments and allocations among the target fisheries and gear types and an economic analysis of effects of the apportionments.

(5) 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 above relevant to recommending proposed PSC limits, and the same factors above relevant to recommending seasonal allocations of the PSC limits. The Council will provide recommendations, including no change for the new fishing year, to the Secretary of Commerce for review and implementation.

(6) As soon as practicable after the Council's December meeting and following the specifications process described in section 4.2.1.1, the Secretary will publish the Council's final recommendations as a notice of final harvest specifications in the Federal Register. Information on which the final harvest specifications 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.

Section 5 is revised as follows:

In Section 5.1.1.20 the table is unchanged but the text is revised as follows:

5.1.1.20 Skates

Management Plan and Area(s): BSAI and GOA groundfish

Species Representatives:

The following skate species were identified during the 1999 Alaska Fisheries Science Center GOA bottom trawl survey:

Alaska skate (*Bathyraja parmifera)*
Aleutian skate (*Bathyraja aleutica)*
Bering skate or sandpaper skate (*Bathyraja interrupta)*
Mud skate (*Bathyraja tanaretzi)*
Black or roughtail skate (*Bathyraja trachura)*
Commander skate (*Bathyraja lindberghi)*
Whiteblotched skate (*Bathyraja maculata)*
Big skate (*Raja binoculata*)
Longnose skate (*Raja rhina*)

Based on the GOA 1999 survey results, the majority of the skate biomass is big skate (50%) and longnose skate (33%).

Life History and General Distribution:

Skates (Rajidae) that occur in the BSAI and GOA are grouped into two genera: *Bathyraja sp.*, or soft-nosed species (rostral cartilage slender and snout soft and flexible), and *Raja* sp., or hard-nosed species (rostral cartilage is thick making the snout rigid). They are dorso-ventrally compressed (flat) animals with large pectoral wings attached to the sides of the head, and long, narrow whiplike tails. Skates are long-lived and have low fecundity. Reproduction is oviparous; fertilization is internal and eggs (usually one in each case, except for 1-7 in big skate egg cases) are deposited in horny cases for incubation.

Skates, as a group, represent the highest proportion of estimated non-target species catch weight

(28 percent) during 1997 to 1999) in both the BSAI and GOA combined. The biomass of all skate species combined as estimated by the Alaska Fisheries Science Center (AFSC) bottom trawl surveys has generally increased in both areas over the past 15 to 20 years, although it has declined somewhat from the 1990 peak in the eastern Bering Sea (NMFS 1999). Little is known of their habitat requirements for growth or reproduction, nor of any seasonal movements.

Skate species distributions from Meckelenburg, Mecklenburg, and Thorsteinson 2002:

Alaska skate: mostly 90-250 m on shelf in eastern Bering Sea (EBS) and Aleutian Islands (AI) and western Gulf of Alaska (GOA);
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Longnose skate: EBS, AI and GOA 20-650 m.

Fishery:

Skates are caught as bycatch in both longline and trawl fisheries, primarily in the Pacific cod, rex sole and sablefish fisheries. They generally are discarded (and may survive depending on catch handling practices), although skates caught incidentally are sometimes retained and processed. Markets for skate products are currently limited in the North Pacific, but skates are subject to directed fisheries in other areas (e.g., Martin and Zorzi 1993, Agnew et al. 1998).

In 2003, a directed fishery for skates developed in the GOA. Skates were removed from the "other species" list in the FMP in 2004 under Amendment 63 to allow for separate management for the directed fishery. Skates are primarily directly fished during the closure of the longline or trawl Pacific cod directed fisheries.

Relevant Trophic Information: feed on bottom invertebrates (crustaceans, molluscs, and polychaetes) and
fish.

What is the approximate upper size limit of juvenile fish (in cm): Unknown for most species. For big skates, age and length at maturity are 8-12 years and 109-130 cm. For longnose skates, age and length at maturity are 7-10 years and 74-100 cm. (Zeiner and Wolf 1993).

Source of Additional Data:
William Raschi, Bucknell University

Habitat and Biological Associations (if known) Narrative:
Egg/Spawning: Deposit eggs in horny cases on shelf and slope.
Juveniles and Adults: After hatching, juveniles probably remain in shelf and slope waters, but distribution is unknown. Adults found across wide areas of shelf and slope; surveys found most skates at depths <500 m in the GOA and EBS, but >500 m in the AI. In the GOA, most skates found between 4-7°C, but data are limited.

Literature:

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Hart, J. L. 1973. Pacific fishes of Canada. Fisheries Res. Bd. Canada Bull. 180. Ottawa. 740 p.

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Teshima, K., and T. K. Wilderbuer. 1990. Distribution and abundance of skates in the eastern Bering Sea, Aleutian Islands region, and the Gulf of Alaska. Pp. 257-267 *in* H.L. Pratt, Jr., S.H.

Zeiner, S. J. and P. Wolf. 1993. Growth characteristics and estimates of age at maturity of two species of skates (*Raja binoculata* and *Raja rhina*) from Monterey Bay, California. In Conservation Biology of elasmbranchs (S. Branstetter. ed.), p. 39-52. NOAA Technical Report NMFS 115.

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jdicosimo: 10/27/03
dstram: 10/27/03
jpollard: 11/5/03, 6/22/04

Amendment 48 for the Fishery Management Plan for the Groundfish Fishery of the Bering Sea/Aleutian Islands Area

* * * * * means the text that either precedes or follows the revision remains unchanged.

The title is revised 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 acceptable 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 3.2, in the secondary objectives list, the first sentence of item 5 is revised as follows:

Management measures should contain a margin of safety in recommending acceptable biological catches when the quality of information concerning the resource and ecosystem is questionable.

3. In Section 3.3, Delete the number "1." for the first definition. Delete definitions 2. and 3.

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 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, 1954-2003.

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex/b	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/b	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	1,132,736	151,372	742	704	239	84,057	5,888
2001	1,387,452	142,452	863	1,148	296	63,563	4,252
2002	1,481,815	166,552	1,143	858	401	74,956	3,150
2003/d	1,340,801	159,420	896	1,313	324	74,408	2,467

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/c	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

Year	Arrow Tooth Flounder	Other Flat Fish/c	Rock Sole/c	Atka Mackerel	Squid	Other Species	Total (All Species)
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
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	12,836	27,693	28,949	264	1,761	23,148	1,694,678
2002	10,821	30,229	40,700	572	1,334	26,639	1,839,169
2003/d	11,911	26,231	34,382	5,286	1,198	23,957	1,682,593

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/ Does not include CDQ harvest, except in ICA
pollock and squid.

Note: Numbers don't include fish taken for research.

Table 4.1.b. Groundfish and squid catches in the Aleutian Islands region, 1962-2003.

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	

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex / b	Other Rock Fish	Greenland Turbot	Yellow Fin Sole
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	1,244	39,684	1,048	14,893	601	1,086	13
2001	824	34,207	1,074	15,588	610	1,060	15
2002	1,177	30,801	1,118	14,996	551	485	29
2003/c	1,653	32,158	1,009	17,573	401	960	0

Table 4.1.b. Continued.

Year	Rock Sole	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

Year	Sole	Rock	Other Flat Fish	Arrow Tooth Flounder	Atka Mackerel	Squid	Other Species	Total (All Species)
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		97	1,220	61,296	5	4,029	120,551
2002	1,165		150	1,032	44,722	10	1,980	98,215
2003/c	961		76	911	48,918	36	1,344	106,000

a/ Arrowtooth flounder included in Greenland turbot catch statistics.
b/ Includes POP shortraker, rougheye, northern and sharpchin rockfish.
c/ Does not include CDQ except for ICA pollock and squid.
Note: Numbers do not 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 nation's 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 million 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 IFQ 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.

Akutan

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 and pollock. The CDQ communities will receive 20 percent of the fixed gear sablefish TACs for the eastern Bering Sea and the Aleutian Islands areas and 10 percent of the eastern Bering Sea pollock allocation. 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 other 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.

<u>Other Alaska Groundfish Fishing Communities</u>

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. 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; and 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 was 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. In the new section 5.11, references to sections 8.1 and 8.9.1 are changes to 5.1 and 5.4.1, respectively.

14. Section 8.17 is renumbered 5.12.

Renumber Section 9 to Section 6

Renumber Section 10 to Section 7

The new Section 7 is revised 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 entirely by U. S.-flagged vessels since 1991 and processed entirely by U. S. processors. 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 as follows:

In consultation with the Council, the Secretary will establish harvest specifications, including 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 published in the Federal Register. Harvest specifications may be effective for up to two fishing years.

b. In the second paragraph, the reference "13.2B.2 on page 14-1" is revised to "8.2.B.2".

c. Revise the third paragraph as follows:

As soon as practicable after its October meeting, the Council will recommend proposed harvest specifications to the Secretary. The Council's recommendation will include proposed ABC and TAC amounts for each target species and the "other species" category, PSC limits, apportionments, TAC reserves, the basis for each proposed harvest specification, and a descriptions of developing information that may be relevant to the final harvest specifications. As soon as practicable after the October meeting and after considering the Council's recommended proposed harvest specifications, the Secretary will publish in the Federal Register a notice of proposed harvest specifications and make available for public review and comment all information regarding the basis for the harvest specifications. The notice of proposed harvest specifications will identify whether and how harvest specifications are likely to be affected by developing information unavailable at the time the notice is published. The prior public review and comment period on the notice of proposed harvest specifications will be a minimum of 15 days.

d. The last paragraph is revised and a paragraph is added as follows:

At its December meeting, the Council will review the final SAFE reports, recommendations from the Groundfish Plan Team, SSC, AP, and comments received. The Council will make final harvest specifications recommendations to the Secretary. As soon as practicable thereafter and after considering the Council's recommendation, the Secretary will publish final harvest specifications for the groundfish fishery. New final harvest specifications will supercede current harvest specifications on the effective date of the new harvest specifications.

However, if the Secretary determines that the notice of final specifications would not be "a logical outgrowth" of the notice of proposed harvest specifications (i.e., the notice of proposed harvest specifications was inadequate to afford the public opportunity to comment meaningfully on the issues involved), the Secretary will either: (1) publish a revised notice of proposed harvest specifications in the Federal Register, solicit public comment thereon, and publish a notice of final harvest specifications, as soon as is practicable; or (2) if "good cause" pursuant to the Administrative Procedure Act exists, waive the requirements for notice and comment and 30-day delayed effectiveness and directly publish a notice of final harvest specifications with a post-effectiveness public comment period of 15 to 30 days.

3. In Section 7.3.1, delete the last sentence.

4. Section 7.3.2 is revised as follows:

7.3.2 Reserves

The groundfish reserves at the beginning of each fishing year shall equal the sum of 15 % of each target species and the "other species" category TACs, except for pollock and the hook-and-line and pot gear allocation of sablefish. When the TACs for the groundfish complex is determined by the Council, 15 % of TACs is set aside as a reserve, except for pollock and hook-and-line and pot gear allocations of sablefish. This reserve is used for: (a) unexpected expansion of the fishery, (b) correction of operational problems in the fishing fleets, promoting full and efficient use of groundfish resources, (c) adjustment of species TACs according to the condition of stocks during the fishing year, and (d) apportionments.

The reserve is not designated by species or species groups and will be apportioned to the fishery during the fishing year by the Regional Administrator in amounts and by species that he/she determines to be appropriate. The apportionment of the reserve to target species or to the "other species" category must be consistent with the most recent assessments of resource conditions unless the Regional Administrator finds that the socioeconomic considerations listed above or specified fishery operational problems dictate otherwise. Except as provided for in the National Standard Guidelines for Fishery Conservation and Management, the Regional Administrator must also find that the apportionment of reserves will not result in overfishing as defined in the guidelines. The Regional Administrator may withhold reserves for conservation reasons.

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 8.

1. The new Section 8.1 is revised as follows:

Four priority objectives dictate the philosophy of management for the groundfish fishery in the region:

(1) Provide for rational and optimal use, in a biological and socioeconomic sense, of the region's fishery resources as a whole;
(2) Minimize the impact of groundfish fisheries on prohibited species and continue the rebuilding of the Pacific halibut resource;
(3) Provide for the opportunity and orderly development of domestic groundfish fisheries, consistent with (1) and (2) above; and
(4) Seek to maintain the productive capacity of the habitat required to support the Bering Sea/Aleutian Islands groundfish fishery.

2. In the new Section 8.2B.,

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 8.4.2.F.

3. In the new Section 8.4.2

a. In paragraph A., the reference to 13.2.B.1 is revised to 8.2.B.1.

b. Paragraph E. is revised as follows:

E. <u>PSC Limits and Time/Area Closures for Groundfish Fisheries</u>

The PSC limits and area closures for groundfish fisheries will be reviewed each year to determine whether changes in prohibited species stock abundance or other factors justify consideration of alternative PSC limits or time/area closures.

4. In the new Section 8.4.2.3,

a. In paragraphs A, the reference to "13.4.2.2" is revised to "8.4.2.2".

b. Paragraphs B (1) through B(6) are revised as follows:

B. * * *

(1) <u>Prior to the October Council Meeting</u>. The Plan Team will provide the Council 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.

(2) <u>October Council Meeting</u>. During its development of recommendations for proposed groundfish harvest levels under Section 7.3, the Council will also review the need to

control the bycatch of prohibited species and will recommend appropriate apportionments of PSC limits to fishery categories as bycatch allowances. Fishery bycatch allowances are intended to optimize total groundfish harvest under established PSC limits, taking into consideration the anticipated amounts of incidental catch of prohibited species in each fishery category. The Council may recommend exempting specified nontrawl fishery categories from the non-trawl halibut bycatch mortality limit restrictions, after considering the same factors (1) through (8) set forth under Section 8.4.2.2, Part D. The Council will also review the need for seasonal apportionments of fishery bycatch allowances. The Council will consider the best available information when recommending fishery apportionments of PSC limits and seasonal allocation of those apportionments. Types of information that the Council will consider relevant to seasonal allocation of fishery bycatch quotas include:

(a) Seasonal distribution of prohibited species;
(b) Seasonal distribution of target groundfish species relative to prohibited species distribution,
(c) Expected prohibited species bycatch needs on a seasonal basis relevant to changes in prohibited species biomass and expected catches of target groundfish species,
(d) Expected bycatch rates on a seasonal basis,
(e) Expected changes in directed groundfish fishing seasons,
(f) Expected start of fishing effort, and
(g) Economic effects of establishing seasonal halibut allocations on segments of the target groundfish industry.

(3) As soon as practicable after the Council's October meeting and after considering the Council's recommendations, the Secretary will publish proposed PSC apportionments in the Federal Register as part of the notice of proposed harvest specifications published under section 7.3. Information on which the recommendations are based also will be published in the Federal Register or otherwise made available. Public comments will be invited by means specified in regulations implementing the FMP.

(4) 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 prohibited species bycatch rates in the target groundfish fisheries and recommendations for halibut PSCs. If the Council requests, the Plan Team also may provide PSC apportionments and allocations among the target fisheries and gear types, and an economic analysis of effects of the apportionments.

(5) December Council Meeting. During its development of recommendations for final groundfish harvest levels, the Council will review public comments, take public testimony, and develop final recommendations 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 will develop final recommendations 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.

(6) As soon as practicable after the Council's December meeting, following the harvest specifications process described in section 7.3, and after considering the Council's recommendations, the Secretary will publish final PSC apportionments in the Federal Register as

part of the notice of final harvest specifications published under section 7.3. Information on which the final recommendations are based will also be published in the Federal Register or otherwise made available.

4. In the new Section 8.4.2.4, the reference "13.4.2.2" is revised to "8.4.2.2".

5. In the new Section 8.4.3.4, the text "DAP or JVP" is deleted.

6. In the new Section 8.4.5,

   a. The text "NOAA Fisheries" in the first and second paragraphs is revised to "NMFS".

   b. Delete the paragraph titled Information on processing expectations.

   c. Paragraph B. is revised as follows:

   B. Processor Reports

   All processors of groundfish shall report information necessary for the management of groundfish fishery resources. The regulation implementing this plan specify the information to be reported and the time schedule for reporting.

   d. Delete paragraph C.

   e. Redesignate paragraph D. to paragraph C.

   f. In the new paragraphs C. 1., C. 2., and C.3., the text "Director" is revised to " Administrator".

7. In the new paragraph 8.4.7.1.1, the reference to 13.4.7.1 is revised to 8.4.7.1.

8. In the new paragraph 8.4.7.1.5(5), the reference 13.4.8.4(1) is revised to 8.4.7.1.4.

9. 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.

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 8.4.7.3.5, 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

12. In the new Section 8.4.8, in paragraphs 1, 3, 7, 8, 10, 12, and 13 the text "Director" is revised to "Administrator".

13. In the new paragraph 8.4.8(B), the reference to 13.4.2 is revised to 8.4.2.

14. In the new paragraph 8.4.9.2.2, the reference 13.4.9.2.1 is revised to 8.4.9.2.1.

15. In the new paragraph 8.4.9.2.3, the reference to 13.4.9.2.1 is revised to 8.4.9.2.1.

16. In the new Section 8.4.9.3

a. the reference to 11.3 in the introductory paragraph is revised to 7.3.

b. In paragraph (a), the reference 13.4.2 is revised to 8.4.2.

17. In the new Section 8.4.10, in the first paragraph, the text "Director" is revised to " Administrator"

18. Delete Section 13.5 (Management Measures–Foreign Fisheries)

19. Delete Section 13.6.

20. Renumber Section 13.7 to 8.5.

21. Renumber Section 13.8 to 8.6.

22. Renumber Section 13.9 to 8.7.

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

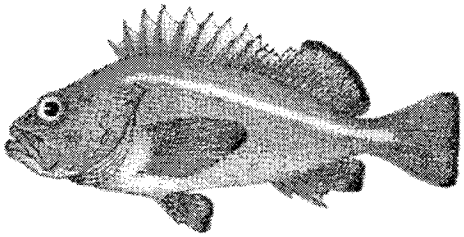
T:\FMPS\EARIR\COMBINED\AM4848\SecRev\48 BSAI FMP Language.wpd
mnbrown: 10/29/03, 3/8/04
jpollard: 11/5/03, 6/22/04

Revised Draft for Secretarial Review

ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW/ INITIAL REGULATORY FLEXIBILITY ANALYSIS

for a Proposed Regulatory Amendment to the Fishery Management Plan for the Groundfish Fisheries of the Gulf of Alaska

Full Retention of Demersal Shelf Rockfish in Longline Fisheries in the Southeast Outside District



Date: December 2003

Lead Agency: National Marine Fisheries Service
Alaska Regional Office
Juneau, Alaska

Responsible Official: Jim Balsiger, Alaska Regional Administrator

Prepared by: Jane DiCosimo, North Pacific Fishery Management Council
Nina Mollett, National Marine Fisheries Service
Ben Muse, National Marine Fisheries Service

Comment Due Date: A public comment period will be announced by NMFS in the proposed rule to implement the preferred alternative.

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EXECUTIVE SUMMARY

State and Federal fisheries managers believe that a high level of unreported mortality of demersal shelf rockfish (DSR) is occurring in the incidental catch fisheries for DSR in the eastern Gulf of Alaska (GOA), particularly in the halibut longline fisheries. Currently, fishermen are limited to keeping 10 percent by weight of DSR caught in Federal waters, as measured against the catch of their target species. Any poundage in excess of that 10 percent maximum retainable amount[1] (MRA) must be discarded at sea.

Under State regulations enacted in July of 2000, all DSR caught in State of Alaska (State) waters must be retained, brought to port, weighed, and reported on fish tickets. All DSR caught over 10 percent of the landed catch of other species is kept for personal use or sold, with the proceeds from the sale forfeited to the State. The State's primary purpose in requiring full retention is to improve estimates of total mortality of DSR. The improved data in turn should allow biologists to better estimate the total fishing mortality. The State's secondary objective in enacting these regulations is to reduce waste in the DSR fishery.

The North Pacific Fishery Management Council in February and June of 1999 took action to require full retention of DSR caught in the Federal fisheries of the Southeast Outside District (SEO[2]). NMFS prepared a proposed rule which was similar to the State's regulations. However, the proposed rule ran into legal obstacles in the Spring of 2002; NOAA General Counsel determined that NMFS's regulatory authority over fishing likely does not extend to the disposition of sale proceeds; and therefore that section of the rule dealing with the disposal of DSR over the amount that could be legally sold was not viable. Subsequently in February 2003 the Council approved a modification of the preferred alternative which requires full retention of DSR but does not allow excess DSR to enter the stream of commerce.

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) examines four alternatives:

Alternative 1: No Action

Under this alternative the maximum retainable percentage limit as set out in 50 CFR 679(e) and 50 CFR 679.20, Table 10, would continue to apply. There would be no change in the 10 percent MRA for DSR for fishermen using hook-and line and jig gear in the SEO. Fishermen could retain any DSR caught, so

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[1]The term "maximum retainable amount" (MRA) replaces "maximum retainable bycatch" (MRB) due to a recent change in Alaska Region NMFS definitions (FR67 4141) to accord with Magnuson-Stevens Act definition of "bycatch." The only exception to the 10% MRA relevant to this rule is for sablefish, for which the MRA is 1%.

"Bycatch" is defined in the Act as "fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. . ." (Sec. 3. 104-297)

"Regulatory discards" are defined as "fish harvested in a fishery which fishermen are required by regulation to discard whenever caught, or are required by regulation to retain but not sell." (Sec. 3 104-297)

The Act's definition of waste has a gray area, in that although it includes regulatory discards, it precludes fish for personal use from being labeled as "waste." In general in this EA, DSR caught in another directed fishery and not discarded at sea is referred to as "incidental catch," but the term "bycatch" is sometimes used in its more generally understood meaning of fish caught while targeting other fish, so that the terms "incidental catch" and "bycatch" are used somewhat interchangeably.

[2]This area is identical to Federal Regulatory Area 650.

long as the weight of the retained DSR was less than 10 percent of the weight of their target species; they are required to discard any DSR harvested which was over that limit.

Alternative 2: Require full retention of DSR in the hook-and-line and jig gear fisheries in the SEO.[3]

This alternative requires full retention of DSR, allows for sale of up to 10% of landed catch, and provides ways to dispose of other rockfish. It has four parts:

1. Eliminate the MRA for incidental catch of DSR caught by federally-permitted vessels using hook-and-line and jig gear in the SEO;

2. Require that all DSR caught by federally-permitted vessels using hook-and-line and jig gear in the SEO be retained, landed, weighed and reported on State of Alaska fish tickets;

3. Limit fishermen to retaining the revenues of incidental catch of DSR of no more than 10 percent of the aggregate round weight of IFQ Pacific halibut, and other groundfish species open to directed fishing, that are landed during the same fishing trip;

4. Provide two methods for disposal of any DSR in excess of the amount that may be sold:
   a. sell the excess DSR and relinquish the proceeds to the State of Alaska;
   b. retain the excess DSR for any other use except sale, barter, or trade.

This was previously the Council's preferred alternative, which NMFS has rejected because NOAA General Counsel determined that NMFS's regulatory authority over fishing does not extend to the disposition of sale proceeds (see Appendix A).

Alternative 3: (Preferred Alternative) Require full retention of DSR in the hook-and-line and jig gear fisheries in the SEO; don't allow DSR over 10 % sales limit to enter the stream of commerce

Alternative 3 is similar to Alternative 2 except that any DSR caught in excess of the10% sale limit would not be allowed to enter the stream of commerce, but could be retained for any other use, including personal use or donation to a charity. Alternative 3 would:

1. Eliminate the MRA for incidental catch of DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO;

2. Require that all DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO be retained and landed. Catcher/processors would continue to observe current maximum retainable amounts (MRAs) for DSR.

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[3]This option was previously the preferred alternative, which NOAA GC has determined has legal obstacles that prevent it from being approved.

3. Limit the sale of incidental catch of DSR to no more than 10 percent of the aggregate round weight of IFQ Pacific halibut, and other groundfish species open to directed fishing, that are landed during the same fishing trip; or no more than 1 percent of the aggregate round weight of sablefish.

4. Allow retention of any DSR in excess of the amount that may be sold for any use except for sale, barter, or trade.

Adopting Alternative 3 would improve the collection of DSR mortality data, but because of the reduced options for disposing of excess incidental catch in comparison with Alternative 2, fishermen may have less incentive to comply with the regulations. ADF&G and NMFS are exploring options for encouraging a donation program that would allow excess DSR landed in the larger ports to be distributed to charities.

Alternative 4: Observer program on halibut longline and other hook-and-line vessels in the SEO to estimate mortality of DSR in non-target fisheries.

Under this alternative, the 10 percent MRA would be retained. Fishermen would still be required to discard DSR over that limit. This alternative would extend existing regulations requiring observer coverage for 30 percent of fishing days on catcher vessels from 60 to 125 feet length overall (LOA) to apply to catcher vessels fishing for groundfish and halibut in the SEO. The RIR/IRFA concludes that although an observer program might supply good data, the costs of carrying observers to the smaller vessels involved would be relatively higher than the costs to larger vessels and might be too high to make such a program practical. However, such a program might be more feasible if adopted as part of a broader, long term change to the North Pacific Groundfish Observer Program that is under consideration by the Council to address cost equity, coverage levels, conflict of interest, and other issues facing the Program.

The EA did not find any significant impacts to the environment from adopting any of these alternatives.

The Regulatory Impact Review

A directed DSR fishery from January 1 to March 15 and from November 16 to December 31 targets DSR, and primarily yelloweye rockfish, for domestic markets for quality fresh round product. Halibut fisheries and other groundfish fisheries harvest DSR from March 15 to November 15 as incidental catch. Some of this fish is high quality product that goes to the fresh round market and some is poorer quality product that is directed into lower-priced markets for fillets.

In 2000, an estimated 423 vessels fished in the halibut and groundfish fisheries in the Federal waters of the SEO in which DSR was taken as incidental catch. Almost all of these were catcher vessels. Only five of the 423 were catcher/processors. Most took at least some halibut. Only 80 caught groundfish without showing deliveries of at least some halibut. These were generally small vessels, that is, vessels under 60 feet in length. Only 51 were over 60 feet; almost all of these fell into the length range of 60 to 125 feet (estimates based on NMFS Catch by Vessel Database and RAM halibut fishing statistics).

This fleet generated an estimated $33 million in gross revenue from its harvests in the Federal waters of the SEO during 2000. Average gross revenues were about $79,000 per vessel. Almost all of the revenues from the Federal SEO waters were generated by catches of halibut and sablefish. Sablefish

revenues were about $21 million, while halibut revenues were about $12 million. Fishing in the SEO was only a part of the fishing activity by these vessels. Gross revenues for these vessels, from all groundfish and halibut fisheries off Alaska in 2000, were $111 million, or about $262,000 per vessel. In addition to significant statewide revenues from sablefish ($54 million) and halibut ($45 million), these vessels obtained large revenues from Pacific cod ($9 million). DSR incidental catch revenues for 2000 in the SEO (estimated in Table 9) were about $176,000, while total statewide DSR revenues (from incidental catch and directed harvests) were about $793,000 (estimated from Tables 7 and 9). These are only estimates of revenues from groundfish and halibut; many of these entities would also have earned revenues from other fisheries, of which Alaska's salmon and herring fisheries were probably most important. DSR incidental catch revenues were about 0.16% of the fleet's total statewide groundfish and halibut revenue; if probable herring and salmon revenues are also considered, DSR incidental catch revenues would have been an even smaller percentage of overall revenues. DSR incidental catch revenues in the SEO were about 0.53% of the fleet's groundfish and halibut revenues from Federal waters in the SEO.

Shoreside processors buying DSR also bought other groundfish, halibut, salmon, herring and crab. In 2000, the 22 firms processing groundfish in Southeast Alaska, had total gross revenues from all fish processing activities of about $262 million, or an average per plant of about $12 million. Several larger plants dominate the average calculation; the median gross revenues were about $5 million. Groundfish (which does not include halibut) were a relatively minor component of the processing activity, accounting for about 20% of aggregate firm gross revenues. Total groundfish revenues were about $52 million, or about $2.4 million per plant. The importance of groundfish varied across firms. Nine firms earned more than 10% of their gross revenues from groundfish, while five earned between 30% and 50% of their revenues from groundfish. No plant made more than 50% from groundfish. In comparison, the total first wholesale value of DSR products (from both the directed DSR fishery and from the DSR bycatch in other fisheries) in 2000 was about $1.2 million, or about $60,000 per plant.

In 2000, 41 catcher vessels, fishing with hook-and-line gear (and with some jig gear), participated in the directed fishery in Federal waters in the SEO. These vessels harvested 183 metric tons and grossed an estimated $617,000 (or about $15,000 per vessel).

Because no cost information is available for this fishery, and because there were no models that would have allowed projections of fishing behavior changes under the rules, and no models of the DSR markets, the RIR analysis is primarily qualitative. The impacts of the alternatives on resource management, the benefits, the costs, the extent to which the alternatives would accomplish program objectives, and the significance of each alternative under the criteria of E.O. 12866, are summarized in the following table.

Summary of the cost and benefit analysis (Table 10 in the RIR)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Status quo. Continue 10% MRA prohibiting retention above that level.	*Required retention. Fishermen must retain all DSR and dispose of it onshore without commercial compensation for excess.*	*Required retention. Fishermen must retain all DSR and dispose of it onshore without commercial compensation for excess. DSR may not enter "stream of commerce."*	*Observers. Implement 30% observer coverage on halibut and groundfish fishing vessels in the SEO.*
Impacts on resource management (See section 4.8)	None	Better information on bycatch mortality, potential source of funds for DSR management, fishermen may change behavior to avoid DSR	Better information on bycatch mortality, fishermen may change behavior to avoid DSR	Better information on bycatch mortality
Benefits (See Section 4.8)	No change in benefits	Resource management improvements may lead to increased value of stock to commercial fishermen, distribution system, and consumers. Non-compliance could compromise the confidence that can be placed in this data source. Less frustration for fishermen over perceived DSR discard waste. Reduced conflict between State and Federal retention regulations. Benefits from improved management may also accrue to sport and subsistence users.	Resource management improvements may lead to increased value of stock to commercial fishermen, distribution system, and consumers. Non-compliance could compromise the confidence that can be placed in this data source. Reduces the conflict between State and Federal retention regulations, but not to the extent of Alternative 2. May reduce waste, but not to extent of Alt. 2. Benefits from improved management may also accrue to sport and subsistence users.	Resource management improvements may lead to increased value of stock to commercial fishermen, distribution system, and consumers. Benefits from improved management may also accrue to sport and subsistence users.
Costs (see Section 4.9)	No change in costs	Costs to fishermen for onboard storage, handling and delivery of DSR. Some additional cost to processors for additional weighing and grading. Depending on market conditions, as well as condition of surrendered catch, processors may face increased cold storage, inventory, handling, and [perhaps]] disposal costs. Potential costs for enforcement.	Costs to fishermen for onboard storage, handling and delivery of DSR. Some additional cost to processors for additional weighing and grading. Disposal costs higher than Alt 2 since there are fewer options. Depending on market conditions, as well as condition of surrendered catch, processors may face increased cold storage, inventory, handling, and [perhaps]] disposal costs. Potential costs for enforcement.	Additional observer costs of $330 per day, plus transportation costs. Reduced work room for crew on vessels. Changes in operating patterns of vessels may be necessary to accommodate the observers.
Net benefits	No change in net benefits	Impossible to quantify with the available information.	Impossible to quantify with the available information.	Impossible to quantify with the available information.
Program objectives (See Section 4.4)	Does not address issues of bycatch mortality, waste, and conflict between State and Federal regulations.	Improves bycatch mortality estimates, does not increase incentives to target DSR, reduces DSR waste, reduces conflict between State and Federal regulations. This alternative has legal difficulties.	Improves bycatch mortality estimates, does not increase incentives to target DSR. Reduces conflict between State and Federal regulations, although not to the extent of Alternative 2. Does not address waste issue.	Improves bycatch mortality estimates, likely has the strongest disincentive to target DSR (i.e., onboard observer). Does not address the issues of waste or of conflict between State and Federal regulations
E.O. 12866 significance (see Section 4.11)	Does not appear to be significant	Does not appear to be significant	Does not appear to be significant	Does not appear to be significant
Notes: Alternative 1 (status quo) is the no actionalternative and provides the baseline against which the costs and benefits for action alternatives have been estimated.				

The Initial Regulatory Flexibility Analysis

The directly regulated entities are those vessels taking DSR as incidental catch in halibut and groundfish fisheries in Federal waters of the SEO district and the processors buying the DSR from them. NMFS estimates that 423 vessels participated in these fisheries in 2000. Most of these vessels were less than 60 feet in length, fishing with hook-and-line gear and jig gear. Average gross revenues for these vessels from the Alaskan halibut and groundfish fisheries were about $262,000. Average gross revenues from all fisheries for these entities are undoubtedly higher, since these vessels participate in other fisheries in Alaska. In the years from 1996 to 2001, between 17 and 26 plants bought groundfish in Southeast Alaska. In 2000, the average gross revenues for these plants were about $12 million. NMFS estimates that these fishing and processing operations were all "small entities" within the meaning of the Regulatory Flexibility Act.

The Council's preferred alternative is Alternative 3. Under Alternative 3, small scale fishermen may experience increased costs associated with handling the additional DSR, of storing them on the vessel until it reaches port, and of unloading and disposing of the fish. Some fishermen may incur additional costs by changing their fishing patterns for their target species in order to avoid DSR bycatch. Costs may be higher on smaller vessels using refrigerated sea water (RSW) which lack deck space for special DSR totes, or on vessels that would otherwise have filled their holds with their target fish, but that are unable to given the requirement to retain a larger amount of DSR. Fishermen will also face costs of disposing of the excess DSR onshore. They will not be allowed to sell it; they may use it for personal use, donate it for charitable purposes, or discard it. Small processors would face the costs of weighing and recording additional DSR that may be landed. They are likely to play a role in helping vessel owners delivering excess DSR to dispose of this excess. These actions could include allowing plant employees to fillet and take excess DSR, adding DSR to their waste streams, or coordinating with donation programs to take excess DSR. Processors would no longer be able to sell excess DSR from federal waters. Processors appear to have received about ten metric tons of such DSR catch in 2001 (the largest annual volume listed), implying future gross revenues lost from this source of about $16,000 a year.

The Council's preferred alternative does not impose any new recordkeeping requirements on regulated entities. NMFS has not been able to identify any relevant Federal rules that may duplicate, overlap, or conflict with the preferred alternative.

This EA/RIR/IRFA has evaluated four alternatives: (1) the status quo, (2) full retention allowing excess DSR to enter the stream of commerce, (3) full retention prohibiting excess DSR from entering the stream of commerce, and (4) use of an observer program. As noted, the Council has chosen Alternative 3 as its preferred alternative. Alternative 1 imposes no adverse impacts on small entities, but fails to advance the action objectives of providing new information on DSR, reducing DSR wastage, and reducing conflict between state and federal regulations. NOAA General Counsel has identified serious legal issues with Alternative 2 that are described in Appendix A to this EA/RIR/IRFA. Alternative 2 may be less costly than Alternative 3 in that fishermen could allow processors to sell the extra DSR and relinquish the proceeds to the State. However, if processors are selling the DSR under Alternative 2, the possibility would exist for them to find roundabout ways to repay fishermen for bringing in extra DSR, thus adding a potential incentive for vessels to target on DSR. Alternative 3, the Council's preferred alternative, is discussed above. Finally, under Alternative 4, fishermen face additional costs for observer coverage, including travel and logistical expenses for observers, and an additional cost of about $330/day for 30% of days at sea. This alternative does provide new information on the status of DSR stocks, but it does not

reduce waste of DSR or reduce conflict between State and Federal regulations.

1.0 PURPOSE OF AND NEED FOR THE ACTION

1.1 Introduction

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) analyzes alternatives for improving data collection for incidentally caught demersal shelf rockfish (DSR) in the hook-and-line and jig gear fisheries in the Southeast Outside District (SEO) of the Gulf of Alaska (GOA). The current regulations require discard of all DSR bycatch over ten percent of the retained catch of targeted species in the fixed gear fisheries. It is believed that this system leads to a considerable amount of unreported discards, and that better data collection would enable biologists to conduct more accurate stock assessments, so that measures can be taken if necessary to prevent overfishing. The proposed changes in handling incidental catch of DSR are also intended to reduce wastage. DSR do not survive being caught and returned to the sea.

1.2 Background on DSR Management

1.2.1 Management authority for regulating fishery

The groundfish fisheries in the exclusive economic zone (EEZ) off Alaska are managed by the National Marine Fisheries Service (NMFS) under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The mission of NMFS is the stewardship of living marine resources for the benefit of the nation, through science-based conservation and management and promotion of a healthy marine environment. The goals for accomplishing this mission are maintaining sustainable fisheries, recovering protected species, and protecting the living marine habitat. Guidance for achieving these goals is taken from relevant Federal legislation.

The groundfish fisheries of the Gulf of Alaska (GOA) are managed under the Fishery Management Plan (FMP) for Groundfish of the Gulf of Alaska developed by the North Pacific Fishery Management Council (Council). The GOA Groundfish FMP was approved by the Secretary of Commerce and went into effect in 1978. It has been amended over sixty times.

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

NEPA, E.O. 12866 and the RFA require a description of the purpose and need for the proposed action as well as a description of alternative actions which may address the problem. This information is included in Sections 1 and 2 of this document, along with an overview of DSR management. Section 3 contains information on the affected environment and the expected direct or indirect effects of the alternatives on the environment, including potential impacts on fish habitat, marine mammals, and endangered species, as required by NEPA. It also includes a section analyzing the distinctions between the direct, indirect and cumulative effects of this action; and a conclusion analyzing the potential significance of the effects identified. Section 4 is the Regulatory Impact Review (RIR), which considers the economic impacts of the alternatives, as required by E.O. 12866. Section 5 addresses the RFA's requirement that the agency

consider potential impacts on small businesses. The remaining sections include a bibliography, a list of authors and consultants for this document, and an appendix.

1.2.2 Location of Groundfish Fisheries

The alternatives considered in this EA would affect groundfish fishing and IFQ halibut fishing in the Gulf of Alaska's Southeast Outside Area (SEO), which is identical to Federal Regulatory Area 650 (Figures 1 and 2). Detailed descriptions of all aspects of the groundfish fisheries are given in the Revised Draft Programmatic Supplemental Environmental Impact Statement (PSEIS) for the Alaska Groundfish Fisheries (NMFS 2003, Chapter 3). Pacific halibut are managed by the International Pacific Halibut Commission (IPHC) which is a joint commission of the United States and Canada. Further information about the Pacific halibut fishery can be found in Appendix A of the Council's Stock Assessment and Fishery Evaluation Report (SAFE) report (NPFMC 2001)[4] and on the IPHC website.[5]

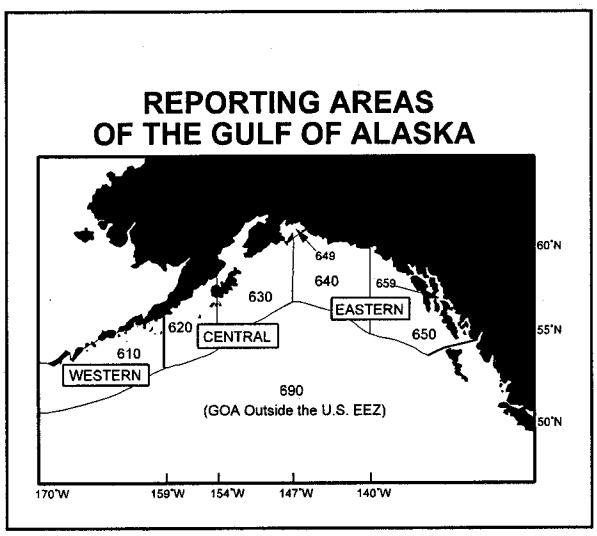

Figure 1. Reporting Areas of the GOA.

1.2.3 DSR management history

The DSR assemblage is comprised of seven species of nearshore, bottom-dwelling rockfishes (see section 3.1). These fishes all occur on the continental shelf and are generally associated with rugged, rocky habitat.
The dominant species in the DSR fishery is yelloweye rockfish (*Sebastes ruberrimus*), which accounts for 90 percent of all DSR landings. Quillback rockfish account for 8 percent of the catch. DSR exhibit slow growth and extreme longevity, and have a very low natural mortality rate, estimated at about two percent (O'Connell and Brylinsky 2001). These species are very susceptible to overexploitation and are slow to recover once driven below the level of sustainable yield (Leaman and Beamish 1984; Francis 1985).

Rockfishes have a closed swimbladder, which regulates buoyancy. They cannot withstand quick changes in pressure and therefore are susceptible to embolism mortality when brought to the surface from depth. Virtually no rockfish survive once caught without special precautions being taken. [6]

DSR have been taken as bycatch in other groundfish and halibut fisheries in Southeast Alaska since the early 1900s. Some DSR bycatch was also landed by foreign longline and trawl vessels targeting on slope

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[4]http://www.fakr.noaa.gov/npfmc/safes/safe.htm.

[5]http://www.iphc.washington.edu/halcom/research/research.htm.

[6]There is a market for live rockfish and it is possible to bring them up alive, slowly, if fishing in very shallow water. Some fishermen take live rockfish in British Columbia, but this fishery is illegal in Alaska.

rockfish in the Eastern Gulf from the late 1960s through the mid-1970s. Beginning in 1979 a small, shore-based rockfish fishery started up in Southeast Alaska, targeting primarily on the nearshore, bottom-dwelling component of the rockfish complex, mostly inside the 110 meter (m) contour.

The early directed fishery targeted the entire DSR complex. In 1986 the directed fishery for yelloweye accounted for 70 percent of the DSR landed and 67 percent of the total rockfish landed. Quillbacks accounted for 23 percent of DSR. The current fishery, which occurs primarily between the 75 m and 150 m contours, targets yelloweye rockfish almost exclusively. Yelloweye accounted for an average of 90 percent (by weight) of the total DSR catch over 1996-2000, and quillbacks for 8 percent.

The directed fishery is prosecuted almost exclusively with longline gear. Although snap-on longline gear was originally used in this fishery, most vessels now use conventional tub gear. The fish generally are bled and iced and brought in whole, and are sold to domestic markets for fresh fish. Processors will not accept fish landed more than three days after capture.

Prior to 1987, the DSR complex was grouped with the "other rockfish" complex in the GOA groundfish FMP, but these species were split into three components (along with pelagic shelf and slope rockfish) for management purposes in the eastern Gulf. Under the FMP, the State has much of the management authority for DSR. The State manages season length, seasonal apportionments of quotas, in-season adjustments, gear specifications, trip limits, and directed fishing quotas. The Federal government continues to conduct the DSR stock assessments, establishes total allowable catch (TAC) limits, and maintains regulatory authority for some other measures. The State has divided the SEO into four management areas: the Northern (NSEO), Central (CSEO) and Southern (SSEO) subdistricts and the East Yakutat subdistrict (EYKT), extending to 140° W. longitude (Figure 2). Two internal State water subdistricts, the Northern Southeast Inside (NSEI) and Southern Southeast Inside (SSEI) are managed entirely by the Alaska Department of Fish and Game (ADF&G) and are not included in the annual stock assessment.

ADF&G uses seasonal allocations to manage the directed longline fishery in the SEO and the internal State waters of Southeast Alaska. Sixty-seven percent of the directed fishery quota is allocated to the period between January 1 and March 15, and 33 percent to the period between November 16 and December 31. DSR may only be taken by hook-and-line gear in the directed fishery. There are no trawl fisheries in the SEO, as trawling was prohibited in the Eastern GOA (east of 140° W. longitude) in 1998.

Directed DSR fishery landings are currently constrained by various fishery management actions. The directed fishery is closed during the halibut IFQ season in order to prevent overharvesting. In Southeast Alaska, a 2.72 mt (6,000 lb) trip limit has been imposed. The EYKT also has a 5-day limit of 5.45 mt (12,000 lb). The directed fishery for DSR may be closed if the incidental catch of either halibut in the DSR fishery, or the DSR in the halibut fishery, is too high. On July 8, 1991, the GOA was closed to all groundfish fishing with longline gear, because the prohibited species catch (PSC) limit of halibut had been reached. Since 1992, the DSR fishery has had a separate[1] halibut PSC limit of 10 mt halibut mortality. In 1993 the fall directed fishery for DSR was canceled due to an unanticipated increase in DSR bycatch during the fall halibut fishery.

In 2003 for the second year in a row, the directed fishery in the EYKT will be preempted by the halibut fishery, because it is anticipated that the DSR bycatch mortality in that fishery will be 96 mt, which is 94% of the 106 mt ABC for this management area.

The history of domestic landings of DSR from the SEO is shown in Table 1. The directed and incidental catch of DSR together in the SEO increased from 120 mt in 1982 to a peak of 900 mt in 1993. In 2001, 122 mt of DSR were landed in the directed fishery, and 326 mt of DSR were taken as incidental catch, for a total of about 450 mt.

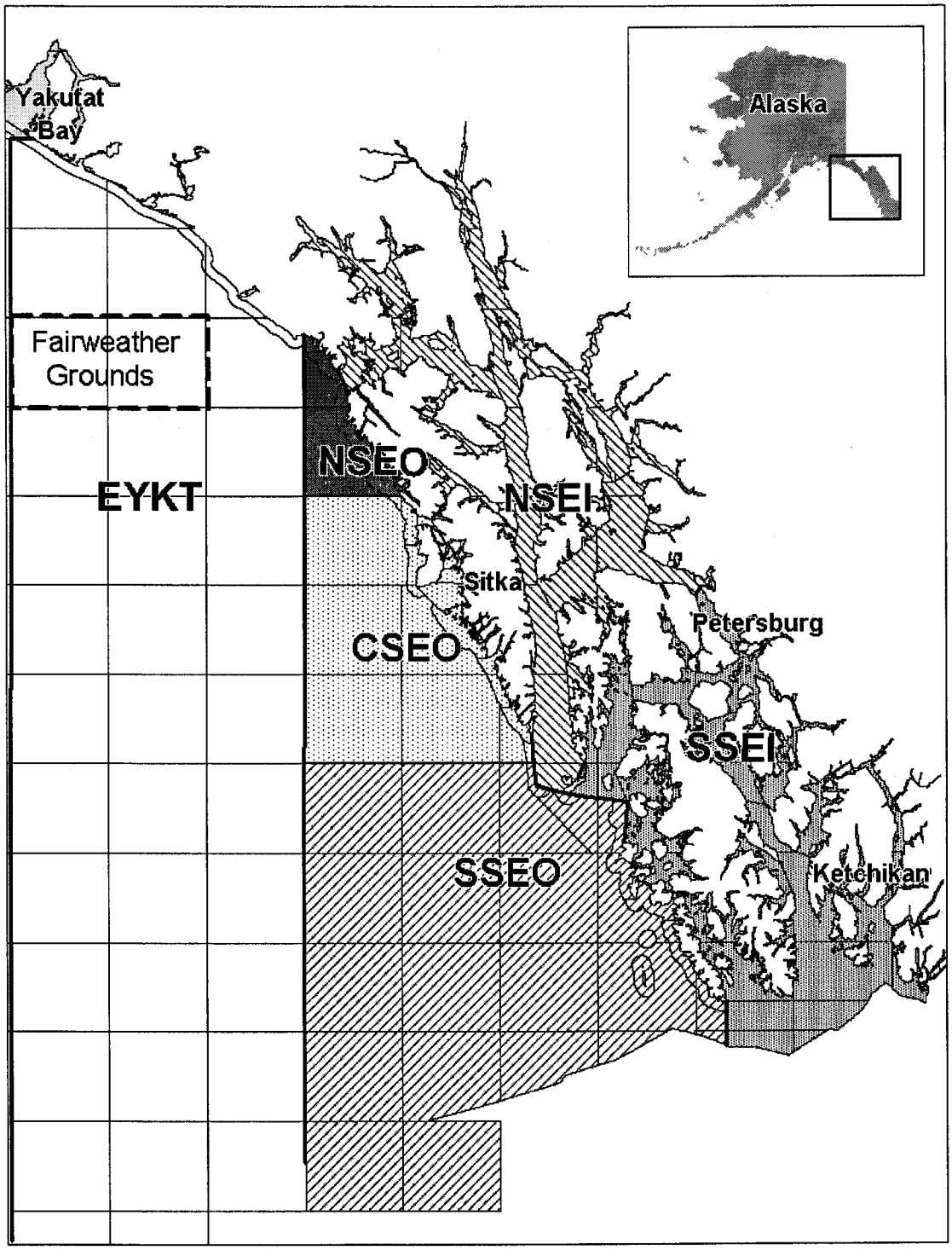

Figure 2. Southeast Outside District (Eastern Regulatory Area 650)

Table 1. Reported landings of demersal shelf rockfish (mt RWT) from domestic fisheries in the Southeast Outside District, 1982-2002[1]

		DIRECTED LANDINGS		INCIDENTAL CATCH LANDINGS		TOTAL SEO	
YEAR	Research	AREA 65 (east of 137°)	AREA 68 (140° to 137°)	AREA 65	AREA 68	LANDINGS	ABC[3]
1982	*	106	*	14	*	120	*
1983	*	161	*	15	*	176	*
1984	*	543	*	20	*	563	*
1985	*	388	*	100	1	488	*
1986	*	449	*	41	*	491	*
1987	*	726	77	47	5	855	*
1988	*	471	44	29	8	552	660
1989	*	312	44	101	18	475	420
1990	*	190	17	100	36	379	470
1991	*	199	187	83	36	889	425
1992	*	307	57	145	44	503	550
1993	13	246	99	254	18	901	800
1994	4	174	109	128	26	441	960
1995	13	110	67	90	22	282	580
1996	6	248	97	62	23	436	945
1997	13	202	65	62	25	381	945
1998	*	176	65	83	34	363	560
1999	*	169	66	74	38	348	560
2000	5	97	56	45	24	282	340
2001	6	122	50	110	37	326	330
2002[1]	1	76	0	111	37	226	350

Source: O'Connell, Carlile and Brylinsky (2002), Table 2.

[1] Landings from ADF&G Southeast Region fish ticket database and NMFS weekly catch reports through November 4, 2002.

[2] Estimated unreported DSR mortality associated with halibut fishery not reflected in totals: 1993=271 mt, 1994=353 mt, 1995=130 mt, 1996=156 mt, 1997=2204 mt, 1998=214 mt, 1999=324 mt, 2000=207 mt, 2001=170 mt, 2002=150 mt. (pers. comm. O'Connell, Jan. 7, 2003)

[3] From 1988 to 1993, ABC for FMP area 65 only; no ABC prior to 1987.

1.2.4 Stock Assessment and Exploitable Biomass

Traditional abundance estimation methods, such as area-swept trawl surveys and mark recaptures, are not considered useful for these fishes because of their distribution and life history. Rockfish density is estimated in the Eastern GOA using a manned submersible to do line transects (O'Connell et al. 2002; O'Connell and Carlile 1993). A total of 452 line transects have been run in the four management areas since 1989, six of them in 2001. Data is collected for four of the eight DSR species, but ABC/TAC recommendations for the entire assemblage are keyed to adult yelloweye biomass because that is the principal species targeted and caught (Table 2). The biomass estimate is derived as a product of estimated density, the estimate of rocky habitat within the 200 m contour, and the average weight of fish for each management area.

Estimation of total area of rocky habitat is difficult, as is estimation of line length for the transects (O'Connell et al. 2002). Techniques have changed over the years in an attempt to improve the survey. Due to revised estimates of rockfish habitat, for example, the 2000 assessment estimated the exploitable biomass at about 40 percent less than the 1999 estimate, or 15,100 mt in the SEO (Table 2). The total exploitable biomass of yelloweye rockfish in the SEO for 2003 is estimated to be 17,510 mt, a 10 percent

increase over 2002, also due to a change in the estimate of yelloweye habitat. The 2003 ABC is 390 mt and the overfishing level is 540 mt. The State has adopted a conservative harvest policy allowing for a 2% annual rate of exploitation, which is lower than the $F_{40\%}$ rate that would be obtained by the Tier 4 overfishing definition.[7] However, because of the patchy concentration of fishing effort, particularly prime habitat on the Fairweather Grounds, the harvest of yelloweye in some localities may be exceeding the overfishing level for the population (O'Connell and Brylinsky 2002).

Further information on stock assessment for DSR is found in a regional information report issued by ADF&G (O'Connell and Brylinsky 2001) and in the SAFE stock assessment report on DSR (O'Connell and Brylinsky 2002).

Table 2. Exploitable biomass (from line transect surveys), catch specifications and total catches (including discards) of adult yelloweye (mt) in the SEO, 1994-2002.

Year	Biomass	ABC	TAC	OFL	Reported Catch
1994	30,450	960	960	1,680	540
1995	20,190	580	580	1,044	220
1996	29,290	950	950	1,702	468
1997	29,290	560	560	1,450	406
1998	25,030	560	560	950	347
1999	25,030	560	560	950	297
2000	15,100	340	340	420	287
2001	14,695	330	330	410	301
2002	15,616	350	350	480	246*

*through 11/30/02
Source: NMFS catch specifications, catch statistics and biomass estimates.
http://www.fakr.noaa.gov/sustainablefisheries/catchstats.htm.

[7]The Tier 4 overfishing definition is the rate of fishing that would reduce the amount of spawning contributed by an average fish over the course of its lifetime to 40 percent of the amount that it would contribute in the absence of fishing.

1.2.5 Incidental Catch Management

NMFS determines annually how much of the TAC for each groundfish species is needed as bycatch in other groundfish fisheries. The remainder of the TAC is made available as a directed fishing allowance. Directed fishing is defined in regulations as "any fishing activity that results in the retention of an amount of a species or species group onboard a vessel that is greater than the maximum retainable limit for that species or species group." The maximum percentage that can be retained as incidental catch is established for each species in the groundfish regulations. That percentage is calculated as a proportion of the basis species[8] that are retained onboard a vessel. Any bycatch in excess of the limit must be discarded. Such discards, required by the regulations, are known as regulatory discards. Maximum retainable catch limits reflect a balance between the need to reduce the harvest rate of bycatch species and the desire to minimize regulatory discards. In most fisheries where DSR is caught as bycatch, the MRA for DSR is 10 percent of the basis species.[9]

During the course of a fishing year, NMFS routinely closes directed fishing for specified groundfish species. Directed fishing closures occur because a fishery has reached a halibut or crab bycatch allowance, the directed fishing allowance for a target groundfish species has been reached, or because of overfishing concerns for another groundfish species taken as bycatch. When directed fishing for a species is closed for any of these reasons, incidental catch amounts of the species may still be retained onboard a vessel up to the specified percentage of other groundfish catch open to directed fishing. NMFS attempts to manage groundfish TACs so that directed fishing closures are implemented in a timely manner, thereby providing sufficient portions of the TAC to allow for incidental catch in other fisheries. When the harvest amount approaches the TAC, NMFS may place the species on "prohibited" status, and any catch of that species must be discarded. If the harvest amount approaches the overfishing level (OFL), then NMFS may close those directed fisheries which take that species as bycatch, in order to prevent overfishing.

The MRAs established in regulations serve as a management tool to slow down the rate of harvest of a species placed on bycatch status and to reduce the incentive for fishing vessels to target on the species. Nonetheless, vessels may deliberately catch up to the MRA of a species on bycatch status, a practice which is referred to as "topping off."

Topping off is a recognized and legal activity. The incentive for fishermen to top off is directly related to the value of, and available market for, the incidental catch species in relation to the species being targeted. From the management perspective, limiting the amount of incidental catch a fisherman is allowed to retain is a tool to slow down harvest rates, which therefore do not necessarily reflect an "intrinsic" bycatch rate, but rather reflect a balance between the recognized need to slow harvest rates, minimize the potential for undesirable discards, and, in some cases, provide an increased opportunity to harvest available TAC.

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[8]Basis species are species open to directed fishing that the vessel is authorized to catch.

[9]Sablefish is the only exception to the 10% MRA which is relevant to this rule. The limit for sablefish is 1%.

Current regulations include a MRA for DSR of 10 percent by weight of most basis species. NMFS Enforcement may confiscate the overage amount, and assesses a $1,000 fine for the third or subsequent overages delivered in the same calendar year. When the overage is for DSR caught in State waters, the State of Alaska accepts surrendered DSR. In this case, the processor accepting delivery may sell the fish after recording the fish on the fish ticket as a forfeiture (harvest code "18"). The amount corresponding to the ex-vessel price is relinquished to the State of Alaska, which has set up a fishery fund for that purpose. The proceeds from DSR are not large enough for the State to use on an annual budgetary basis, but are being deposited into an account that can transcend fiscal years. This is intended to be used for management or research in the DSR fishery, once the account is sufficient.

Table 3 lists the reported DSR forfeitures for the directed fishery in excess of the trip limit and as incidental catch in the halibut fishery and other groundfish fisheries for the SEO district for 1996 – 2002. Approximately 123 vessels in the SEO target fishery, halibut incidental catch fishery, and other bycatch fisheries landed excess DSR, 58 of these in Federal waters. Note in particular the jump in the amount of confiscated fish due to the State regulation requiring full retention of DSR caught in State waters, which went into effect in the summer of 2000. Judging from these data, the State regulation seems to have resulted in a large increase in the amount of DSR retained from Federal waters as well and forfeited to the State, in spite of the regulation requiring discarding of all DSR over the 10 percent MRA level in Federal water, which still stands. Whether this reflects confusion due to the conflict between the two regulations, or whether it is simply easier for fishermen to deal with the situation by bringing all their DSR to port and risking a fine, is difficult to say.

The current management plan for DSR attempts to account for total mortality of DSR and set directed fishing levels after accounting for this bycatch. In 1998 and 1999, for example, the overfishing level for DSR was 950 mt and the TAC was set at 560 mt. The directed fishery quotas were set for the four ADF&G management areas in the SEO after subtracting the 300 mt estimated to be taken incidental to the halibut fishery. The total directed fishery quota for the SEO was 260 mt. However, the difficulty with setting these quotas, again, is that the true bycatch mortality of the DSR is unknown.

Table 3. Demersal shelf rockfish landed and confiscated in various fisheries in 1996-2002. Numbers are for unique vessels and separate landings.

		State and Federal waters				Federal waters only			
Year	Fishery	lb	mt	Vessels	Landings	lb	mt	Vessels	Landings
1996	Directed DSR	3,079	1.40	9	11	2,935	1.33	7	9
1996	Directed Halibut	4,116	1.87	36	50	2,768	1.26	19	25
1996	Other *	2,613	1.19	2	3	2,562	1.16	1	1
	TOTAL	9,808	4.45	47	64	8,265	3.75	27	35
1997	Directed DSR	3,882	1.76	7	9	3,850	1.75	7	9
1997	Directed Halibut	9,192	4.17	49	67	7,502	3.40	29	41
1997	Other *	223	0.10	5	5	42	0.02	1	1
	TOTAL	13,297	6.03	61	81	11,394	5.17	37	51
1998	Directed DSR	6,559	2.98	12	14	5,430	2.46	9	10
1998	Directed Halibut	14,253	6.46	44	70	8,035	3.64	30	41
1998	Other *	402	0.18	5	8	268	0.12	3	5
	TOTAL	21,214	9.62	61	92	13,733	6.23	42	56
1999	Directed DSR	6,231	2.83	9	11	5,743	2.60	7	9
1999	Directed Halibut	12,857	5.83	44	77	9,152	4.15	28	43
1999	Other *	887	0.40	10	14	152	0.07	3	3
	TOTAL	19,976	9.06	63	102	15,047	6.83	38	55
2000	Directed DSR	3,320	1.51	8	10	3,106	1.41	8	10
2000	Directed Halibut	11,937	5.41	53	77	8,688	3.94	30	35
2000	Other *	473	0.21	9	11	72	0.03	2	2
	TOTAL	15,731	7.14	70	98	11,866	5.38	40	47
2001	Directed DSR	4,037	1.83	7	7	3,720	1.69	7	7
2001	Directed Halibut	38,223	17.34	114	152	22,931	10.40	51	66
2001	Other *	79	0.04	2	2	0	0.00	0	0
	TOTAL	42,338	19.20	123	161	26,651	12.09	58	73

* miscellaneous finfish and directed lingcod fisheries
Source: ADF&G fish ticket data, round wt.

For 2002, the total directed quota was set at 180 mt, divided by subdistricts and by management area. In 2002 (for the first time), the directed fishery was pre-emped by the halibut fishery in the EYKT area, and this directed fishery will be pre-empted again in 2003, due to the high DSR mortality rate in the EYKT, which is estimated for 2003 to be 98 mt, or 94% of the 106 mt ABC for this management area (O'Connell et al. 2002). This preemption affects the Fairweather Ground, which is a portion of the EYKT management subdistrict and has supported an important directed fishery for DSR in past years. In the past, over one-third of the directed fishery quota was assigned to the EYKT (O'Connell and Brylinsky 2001)

The overfishing level for DSR is sufficiently higher than the TAC that it is unlikely the overfishing level would be reached under full retention, even if the true total mortality were higher than estimated. In years of high halibut catch, incidental catch in the halibut fishery would pre-empt the directed fishery, as is occurring this year in the EYKT. Conversely, it may be possible to increase the directed fishery TAC if it becomes apparent that NMFS has overallocated TAC to the incidental catch fishery.

1.2.6 Problems with bycatch estimation

Reported incidental catch of DSR taken in the course of the halibut fishery currently accounts for a significant portion of the total DSR catch: over 30 percent of the total DSR landings in Southeast Alaska in recent years (NPFMC 2001). However, this figure understates the true mortality rates. Unreported discards have been estimated by ADF&G as ranging from between 130 mt to 355 mt annually, but the estimates are considered unreliable, as data have become more difficult to collect under the halibut IFQ fishery.

Until the halibut IFQ system was instituted, unreported mortality of DSR during the halibut fishery was estimated based on IPHC interview data. For example, the 1993 interview data indicates a total mortality of DSR of 13 percent of the June halibut landings (by weight) and 18 percent of the September halibut landings. These data were taken by IPHC port samplers and summarized by the IPHC. The samplers believed the data to be marginal in quality.[10]

In recent years, ADF&G has used IPHC catch statistics to determine the percentage of the halibut catch taken in each of the four DSR management areas in the SEO. ADF&G estimated that approximately 47 percent of the 2C (IPHC Regulatory Area) halibut quota and 11 percent of the Area 3A halibut quota are taken in the SEO.[11] Based on the 2002 halibut quotas and distribution of harvest, ADF& G estimates the total DSR mortality for the 2002 SEO halibut fishery at 236 mt, but is concerned about indications in the yelloweye biological data that they may have underestimated bycatch mortality, and therefore harvested at a higher rate than intended. (O'Connell et al. 2002).

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[10]Morris Wade, IPHC, pers. comm. with Tory O'Connell, 1993.

[11]For IPHC area maps, see IPHC website at http://www.iphc.washington.edu/halcom/research/research.htm.

ADF&G also uses data from the IPHC longline surveys. The IPHC estimates are based on sampling 20 consecutive hooks on each skate of gear (a skate has 100 hooks).[12] Bycatch of DSR, expressed as the percentage of DSR weight to halibut weight (for legal-sized halibut) ranged from 0 to well over 100 percent, and estimates of area means ranged from 3 percent in the EYKT (excluding Fairweather stations) to 23 percent in the Fairweather Ground.

These data are evidence for the inherent problem in estimating a rate of bycatch for. DSR are habitat-specific, and IPHC longline survey data indicate that bycatch of DSR is highly variable both inter-annually and within year by area. Although DSR distribution overlaps with halibut, the distributions do not correlate. Relying on a 10 percent MRA therefore does not give ADF&G the information it needs to determine whether the TAC has been met, or whether the overfishing limit has been surpassed.

Most vessels in the Eastern Gulf longline fleet are under 60 ft and therefore do not carry observers. Although the IPHC requires logbooks for vessels 26 ft and longer, and State fish tickets include a box for reporting discards at sea, accurate weights, by species, for discards at sea are not possible, and State managers say that logbooks and fish tickets are unreliable in estimating DSR mortality.[13] IPHC logbook data is confidential and is not available to use for analysis of data by vessel over time and area.

1.3 Problem Statement

1.3.1 Identification of Problem

In 1996, the GOA Groundfish Plan Team began focusing on problems with obtaining accurate information on DSR mortality in the halibut longline fishery (see section 1.2.6 above for discussion of problems with bycatch estimation). According to anecdotal information from commercial fishermen, which was supported by data from International Pacific Halibut Commission (IPHC) surveys, some of the DSR bycatch, and possibly a high level, was not being reported. This introduced an unacceptable level of uncertainty for fishery management purposes in accounting for DSR mortality in the annual DSR stock assessment.

According to anecdotal evidence, the 10 percent MRA for DSR taken during the directed halibut fixed gear fishery is not always large enough to allow for normal bycatch rates in an area. On a season-wide basis, the total bycatch of DSR during the halibut fishery may be only 10 percent; but on an individual trip basis the bycatch of DSR varies greatly and for some trips may be much higher than the limit. The total bycatch mortality of DSR in other commercial fisheries is also unknown.

The major consequence to fishery management of not having a good understanding of bycatch is that the allowance for the target DSR fishery may be set too high, or too low. If the total bycatch of DSR were significantly greater than currently estimated, the allocation for the directed DSR fishery would need to be reduced. The converse would also be true, that if the total bycatch were lower than current estimates, the allocation might need to be raised – but it is unlikely that the bycatch rate is being overreported.

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[12]Heather Gilroy, Fisheries Statistics Manager, IPHC. Pers. comm., phone, Feb. 25, 2002.

[13]pers. comm. O'Connell, Jan. 7, 2003

ADF&G tackled this problem by proposing that the Alaska State Board of Fisheries (Board of Fisheries) and NMFS adopt complementary regulations implementing a full retention program for rockfish. Under this program, all incidental catch of DSR would be landed, weighed and reported. The information from this program would be used to help calculate total mortality, to enhance the DSR stock assessment and management for TAC setting. The information would also be used to evaluate whether, given the wide variation in DSR bycatch in different locations, it would make sense to keep the full retention requirement, or to reinstate the MRA, revised from the current 10 percent level if appropriate.

In September 1997, the Council initiated an analysis of a groundfish proposal submitted by ADF&G to require full retention of DSR in Statistical Area 650, or the Southeast Outside District (Figure 1). The Council adopted full retention as its preferred action in February, 1999. However, the rule ran into legal obstacles, as described subsequently, and has not been implemented by NMFS.

In July 2000 the Board of Fisheries enacted a regulation (5 AAC 28.171) requiring holders of Commercial Fish Entry Commission (CFEC) licenses to retain all species of rockfish caught in inside waters and all DSR caught in State waters (0-3 miles from shore). Overages must be reported on an ADF&G fish ticket. Any proceeds from the sale of excess rockfish bycatch must be forfeited to the State. The amount of DSR landed has increased substantially since this regulation was promulgated: in 2001, over 42,000 pounds of DSR were forfeited in Southeast Alaska, compared to less than 16,000 in 2000 (Table 3). However, the State regulation was intended to complement Federal regulations, and ADF&G managers are concerned that the data will be insufficient if it is based only on DSR taken in State waters. Also, because fishermen may face Federal penalties for retaining DSR in Federal waters in amounts that exceed MRAs, State managers suspect that fishermen may be taking the expedient route and failing to land all DSR caught in State waters.[14]

Management of DSR has been conservative, and the 2% level of harvest should be sustainable. However, these species occur patchily, and fishing effort concentrates on areas with the best habitat. Such effort has also increased, according to anecdotal reports, since the implementation of IFQs in the halibut fishery. There has also been a decline in density estimates on the Fairweather ground. All this leads State managers to conclude that localized overfishing may be occurring, and particularly that yelloweye occurring in prime habitat may be getting caught at a rate locally exceeding the overfishing level. (O'Connell et al. 2002).

1.3.2 Statement of Purpose

The Council's objectives in recommending a regulatory amendment requiring full retention of DSR bycatch are essentially fourfold:

1. To improve the gathering of information on the bycatch of DSR in the halibut longline fishery and other fisheries in the SEO, in order to get a more accurate picture of DSR mortality and to enable biologists to improve the annual stock assessments.

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[14]Pers. comm. Tory O'Connell, 2002.

2. To avoid, in the process of implementing a full retention program, either increasing incentives to target on DSR or increasing incentives to discard bycatch in excess of the amount that can legally be sold.
3. To minimize waste to the extent practicable while meeting these goals.
4. To achieve consistency between State and Federal regulations that govern the retention and disposition of DSR harvested in the SEO.

1.3.3 Magnuson-Stevens Act Requirements

Several standards established in the Magnuson-Stevens Act are pertinent to this action.

National Standard 1 states: "Conservation and management measures shall prevent overfishing while achieving on a continuing basis, the optimum yield from each fishery for the United States fishing industry."

National Standards 2 states: "Conservation and management measures shall be based upon the best scientific information available."

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

Alternatives 2-4, examined in this EA, are intended to improve the collection of information on DSR mortality. Alternatives 2 and 3 reduce waste by requiring full retention and appropriate use of retained fish instead of those fish being discarded, dead, at sea. To some extent, therefore, the alternatives address all three of the above standards.

Certain sections of the Magnuson-Stevens Act which were contained in the Sustainable Fisheries Act of 1996 (SFA) are also relevant. Section 303(a)(11) requires an assessment of the amount and type of bycatch occurring in each fishery and adoption of conservation and management measures that minimize bycatch to the extent practicable. Section 313(h) requires total catch measurement in each fishery under Council jurisdiction using measures to "ensure the accurate enumeration, at a minimum, of target species, economic discards, and regulatory discards." Section 313(i) requires full retention by fishing vessels and full utilization by fish processors of economic discards in fisheries, if such discards cannot be avoided. Section 313(f) requires the reduction of economic discards.

2.0 DESCRIPTION OF THE ALTERNATIVES

2.1 Alternatives Considered

Alternative 1: No Action

Under this alternative the maximum retainable percentage limit (MRA) as set out in 50 CFR 679(e) and 50 CFR 679.20, Table 10, would continue to apply. There would be no change in the 10 percent MRA for DSR for fishermen using hook-and-line or jig gear in the SEO. Fishermen could retain any DSR caught, so long as the weight of the retained DSR was less than 10 percent of the weight of their target species; they would be required to discard any DSR harvested that was over that limit.

Discussion of Alternative 1: If no action were taken, managers would be unable to collect the data necessary to better estimate the TAC, ABC, OFL, and reasonable MRAs for this assemblage. Furthermore, rockfish over the MRA would continue to be discarded dead at sea; some of which might otherwise be retained in edible condition and used for human consumption.

Alternative 2: Require full retention of DSR in the hook-and-line and jig gear fisheries in the SEO.

This alternative requires full retention of DSR, allows for sale of up to 10% of landed catch, and provides two ways to dispose of other rockfish. Alternative 2 has four provisions:

1. Eliminate the MRA for incidental catch of DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO;

2. Require that all DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO be retained, weighed, and reported on State of Alaska fish tickets.

3. Limit the sale of incidental catch of DSR to no more than 10 percent of the aggregate round weight of IFQ Pacific halibut, and other groundfish species open to directed fishing, that are landed during the same fishing trip; or no more than 1 percent of the aggregate round weight of sablefish.

4. Provide two methods for disposal of any DSR in excess of the amount that may be sold and the proceeds retained by the fisherman:
   a. sell the excess DSR and relinquish the proceeds to the State of Alaska;
   b. retain the excess DSR for any other use except sale, barter, or trade.

Discussion of Alternative 2: This was previously the preferred alternative, based on the action taken by the Council in June 1998. NOAA General Counsel (GC) determined in the spring of 2002 that this alternative has legal problems that prevent it from being approved by NMFS. The legal memorandum describing these problems is Appendix A to this document at the end of the following discussion.

The action as passed by the Council in 1999 actually differed from the language above, in that it laid out three options for disposal of excess DSR - relinquishing proceeds to the State, keeping the DSR for private consumption, or donating it to a non-profit charity. These last two were subsequently combined however, because the structure of State recordkeeping precludes keeping track of the fish once the processor has weighed it and returned some or all of it to the fisherman for personal use. Because it would be difficult to track how the fish was being used, the two options of keeping it for personal use or donating it were combined.

Alternative 2 would implement a full retention program for DSR caught in the hook-and-line and jig gear fisheries in the SEO. The documented catches of DSR taken under this program would allow fisheries managers to more accurately manage the TAC. Although no additional observer coverage would be required to verify full retention, State managers believe that compliance would be sufficiently assured to greatly enhance bycatch mortality reporting relative to Alternative 1.

Some concerns have been expressed about the practice of topping off in relationship to the full retention program for DSR. In October 1998, the Council's Scientific and Statistical Committee responded to these concerns. They noted that under a full retention program for DSR, landings and incidental catch might increase since it would be legal to retain DSR in excess of 10 percent of weight of the halibut or sablefish catch in the Individual Fishing Quota (IFQ) fisheries. DSR incidental catch landings could increase to the point where they would preclude a directed fishery for DSR. However, although increases in DSR catch could occur where natural bycatch rates exceed the MRA, any incentive to surpass that limit would come more from the profits associated with the directed fishery than from a topping off strategy. Since the proceeds of DSR overages would have to be forfeited, their retention presents an opportunity cost to fishermen that would affect the decision to further prosecute the target fishery. Therefore, the SSC concluded that there is no *additional* incentive to "top off" under a full retention program for DSR.

In other words, although it is likely that a full retention program would result in increased landings of DSR, this alternative (or alternative 3) would be unlikely to promote topping off, and might result instead in reduction of bycatch, if fishermen avoid areas of high bycatch to minimize the inconvenience of bringing unprofitable product to shore.

This alternative would also reduce waste, at least in terms of utilizing fish that would otherwise be dead in any event. Rockfish rarely survive being captured and discarded, so that no additional fish are saved in the course of adhering to current regulations, under which fish over 10 percent of the retained catch must be discarded. Under Alternative 2, the excess incidental catch would instead be landed, and most of the fish would be made available for human consumption, through one of the allowed options.

This alternative is less costly than an observer program would be, both to the fishermen and to the government. Because of the requirement of full retention, it is also likely to provide more data than an observer program would regarding the total mortality of DSR. However, the data might be less accurate than could be obtained through an observer program, as unobserved fishermen would have an incentive to throw back some of their bycatch, in spite of the rules, again because of the inconvenience (i.e., economics costs) of bringing unprofitable catch to shore.

Although this alternative does not use additional observer coverage to verify full retention, State managers have stated that they expect enough compliance to enhance bycatch mortality accounting over the status quo alternative.

As compared to the status quo, Alternative 2 has the added advantage of consistency with State regulations requiring a CFEC license holder to retain all DSR taken, and have it weighed and reported on an ADF&G fish ticket. Under current Federal regulations, NMFS Enforcement may take action on any amount retained over the 10 percent MRA. Such action may include a $1,000 fine on the third infraction in the same calendar year.

Disposition of DSR under State regulations, which are caught in excess of the legal limit and not sold, is the responsibility of the fishermen, who may sell it and forfeit the proceeds to the State, donate it to a food bank or other charity, or take it home. State regulations do not allow fishermen to surrender the fish directly, but rather require that all proceeds from the sale of DSR over the 10 percent allowable amount be forfeited to the State. Such forfeitures are marked on the fish ticket, and the State deposits the proceeds in a fishery fund which is designed to transcend fiscal years. When the DSR fishery fund has collected a large enough sum, it will be used toward management or research for DSR.

The State of Alaska would be expected to reassess the full retention program within three years and to recommend retaining a full retention program or reverting to setting maximum retainable percentage limits, possibly with adjustments to the MRA based on the improved data collected through this program.

Legal Obstacles to adopting Alternative 2: NOAA GC's reasoning for determining that Alternative 2 is not legal is summarized in this section. NOAA GC's full memo to the Council on this subject (Sept. 27, 2002) is attached as an appendix to this EA.

Basically, NOAA GC determined that the provision requiring proceeds from the sale of DSR over the 10 percent MRA probably exceeds the rulemaking authority provided by the Magnuson-Stevens Act. The Magnuson-Stevens Act is focused on harvesting. The Act authorizes NMFS to take conservation and management measures "applicable to foreign fishing and fishing by vessels of the United States." 16 U.S.C. 1853(a). "Fishing" is defined in the Act to include the actual or attempted catching, taking or harvesting of fish, "any other activity which can reasonably be expected to result in the catching, taking or harvesting of fish, or any operations at sea in support of, or in preparation for" the harvesting of fish. 16 U.S.C. 1802(15).

NMFS and the Councils have interpreted the law as providing authority to regulate what a fisherman can do with legally harvested fish, as long as conservation and management reasons exist for such regulation. Regulations have been implemented by NMFS that regulate processing activities by harvesters and at-sea processors, such as the roe-stripping and forage fish regulations in the North Pacific, and regulations that prohibit the sale of illegally harvested fish. These activities have been determined to fall within the Magnuson-Stevens Act authority to regulate "fishing." However, the regulation of proceeds from the sale of legally harvested fish proposed in Alternative 2 is one step further removed from the Magnuson-Stevens Act's focus on "fishing," and from the authority it grants NMFS to regulate fishing.

Furthermore, if the excess DSR is allowed to be sold to the processor via an ability to relinquish the harvester's proceeds to the State of Alaska, more DSR than contemplated by the 10 percent sale limit could enter the stream of commerce, and could create incentives for arrangements between harvesters and processors that would undermine the rule's objective of discouraging fishermen from targeting on DSR or fishing in areas where high DSR incidental catch is anticipated.

NOAA GC also looked at the possibility of modifying the draft proposed rule so that Federal regulations would require full retention of DSR caught in the SEO but remain silent as to the disposition of the DSR and sale proceeds. If State regulations required that proceeds from the sale of DSR caught in the EEZ in excess of a 10 percent sale limit be relinquished to the state, that would create a situation wherein fish that would be required to be retained in the EEZ without any other limitation under Federal law would be subject to limitations as to its disposition under State law. NOAA GC concluded that there could be pre-emption problems with such a regulatory scheme. A reviewing court might find that the Federal law supersedes the State law because the State law limiting receipt of sale proceeds could be found to interfere with and be contrary to the Federal law which sets no limit on receipt of sale proceeds, especially given the extensive administrative record showing that such a limitation was considered but rejected. NOAA GC noted that the situation is similar to the facts in State v. Sterling, 448 A. 2d 785, 787 (R.I. 1982). In State v. Sterling, a Rhode Island law purported to impose a landing-possession limit on yellowtail flounder of 3,000 pounds per boat per trip, without regard to the area of capture. An FMP regulation governing the fishing of yellowtail flounder in the same region established no per-trip possession or landing limits. Finding the Rhode Island statute in conflict with the FMP regulation, the court held that the State law was pre-empted.

Alternative 3: (Preferred Alternative) Require full retention of DSR in the hook-and-line and jig gear fisheries in the SEO; don't allow DSR over 10 % sales limit to enter the stream of commerce

This alternative is similar to Alternative 2, except that any DSR caught in excess of the10% sale limit would not be allowed to enter the stream of commerce, but could be retained for any other use, including personal use or donation to a charity. Alternative 3 would:

1. Eliminate the MRA for incidental catch of DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO;

2. Require that all DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO be retained and landed. Catcher/processors would continue to observe current MRAs for DSR.

3. Limit the sale of incidental catch of DSR to no more than 10 percent of the aggregate round weight of IFQ Pacific halibut, and other groundfish species open to directed fishing, that are landed during the same fishing trip; or no more than 1 percent of the aggregate round weight of sablefish.

4. Dispose of any DSR in excess of the amount that may be sold by any method other than sale, barter, or trade.

Discussion of Alternative 3: This alternative is similar to Alternative 2 but is more clearly within the purview of NMFS' authority, as the action would not entail regulating the sale of fish.

The proposed regulations do not explicitly require weighing and reporting the DSR on fish tickets because of existing State and federal regulatory requirements. State regulations at 5 AAC 39.110(c) require that all fish caught in Alaska State waters or in the EEZ and landed at Alaska ports must be weighed and reported on ADF&G fish tickets. This is the responsibility either of the buyer of raw fish, or of the fisherman who sells to a buyer not licensed to process fish or who processes his or her own catch.

DSR landed in out-of-state ports must also be reported under existing regulations. Fishermen who catch fish in State waters and land it in ports outside Alaska must under State regulations complete an ADF&G fish ticket or equivalent document estimating weights by species, with gear and location information; more precise information is generally obtained from fish tickets filled out by the out-of-state processors. Fishermen who catch fish in the EEZ and land it outside Alaska are not covered by these State requirements, but under federal regulations at § 679.5 (k) must submit a vessel activity report estimating the weight of the fish or fish products, by species.

Most incidental catch of DSR is brought to Alaska ports and would be entered on ADF&G fish tickets if it were retained under the proposed rule. To the extent that fishermen comply with the proposed full retention requirements, DSR catch data would improve under the proposed rule. Three potential problems can be foreseen with this variation however:

1. It does not track the State's program as closely as Alternative 2, because it does not allow forfeiture of excess DSR to the State. This could lead to problems and costs in keeping fish caught in State waters separate from fish caught in Federal waters.

2. Because fishermen might have to deal with excess fish by either retaining it or donating it, some might be less inclined to comply than they would if they had the option of allowing the processors to sell the fish, but forgoing the proceeds themselves.

3. Increased waste could ensue. Because processors could not sell excess DSR, the fish would have to be disposed of in another manner. Probably most of the excess would enter the waste stream for processors. Processing waste at shore plants is generally converted into fish meal, fish oil, and other by-products. Nonetheless, recovery is not 100%, thus some waste is discharged into the local marine environment. Smaller plants (e.g., with limited or no meal production capability) likely discharge proportionately more waste, per unit of landed catch, than larger plants (e.g., operations with meal production capability).

The level of excess fish caught over the 10% allowed to be sold would also affect whether these problems materialized. If a convenient donation program were established by the State or another party, donation might become a more viable option. The reduced options for dealing with excess fish might also lead fishermen to be more careful about avoiding excess DSR, which would improve the wastage situation.

Catcher/processors were excluded from the requirement for full retention of DSR because only trace amounts of DSR are caught by catcher/processors using nontrawl gear in the SEO of the GOA. These

vessels typically fish for sablefish in deeper waters than are preferred by DSR species. The use of observer data to estimate mortality of DSR for this sector is considered adequate; catcher/processors would be required to comply with the existing MRAs.

Alternative 4: Observer program on halibut longline and other hook-and-line vessels in the SEO to estimate mortality of DSR in non-target fisheries

The 10 percent MRA would be retained. Fishermen would still be required to discard DSR over that MRA. This alternative would extend existing regulations requiring observer coverage for 30 percent of fishing days on catcher vessels from 60 to 125 feet LOA to apply to catcher vessels fishing for groundfish and halibut in the SEO.

Discussion of Alternative 4: This alternative would solve the problem of inadequate data collection, in that it would create a scientific sampling program to obtain information. It has the advantage of precedent, as observers are used to obtaining such information in other fisheries. A number of obstacles exist, however, to such a program. Many of the vessels participating in the halibut fishery would find it difficult to accommodate an observer because of space limitations and safety factors.

The sampling results could be skewed somewhat by the need to limit observers to vessels that could accommodate them. Most of these vessels also do not have the capacity to weigh incidental catch, so observer estimates of total mortality would have to be based on numbers of fish.

A related problem is that bycatch of rockfish is highly variable and an effective program may need a high percentage of vessel coverage. ADF&G reviewed bycatch statistics for IPHC station locations in Southeast Alaska, from the IPHC 1998 longline survey. Bycatch of yelloweye[15], expressed as the proportion of yelloweye weight to halibut weight (for legal-sized halibut) ranged from 0 to 189 percent, with area specific means ranging from 5 percent in the EYKT to 30 percent in the Central SEO. The overall average for the SEO was 10.9 percent, based on 109 longline sets. The combined average for the North, Central, and South SEO subdistricts was 15 percent (±7 percent).

It is clear from reviewing these data that variables including area, depth, and season fished greatly affect bycatch rates of yelloweye rockfish. In order to account for these variables statistically, an observer program would need to include a higher proportion of vessels and of total fishing trips than would be necessary if DSR bycatch were more evenly distributed. An extensive observer program would be expensive and logistically burdensome for the vessel operators and the observer program, as compared to the likely improvements in catch and mortality data obtained. However, such a program might be more feasible if adopted as part of a broader restructuring of the observer program, allowing for different funding mechanisms and more flexibility, which is currently under study by the Council and NMFS

[15]Yelloweye rockfish accounts for 90 percent of all DSR landings.

2.2 Exempted Fishing Permit: An Additional Option

An exempted fishing permit (EFP) would consist of an experiment conducted in order to obtain bycatch data. The experiment could require full retention of fish, but would outline clear procedures, would set a time limit for obtaining the information, and would involve enrolling vessels that wished to participate. Presumably, vessels which voluntarily participate would be likely to comply with the full retention requirement. This is a possible solution to the problem of collecting data in order to establish bycatch rates.

Under Federal regulations,[16] an EFP allows fishing to occur in a way that would otherwise be prohibited. Thus, conducting an EFP might allow the State and Federal government more flexibility than would otherwise be the case. Normally adopting an EFP is not considered a separate alternative to be analyzed in an EA/RIR/IRFA, because it would require an application by a third party, in this case most likely the State, which would design the experiment and ask for approval. At that point, NMFS would develop a separate EA for the EFP, and that analysis would depend on how the program was designed in terms of time, level of expected participation, etc.

An exempted fishing permit program to quantify the level of DSR discards might grant fishermen special benefits in exchange for a voluntary commitment to retain all DSR, and to bring that DSR to shore for counting and weighing. The number of fishermen included would have to be large enough to provide a scientifically valid sample, permitting inferences about overall discards in the population. The sample would have to be appropriately stratified, so that operations of different sizes, or with different times and locations of fishing, would be represented.

An exempted fishing permit program would depend on voluntary participation, and the level of this participation would, in turn, depend on the incentives that could be built into the program. The incentive would have to be high enough to allow fishermen to cover participation costs and to prompt voluntary participation. However, if the incentive were too high, fishermen might deliberately target on DSR, which would make it hard to extrapolate from the experience of the EFP participants to the whole fleet. Further complicating matters, the costs of retaining DSR differ depending on factors which include the vessel's storage capacity and its distance from its home port – the need to fully retain DSR onboard could mean an additional trip for a vessel that must travel from a distance to fish. Therefore, the appropriate incentive might differ among different classes of operations.

2.3 Alternatives Considered but Rejected

Following is a summary of alternatives that were discussed and partially analyzed while developing this proposal, but rejected without a full analysis as the Council did not consider them suitable for the DSR fisheries, for the reasons outlined.

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[16] § 679.6 Exempted fisheries. . .For limited experimental purposes, the Regional Administrator may authorize, after consulting with the Council, fishing for groundfish in a manner that would otherwise be prohibited. No exempted fishing may be conducted unless authorized by an exempted fishing permit issued by the Regional Administrator to the participating vessel owner in accordance with the criteria and procedures specified in this section. . .

1. Open directed DSR fishery concurrent with the halibut IFQ season and require full retention.

This alternative, allowing concurrent directed and incidental catch fisheries for DSR, would mean that incidental catch of DSR taken in the course of fishing for halibut could be legally landed on a directed fishery fish ticket. This entails some problems. The directed fishery was closed during the halibut IFQ season precisely in order to prevent overharvesting. Currently, the directed fishery quota in the SEO is taken in a matter of a few weeks.[17] Opening the directed fishery concurrently with the halibut IFQ fishery would remove the halibut fishermen's incentive to avoid bycatch, replacing it instead with the incentive to top off for directed fishery deliveries. As a result, the amount of DSR taken by the halibut IFQ fleet would be likely to increase considerably. Furthermore, the current scheme, under which the directed harvest receives part of the TAC, and the rest is allocated to incidental catch of rockfish in other fisheries, would no longer be feasible. The likely result would be a derby-style rush for fish.

2. Defer All Management of DSR Rockfish to the State.

The State currently manages most aspects of the DSR fishery, consistent with the FMP for the GOA. NMFS is responsible for setting the TAC and maximum retainable percentage levels. This alternative would defer management authority for DSR to the State of Alaska, either by removing DSR from the GOA FMP, or by deferring additional management authority to the State, including the ability to set MRAs. Under this scenario, the State would be able to complement its regulations by requiring surrender of DSR in excess of 10 percent of retained groundfish catch. The drawback to this alternative is that it would seem to be an extreme solution to the stated problem, when alternatives are available under the existing FMP management structure.

3. Implement an IFQ fishery for DSR.

Under recent Magnuson-Stevens Act guidelines, no new IFQ fisheries were allowed until October 2002. This provision has expired, so that managing the DSR fishery through IFQs would now be a legal option. This alternative has some of the advantages of any IFQ fishery, including increased efficiency and elimination of the incentive to race for fish. However, given the relatively low TAC, the inherent problem of discard mortality, the variation in DSR catch rate by area, depth and season, and the rapid turnover of this fishery, this might be a complicated system to implement effectively. The program would likely require concurrent quota share fishing for halibut and DSR, similar to that which occurs for halibut and sablefish. However, an IFQ fishery for DSR might be worth reconsidering, perhaps after a full retention program has been in place long enough to understand the bycatch situation more fully.

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[17]See O'Connell and Brylinsky (2001) for historical season openings in SEO management areas.

3.0 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

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

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose was discussed in Section 1, and background information presented on the DSR fishery. Alternatives were presented in Section 2. The economic impacts of the alternatives will be discussed in Sections 4 (RIR) and 5 (IRFA). This section contains the discussion of the environmental impacts of the alternatives, including impacts on essential fish habitat, on threatened and endangered species, and marine mammals.

The environmental impacts generally associated with fishery management actions result from (1) the harvest of fish stocks, which may result in changes in food availability to predators and scavengers, changes in the population structure of target fish stocks, and changes in the marine ecosystem community structure; (2) changes in the physical and biological structure of the marine environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and (3) entanglement/entrapment of non-target organisms in active or inactive fishing gear. A summary of the effects of the annual groundfish harvests on the biological environment, including impacts on marine mammals, seabirds, and other threatened or endangered species, is included in the final environmental assessment for the annual groundfish TAC specifications (NMFS 2001a).

3.1 Biology of DSR Rockfish and Environmental Impacts on them from the Alternatives

Rockfishes of the genus *Sebastes* are found in temperate waters of the continental shelf off North America. At least 32 species of *Sebastes* occur in the GOA. In 1987, the Council divided the rockfish complex into three components for management purposes in the eastern Gulf: DSR, Pelagic Shelf Rockfish, and Slope Rockfish. The DSR assemblage is comprised of seven species of nearshore, bottom-dwelling rockfishes listed below. These fishes all occur on the continental shelf and are generally associated with rugged, rocky habitat.

The dominant species in the DSR fishery is yelloweye rockfish, which accounts for 90 percent of all DSR landings, and which therefore is the focus of this discussion. Quillback rockfish account for 8 percent of the catch. DSR exhibit slow growth and extreme longevity; the maximum published age for yelloweye is 118 years. Estimates of natural mortality are very low. They are viviparous. These types of fishes are very susceptible to overexploitation and are slow to

Common name	Scientific Name
canary rockfish	*Sebastes pinniger*
China rockfish	*S. nebulosus*
copper rockfish	*S. caurinus*
quillback rockfish	*S. maliger*
rosethorn rockfish	*S. helvomaculatus*
tiger rockfish	*S. nigrocinctus*
yelloweye rockfish	*S. ruberrimus*

recover once driven below the level of sustainable yield (Leaman and Beamish 1984; Francis 1985); an acceptable exploitation level is assumed to be low.

Rockfishes have internal fertilization. Several months separate copulation, fertilization, and parturition (release of larvae). Most of these species extrude larvae in late winter and spring. Yelloweye rockfish extrude larvae over an extended period, peaking in April and May (O'Connell 1987). They typically attain sexual maturity at about 15 years and individual growth levels off at about 30. They may live to be over 100. The natural mortality rate (M) = 0.02.

Rockfish have a physoclistic, or closed, swim bladder, which is used to regulate buoyancy. They are not capable of quickly adjusting to depth changes and therefore suffer embolism mortality when brought to the surface from depth. Most DSR do not survive encounters with fishing gear. Rockfishes have a closed swimbladder, which is used to regulate buoyancy.

Yelloweye are a large fish which may attain a maximum length of 91 cm. They are predatory, generally feeding close to the bottom. Important prey in their diet include herring, sandlance, Puget Sound rockfish and shrimp (Rosenthal et. al 1988).

The purpose of the proposed regulations is to obtain a better accounting of DSR mortality so as to improve stock assessments and, ultimately, to safeguard the DSR from overfishing. Under status quo Federal management, it is believed that much DSR bycatch goes unreported. Under alternative 2, full retention would be required and this should lead to better accounting of mortality and therefore a better ability to make stock assessments and set quotas. Alternative 3, which would establish an observer program, would also lead to a better accounting of mortality.

No changes to the total TAC of DSR are proposed by any of the alternatives. Alternatives 2 and 3, requiring full retention of DSR, could have the effect of encouraging fishermen to move to areas of lower bycatch of DSR, in order to avoid the costs of bringing the excess DSR to shore to be weighed and disposed of. That might reduce waste in the fishery. Alternative 4 would implement an observer program in the fishery. It therefore might enable biologists to better set the ABC, OFL and TAC amounts, that is to say, it would lead to better-informed management. Presumably, more information is better than less and better-informed management would be beneficial to the fish stocks.

3.2 Essential Fish Habitat

Inclusively, all the marine waters and benthic substrates in the management areas comprise the habitat of all marine species. Additionally the adjacent marine waters outside the EEZ, adjacent State waters inside the EEZ, 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 fisheries' target species, marine mammals, seabirds, and the ESA listed species. The draft programmatic PSEIS assesses the impacts of the groundfish fisheries in the GOA on the habitat, including a detailed discussion of gear impacts in Section 3.6.4 (NMFS 2003). A description of maps of essential fish habitat for the DSR fishery in the Eastern GOA are found in the EA/RIR for GOA Plan Amendment 55 (NPFMC 1998).

The effects of longline fishing on habitat have received little attention, as most scientific studies have focused on the impacts of bottom trawling. However, longline fishing has some effect on habitat, as hooks bring up coral, sponges, and other living substrate that is used as habitat for fish. Maintaining the status quo would involve a continuation of any such impacts. None of the alternatives analyzed would change the amount of fishing nor the types of fishing gear used. Alternatives 2 or 3 might have some influence on the fishing locations, as fishermen might want to avoid excess bycatch of DSR. This could be beneficial to habitat that is very productive for DSR.

3.3 Trophic Interactions and Scavenger Population Response

The marine food-web of North Pacific marine fishes is complex (Livingston and Goiney 1983). Numerous species of plankton, phytoplankton, invertebrates, mollusks, crustaceans, forage fish, demersal, mid-water, and pelagic fish, marine mammals, seabirds, and humans combine to comprise the food-web present in the GOA. Environmental changes as well as human exploitation patterns can effect change trophic interactions. Fishing causes direct changes in the structure of fish communities by reducing the abundance of target or bycatch species. These reductions may then lead to responses in non-target species through changes in competitive interactions and predator-prey relationships. Indirect effects of fishing on trophic interactions in marine ecosystems may also occur.

Several years of groundfish food habits data collected by the Trophic Interactions Program at the Alaska Fisheries Science Center confirm the consumption of fish processing offal by fish in the eastern Bering Sea, Aleutian Islands, and Gulf of Alaska (Queirolo et al. 1995). Estimates of the average percent by weight of offal in the diet of groundfish species in the Gulf of Alaska in 1990 and 1993, indicate a decline in the amount of offal in the diet between those years for Pacific cod, arrowtooth flounder, and Pacific halibut. Estimates are not available for consumption of whole animal discards by groundfish, marine mammals, or birds in the BSAI and GOA areas. When analyzing stomach contents of groundfish and birds, and scats of marine mammals, it is impossible to discern whether a whole animal in the stomach contents was consumed when alive or dead. Discarded fish are categorized as trophic level 1, or detritus. No information has been collected for rockfish. The total amount of dead organic material (detritus) that would reach the bottom is probably small relative to other natural sources of detritus.

Fishery management measures under alternatives 2 or 3 – as compared to either maintaining status quo management or instituting an observer program – might affect the marine food-web in the long-term by reducing the amount of the seven species of DSR that are discarded dead at sea. A full retention program for DSR in the SEO would reduce this available prey to scavengers (i.e., fish, marine mammals, and seabirds) by an unknown amount. By the same reasoning, the status quo management, under which DSR over the maximum retainable percentage amounts are discarded, might result in artificially promoting the population of scavenging species. The scavengers that might be affected are not known; while the literature describes what species yelloweye rockfish eat, there is little information on what species eat yelloweye rockfish. Adult yelloweye have been found in halibut stomachs. American bald eagles have been seen scavenging on floating discarded yelloweye rockfish.[18] Bottom invertebrates are believed to scavenge on those rockfish sinking to the seafloor.

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[18]Tory O'Connell, pers. com, winter, 2001.

Possible ecological impacts of reducing DSR discards through a full retention program could be categorized as beneficial since these discards are an artificial contribution to trophic interactions. Stock assessments already assume 100 percent mortality of the discards of these species, so no change in the population status of these species is anticipated due to any of the proposed alternatives. However, the decrease in discards returned to the sea could result in a decrease in the amount of food available to scavengers and, if this decrease was large enough, could produce a decline in growth or reproductive output of species that rely on discards for a major portion of their food intake. Also, changes in energy flow to the detritus and local enrichment through an increase in processing waste (offal) could occur. The effect of full retention programs, as described in more detail in the EA/RIRs for BSAI Plan Amendment 49 (NPFMC 1997a) and GOA Plan Amendment 49 (NPFMC 1997b) to implement the Improved Retention/Improved Utilization Program, would theoretically be to return trophic interactions to a natural state.

However, it is unlikely that the decrease in discards would be large enough to measurably affect scavenger populations or the marine food web. As described in the EA for GOA Plan Amendment 49 (1997b), under "status quo rates of offal and discard production," most of the scavenger populations were not showing obvious signs of increase related to offal production in groundfish fisheries by pollock, Pacific cod, arrowtooth flounder, flathead sole, yellowfin sole, Pacific halibut, and skates. The authors reported evidence suggesting no linkage between offal and discards with any scavenger population trends under the existing system. Since the DSR TAC is limited to 340 mt and landings totaled 287 mt in 2000, it is unlikely that bycatch overages discarded dead at sea would have a significant impact on scavenger populations.

Local enrichment and change in species composition in some areas might occur if discards or offal returns were concentrated in those areas. Such effects have previously been seen in Orca Inlet in Prince William Sound and in Dutch Harbor, Alaska for other groundfish species (NMFS 1997a and b).

The aim of a full retention program is to quantify the unknown amount of discards being returned to sea, which might lead to modifying the MRA for DSR to better reflect natural bycatch levels and eliminate, to the extent possible, these discards. In either case, whether in the long run the full retention requirement is maintained or the maximum retainable percentage limit is set using better information, Alternatives 2 or 3 remove discarded rockfish from the marine food-web, and therefore can be seen as complying with Congressional mandates to reduce waste.

3.4 Endangered Species Act considerations

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 NMFS for most marine mammal species, marine and anadromous fish species, and marine plant species and by the U.S. Fish & Wildlife Service (USFWS) for bird species, and terrestrial and freshwater wildlife and plant species.

The designation of an ESA-listed species is based on the biological health of that species. The status determination is either threatened or endangered. Threatened species are those likely to become endangered in the foreseeable future [16 U.S.C. § 1532(20)]. Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. § 1532(20)]. Species

can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NMFS, is authorized to list marine fish, plants, and mammals (except for walrus and sea otter) and anadromous fish species. The Secretary of the Interior, acting through the USFWS, is authorized to list walrus and sea otter, seabirds, terrestrial plants and wildlife, and freshwater fish and plant species.

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

Federal agencies have an affirmative mandate to conserve listed species (Rohlf 1989). One assurance of this is that Federal actions, activities or authorizations (hereafter referred to as Federal actions) must be in compliance with the provisions of the ESA. Section 7 of the Act 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 have no adverse effects on the listed species. Formal consultations, resulting in biological opinions, are conducted for Federal actions that may have an adverse effect on the listed species. Through the biological opinion, a determination is made as to whether the proposed action poses "jeopardy" or "no jeopardy" of extinction to the listed species. 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 no longer pose the jeopardy of extinction to the listed species. These reasonable and prudent alternatives must be incorporated into the Federal action if it is to proceed. A biological opinion with the conclusion of no jeopardy may contain a series of management measures intended to further reduce the negative impacts to the listed species. These management alternatives are advisory to the action agency [50 CFR. 402.24(j)]. If a likelihood exists of any taking[19] 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. An incidental take statement is not the equivalent of a permit to take.

Twenty-three species occurring in the GOA and/or BSAI groundfish management areas are currently listed as endangered or threatened under the ESA (Table 4). The group includes great whales, pinnipeds, Pacific salmon and steelhead, two types of eiders, and an albatross.

Section 7 consultations

Because groundfish and crab fisheries are Federally regulated activities, any negative effects of the fisheries on listed species or critical habitat and any takings that may occur are subject to ESA Section 7 consultations. NMFS initiates the consultation and the resulting biological opinions are issued to NMFS. The Council may be invited to participate in the compilation, review, and analysis of data used in the consultations. The determination of whether the action "is likely to jeopardize the continued existence

[19]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 4. Species currently listed as endangered or threatened under the ESA and occurring in the GOA and/or BSAI groundfish management areas.

Common Name	Scientific Name	ESA Status
Northern Right Whale	*Balaena glacialis*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Blue Whale	*Balaenoptera musculus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Snake River Sockeye Salmon	*Onchorynchus nerka*	Endangered
Short-tailed Albatross	*Phoebaotria albatrus*	Endangered
Steller Sea Lion	*Eumetopias jubatus*	Endangered and Threatened [2]
Snake River Fall Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Snake River Spring/Summer Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Puget Sound Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Lower Columbia River Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Upper Willamette River Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Upper Columbia River Spring Chinook Salmon	*Onchorynchus tshawytscha*	Endangered
Upper Columbia River Steelhead	*Onchorynchus mykiss*	Endangered
Snake River Basin Steelhead	*Onchorynchus mykiss*	Threatened
Lower Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Upper Willamette River Steelhead	*Onchorynchus mykiss*	Threatened
Middle Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Spectacled Eider[2]	*Somateria fishcheri*	Threatened
Steller Eider[2]	*Polysticta stelleri*	Threatened
Northern Sea Otter	*Enhydra lutris*	Candidate

[1] Steller sea lions are listed as endangered west of Cape Suckling and threatened east of Cape Suckling, which includes the area under consideration for this action.

[2] These species do not occur in the eastern GOA.

of" endangered or threatened species or to result in the destruction or modification of critical habitat, however, is the responsibility of the appropriate agency (NMFS or USFWS). If the action is determined to result in jeopardy, the opinion includes reasonable and prudent measures that are necessary to alter the action so that jeopardy is avoided.

Section 7 consultations have been done for all the species listed in Table 4, some individually and some as groups.

Endangered cetaceans

NMFS concluded a formal Section 7 consultation on the effects of the GOA groundfish fisheries on endangered cetaceans April 19, 1991. This opinion concluded that the fisheries are unlikely to jeopardize the continued existence or recovery of endangered whales. No new information exists that would cause NMFS to alter the conclusion of the 1991 opinion.

Steller sea lions

In 1990, NMFS designated the Steller sea lion as a threatened species under the ESA. NMFS designated critical habitat in 1993 (58 FR 45278) for the Steller sea lion based on the Recovery Team's

determination of habitat sites essential to reproduction, rest, refuge, and feeding. Listed critical habitats in Alaska include all rookeries, major haulouts, and specific aquatic foraging habitats. In 1997, based on biological information collected since the species was listed as threatened in 1990 (60 FR 51968), NMFS reclassified Steller sea lions as two distinct population segments under the ESA (62 FR 24345). The Steller sea lion population segment west of 144° longitude (a line near Cape Suckling, Alaska) is listed as endangered; the remainder of the U.S. Steller sea lion population maintains the threatened listing. The Final Supplemental Environmental Impact Statement for Steller Sea Lion Protection Measures (NMFS 2001b, Section II, Appendix A), contains the most recent Biological Opinion on Steller Sea Lions, completed in October, 2001.

The SEO, which is the subject of this rule, is not part of the area which was the subject of the reasonable and prudent alternatives developed to protect the endangered western population of Steller sea lions. Rockfish have not been identified as an important part of the sea lions' diet. The alternatives considered here are not expected to affect Stellers' sea lions or their critical habitat.

Seabirds

Short-tailed albatross are the only listed seabirds which could potentially occur in the SEO (Stellers eiders and spectacled eiders are not found in the eastern GOA). The entire world population of short-tailed albatrosses was estimated in 1998 as approximately 1000 birds; 400 adults breed on two small islands near Japan. The population is growing but is still critically endangered because of its small size and restricted breeding range. Past observations indicate that older short-tailed albatrosses are present in Alaska primarily during the summer and fall months, although juveniles may be present at other times of the year. Formal consultations on the effects of the groundfish fisheries on the short-tailed albatross under the jurisdiction of the USFWS were conducted in 1989, 1995, and 1997 (USFWS 1989, USFWS 1995, USFWS 1997). The 1989 consultation concluded that the BSAI and GOA groundfish fisheries would adversely affect the short-tailed albatross but would not jeopardize the continued existence of the species. An incidental take of up to two birds per year was allowed. Subsequent consultations for changes to the fishery that might affect the short-tailed albatross also concluded no jeopardy and established non-discretionary reasonable and prudent measures to minimize the impact of the possible incidental take. The 1997 consultation resulted in an incidental take limit of up to 4 birds during the 2-year period 1997-1998 and limited the scope of the consultation to the groundfish hook-and-line fisheries. A consultation issued on March 19, 1999 (USFWS 1999) continued the no jeopardy conclusion and established the requirement to immediately reinitiate consultation if incidental takes exceeded four short-tailed albatrosses over two years' time.

NMFS requested and was granted an extension of the 1999 Biological Opinion and its accompanying Incidental Take Statement, which otherwise would have expired on December 31, 2000. (USFWS 2001). Two section 7 consultations with USFWS were initiated in 2000, and have not been concluded as yet.

None of the alternatives considered for this rule are expected to have an impact on the short-tailed albatross in any manner not previously considered. This rule is intended to improve accounting for DSR bycatch, reduce the risk of overfishing DSR, and reduce waste. The TAC would not change under any of the alternatives, and no changes are anticipated in the types of gear used. No additional impacts on short-tailed albatross or their critical habitat are expected from the options under consideration.

Impacts of the alternatives on endangered or threatened species

None of the alternatives under consideration would affect the fisheries in a way not previously considered in the above consultations. The proposed alternatives are designed to improve accounting for DSR bycatch and reduce waste. None of the alternatives should affect takes of listed species. Therefore, none of the alternatives are expected to have a significant impact on endangered or threatened species.

3.5 Marine Mammal Protection Act considerations

Under the Marine Mammal Protection Act (MMPA), NMFS categorizes all U.S. commercial fisheries (State and Federal) into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. The categorization of a fishery determines whether participants in that fishery are subject to certain requirements of the MMPA, such as registration, and observer coverage.

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

Take of the above listed marine mammals has been monitored through observer programs. No incidental kills or injuries have been recorded in the groundfish longline/setline fisheries in Alaska's state-managed waters. There have been documented injuries or deaths for harbor seals and Northern elephant seals in the GOA groundfish longline/setline fisheries in Federally regulated waters.

Because of the low incidence of problems and the fact that none of these alternatives would affect the size of the fishery or the gear type used, no effects are anticipated that would affect marine mammals under any of the alternatives considered for this action.

3.6 Coastal Zone Management Act Considerations

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

3.7 Socioeconomic Impacts

A description of the DSR fishery and detailed discussions of the socioeconomic impacts of these alternatives may be found in Sections 4 and 5. Section 4 contains a Regulatory Impact Review (RIR), conducted to review the costs and benefits of the alternatives in accordance with the requirements of E.O. 12866. A summary of the cost and benefit analysis may be found in Table 10. Section 5 contains

an Initial Regulatory Flexibility Analysis, conducted to evaluate the impacts of the suite of potential alternatives being considered, including the preferred alternative, on small entities, in accordance with the provisions of the Regulatory Flexibility Act.

3.8 Direct, Indirect and Cumulative Effects

Effects of an action can be direct or indirect. According to the definition in the Council on Environmental Quality (CEQ) regulations (40CFR1500.1) providing guidance on NEPA, direct effects are caused by the action and occur at the same time and place, while indirect effects are those caused by the action and occur later in time or farther removed in distance, but are still reasonably foreseeable. Although the CEQ regulations draw this distinction between direct and indirect effects, legally both must be considered equally in determining significance. In practice, according to "The NEPA Book" (Bass et al. 2001, p. 55), "the distinction between a reasonably foreseeable effect and a remote and speculative effect is more important than the question of whether an impact is considered direct or indirect."

The alternatives under consideration in this EA/RIR/IRFA are primarily designed to improve data collection on DSR mortality. Any direct effects or reasonably foreseeable indirect environmental effects from the action would be minor, as explained in the EA. The action itself would not entail changes in harvest levels, and any environmental effects, such as the removal of DSR biomass from the ecosystem, are so minor as to make it difficult to reasonably predict further indirect effects of those changes. However, the action could have some indirect effects when we consider possible changes in management deriving from the improved information gleaned from the data collected under full retention rules. The new data would affect the calculation of TAC and ABC levels, and the relative proportion of DSR allotted to the directed DSR fishery and as incidental catch could also change in response to an enhanced understanding of fishing-induced DSR mortality. The process by which these decisions are made would not be affected, however.

Cumulative effects are linked to incremental policy changes that individually may have small outcomes, but that in the aggregate and in combination with other factors can result in major resource trends. Cumulative effects from fishery management actions in the Gulf of Alaska have been examined in depth in the PSEIS (NMFS 2003) and the Steller Sea Lion Protection Measures Final EIS (NMFS 2001b).

This action would not interact synergistically with other actions or with natural trends to significantly affect the resources of the Gulf of Alaska. No other regulations concern mortality accounting for DSR taken in Federal waters. The preferred alternative is designed to essentially extend the State's full retention plan for DSR to include Federal waters, and direct or indirect environmental or socioeconomic benefits and costs would be similar for the State and Federal regulations. Mortality accounting could theoretically be affected by the sport fishery for DSR, but, as discussed in the RIR, section 4.6, the sport fishery is relatively small, it is not subject to the harvest limitations established by the commercial fishery managers, and sport harvests are not considered in the calculations that underlie the commercial TACs. No reasonably foreseeable future actions would have impacts that would cause significant cumulative effects when combined with the effects from this action.

3.9 Conclusions

To determine whether there would be any significant impacts from implementation of the preferred alternative analyzed in this EA, as required by NEPA, 50 CRF § 1508.27, and NOAA Administrative Order 216-6 (NOA 216-6), we addressed 10 of the criteria for determining significance, which were suggested in two lists – one for general NOAA actions and one specifically for fishery management actions – in, respectively, Section 6.01 and 6.02 of NOA 216-6.[20] Our questions address the issues raised by this action and dealt with in the EA/RIR/IRFA, as follows:

1. Would the effects of this action be significantly adverse or beneficial?

   This is a relatively minor action within the context of fishery management in the Gulf of Alaska. Implementation of the preferred alternative, as analyzed in the EA/RIR/IRFA, will not significantly affect the quality of the human environment. While we may obtain information that allows us to improve DSR management at the margin, we do not expect fundamental changes in the management of the fishery. Direct impacts on the environment would be minimal, as discussed in sections 3.1 through 3.6 of the EA. Any changes in management that do occur would be based on policy adopted in light of new information and not as a direct result of implementing any of the alternatives. Indirect impacts to the environment could derive from better information leading to more skillful management. For example, new information could eventually lead to decisions by managers to reallocate DSR harvest between targeted and incidental catch harvests. From a socioeconomic standpoint, we expect minor direct impacts on fishermen and fish buyers from a full retention program, including increased handling costs, and minor changes in paperwork. If a successful donation program is in place, the satisfaction associated with a reduction in perceived waste would constitute a positive impact. The socioeconomic impacts are discussed in the cost and benefit sections of the RIR (Sections 4.8 and 4.9), with a summary provided in Table 10.

2. Would the proposed action jeopardize the sustainability of any target or non-target species affected by this action?

   The proposed action is not expected to jeopardize the sustainability of any target or non-target species affected by this action. As explained in section 3.1, the action is primarily designed to collect better data on incidental catch of DSR taken in the SEO by fishermen targeting other groundfish species and IFQ Pacific halibut. The action itself would not lead to direct changes in the mortality level, but improved information might lead to certain changes in management. For example, the TAC or ABC, or the proportion of DSR taken by the directed fishery for DSR, or as incidental catch in other fisheries, might change in response to an enhanced understanding of fishing-induced DSR mortality.

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[20] A few of the criteria listed in NOA 216-6 , including the potential for adverse impact on historically or culturally important sites and whether the action might result in the introduction or spread of a nonindigenous species, were not considered relevant to this action, and some of the listed criteria were combined.

3. Would the proposed action cause substantial damage to essential fish habitat, or have a substantial impact on biodiversity and ecosystem function within the affected area?

The proposed action would not cause substantial damage to essential fish habitat, or a substantial impact on biodiversity and ecosystem function within the affected area, as discussed in sections 3.2 and 3.3 of the EA. The amount of fishing and the types of fishing gear used would not change. Requiring full retention might have some effect on fishing locations, as fishermen might want to avoid excess bycatch of DSR, which could have some localized beneficial effects on habitat used by DSR species. Some DSR that would be discarded under current management would instead be landed, but the reductions in discards would not be large enough to measurably affect scavenger populations or the marine food web.

4. Would the proposed action adversely affect endangered or threatened species, marine mammals, or critical habitat?

As analyzed in sections 3.5 and 3.6 of the EA, none of the alternatives would adversely affect endangered or threatened species, marine mammals, or critical habitat.

5. Would the proposed action affect public health or safety?

No issues involving public health or safety have been raised in connection with this action.

6. Would the effects on the human environment detailed in the EA/RIR/IRFA be highly controversial?

No controversy has arisen regarding the data and level of information used in this analysis.

This proposed action has also not met with much public controversy. When initially proposed, Alternative 2 provoked some discussion because of potential costs to fishermen of complying with the rule, but these costs are counterbalanced by perceived benefits in terms of improved data collection and reduced wastage. The State of Alaska implemented full retention regulations in its own waters adjacent to the Federal waters covered by this action in 2000. The operation of the State's rule has not caused controversy.

7. To what degree are the effects of this action highly uncertain; does the action involve unique or unknown risks?

Some uncertainty attaches to the question of the degree to which fishermen will comply with a full retention requirement. To the extent that the data is incomplete, the objectives of the action may be undermined. The action does not entail unique or unknown risks.

8. To what degree does this action establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

The experience with the results of this action may help managers decide whether or not to take similar action for other rockfish species with poor bycatch information, such as shortraker and rougheye. Beyond the possibility that it may prove helpful in assessing full retention as a tool, this action is such a carefully crafted response to a special situation that its ramifications are likely to be limited.

9. Will the action have effects that are individually insignificant but cumulatively significant?

This action is not expected to have effects which combined with the effects of other actions or natural trends would be cumulatively significant. –See section 3.8.

10. Will this action cause a violation of Federal, state, or local law for environmental protection?

No.

4.0 REGULATORY IMPACT REVIEW

4.1 Introduction

This Regulatory Impact Review (RIR) evaluates alternative regulatory actions to improve information on demersal shelf rockfish (DSR) bycatch mortality in the halibut and groundfish hook-and-line and jig fisheries in Federal waters in the Gulf of Alaska's Southeast Outside District (SEO).[21]

4.2 What is a Regulatory Impact Review?

This RIR is required under 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.

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[21]The SEO area is also designated as Area 650. The SEO includes Alaska State waters (within three miles of the outside coast) as well as Federal waters. SEO and its subareas are shown in Figure 2 in the EA.

4.3 Statutory authority

The National Marine Fisheries Service manages the U.S. groundfish fisheries of the Gulf of Alaska management area (GOA) in the Exclusive Economic Zone (EEZ) under the Fishery Management Plan (FMP) for that area. The North Pacific Fishery Management Council (Council) prepared the FMP 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.

Federal regulations were amended in 1991 so that State of Alaska (State) management regulations governing the harvest of DSR in the SEO would not be pre-empted. Under this regulation, State of Alaska regulations governing fishing seasons, gear, harvest guidelines, possession and landings requirements, and harvest of bait by commercial permit holders, were not pre-empted in Federal waters for vessels "fishing for demersal shelf rockfish in the Eastern Regulatory Area" (56 *FR* 2706, January 24, 1991). The Eastern Regulatory Area includes the SEO district, as well as the waters inside Southeast Alaska (Area 659), inside Prince William Sound (Area 649), and in the GOA south of Prince William Sound (Area 640).[22]

Management of the Pacific halibut (hereafter halibut) fishery in and off of Alaska is based on an international agreement between Canada and the United States – the "Convention between United States of America and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea," signed at Ottawa, Canada on March 2, 1953, and amended by the "Protocol Amending the Convention," signed at Washington, D.C., March 29, 1979. This Convention, administered by the International Pacific Halibut Commission (IPHC), is given effect in the United States by the Halibut Act. Generally, fishery management regulations governing the halibut fisheries are developed by the IPHC and recommended to the U.S. Secretary of State. When approved, these regulations are published by NMFS in the Federal Register as annual management measures. For 2002, the annual management measures were published March 20, 2002 at 67 FR 12885.

The Halibut Act provides for the Council to develop halibut fishery regulations, including limited access regulations, in its geographic area of concern that would apply to nationals or vessels of the United States (Halibut Act, section 773(c)). Such regulations must be in addition to and not in conflict with IPHC regulations, approved and implemented by the Secretary, and any allocation of fishing privileges must be fair and equitable and consistent with other applicable Federal law.

The Council does not have a "fishery management plan" for halibut as that term is used under the Magnuson-Stevens Act. Hence, halibut fishery management rules developed by the Council do not follow the FMP or FMP amendment procedures set out in the Magnuson-Stevens Act. Instead, a regulatory amendment process is followed. This process requires submission of the Council action to the Secretary together with a draft proposed rule notice for publication in the Federal Register, along with supporting analyses as required by other applicable law.

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[22]These areas are shown in Figure 1 in Section 1 of the EA.

4.4 Purpose and need for action

This RIR examines the impacts of alternative methods of obtaining better information on DSR mortality on the Gulf of Alaska fisheries harvesting DSR. As noted in the accompanying Environmental Assessment (EA)[23], the four purposes of this action are:

1. To improve the gathering of information on the bycatch of DSR in the halibut longline fishery and other fisheries in the SEO, in order to get a more accurate picture of DSR mortality and to enable biologists to improve the annual stock assessments.

2. To avoid, in the process of implementing a full retention program, either increasing incentives to target on DSR or increasing incentives to discard bycatch in excess of the amount that can legally be sold.

3. To minimize waste to the extent practicable while meeting these goals.

4. To achieve consistency between State and Federal regulations that govern the retention and disposition of DSR harvested in the SEO.

Fishermen catch DSR in fisheries targeted directly on DSR. They also catch it in other fisheries, particularly those for halibut, as a by-product. The annual DSR TAC is divided between the targeted DSR fishery and incidental catch in the halibut fishery (and other groundfish fisheries). To prevent fishermen in the halibut and other groundfish fisheries from topping off (or deliberately targeting) DSR,[24] they are required to discard DSR taken in excess of 10 percent of the weight of the targeted fish they have onboard. However, this regulation creates three problems: (1) DSR do not survive capture, so that discarding them is seen by many fishermen and managers as wasteful; (2) the discards are not adequately reported, so managers have poor information about the total levels of discard mortality; (3) State and Federal regulations governing the treatment of DSR incidental catch are currently in conflict and create compliance problems for the fishermen.

Because discards are not adequately reported, total bycatch mortality of DSR in the halibut and other groundfish fisheries is unknown. If, on the basis of information gained from the proposed action, it turns out that the bycatch is significantly greater than currently estimated, the directed fishery allocation may be reduced to prevent the risk of overfishing. Conversely, if the true mortality is lower than estimated, the directed fishery allocation may be increased. Data from the action would be used in several ways: (1) to obtain information about bycatch and bycatch rates for DSR; (2) to calculate total mortality; (3) to enhance the DSR stock assessment and refine estimates of allowable biological catch (ABC) and TAC levels.

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[23] Section 1.3.2.

[24] See the "topping off" discussion in Section 1.2.5 of the EA.

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.[25]

The alternatives reviewed in this RIR are a response to a market failure. Public management of the DSR fishery is necessary to maximize the social value of the DSR resource. DSR are a slow-growing common property resource. Fish left unharvested by one fisherman can be taken by the next. Fishermen individually, and as a group, have an incentive to fish intensely in the present, because each must heavily discount the possibility of his own harvest in the future. Taken together, the fishermen exploit the fishery as if they had a discount rate that was higher than the appropriate social discount rate. Fisheries management has intervened to offset this tendency by imposing annual total allowable catches (TACs) based on annually updated estimates of the available resource base.

4.5 Alternatives considered

The four alternatives considered for this action have been described in detail in Section 2.1 of this Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA). This section summarizes the alternatives.

Alternative 1: No Action

Under this alternative the maximum retainable percentage limit (MRA) as set out in 50 CFR 679(e) and 50 CFR 679.20, Table 10, would continue to apply. There would be no change in the 10 percent MRA for DSR for fishermen using hook-and-line or jig gear in the SEO. Fishermen could retain any DSR caught, so long as the weight of the retained DSR was less than 10 percent of the weight of their target species; they would be required to discard any DSR harvested that was over that limit.

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[25]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.

Alternative 2: Require full retention of DSR in the hook-and-line and jig gear fisheries in the SEO.

This alternative requires full retention of DSR, allows for sale of up to 10% of landed catch[26], and gives two alternatives for disposal of other rockfish. It has four parts:

1. Eliminate the MRA for incidental catch of DSR caught by federally-permitted vessels using hook-and-line and jig gear in the SEO;

2. Require that all DSR caught by federally-permitted vessels using hook-and-line and jig gear in the SEO be retained, landed, weighed and reported on State of Alaska fish tickets;

3. Limit fishermen to retaining the revenues from incidental catch of DSR of no more than 10 percent of the aggregate round weight of IFQ Pacific halibut, and other groundfish species open to directed fishing, that are landed during the same fishing trip.

4. Any DSR in excess of the amount that may be sold with revenues retained by the fishermen may be disposed of by either of two methods:
   a. sell the excess DSR and relinquish the proceeds to the State of Alaska;
   b. retain the excess DSR for any other use except sale, barter, or trade.

(This was the Council's original preferred alternative. For reasons discussed in the EA and in Appendix A, NOAA General Counsel has indicated that the Magnuson-Stevens Act may not provide the necessary authority to implement this alternative. At its February 2003 meeting, the Council adopted Alternative 3 as its new preferred alternative.)

Alternative 3: Require full retention of DSR in the hook-and-line and jig gear fisheries in the SEO; don't allow DSR over the 10 % sales limit to enter the stream of commerce

Alternative 3 is similar to Alternative 2 except that any DSR caught in excess of the10% sale limit would not be allowed to enter the stream of commerce, but could be retained for any other use, including personal use or donation to a charity. Alternative 3 would:

1. Eliminate the MRA for incidental catch of DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO;

2. Require that all DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO be retained and landed. Catcher/processors would continue to observe current maximum retainable amounts (MRAs) for DSR.

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[26]Sablefish is the only exception to this 10% MRA. The limit for sablefish would be 1%.

3. Limit the sale of incidental catch of DSR to no more than 10 percent of the aggregate round weight of IFQ Pacific halibut, and other groundfish species open to directed fishing, that are landed during the same fishing trip; or no more than 1 percent of the aggregate round weight of sablefish.

4. Allow retention of any DSR in excess of the amount that may be sold for any use except for sale, barter, or trade.

Alternative 3 was chosen as the Council's preferred alternative at its February 2003 meeting.

Alternative 4: Observer program on halibut longline and other hook-and-line vessels in the SEO to estimate mortality of DSR in non-target fisheries

Under this alternative the 10 percent MRA would be retained. Fishermen would still be required to discard DSR over that MRA. This alternative would extend existing regulations requiring observer coverage for 30 percent of fishing days on catcher vessels from 60 to 125 feet LOA to apply to catcher vessels fishing for groundfish and halibut in the SEO.

4.6 Description of fishery

This section of the RIR is organized into five parts; each part describes a different aspect of the DSR fisheries: (1) the approach used to determine the amounts of DSR that can be harvested in each year; (2) the DSR full retention program in State waters that has been operating since July 2000; (3) the directed fishery for DSR in the SEO; (4) the fishery in the SEO that takes DSR as incidental catch; and (5) the sport fishery.

Allowable catch determination and allocation in Federal waters

The SEO is divided into four separate subdistricts: the Southern Southeast Outside (SSEO), Central Southeast Outside (CSEO), Northern Southeast Outside (NSEO) and East Yakutat (EYKT).[27] These subdistrict designations are important, because the DSR fishery TACs are calculated and administered separately for each of these areas. Table 5 summarizes the approach to directed DSR TAC determination in the subareas in the SEO.

If a directed fishery is allowed, it takes place in two parts. A winter fishery, which is allocated two-thirds of the directed DSR TAC, takes place from January 1 to March 14, while a fall fishery, with one-third of the TAC, takes place from November 16 to December 31. In other words, once 67 percent of the annual directed harvest limit for a management area is taken in the winter, the fishery is closed, and once

[27] The SEO (Area 650) and its four subareas are shown in Figures 1 and 2 in Section1.2.1 of the Environmental Assessment (EA).

Table 5. DSR directed fishery TAC Determination in the SEO Subareas

Calculate the yelloweye biomass	Yelloweye rockfish accounts for about 90% of DSR harvests in the SEO. The calculation of the allowable DSR harvest is based on annual estimates of the yelloweye biomass. The estimate of the exploitable biomass of yelloweye in each of the subareas is based on the estimated yelloweye habitat within the area, the estimated yelloweye density within the habitat, and the estimated average weight of the yelloweye. The yelloweye density estimates are based on transects surveyed by submarine. Yelloweye biomass estimates are deliberately conservative. The estimates in each area are based on the lower end of the 90% confidence interval around the point estimate for density. This conservative approach to estimating the exploitable biomass is taken because yelloweye "are particularly vulnerable to overfishing given their longevity, late maturation, and sedentary and habitat-specific residency." (O'Connell, Carlile, and Brylinsky, 2001, p. 10).
What is the permissible catch from the biomass?	Within each area the recommended allowable biological catch of yelloweye is determined using a fishing mortality rate of F = 0.02 of the biomass. Yelloweye are estimated to constitute 90% of the harvest. Therefore, the actual total harvest of yelloweye and other DSR (mainly quillbacks) can be calculated by dividing the yelloweye catch estimate by 0.9. The use of the rate F=0.02 is conservative (Tier 4 allows for $F_{40\%}$, in this case equivalent to F=0.025).
What is the expected DSR bycatch in the SEO?	Managers estimate the percentage of the halibut harvests within Halibut IPHC management Areas 2C and 3A that were taken in the SEO in the previous year. These percentages are then applied to the 2C and 3A halibut quotas for the coming year. IPHC statistical reporting areas do not correspond exactly with the SEO subareas, so rough extrapolation is required from the IPHC areas to the SEO areas. DSR bycatch is assumed to be 10% of the halibut harvest from the Southern Southeast Outside, Central Southeast Outside, and Northern Southeast Outside subdistricts, and of fish coming from Area 19 of the East Yakutat subdistrict. Area 19 approximates the Fairweather Grounds, where DSR bycatch is believed to be relatively high. DSR bycatch is assumed to be 7% of the halibut harvest from other parts of the East Yakutat subdistrict (Areas 18W and one-half of the harvest from Area 20).[28] The 10% and 7% bycatch rates have a weak scientific foundation. These estimates fall within ranges suggested by other data sources and have political support. However, ADF&G managers suspect that they may be low. They cite IPHC port survey data collected prior to the advent of the individual quota program which suggest bycatch rates of 13% to 18%.[29] Catch curve analysis of yelloweye data suggests that fishery removals are greater than estimated in some areas.
How much DSR is available for the directed fishery?	Subtract the expected DSR bycatch from the fishable biomass. The remainder is available for the directed fishery. If the remainder is too small, there will be no directed fishery in that subarea. There has been no directed DSR fishery in the NSEO subarea since 1994. The DSR bycatch in the EYKT subarea was high enough to require closure of the directed DSR fishery for the first time in 2002.
Notes: The details of this process may be found in O'Connell, Carlile, and Brylinsky (2001).	

33 percent of the limit is taken in the fall season, the fishery is closed.[30] Often the TAC for the directed fishery is harvested and the fishery closed before the full season is completed.

DSR managers have no control over halibut quotas or fishing activity and thus no control over incidental catch of DSR in the halibut fishery. The halibut fishery is given priority access to the DSR quota, and

[28]Tory O'Connell, ADF&G demersal shelf rockfish manager, Dec. 11, 2001, pers. com.

[29]O'Connell, *supra*.

[30]The season regulation may be found at 5 AAC 28.111.

the residual, if any, is made available for the directed DSR fishery.[31] If it is estimated that the incidental catch in the directed halibut and groundfish fisheries will exceed the TAC in a management area, the directed fishery in that area is precluded. As noted in Table 5, there has been no directed fishery for DSR in the Northern Southeast Outside (NSEO) District since 1994. In 2002, the directed DSR fishery on the Fairweather ground was closed because the estimated incidental catch of DSR in the halibut fishery in that area would be too large to allow one.

Full retention in Alaska waters

DSR occur in both Federal waters and State waters (within three miles of shore) in the SEO. The State of Alaska adopted a "full retention" regulation similar to Alternative 2 that became effective in its waters in July, 2000.[32] In 2001, Southeast Alaska fishermen completed the first full year of fishing under this regulation. The State regulation is important for this discussion for two reasons: (1) the experience in the fishery under this regulation may shed light on the way a similar regulation might work in Federal waters; (2) current conflicting approaches in State and Federal waters create compliance difficulties for fishermen.

In February 2000 the Alaska Board of Fisheries adopted a regulation requiring fishermen in State waters who take DSR as incidental catch to retain all of the DSR, weigh it, and report it on fish tickets. Under this regulation, fishermen may retain the income from DSR incidental catch up to 10 percent of the round weight of the targeted fish that they land. Fishermen are required to submit any income from the sale of any DSR over 10 percent of the round weight of the targeted fish to the State of Alaska's fishery fund (O'Connell et al. 2001, p. 9). The money placed in this fund is to be used for the benefit of the fishery from which it was collected.[33] This regulation applies in Alaska State waters but not in Federal waters. Since areas of the SEO within three miles of the coast are State waters, the rule applies in some, but not all of the waters of the SEO.

While compliance is impossible to determine accurately, fishery observers suggest that it is substantial.[34] The full retention regulation appears to have had an impact on the volume of DSR being delivered. Table 3 in the EA summarizes the amounts of DSR landed over regulatory limits and confiscated in various fisheries from 1996 to 2001. In 2000, fishermen delivered 12,410 pounds or about 5.6 metric tons of DSR that fell into this category from the halibut and other groundfish fisheries in State and Federal waters. In 2001, fishermen delivered 38,302 pounds, or about 17.4 metric tons in this category. This is a large apparent increase in delivered DSR bycatch.[35] Moreover, Table 2 indicates that a large part of this increased volume of fish in this category came from fishermen active in Federal waters of the

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[31]The bycatch priority may be found at 5 AAC 28.160(c)(1)(C).

[32]The full retention regulation may be found at 5 AAC 28.171(a).

[33]O'Connell, *supra*, note 26.

[34]O'Connell, *supra,* note 26; Dan Falvey, longline fisherman, Dec. 12, 2001 and Jan. 30, 2002; Arne Fugulvog, longline fisherman, Dec. 13, 2001, pers. com.

[35]This comparison of 2000 and 2001 should actually understate the total impact, since the regulation took effect in July 2000 and total DSR retentions that year are probably above what they would otherwise have been.

SEO (to whom the full retention rule did not apply). Deliveries in this category reported from Federal waters rose from 8,760 pounds in 2000 to 22,931 pounds in 2001. The increase in deliveries from Federal waters accounted for about 45 percent of the total increase in deliveries.

This regulation has had operational implications for fishermen since they must now retain all incidental catch of DSR, thus utilizing valuable hold space. Two main storage techniques are used on the vessels in this fishery. Some ice down their fish in fish holds, others store the fish in tanks of refrigerated sea water (RSW). Storing the additional DSR onboard raises three issues: (1) impact on quality of other fish, (2) maintaining DSR quality, (3) displacement of other fish. DSR have spines which can puncture other fish in the same storage compartment, reducing their commercial value. Moreover, storage in RSW tanks may also lead to abrasion between the DSR and other species, damaging the scales and flesh of the other species. DSR themselves lose quality when they are stored in RSW tanks. Yelloweye are valued, in part, for their bright red or orange color. Storage in RSW tends to wash out the color, in some cases leaving them appearing white. This reduces their value on delivery. Finally, the space taken by DSR is not available for the storage of other species. An industry source suggests that a pound of DSR could be expected to displace more than a pound of halibut; he said that a pound and a half would be the high end of the possible range of displacement.[36]

On a vessel storing the fish on ice, these problems may be dealt with by setting the DSR aside until the other species are iced down, and then storing the DSR in a separate top layer of their own in the fish hold. The DSR may also be iced down in a bait hold. On larger vessels using RSW, the DSR can be iced in totes on the deck. Smaller RSW vessels with limited deck space for totes may experience the greatest storage problems.[37] Clearly, all of these options impose operational compromises and economic costs.

The volumes of DSR taken by halibut fishermen can require them to cut their fishing trips short. Fishermen may thus be required to take extra trips to fully harvest their halibut individual quotas. Rockfish must be delivered within three days of catch to be accepted by processors, while halibut will maintain their quality (and market value) onboard for significantly longer periods. Halibut trips often last 10 days.

If fishermen are trying to deliver quality rockfish and get a higher price for it, they may also tend to take shorter trips. DSR would displace other species (primarily halibut) only if the fishing vessel would have completely filled its holds on the trip. Anecdotal comments suggest that on many trips vessels return without filling their holds, and that this may be more common in the halibut fishery since the advent of the individual quota program. Fishermen now tend to fish more slowly, to be more concerned with quality, and to return to port without trying to completely fill their holds.[38]

Fishermen may sell their DSR to a fish buyer on shore, but they are not allowed to accept payment for the DSR in excess of their MRA for the trip (the limit will vary depending on their harvest of the target

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[36]Falvey, *supra*, note 30.

[37]Linda Behnken, longline fisherman, Jan. 30, 2002, pers. com., and Falvey, *supra*, note 30.

[38]Behnken and Falvey, *supra*, note 30.

species). If a fisherman lands DSR, including fish over the limit, the processor will write a check to him paying for the DSR under the limit. If the DSR species mix varies, or if the fish vary in quality, the processor and fisherman are able to count the more valuable fish as the allowable DSR. The processor does not pay the fishermen for fish over the limit. The processor writes a check to the Alaska Department of Fish and Game (ADF&G) for these fish and forwards the check to ADF&G along with the fish tickets. ADF&G also allows processors who wish to accumulate the checks from multiple trips to forward these with supporting documentation to the Department on a monthly basis.[39]

Fishermen have retained the fish for their own home use. Fishermen have also donated the fish to non-profits. At least one non-profit organization in Sitka is said to be willing to come take the fish for use in its own lunch program.[40] Relatively small amounts of DSR appear to have been used for these purposes so far, however.[41]

The change in the State's fishery regulations in July 2000 created an inconsistency with Federal regulations that is said to have caused inconvenience for many fishermen. Waters in the SEO within three miles of shore are under State jurisdiction, and are subject to the State's full retention regulations. SEO waters beyond the three-mile limit are subject to Federal regulation and to the provisions of the MRA program. These latter regulations prohibit retention of any fish over the 10 percent MRA. Fishing trips will often take fishermen into both Federal and State waters, and subject them to these conflicting regulations on different parts of their DSR catch. If enforcement agents board a vessel while it is fishing in Federal waters, there is a rebuttable presumption that all catch onboard has been caught in Federal waters, and is thus subject to the 10% MRA, regardless of whether the boat fished in State, a well as Federal, areas. As noted, fishermen are unable to weigh their fish at sea and on delivery must estimate the portions of their catches taken in State and Federal waters.

Directed DSR fishery in Federal waters

The directed fishery for DSR takes place primarily in waters between 75 and 150 meters deep. While the complex consists of seven species, in recent years about 90 percent of the harvest has been yelloweye and about 8 percent has been quillbacks. The directed fishery is largely a longline fishery, although jig gear is used by some fishermen (see Table 6).

By regulation the directed fishery season for DSR takes place from January 1 to March 14 and from November 16 to December 31. Sixty-seven percent of the directed DSR allocation in each of the SEO's subareas is reserved for the January-March season and 33 percent is reserved for the November-December season. The directed DSR allocations are based on the Federal TAC after deducting estimated halibut and other groundfish bycatch mortality. The actual fishing period in some areas can be significantly less than the scheduled seasons, because the fleet is capable of taking its quota more

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[39]Marshall, Scott. 2000. Letter from Scott Marshall, Southeast Regional Supervisor, Commercial Fisheries Division, Alaska Department of Fish and Game, to Southeast seafood processors. November 16, 2000.

[40]Behnken and Falvey, *supra*, note 30.

[41]Kamala Carroll, ADF&G, Sitka, Feb. 14, 2002; Jeff Pearson and Bev McElhose, Seafood Producers' Co-op, Feb. 6, 2002, pers. com.

quickly. In 2002, the winter season in the Central SEO only lasted until January 4, and the fall season until November 17. The winter season in the Southern SEO lasted until January 25, while the fall season lasted until November 24. There were no open seasons in the Northern SEO. In 2001, only the East Yakutat area had no premature seasonal closure (O'Connell and Brylinsky 2001, Tables 6a -6f, pp. 20-25).

During the directed fishery east of 137°W. Long. (including all the outside districts except East Yakutat), vessels or Alaska Commercial Fisheries Entry Commission permit holders may not sell more than 6,000 pounds (round weight) of DSR in any five-day period. DSR over this amount must be weighed and reported on an ADF&G fish ticket; and revenues from DSR in excess of this amount must be turned over to the State. Similar provisions are in place in the East Yakutat portion of the SEO, except that the five day limit is 12,000 pounds (O'Connell 2001, pp. 12-13).[42] Money from trip limit overages is handled by Alaska, which treats it the same way as it does money from MRA overages. Note that trip limit overages may include money from trips in Federal waters.[43] [44]

The expenses incurred in such a trip would include those for fuel, food, ice, bait, damage to or loss of fishing gear, crewshares, and the cost of the skipper's compensation. Since directed DSR is probably only a part of a groundfish fisherman's diversified operation, the fixed costs of the operation are not significantly affected by a decision about whether or not to participate in the directed DSR fishery.

Table 6 summarizes information on numbers of catcher vessels estimated to have made directed harvests of DSR from 1996 to 2001. An examination of landings data shows that this directed fishery was prosecuted entirely by catcher vessels; catcher/processors were not active. Table 6 indicates several additional things: (1) two gear types made directed DSR harvests, hook-and-line and jig gear; (2) comparison of columns 2 and 3 with columns 6 and 7 indicates that almost all directed harvests were made by vessels greater than or equal to 27 feet and less than 60 feet (Vessels less than 27 feet don't need a Federal longline permit and vessels under 60 feet are not required to carry observers, as vessels over 60 feet are required to do 30 percent of their fishing time.); (3) the numbers of vessels of each gear type landing DSR appear to have been generally declining during this period.

The primary market for DSR (one industry source estimates it at about 90 percent) is the U.S. Chinese community (the product is not marketed to other Asians or other ethnic groups). This is a national domestic market (Houston, San Francisco, Detroit) although some may be shipped overseas. The product is marketed fresh and in the round (with the guts in) by the fish buyers.[45] To service this market, buyers require a high quality product from fishermen. They look for fish that have been bled and iced, with good flesh color and good color in the eyes, that have not been bleached by the sun while they lay on deck, have good texture, and have not been held onboard for more than three days. (If they have been

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[42]The regulation may be found at 5 AAC 28.171(c).

[43]Marshall, Scott. 2000. Letter from Scott Marshall, Southeast Regional Supervisor, Commercial Fisheries Division, Alaska Department of Fish and Game, to Southeast seafood processors. November 16, 2000.

[44]Carroll, *supra*, note 37.

[45]Jeffrey Reynolds, sales manager with Seafood Producers Co-op, Bellingham, WA, Dec. 28, 2001, pers. com.; and Brian Paust, Marine Advisory Agent, Petersburg, Ak., Jan. 29, 2002, pers. com.

held onboard three days, they may retain good quality for another 4 to 5 days before being consumed).[46] Other product forms are marketed as well. If the fresh, round market prices are low, processors may freeze the high quality DSR in the round and save it until markets improve. Poorer quality fish may be filleted and sold in other markets.[47]

Table 6. Numbers of catcher vessels active in the directed DSR fisheries in the SEO, 1996-2001.

	Vessels with DSR in DSR target landing		Vessels with DSR in all target landings		Vessels greater than or equal to 27 feet and less than or equal to 60 feet.	
Year (1)	Hook and line (2)	Jig (3)	Hook and line (4)	Jig (5)	Hook and line (6)	Jig (7)
1996	85	12	86	12	78	12
1997	76	8	76	8	71	5
1998	58	3	58	3	54	2
1999	61	3	61	3	58	2
2000	39	2	40	2	37	1
2001	44	1	44	1	40	1

Notes: prepared from the NMFS SF Alaska Region (AKR) "Catch by vessel" database. 12-17-01 and updated 12-17-02. Directed fishing was determined by the dates of landings (January 1 to March 14 and November 16 to December 31) and by the use of a DSR permit to make the landings. 2002 is not included, as up-to-date information on 2002 is not available in this database. These estimates are all catcher vessels; no catcher/processors appear to have been active during this period.

Table 7 provides estimates of average DSR prices in the directed fishery, and of total and average (per vessel) gross revenues generated in the directed fishery over the period 1996-2001. Price increases during this period did not completely offset generally declining harvests. As a result, total gross revenues from the fishery declined in every year, from about $768,000 in 1996 to about $561,000 in 2001. As noted earlier, the number of vessels participating in the directed fishery for DSR generally fell during this period. On balance, the size of the fleet appears to have fallen faster than gross revenues, so that average gross revenues were higher at the end of the period than in the beginning.

[46]Reynolds, Paust, *supra*, note 38.

[47]Reynolds, Paust, *supra*, note 38; Pearson, supra, note 37.

Table 7. DSR gross revenues from Directed DSR fishery in the SEO, 1996-2001

Year	Average DSR round price per pound	Average DSR round price per metric ton	DSR landings in metric tons	Gross revenues from DSR	Number of vessels	Average DSR gross revenues
1996	$1.01	$2,227	345	$768,200	97	$7,920
1997	$1.26	$2,778	267	$741,678	84	$8,830
1998	$1.26	$2,778	241	$669,455	61	$10,975
1999	$1.20	$2,646	235	$621,703	64	$9,714
2000	$1.53	$3,373	183	$617,272	41	$15,055
2001	$1.48	$3,263	172	$561,208	45	$12,471

Notes: Prices from NMFS-AKR REFM; directed landings from Table 8; number of vessels from NMFS-SF AKR "catch by vessel" data set. Gross revenues understate total revenues from this fishery since they do not account for the value of landed bycatch of other species.

DSR incidental catch fishery in Federal waters

Large amounts of DSR are also taken as incidental catch in the directed fisheries for halibut. Some additional amounts of DSR are taken in the other directed fisheries for groundfish. Table 8 shows total directed and incidental catch harvests and provides estimates of DSR discard mortality in the halibut and other groundfish fisheries. The two columns on the right side of the table show the large proportions of the total landings and of total DSR mortality that are believed to be due to bycatch discard mortality - primarily in the halibut fishery. These percentages have not only been large, but also variable. Discard mortality as a percent of total mortality ranged between 30 percent and 48 percent.

Some incidental catch is delivered in the very good condition required for the fresh and frozen round markets. Other DSR is of poorer quality and is directed to the fillet market. A comparison of the average prices in Table 7 (for directed DSR deliveries) with the average prices in Table 9 (for DSR delivered as incidental catch) shows that the average prices received in the incidental catch fishery are much lower. The average price for the six years from 1996 to 2001 for DSR incidental catch was about 51 percent of the average price for DSR delivered in the directed fishery. The percentage ranged from 38 percent in 1997 up to 66 percent in 1999. While fishermen delivering a high quality product may be receiving prices similar to those in the directed fishery, others are delivering product suitable for fillets. The latter fishermen may be receiving $0.30 to $0.35 a pound for their product.[48]

Under current Federal rules, fishermen may retain an amount of DSR equal to 10 percent of the weight of their target harvest. However, fishermen are unable to weigh their catch at sea. They must estimate the weights in order to stay within the MRA. In many cases, fishermen learn that their estimates were mistaken when they make their delivery and find that they have exceeded (or fallen short of) the MRA. For example, on weighing the fish, the processor may find that the DSR delivered is 200 or 300 pounds

[48]Reynolds, *supra*, note 38.

Table 8. SEO DSR directed catch, incidental catch, and estimated discards, 1993-2001. Metric tons round weight.

Year	Directed catch (a)	Delivered Incidental Catch (b)	Estimated Discarded Bycatch (c)	Reported landings* (a)+(b)	Total mortality (a)+(b)+(c)	Discards as percentage of landings	Discards as percentage of mortality
1993	345	272	271	630	901	43%	30%
1994	283	154	353	441	794	80%	44%
1995	177	112	130	302	432	43%	30%
1996	345	85	156	436	592	36%	26%
1997	267	87	204	367	571	56%	36%
1998	241	117	214	358	572	60%	37%
1999	235	112	324	347	671	93%	48%
2000	183	94	207	282	484	73%	43%
2001	172	147	170	319	489	53%	35%

Source: O'Connell et al. (2001, Table 2, p. 14). Estimated discarded bycatch, O'Connell, pers. com., 1-7-03.
*Includes small amounts of research catch (does not add to sum of directed and incidental catch)

Table 9. Value of DSR incidental catch in halibut and groundfish fisheries in the SEO.

Year	Metric tons round weight	Weighted average price for DSR ($/lb round weight	Price for yelloweye ($/lb round weight)	Total Value (using DSR price)
1996	85	0.65	0.67	$121,805
1997	87	0.48	0.48	$92,065
1998	117	0.53	0.54	$136,708
1999	112	0.79	0.81	$195,065
2000	94	0.82	0.84	$169,932
2001	147	0.71	0.72	$230,096

Notes: Incidental catch from Table 8; Prices from REFM.

over the limit. The processor will pay the fisherman for all of the fish, including the overage, and deliver copies of the fish tickets to NOAA Enforcement. NOAA Enforcement will calculate the size and value

of the overage and may present a "summary settlement offer" to the fisherman either in person or by certified mail. Unless it is a serious offense, the offer will allow the fisherman to voluntarily abandon the proceeds of the bycatch overage by submitting payment for the value of the overage, but will not impose further penalties. Due to staff limitations and heavy workloads, it can be up to ten months before the notice is sent out. After a summary settlement offer has been issued, the fisherman has up to 30 days to submit a check to NOAA enforcement for the value of the overage. If a fisherman chooses not to pay the summary settlement, the situation is placed in the hands of the NOAA GC's office and an additional penalty may be assessed.[49]

The halibut and sablefish seasons are open from March 15 to November 15. Most of the DSR landed during this period is incidental catch from halibut fishing.[50] The SEO overlaps two separate IPHC halibut areas, Areas 3A and 2C. Separate halibut QS was issued for each of those IPHC areas. Thus holders of 3A QS may fish in the western part of the SEO (which includes most of the Fairweather Grounds) and holders of 2C QS may fish in the eastern part of the SEO. In mid-December 2001, 1,505 unique persons held QS for halibut in IPHC Area 2C, and 1,997 unique persons held QS for halibut in IPHC Area 3A. Many of these people hold both types of QS, so summing the numbers from each area would overstate the number of unique persons who could fish for halibut in the SEO. Both Area 2C and Area 3A are very large, and many quota share holders in each area do not operate in the SEO.

In 2000, an estimated 423 vessels fished in the halibut and groundfish fisheries in the Federal waters of the SEO in which DSR was taken as incidental catch. Almost all of these were catcher vessels. Only five of the 423 were catcher/processors. Most took at least some halibut. Only 80 caught groundfish without showing deliveries of at least some halibut. These were generally small vessels, that is, vessels under 60 feet in length. Only 51 were over 60 feet; almost all of these fell into the length range of 60 to 125 feet (estimates based on NMFS Catch by Vessel Database and RAM halibut fishing statistics).

This fleet generated an estimated $33 million in gross revenue from its harvests in the Federal waters of the SEO during 2000. Average gross revenues were about $79,000 per vessel. Almost all of the revenues from the Federal SEO waters were generated from halibut and sablefish. Sablefish revenues were about $21 million, while halibut revenues were about $12 million. Fishing in the SEO was only a part of the fishing activity by these vessels. Gross revenues for these vessels, from all groundfish and halibut fisheries off Alaska in 2000, were $111 million, or about $262,000 per vessel. In addition to significant statewide revenues from sablefish ($54 million) and halibut ($45 million), these vessels obtained large revenues from Pacific cod ($9 million). DSR incidental catch revenues for 2000 in the SEO (estimated in Table 9) were about $176,000; total statewide DSR revenues (from incidental catch and directed harvests) were about $793,000 (estimated from Tables 7 and 9). These revenue estimates are only estimates of revenues from groundfish and halibut; many of these entities would also have earned revenues from other fisheries, of which Alaska's salmon and herring fisheries were probably most important. DSR incidental catch revenues were about 0.16% of the fleet's total statewide groundfish and halibut revenue; if probable herring and salmon revenues are also considered, DSR incidental catch revenues are even a smaller percentage of overall revenues. DSR incidental catch revenues in the SEO were about 0.53% of the fleet's groundfish and halibut revenues from Federal waters in the SEO.

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[49]Falvey, *supra*, note 30; Al Duncan, NOAA Enforcement agent in Sitka, AK, Feb. 6, 2002, pers. com. Ron Antaya, NOAA Enforcement, Juneau AK, March 22, 2002, and Jan. 10, 2003, pers. com.

[50]Falvey, *supra*, note 30 O'Connell, *supra*, note 26.

DSR incidental catch was taken primarily by the catcher vessels. Catcher/processors, typically fishing in deeper waters for sablefish, caught only trace amounts of DSR. Over the period of 2001 through August of 2003, observer data from 8 distinct catcher/processor vessels in area 650, with a total of 159 sampled sets, indicates that only 7 of the sampled sets, or 4.4 percent, had any DSR species, with a total extrapolated DSR weight of 286 kilograms, or about a quarter of a metric ton, for all those sets. The percentage of DSR in the observed sets was 0.11 percent.

Shoreside processors buying DSR also bought other groundfish, halibut, salmon, herring and crab. In 2000, the 22 firms processing groundfish in Southeast Alaska, had total gross revenues from all fish processing activities of about $262 million, or an average per plant of about $12 million. Several larger plants dominate the average calculation; the median gross revenues were about $5 million. Groundfish (which does not include halibut) were a relatively minor component of the processing activity, accounting for about 20% of aggregate firm gross revenues. Total groundfish revenues were about $52 million, or about $2.4 million per plant. The importance of groundfish varied across firms. Nine firms earned more than 10% of their gross revenues from groundfish, while five earned between 30% and 50% of their revenues from groundfish. No plant made more than 50% from groundfish. In comparison, the total first wholesale value of DSR products (from both the directed DSR fishery and from the DSR bycatch in other fisheries) in 2000 (from 19 plants) was about $1.2 million, or about $60,000 per plant.[51]

The sport and subsistence fisheries

Sport fishermen harvest DSR in the waters of Southeast Alaska. DSR are often taken as incidental catch in directed sport fisheries for salmon, halibut, and lingcod. They are also taken in a directed DSR sport fishery. The fisheries take place in both State and Federal waters; however, data collection procedures do not produce information on whether fish were harvested in State or Federal waters.

Although rockfish are not a primary target of most Southeast Alaska sport anglers, an estimated 37,165 rockfish were caught in the combined Ketchikan, Sitka, and Juneau fisheries in 2001. Only 45 percent of the rockfish caught were retained. Yelloweye comprised nearly 70 percent of the harvest in Sitka, but only 41 percent of the harvest in Ketchikan. Quillbacks were the second most commonly taken rockfish in Ketchikan, while black rockfish were the second most commonly taken in Sitka (Hubartt et al. in prep.).

In the Ketchikan area, sport rockfish harvests have generally declined from the levels of the early 1990s. The Ketchikan rockfish harvest in 2001 was only 34 percent of the 1984-2000 average. On the other hand, Sitka sport harvests have risen. The Sitka harvest in 2002 was about 177 percent of the 1984-2000 average. Fewer than half of the rockfish harvested are retained by the sport fishermen. The retention rate in the Ketchikan area was 38 percent in 2001, while the retention rate in the Sitka area was 47 percent. (Hubartt et al. in prep).

The sport fishery is managed by the Alaska Department of Fish and Game. Data is collected through creel surveys, a charter operator logbook program, and through a statewide survey of Alaska sport fishing

[51]Terry Hiatt. NMFS, Alaska Fisheries Science Center. Personal communication, September 27, 2001.

license holders. The Department is unable to estimate the biomass mortality associated with its harvest estimates. The creel survey and logbook programs, which provide the landings information, are designed to obtain data on fish numbers rather than weights. Management of the sport and commercial fisheries is not tightly integrated. Sport harvests are not subject to the harvest limitations established by the commercial fishery managers, and sport harvests are not considered in the calculations that underlie the commercial TACs.[52]

Data from surveys of subsistence resource users conducted by the Alaska Department of Fish and Game (ADF&G) suggest that "red rockfish" are a common subsistence good in Southeast Alaska. "Red rockfish" is a generic category, including yelloweye, shortraker, rougheye, and other species.[53] These surveys are available for twenty communities, some very small, in Southeast Alaska during the period 1996-1998[54]. While a community may have been surveyed in more than one year during this period, only data for the year considered by the Division of Subsistence as the most representative of the community harvest pattern are summarized here. The data are adequate to indicate the extent of subsistence use of red rockfish, but not to estimate actual subsistence harvests during the period.

The total edible pounds harvested for the different communities ranged from none for Klukwan and 110 pounds for the Game Creek Census Designated Place up to about 13,000pounds in Craig and 35,000 pounds in Sitka. A total of about 82,000 pounds of edible weight were harvested across all 20 communities in their most representative year (this is meant to provide a sense of the extent of subsistence use, not an estimate of annual subsistence use). Per capita harvests ranged from none in Klukwan and 0.64 edible pounds in Kake, to about 26 edible pounds in Naukati Bay and about 60 pounds in Edna Bay. Median community per capita consumption of edible meat was about 4.9 pounds.

The percentage of the households trying to harvest red rockfish in these communities was often quite large. This ranged from zero in Klukwan to 91.7% in Edna Bay. The average percent over the 20 communities was 31%. Because many harvesters pass on red rockfish as gifts, the percentages of households using red rockfish in these communities were even larger. In 10 of the 20 communities, over half of the households made use of subsistence red rockfish. The average percentage of community households transferring red rockfish as gifts was about 11%.[55]

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[52]Mark Schwann, Alaska Dept. of Fish & Game, Feb. 6, 2002, pers. com.

[53]The ADF&G Subsistence Division survey has categories for "red rockfish," "black rockfish," and "unknown rockfish." The focus here is on red rockfish, since yelloweye account for 90% of the DSR catch, and yelloweye fall in the red rockfish category.

[54] The twenty communties were: Angoon, Coffman Cove, Craig, Edna Bay, Game Creek Census Designated Place, Haines, Hollis, Hoonah, Hydaburg, Kake, Kasaan, Klawock, Klukwan, Naukati Bay, Point Baker, Port Protection, Sitka, Thorne Bay,Whale Pass, Whitestone Logging Camp.

[55] These are averages of community percentages, unweighted for community populations. Sitka is by far the largest community in the data set, and its percentages are below the community average for all of these cases. Thus the percentage of households in these 20 communties taken together would be less than these community averages.

Red rockfish used for subsistence may have been taken in a variety of ways. Some may have been harvested in directed red rockfish subsistence activities, or as bycatch in other subsistence activites. Some may be directed into subsistence channels from directed sport or commercial fishing activities. The ADF&G subsistence data base identifies three sources for red rockfish: commercial fishery retention, rod and reel (not a valid subsistence gear at the time, so this is presumably sport fish harvest identified by respondents as subsistence consumption) and other gear (presumably subsistence gear, possibly hand-held longlines). Of the 81,855 edible pounds of red rockfish identified from the representative years in the 20 communities, 38% was derived from commercial fishery retention, 55% was identified as taken with rod and reel, and 7% was taken with other gear types.

4.7 Summary of the benefits and costs

The DSR fishery has a value, which can be approximated by estimating the present value of the net returns that annual DSR harvests will generate through time.[56] The benefit of the DSR full retention alternatives, or of observer coverage, is the increase in the present value of the net returns from the fishery. The present value of the fishery may increase if better information allows managers to set TACs for DSR and allocations between directed DSR catch and incidental catch that will come closer to optimizing the sustained benefit stream deriving from the resource. The "value of the net returns" from the fishery must be construed broadly. It does not simply consist of the change in the profits to commercial users. Consumers, subsistence and personal-use fishermen, and sport fishermen may receive net benefits from the fishery that are not measured by commercial market prices. Conservationists may receive benefits if the proposed action reduces the likelihood of severe resource degradation or even species extinction.

Acquiring better information may be costly. Under Alternatives 2 or 3, commercial fishermen will have to retain and deliver all DSR catch, including fish they are currently required to discard. This will impose direct expenses and require operational changes. If it is costly for them to do this, the costs will offset some of the increase in the present value of the resource. Depending on relative market power (e.g., as between harvesters, processors, wholesalers, and consumers) some of these costs may be distributed to other participants in the DSR market stream. Under Alternative 4, the commercial fishing sector will have to pay for observer coverage, which is not currently required under the status quo (Alternative 1) and would not be required under Alternatives 2 or 3.

The benefits and costs of the alternatives are summarized below in Table 10. These impacts are discussed more carefully in Sections 4.8 (Benefits) and 4.9 (Costs). The final section of the RIR, Section 4.10, summarizes the implications for the E.O. 12866 significance analysis.

In general the information on operating behavior and costs that would make it possible to predict how fishermen and markets will react to the new regulation, and how their costs and revenues will change, is not available. Therefore this analysis of benefits and costs must be primarily qualitative.

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[56]The present value is the sum of the annual net benefits from each year in the fishery, after appropriately discounting values from future years.

Table 10. Summary of the cost and benefit analysis

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Status quo. Continue 10% MRA prohibiting retention above that level.	*Required retention. Fishermen must retain all DSR and dispose of it onshore without commercial compensation for excess.*	*Required retention. Fishermen must retain all DSR and dispose of it onshore without commercial compensation for excess. DSR may not enter "stream of commerce."*	*Observers. Implement 30% observer coverage on halibut and groundfish fishing vessels in the SEO.*
Impacts on resource management (See section 4.8)	None	Better information on bycatch mortality, potential source of funds for DSR management, fishermen may change behavior to avoid DSR	Better information on bycatch mortality, fishermen may change behavior to avoid DSR	Better information on bycatch mortality
Benefits (See Section 4.8)	No change in benefits	Resource management improvements may lead to increased value of stock to commercial fishermen, distribution system, and consumers. Non-compliance could compromise the confidence that can be placed in this data source. Less frustration for fishermen over perceived DSR discard waste. Reduced conflict between State and Federal retention regulations. Benefits from improved management may also accrue to sport and subsistence users.	Resource management improvements may lead to increased value of stock to commercial fishermen, distribution system, and consumers. Non-compliance could compromise the confidence that can be placed in this data source. Reduces the conflict between State and Federal retention regulations, but not to the extent of Alternative 2. May reduce waste, but not to extent of Alt. 2. Benefits from improved management may also accrue to sport and subsistence users.	Resource management improvements may lead to increased value of stock to commercial fishermen, distribution system, and consumers. Benefits from improved management may also accrue to sport and subsistence users.
Costs (see Section 4.9)	No change in costs	Costs to fishermen for onboard storage, handling and delivery of DSR. Some additional cost to processors for additional weighing and grading. Depending on market conditions, as well as condition of surrendered catch, processors may face increased cold storage, inventory, handling, and [perhaps]] disposal costs. Potential costs for enforcement.	Costs to fishermen for onboard storage, handling and delivery of DSR. Some additional cost to processors for additional weighing and grading. Disposal costs higher than Alt 2 since there are fewer options. Depending on market conditions, as well as condition of surrendered catch, processors may face increased cold storage, inventory, handling, and [perhaps]] disposal costs. Potential costs for enforcement.	Additional observer costs of $330 per day, plus transportation costs. Reduced work room for crew on vessels. Changes in operating patterns of vessels may be necessary to accommodate the observers.
Net benefits	No change in net benefits	Impossible to quantify with the available information.	Impossible to quantify with the available information.	Impossible to quantify with the available information.
Program objectives (See Section 4.4)	Does not address issues of bycatch mortality, waste, and conflict between State and Federal regulations.	Improves bycatch mortality estimates, does not increase incentives to target DSR, reduces DSR waste, reduces conflict between State and Federal regulations. This alternative has legal difficulties.	Improves bycatch mortality estimates, does not increase incentives to target DSR. Reduces conflict between State and Federal regulations, although not to the extent of Alternative 2. Does not address waste issue.	Improves bycatch mortality estimates, likely has the strongest disincentive to target DSR (i.e., onboard observer). Does not address the issues of waste or of conflict between State and Federal regulations
E.O. 12866 significance (see Section 4.11)	Does not appear to be significant	Does not appear to be significant	Does not appear to be significant	Does not appear to be significant

Notes: Alternative 1 (**status quo**) is the **no action** alternative and provides the **baseline** against which the costs and benefits for action alternatives have been estimated.

4.8 Benefits of the alternatives

The potential benefits from Alternatives 2 or 3 are likely to be very dependent on the extent to which fishermen comply with the rule. Because of this, the first part of this section deals with enforcement issues. A discussion of impacts on resource management follows. Benefits accruing to persons who value the continued existence of DSR (e.g., passive-use), to commercial fishermen and processors, to sport fishermen, to subsistence/personal-use fishermen, and to consumers are then discussed.

Enforcement

Alternatives 2 and 3 require fishermen to retain DSR bycatch, to bring it to shore, and to weigh it. Neither alternative allows fishermen to earn income from the DSR retained above the 10% MRA. Alternative 3 also prohibits fish buyers or processing firms from earning income from these fish.

These alternatives create a two-fold enforcement problem. First, discard of DSR at-sea will be illegal under Alternatives 2 or 3. However, under each alternative, costs associated with retention and disposal of the DSR may give fishermen an incentive to discard. Second, under these alternatives, fishermen can only receive payment for DSR weighing up to 10% of the other species they are delivering. This provision is included to limit the incentive to target DSR. Moreover, under Alternative 3, the excess DSR may not enter the stream of commerce. Because DSR are valuable, processors and fishermen have an incentive to evade the rules prohibiting or restricting commercial DSR transactions.

Both alternatives impose costs on fishermen or processors, including the costs of storing DSR onboard, the possible displacement of target species because of limited storage facilities aboard, the costs of weighing and recording the DSR, and the costs of disposal after weighing. The disposal costs may be somewhat greater under Alternative 3, which restricts acceptable ways of disposing of the fish to a greater extent (by prohibiting the fish from being sold, traded or bartered). Because of these costs, fishermen will have a continuing incentive to discard their excess bycatch at sea, in violation of the proposed regulations.

Discard of DSR at-sea is illegal under Alternatives 2 and 3. Fishermen incurring the costs described above will be balancing the immediate savings associated with discarding against their desire to obey the law, and the expected value of any fine they may incur if caught violating the discard prohibition. The expected value of the fine will depend on the likelihood that they are caught, and (since a fine will be imposed in the future, if at all) by the fisherman's subjective discounting of future costs and benefits.[57]

Discarded rockfish continue to float and many have a bright red color that attracts attention. However, effective enforcement of the rule is likely to require actual observation of discarding or of discards closely associated with a vessel. Vessels that routinely discard DSR as they are brought aboard are not likely to be found with large numbers of DSR nearby. Vessels that initially retain DSR, but that discard it when they find they have more than they can be paid for, may discard larger amounts at one time. Observations from planes or helicopters may not be enough; it may be necessary to actually recover

[57]The discounting reflects the fact that $100 that must be paid a year from now is less of a burden than $100 that must be paid now - since if it doesn't have to be paid for a year you can enjoy the use of it in the interim.

discarded fish to make a species identification. In some instances, crew members may report discarding activity, but their allegations may be difficult to verify.

Under Alternative 2, fishermen may also be paid for the DSR they land, up to 10% of the weight of the other species they land. Payment for the remaining fish must be directed to the State of Alaska's fisheries fund and not to the fishermen.[58] The processors may then sell the DSR at wholesale and retain the proceeds. The purchase of excess rockfish may be a profitable activity for buyers and processors. This raises the possibility that buyers and processors will look for ways to encourage fishermen to deliver rockfish in excess of the 10% retention cap. They could do this by paying relatively higher prices for the 10% DSR (a DSR premium) that the fishermen may legitimately be paid for, or by paying more than the going rate for species that are delivered along with the DSR. This activity could be very difficult for enforcement to identify. While it would not lead to a miscounting of delivered DSR volumes, it does raise the danger that DSR targeting might be encouraged, or at the least, that fishermen would be less prone to avoid areas with high DSR bycatch.

Under Alternative 3, fishermen may be paid only for the DSR they land, again up to 10% of the weight of the other species they land. However, DSR above this limit are not be allowed to enter the "stream of commerce." That is, processors may not sell DSR or DSR products. Either the processor, or the fisherman, must take responsibility for disposing of the excess DSR through non-commercial channels. The fishermen, or the buyers, or their employees could personally consume the DSR. Alternatively, the excess DSR could be donated to a non-profit outlet, or it could be disposed of in the plant's processing waste stream, although presumably not in the manufacturing of fish meal and oil, because these are commercial products, subsequently offered for sale (i.e., which enter the stream of commerce). This requirement raises enforcement issues beyond those under Alternative 2. The DSR may be valuable in wholesale markets. That value gives buyers or processors an incentive to sell the fish and share the proceeds with the fishermen. Successful cheating may also make it necessary for buyers and processors to falsify their State and Federal reporting records. Since the DSR may legitimately be disposed of by donation to non-profit entities, there is also a possibility that non-profits may resell DSR.[59]

Impacts on resource management

The benefits of the alternatives may flow from three impacts the alternatives may have on resource management. First, an alternatives may lead to better information about total bycatch mortality; second, revenues from overages collected under Alternative 2 may act as a grant to Alaska for investments in DSR management; third, the additional costs of full retention may cause some fishermen to alter their fishing patterns to avoid concentrations of DSR.

Many of the benefits from the alternatives will depend on the information they generate about the extent of bycatch discard mortality and the impacts that this information will have on decision making about the appropriate rate to use for estimating discards in the "other groundfish" and halibut fisheries. As noted earlier, the rates currently used do not have a strong scientific foundation.

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[58] As noted in Section 2.1 of the EA, there are serious legal questions about the viability of Alternative 2.

[59] It may or may not be desirable to prohibit non-profit sale of the excess DSR. Sale of DSR in a "fish feed"might be a community event raising money for charitable purposes.

The current approach to DSR management gives an effective priority to estimated incidental catch of DSR in the halibut fishery (see Table 9). If it turns out that the incidental catch is significantly greater than currently estimated, the directed fishery allocation may be reduced or eliminated to prevent the risk of overfishing. However, if the true mortality is lower than currently estimated, then the directed fishery allocation may be increased.

As noted earlier, managers believe that the true mortality rate is higher than the rate used for estimating bycatch. This suggests that estimated halibut incidental DSR catches are more likely to increase than decrease. Moreover, there is a factor peculiar to Alternatives 2 and 3, that would also contribute to this result. Because it is likely that some persons will not fully comply with the full retention rule, managers will never be sure that all the DSR bycatch has been accounted for. This means that even if, under the alternative, incidental catch deliveries were less than anticipated, managers could not assume that the bycatch rate was less than the rate previously used to estimate bycatch (because there is always the chance that some DSR were discarded illegally). The same problem would not occur if incidental catch deliveries were greater than expected. This issue would not arise under Alternative 4, the observer alternative.

A second factor that may contribute to resource health under Alternative 2 is the revenue that may be provided for DSR management.[60] Under Alternative 2, revenues from overages, which would otherwise have been paid to fishermen, will be deposited in an account in the Alaska Fish and Game Fund and be earmarked for DSR management. It is impossible to predict accurately what the total amount of these revenues would be. A high estimate, using the highest annual estimate of discard mortality since 1993, assuming perfect compliance, and the highest average price received for incidental catch since 1996, is $638,000; a low annual estimate, assuming the lowest estimate of discard mortality since 1993, a 50% compliance level, and a fillet price, is $27,000. An intermediate annual estimate, using the average bycatch mortality from 1993 to 2001, a 75% level of compliance, and an average price since 1996, is $221,000.[61] The extent to which deposits into the Fish and Game Fund will actually increase revenues for DSR management will depend on the extent to which the State may respond to the additional income in this fund by spending money it might otherwise have spent on DSR management on other things.[62]

While Alternative 2 earmarks the DSR overage revenues for use in fisheries management, this is not the only possible use for these funds. They could be retained by the Federal government and deposited in its general funds, or used in other ways. The highest valued use of additional revenues may not be DSR management. It may not be in fisheries management at all. When these funds are earmarked for DSR

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[60]As noted in Section 2.1 of the EA, there are serious legal questions about Alternative 2, and it may not be viable.

[61]These crude estimates are meant to suggest the range of possible revenues, rather than to make a prediction. The price of $0.50 was used in the intermediate scenario to reflect the opportunities fishermen have under the State system to assign their lower priced DSR to the overage and to assign their higher priced poundage to meeting the MRA.

[62]In this regard it should be pointed out that Alaska is widely expected to face a fiscal crisis in the next few years and State agencies may find themselves strapped for funds. Whether the current proposal would make it easier for Alaska to move DSR money to other purposes, or will allow Alaska to keep DSR funding up despite the funding crisis is impossible to say.

management, the government's ability to allocate its revenues to their highest and best use may be limited.

However, by earmarking these funds for Alaska's Fish and Game Fund, the Federal DSR full retention program becomes fully consistent with the Alaska full retention program. The paperwork burden on fishermen landing incidental catch of DSR would be reduced, the complications of the DSR overage program would be reduced for fishermen, processors, and managers, and NOAA enforcement would experience a reduced paperwork burden. These benefits may offset the costs to the Federal government from the reduced flexibility in its disposition of the funds. Precedent for earmarking to the Alaska Fish and Game Fund is also available. Bycatch overage revenues from lingcod and black rockfish caught in Federal waters are currently deposited in this fund, as are trip limit overages in the directed DSR fishery.[63]

The third mechanism by which Alternatives 2 or 3 may contribute to the health of the DSR stocks is by prompting some fishermen to change their fishing patterns so as to reduce DSR bycatch, and the costs of handling, storing, and delivering it. It is impossible to determine how likely this response will be.

Although these alternatives may lead to improvements in resource management, the benefits from these improvements are likely to be delayed for a long time. Of course, if bycatch estimates are currently too high, the benefits of increased DSR availability in the directed fishery may be received in a few years. But as pointed out above, this is relatively unlikely. The other sources of improved DSR management would produce their benefits in the form of increasingly healthy and productive stocks. But it may take a long time for these benefits to be received. As noted in Section 1.2 in the EA, rockfish grow slowly, and stocks "are slow to recover once driven below the level of sustainable yield." Moreover, yelloweye rockfish, which account for the bulk of the harvest, don't become sexually mature until they are 15 years old. Thus benefits from improved mortality accounting may not be felt for many years and, according to standard benefit-cost analytical methods, may have to be heavily discounted (depending upon the true social rate of time preference). Discounting is not conducted explicitly in this RIR, which is primarily qualitative. However, to provide an understanding of the potential impact of discounting, note that the value of $1.00 after 15 years, discounted using the current rate recommended by the U.S. Office of Management and Budget (OMB), is $0.67.[64] The value of a discounted dollar in subsequent years would be even less. There are convincing arguments within the professional literature which suggest that real rates of social time preference may be much smaller than those recommended by OMB and, indeed, when the risk of extinction of a species exists, the true rate may be negative, under some circumstances.

Non-use benefits

Non-use, or passive-use, benefits are the benefits received by persons who value the continued existence of a species or of some attribute or attributes of a natural environment. People do not need to use (for example, by viewing or consuming) the resource, and need not expect to use the resource, in order to

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[63]Marshall, Scott. Letter from Scott Marshall, Southeast Regional Supervisor, Commercial Fisheries Division, Alaska Department of Fish and Game, to Southeast seafood processors. November 16, 2000, page 2.

[64]This "present value" is calculated by interpolating between 10 and 30 year real rates recommended by the U.S. Office of Management and Budget to obtain a 15 year real rate of 2.675%. (Daniels).

derive non-use benefits. Activity undertaken by many persons to preserve endangered species, and the results of survey research, suggest that, in many instances, a substantial value is placed on the continued existence of a species.

Non-use benefits flowing from a reduction in the risk of extinction are not likely to be significant in this instance. The fishery is managed conservatively. The exploitable biomass estimate is conservative (exploitable biomass estimates are "...based on the sum of the lower 90% confidence limits of biomass estimates from each management area."). Moreover, managers believe that they are taking about 2 percent of the exploitable biomass of the DSR stock in the SEO annually. They believe that this level of exploitation is sustainable for the SEO as a whole. Yelloweye tend to remain in one area, however, and this may create the possibility of localized overfishing. This may be occurring, for example, on the Fairweather Grounds. However, overall, the stock does not appear to be in danger of extinction at this time (O'Connell, Carlile, and Brylinsky 2001, p. 9-11).

Benefits to commercial fishermen and DSR buyers and distributers

Experience with Alaska's DSR full retention program, and comments from fishermen contacted for this analysis, suggest that the amounts of DSR incidental catch delivered and weighed will increase under this program. This should improve the information on bycatch mortality. On the other hand, it is also unlikely that all fishermen will fully comply with the program all the time. Persons familiar with the Alaska program do not believe that there is 100 percent compliance with that program. As noted earlier, there are costs associated with retention and delivery of the DSR. These costs will not be offset by the opportunity to sell all the DSR that are delivered. Therefore, it is likely that at least some fishermen will not fully comply with the program.

The benefits from the improved estimates of DSR bycatch mortality are hard to determine. In part, this is because they will depend on the content of the new information (which, by definition, is unknown now), and on what policy decisions are made based on that improved information. One approach is to guess at what the benefits might be by assuming that the value of the annual DSR harvest increases because of the rule. A crude analysis of this type is of limited usefulness. It does however provide a potential benchmark against which to evaluate the E.O. 12866 significance criterion of a $100 million impact.

Using this approach, we can estimate that the gross value of the directed harvest and incidental catch harvest of DSR from 1996 to 2001 averaged about $820,000 a year (from Tables 7 and 9). A 10 percent increase in the revenues would generate about $82,000 per year, a 20 percent improvement would generate $164,000 a year. A 50 percent increase would generate about $410,000 per year. These estimates have to be qualified by two important factors: (1) they are estimates of gross and not net revenues; (2) DSR are a slow growing species and the benefit from the improved information might not be felt for many years.

Fishermen in the directed fisheries are currently required to discard their DSR bycatch over the 10 percent MRA. The fish would be valuable if they could be sold. The fish cannot survive release, once brought to the surface, so discarding doesn't preserve them for growth, reproduction, or future harvest. Several respondents have indicated that fishermen forced to discard their DSR are frustrated by the waste. The fish are bright red and remain floating behind the vessel as they are discarded. In some cases

large numbers of them are left floating. The visibility of the fish after discarding must be an unusually potent reminder of the waste.[65] Alternative 2 would eliminate the discard requirement, and in fact, make it illegal to discard the DSR. The elimination of waste is one of the stated objectives of the proposal and the satisfaction to fishermen of no longer being forced to waste the fish would be one of its benefits. This benefit would not, however, accrue to the same extent under Alternative 3, which does not allow the fish to enter the stream of commerce, although it does permit personal and/or charitable uses of the DSR in excess of the saleable 10 percent DSR MRA. Alternative 3 may force fishermen or processors to dispose of some DSR, rather than to turn it to some human use. This benefit would not accrue from the observer alternative. Under that alternative, fishermen would still be subject to the 10 percent DSR MRA and would be required to continue to discard DSR in excess of 10 percent.

In July 2001 the State of Alaska initiated a full retention requirement for DSR caught within its waters. These waters include the inside districts of Southeast Alaska, but they also include waters of the SEO within three miles of shore. Fishermen fishing off of Southeast Alaska routinely fish inside Alaska waters and outside of Alaska waters on a single trip. Thus, they are subject to two conflicting DSR bycatch handling requirements. In Federal waters they are required to discard all DSR over 10 percent of the weight of the targeted species they have onboard. In State waters they are required to retain all DSR. The conflict between the State and Federal regulations, both of which may apply during some portions of a single trip, creates uncertainty for fishermen. They cannot weigh their fish at sea and must make estimates on delivery of the volumes taken in State and in Federal waters. Errors can easily enter into these estimates and place them in apparent violation of the Federal no retention rule. Alternatives 2 and 3, the full retention alternatives, would provide consistency between Federal and State rules on this issue. This is not a benefit accruing from Alternative 4, the observer alternative. State and Federal regulations with respect to the discard of DSR bycatch would still be in conflict. Information from observers might be useful to clarify the location of DSR bycatch for the 30 percent of fishing days that are observed, but there would be no information on the 70 percent of days that were not observed.

The full retention alternative may simplify the paperwork for fishermen delivering DSR as incidental catch on directed trips for halibut or for other groundfish species in Federal waters. Currently these fishermen are paid for their full catch and are expected to rebate any income from DSR over the MRA to Federal enforcement officers in response to a subsequent request (these requests may come many months later). Under the full retention alternative currently in use for the State fisheries, processors pay the fisherman for the DSR under the retained incidental catch limit at the time of delivery, and subsequently deliver a check for the balance of the DSR directly to the State for deposit in the fishery fund. The State's approach, which is likely to be adopted under Alternative 2, is simpler, reducing the paperwork effort for the fisherman, and making it somewhat easier for the fisherman to settle with his or her crew.[66] [67] Under Alternative 3, the excess DSR are not allowed to enter the stream of commerce, and a rebate procedure should not be necessary. Under Alternative 4, the observer alternative, the current methods of handling overages would not be changed.

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[65]Falvey, Fugulvog, *supra*, note 30; Paust, note 38, O'Connell, note 26.

[66]Falvey, *supra*, note 30; Behnken, note 32, Pearson and McElhose, *supra*, note 37.

[67]The Federal procedure is more fully described in the description of the incidental catch fishery in Section 4.6, while the State's approach is discussed in the description of the State's full retention program in the same section.

Benefits to sport and subsistence fishermen

As noted earlier, sport fishermen harvest DSR in Southeast Alaska, and to some extent in the SEO. DSR are often taken as incidental catch in directed sport fisheries for salmon, halibut, and lingcod. They are also taken by a directed DSR sport fishery.

It's difficult to see a clear benefit to sport fishermen from any of these proposals. Better information and the better management that results should improve the biological health of the fishery. This might increase sport catch-per-unit-of-effort (CPUE) and increase the satisfaction from sport fishing. On the other hand, much of the sport fishing takes place within State waters, and, since DSR tend to have a localized distribution, an improvement in SEO stocks may not have a large impact on stocks harvested by sport fisheries. Management of the sport fishery is not tightly tied to and dependent on management of the Federal commercial fishery. Moreover, DSR are slow growing; thus, biological benefits and increased CPUE might take years to manifest themselves in the sport fishery.

A full retention requirement in the commercial fishery might have an intangible benefit, however, in that it could improve the public perception of the commercial fishery, especially in the eyes of the sport fishing community. When sport fishermen observe commercial operators throwing DSR over the side, and see DSR carcasses floating behind a commercial boat, tensions and bad feelings between the groups may be heightened. If this highly visible discarding practice is eliminated, both groups may gain.

Subsistence impacts may differ from sport impacts, because a significant part of subsistence consumption is being diverted from commercial landings. Alternative 1 is the status quo and the baseline, and will not provide any additional benefits for subsistence fishermen. Alternative 2 will lead to increased DSR deliveries from the directed halibut and groundfish fisheries. Fishermen have the option of using this fish themselves or for gifts, or of selling it and transferring the proceeds to the state. This option should increase the DSR available for subsistence purposes from these fisheries. Alternative 3 will lead to increased DSR deliveries from the directed halibut and groundfish fisheries, but fishermen or processors will not be allowed to sell the excess. This constraint on the marketing of excess DSR may make fishermen less likely to comply with this alternative than with alternative 2 leading to smaller deliveries of excess DSR than under Alternative 2. On the other hand, they have fewer options for use of the excess DSR they deliver than under Alternative 2, and fewer opportunity costs to using it for subsistence purposes. This option should increase the DSR available for subsistence purposes from the halibut and groundfish fisheries over the status quo. Alternative 4 will not affect the amounts of DSR bycatch being brought to shore by commercial fishermen. In the long run, subsistence harvesters should benefit from Alternatives 2, 3, or 4 as better information and management benefits DSR stocks.

Potential benefits to consumers

Consumer benefits from a good or service are generally measured by the excess of the amount people would be willing to pay for the good or service over and above what they do have to pay for it.[68] The benefits to consumers from the full retention program would be measured by any increase in this

[68]The technical term for this is "consumers' surplus."

"excess" through time associated with management changes based on the new information learned through the program.

New information should lead to resource productivity increases through time and thus increased consumer benefits, but the actual size of these benefits is impossible to predict. As already noted, the information that will be produced is unknown, and the management changes that will follow from it are also unknown. Furthermore, projections of benefits cannot be made without better data on the DSR market. As noted previously in this discussion of benefits, DSR are slow growing, and the benefits may not be received for many years.

In the short run, Alternative 2 may be associated with changes in the marketing of fish. DSR bycatch that was formerly discarded will now be delivered to shore from March 15 to November 15. Under Alternative 2 it could enter the stream of commerce, while under Alternative 3 it could not. Table 8, which shows estimated discarded bycatch, both absolutely and as a percentage of landings, suggests that there could be a large increase in the supply of DSR under Alternative 2 during that period. From 1993 to 2001, estimated discards ranged from 36 percent to 93 percent of landings. Although there are problems with these discard estimates, and they may be higher or lower than actual discards, they certainly suggest that a large number of additional fish, relative to current landings, will be delivered. It is difficult to predict the level of quality of these new deliveries. This increase in the volume of fish could imply increases in both high quality fish for the fresh and frozen round markets, and lower quality fish for the fillet markets. Increases in commercial production would not occur under Alternatives 3 or 4.

Under Alternatives 2, 3, and 4, if new estimates of the DSR discard mortality rate do not match the previous estimates, allocation of DSR may shift from the halibut fishery to the directed DSR fishery, or from the directed fishery to the halibut fishery. If the current estimated bycatch rates are higher than the actual rates, bycatch set-asides may be reduced and volumes in the directed fishery may be increased. Conversely, if the estimated bycatch rates are lower than the actual rates, the bycatch set-asides may be increased and the quota for the directed fishery reduced. This latter possibility is believed to be more likely by fishery managers. The disparity between prices for DSR taken as incidental catch or in the directed fishery for DSR, and the argument that fishermen will have less concern for the quality of incidental than directed catch, suggest that a shift from an incidental catch fishery to a directed fishery implies more product going into fresh and frozen round markets, and that a shift from a directed fishery to an incidental catch fishery means relatively more product going into fillet markets.

Charitable donations in Southeast Alaska may increase under Alternatives 2 or 3. These may provide benefits to some low income consumers. As noted earlier, at least in Sitka one organization is said to be willing to take the product and fillet it for a lunch program conducted under the State program. Charitable donations might increase if larger quantities of DSR were delivered to shore under Alternatives 2 or 3. However, as noted in the discussion of the Alaska full retention regulation in Section 4.6, Alaska Department of Fish and Game sources suggest that relatively little use has been made of DSR for charitable donations under the Alaska program. It is impossible to say, therefore, whether a large number of persons would eventually be served by this program, or to estimate the benefits from it.

4.9 Costs of the alternatives

Alternative 1, the status quo, is treated as the baseline in this discussion. No additional costs are associated with maintaining status quo management. The costs of the full retention and observer options are discussed or estimated using Alternative 1 as the baseline.

Cost of full retention to fishermen and DSR buyers and distributers

Commercial fishermen may respond in different ways to the requirement under Alternatives 2 and 3 that all incidental catch of DSR be retained and landed. Some may change their fishing patterns to minimize their bycatch of DSR. Fishermen who do not change their fishing patterns or who do, but nevertheless take DSR, will be required to retain and deliver them for weighing. Because of the lack of observer coverage in this fishery, some fishermen, faced with the increased costs of full retention and the consequent need to change their fishing patterns, may discard some or all of their DSR bycatch in violation of the regulation.

Some fishermen may change the places they fish to reduce the amounts of DSR bycatch they take during their halibut fishing. DSR are "habitat-specific," and the distributions of halibut and DSR are not correlated. "IPHC longline survey data indicates that bycatch of DSR is highly variable . . . within year by area." (O'Connell et al. 2001, p. 4). Thus, fishermen may be able to reduce DSR bycatch by fishing in new areas. Changes in fishing patterns will likely reduce fishermen's profits from a trip, since they will be operating in ways that they would not have if they had been left unconstrained. For example, they may incur larger fuel costs or they may experience lower halibut CPUE.

Fishermen may continue to fish as before, and comply with the new regulations, by delivering their fish to shore and forfeiting (under Alternative 2) or foregoing (under Alternative 3) the commercial value on all DSR over 10 percent of the weight of their targeted catches. In either case, these fishermen would face increased operating costs. They would have to make provision for storage of the DSR onboard. This may require special facilities to protect halibut or other catch from the DSR spines, and may utilize ice or space that might also have been used for their targeted catch. For many vessels the cost of retaining the DSR may be small. As noted earlier, in the description of the fishery in Section 4.6 of this RIR, on many trips a vessel may not expect to fill its hold to capacity with halibut or other groundfish and retained DSR. In these cases, for vessels icing their catch, and for larger RSW vessels, there may be few costs associated with bringing the DSR to shore and delivering them to the processor. Smaller RSW vessels with limited room on deck for totes may face higher costs. On delivery, offloading and grading may take somewhat more time. Under Alternative 3, DSR brought to shore in excess of the 10% limit will have to be disposed of without sale. Fishermen would be required to utilize the fish for personal use, find a charitable outlet, or to arrange for the discard of the excess after weighing. This effort would impose additional costs on them.

Faced with the costs of storage, handling, and delivery, and with potential cost increases associated with changing their fishing patterns to reduce bycatch, fishermen might choose to violate the full retention requirements (i.e., fishermen may continue to discard some or all of the DSR bycatch). DSR are brightly colored and float after being discarded at sea. This might make it possible to identify vessels discarding relatively large numbers of DSR, if the vessel were found in the area shortly after disposal. In some

instances, crew members might also report illegal discarding. Nonetheless, discards would be difficult for NMFS Enforcement or USCG to monitor.

Alternatives 2 and 3 involve an increase in costs for fish buyers. With the delivery of additional fish, buyers would face additional costs for weighing and for sorting and grading of fish. Additional recordkeeping time would be required to fill out fish tickets and, under Alternative 2, for estimation and delivery of the overage payments to the fishing fund. Under Alternative 3, processors are likely to help vessel owners delivering excess DSR to dispose of this excess. These actions could include allowing employees to fillet and take home excess DSR, adding DSR to their waste streams, or coordinating with donation programs to take excess DSR. Under Alternative 2, processors might recover some of the costs through sale of the product, while under Alternative 3, they could not sell the fish.

New information collected under Alternatives 2, 3, or 4, may lead to reductions in the allowable catches for the directed DSR fishery at the start and end of the calendar year. This would require an additional action through the annual specifications process, and would not be a direct consequence of this action. Nevertheless, if this happened, the commercial fishermen in the directed DSR fishery (and persons diverting the commercial harvest in this fishery to subsistence purposes) would face reduced harvests.

Costs imposed on consumers

Following the adoption of any one of the alternatives to the status quo, there is the distinct possibility that total commercial production of DSR, from this region, could decline. This would be so if the newly acquired fishng mortality data demonstrate that DSR are being overharvested, whether globally or locally, at current TAC levels. In such a circumstance, restrictions might be imposed to reduce the total catch of this species complex. This could, in turn, result in reduced supplies of DSR product to the marketplace and accompanying higher consumer prices. As previously suggested, data on markets, and their price and supply responsiveness, do not currently exist. Therefore, it is not possible, at this time, to quantify these effects. Nonetheless, they may reflect real consumer welfare losses, especially because DSR are primarily marketed domestically.

Observer costs to the fishermen[69]

Alternative 4, (the observer alternative) assumes an extension of the standard model for observer coverage in groundfish fisheries in Federal waters off Alaska. Under that model, fishing vessels over 125 feet long must have observer coverage on 100 percent of their fishing days, vessels from 60 to 125 feet long must have coverage on 30 percent of their fishing days, and vessels under 60 feet are not required to carry observers.[70] Vessel operators contract with private firms to provide the observer coverage and pay for it themselves. NMFS does not have details on the costs of observer coverage to the

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[69]The Canadians face a similar problem with estimating DSR bycatch mortality in their British Columbia fisheries, and have experimented with an observer program to gather additional information. See Haigh *et al.*

[70]The 30% coverage is based extends the model used for observer coverage in the groundfish fleet of vessels between 60 and 125 feet to a fleet of vessels generally under 60 feet fishing groundfish and halibut. The 30% coverage may not provide the appropriate sampling scheme for this different fleet.

fishing operations. However, anecdotal information suggests that fishermen pay about $330 per day for the coverage, and may be required to pay for additional observer travel and logistics as well.

This alternative would extend the standard groundfish observer coverage in two ways: (1) to vessels under 60 feet; (2) to vessels, of whatever size, fishing for halibut. In the SEO, these latter vessels are generally smaller than 60 feet. Neither class of vessel would normally be required to carry observers. However, under this alternative, it is assumed that the vessel classes under consideration here would be required to carry observers on 30 percent of their fishing days, as is currently required of medium-sized groundfish vessels. Consistent with the groundfish model, fishing vessel operators would be required to contract for the coverage with private firms and would pay for the coverage themselves. Under this alternative, fishermen would continue to be subject to the 10 percent DSR MRA; they would be required to discard DSR in excess of that limit.[71]

The daily cost of this alternative has been estimated by assuming a $330/day cost for observer coverage. The total number of fishing days has been estimated as 4,508.[72] With 30% coverage, this fleet of vessels would be carrying observers for about 1,350 days. Thus, the total observer cost for this coverage is estimated to be $446,000, or an average of $1,054 per vessel (assuming 423 vessels). As noted in the footnote below, this is a very crude estimate of their total observer costs.

As noted, the cost estimates above may not include all logistics and transportation expenses incurred by the observers. These expenses would be billed, on top of the assumed $330/day observer costs, to the fishing vessel operators. Moreover, these fishing operations would incur observer related costs that are not directly reflected in the money they must spend on observer coverage, logistics and transportation. For example, fishing vessel operators might have to alter their travel plans and schedules to pick up or drop off observers; observers and their equipment may take up limited deck space while they observe gear setting and retrieval, and record and sample catch and bycatch; observers occupy "living space" aboard, which otherwise may have housed additional crew members. These operational impacts may be reflected in both increased operating expenses and reduced harvests and revenues. These impacts would

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[71]Because of this, the observer alternative does not reduce fishermen's frustration over waste of DSR. Moreover, this alternative does not ameliorate the conflict between the State and Federal regulations DSR retention regulations in the SEO.

[72]The number of fishing days was estimated as follows. Alaska fish ticket records record the dates for the start and end of a fishing trip. This made it possible to estimate the length of each trip. Each groundfish record in the fish ticket database showing harvests from the SEO was treated as a separate trip. It was thus possible to count up the number of days of fishing time. This is clearly a crude approach to this calculation, but it is sufficiently accurate to allow the analysis to address the significance threshold in E.O. 12866 ($100 million). Some potential sources of bias would tend to lead to an underestimate of costs. The approach only looks at trips with groundfish landings; however, halibut vessels appear to have taken at least some trips producing no groundfish landings. These trips aren't counted. Other sources of bias might tend to lead to an overestimate of costs. For example, 359 of the reported days were fished by vessels between 60 and 125 feet. Unless these vessels were fishing for halibut and delivering groundfish (including sablefish) only as bycatch, they would already have been subject to the 30 percent observer coverage requirement. Another source of inaccuracy which might increase the number of trips and lead to an overestimate of costs involved the assumption that each trip was represented by only one fish ticket. It is likely that an unknown number of trips generated more than one fish ticket. A third source of bias leading to an overestimate of costs is the application of the analysis to all SEO activity. Actually, the observer coverage would only apply to days spent fishing in the federal waters of the SEO.

be relatively more severe on a smaller vessel. It is not possible, with available information, to quantify these effects, but they may represent a substantial additional cost of operation for this class of vessels.

The discussion above was predicated on a set of costs that reflect experience in the current 100 percent and 30 percent observed fleets. However, most of the vessels that would be required to carry DSR observers are under 60 feet and have not been required to carry observers before. The costs of supplying certified observers to these small vessels may be higher, on average, than the costs of supplying observers to the larger vessel fleet. There are several reasons for this: (a) working conditions may be more difficult on smaller vessels and observers may require higher wages for working on them, (b) smaller vessels may take shorter but more frequent trips making it necessary for observers to transfer between operations more frequently and increasing logistical and transportation costs, (c) higher costs for moving observers between vessels may make it harder for observer companies to meet the needs of fishermen for observers in a timely manner, (d) increased demands for observers associated with the program may make it harder for observer companies to supply them.

In addition to the privately borne costs of the observer program, just discussed, the public willalso face additional costs. An increase of 1,350 fishing days spread over eight months of open IFQ fisheries, is likely to require additional observers. These observers will have to be trained, partly at public expense. In addition, the additional observing activity will make it necessary to spend more time debriefing observers and entering observer data. If additional funding for these activities is not forthcoming, the cost would be incurred as a reduction in other services provided.

This alternative would implement observer coverage on halibut and groundfish fishing vessels in the SEO in order to gather DSR bycatch data. However, there may be other reasons to expand or alter observer coverage. For example, observer coverage on halibut vessels, including the vessels under 60 feet, has been investigated as a method of monitoring the bycatch mortality of the short-tailed albatross. This seabird has been identified as endangered by the U.S. Fish and Wildlife Service under the provisions of the Endangered Species Act (Geernaert et al. 2001).

This has two implications. First, it may be premature to implement observer coverage in this fishery for the purpose of monitoring DSR bycatch mortality alone. A piecemeal approach to alterations in the observer program may be inappropriate, making the ultimate change more costly, and perhaps starting the changes down a path that might need to be altered as other issues are considered. It may be more appropriate to pursue an observer alternative as part of a broader change in the approach to observers in the GOA and BSAI. Second, in this analysis the costs of the observer program in the SEO are being balanced against the benefit flowing from better information on DSR bycatch mortality. There may well be other benefits from observer coverage that would be considered in a more comprehensive approach.

4.10 Summary of the 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.

The combined value of the incidental catch and directed harvest of the DSR is typically less than a million dollars. As noted earlier, if the information led to improvements in management and subsequently increased the annual value of the DSR harvests by 50 percent, the total increased gross ex-vessel value would only be about $410,000. The increase in net value would be less. The potential cost of the full retention alternative was unknown. The estimated cost for the observer program is on the order of $446,000 (although this was identified as a likely underestimate). None of these changes, even with large adjustments made for the purpose of a sensitivity analysis, would appear to have the potential to result in ". . . 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 . . ."

NMFS has not identified any factors that would (a) "Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency"; (b) "Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof"; or (c) "Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the executive order."

5.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

5.1 Introduction

This Initial Regulatory Flexibility Analysis (IRFA) reviews a regulatory action that would improve information on demersal shelf rockfish (DSR) bycatch mortality in the targeted halibut and groundfish fisheries in Federal waters in the Gulf of Alaska off of Southeast Alaska.

5.2 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 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 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 that focus is reflected 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 the 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.

5.3 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, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;
- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the 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.

5.4 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) small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a 'small business' as having the same meaning as 'small business concern,' which is defined under Section 3 of the Small Business Act. A '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 business 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 under the following conditions: (1) If a 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, that person is considered an affiliate of the concern; 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 a 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 fewer than 50,000.

5.5 What is this action?

The alternatives considered for this action are described in Section 2.1 of the environmental assessment (EA), and are summarized again in Section 4.5 of the Regulatory Impact Review (RIR). In February 2003, the Council chose Alternative 3 as its preferred action. Alternative 3, which requires full retention, but which doesn't allow the excess DSR to enter the stream of commerce, has the following four components:

1. Eliminate the MRA for incidental catch of DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO;

2. Require that all DSR caught by federally-permitted catcher vessels using hook-and-line and jig gear in the SEO be retained and landed. Catcher/processors would continue to observe current maximum retainable amounts (MRAs) for DSR.

3. Limit the sale of incidental catch of DSR to no more than 10 percent of the aggregate round weight of IFQ Pacific halibut, and other groundfish species open to directed fishing, that are landed during the same fishing trip; or no more than 1 percent of the aggregate round weight of sablefish.

4. Allow retention of any DSR in excess of the amount that may be sold for any use except for sale, barter, or trade.

5.6 Reason for considering the proposed action

A complete description of the purposes of this proposed action can be found in Section 1.0 of the EA, and a somewhat shorter description is in Section 4.4 of the RIR. As noted in the RIR, fishermen catch DSR in fisheries targeted directly on DSR. They also catch it in other fisheries, particularly those for halibut, as a by-product. The annual DSR Total Allowable Catch (TAC) is divided between the targeted DSR fishery and incidental catch in the halibut fishery (and other groundfish fisheries). To prevent fishermen in the halibut and other groundfish fisheries from exploiting loopholes in the rules that could permit covert targeting of DSR, they are currently required to discard DSR taken in excess of 10 percent of the weight of the targeted species which they have onboard. However, this regulation creates three problems: (1) DSR sustain injuries when brought to the surface that result in 100 percent mortality, so that discarding is perceived by many fishermen and managers as wasteful; (2) the discards are not adequately reported, so managers have poor information about the total levels of discard mortality; (3) State and Federal regulations governing the treatment of DSR bycatch, which is often taken in Federal and State waters on the same trip, are not consistent.

Because of the discard requirements, total bycatch mortality of DSR in the halibut and groundfish fisheries is unknown. This creates a risk of overfishing the DSR stock. Data from the proposed full

retention program would be used to: (1) obtain information about bycatch and bycatch rates for DSR; (2) calculate total mortality; (3) enhance the DSR stock assessment and refine estimates of allowable biological catch (ABC) and (TAC); and ultimately, (4) revise the DSR MRA accordingly, unless a decision is made to continue the full retention program indefinitely.

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

As noted in the EA and the RIR, the objectives of this action are:

1. To improve the gathering of information on the bycatch of DSR in the halibut longline fishery and other fisheries in the SEO, in order to get a more accurate picture of DSR mortality and to enable biologists to improve the annual stock assessments.

2. To avoid, in the process of implementing a full retention program, either increasing incentives to target on DSR or increasing incentives to discard bycatch in excess of the amount that can legally be sold.

3. To minimize waste to the extent practicable while meeting these goals.

4. To achieve consistency between State and Federal regulations that govern the retention and disposition of DSR harvested in the SEO.

The legal basis for the proposed action was discussed in Section 4.2 of the RIR that accompanies this IRFA.

5.8 Number and description of small entities directly regulated by the proposed action

What are the regulated entities?

The preferred alternative would regulate catcher vessels fishing for halibut or for groundfish with hook-and-line gear and jigs in Federal waters in the SEO. Vessels fishing only in State waters in the SEO would not be regulated by this alternative. Vessels fishing in both Federal and State waters would not be regulated while fishing in State waters. The vessels targeting DSR during the directed DSR fishing season from January 1 to March 14, and from November 16 to December 31, would not be directly regulated by this proposal. Catcher/processors would not be regulated by this alternative.

The preferred alternative would also regulate entities buying fish from vessels delivering DSR as bycatch. Under its provisions, these entities would not be allowed to subsequently sell DSR purchased from a fisherman in excess of the limit imposed by the 10% restriction on the fisherman's permitted sales.

Number of small regulated entities

As noted in the RIR, an estimated 423 vessels were active in the halibut and groundfish hook-and-line fisheries in the Federal waters of the SEO in 2000. Almost all of these (all but five) were catcher vessels. Each of these vessels has been assumed to represent a separate entity (estimates based on NMFS Catch by Vessel Dtabase and RAM halibut fishing statistics).

As noted earlier in the IRFA, a small fishing entity is a vessel that annually grosses less than $3.5 million in all of its combined operations, including the operations with which it may be affiliated. It is currently impossible, however, to determine how much these fishing vessels gross in all of their operations, or to identify the affiliations between them and other entities. The best source of information on the size classification of groundfish fishing entities in the GOA are tables prepared by the NMFS Alaska Science Center and published in the annual Groundfish Economic SAFE document. These indicate that all hook-and-line groundfish vessels in the GOA are small entities (Hiatt et al., 2002). There are good reasons to believe that these tables understate the numbers of large entities.[73] However, in the absence of better information, all of the entities potentially taking DSR bycatch in Federal waters of the SEO are treated here as small entities.

Landings records indicate that between 17 and 26 shorebased buyers in Southeast Alaska purchased DSR between 1996 and 2001. The median and modal numbers of firms were both 21.[74] The threshold for large seafood buyers and processors is 500 employees. In taking account of the numbers of employees, affiliations between entities should be accounted for. That is, a firm that employs fewer than 500 persons would be a large entity if it were affiliated with another firm that employed more than 500; or with two affililated firms that between them employed more than 500. Firm level data on the numbers of employees and information about the affiliations between entities is not readily available. For this purpose of this analysis, these shoreside processors are assumed to be small entities.

Description of small regulated entities

This fishery was described in the RIR, Section 4.6. The fleet is largely composed of catcher vessels under 60 feet, primarily fishing hook-and-line gear for halibut. Other groundfish species are taken as well. Sablefish may be targeted separately from halibut; other groundfish are probably taken largely incidentally. This fleet generated an estimated $33 million in gross revenue from its harvests in the Federal waters of the SEO during 2000. Average gross revenues were about $79,000 per vessel. Almost all of the revenues from the Federal SEO waters were generated by halibut and sablefish. Sablefish revenues were about $21 million, while halibut revenues were about $12 million. Fishing in the SEO was only a part of the fishing activity by these vessels. Gross revenues for these vessels, from all groundfish and halibut fisheries off Alaska in 2000, were $111 million, or about $262,000 per vessel. In

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[73]Perhaps the strongest reason for this is that the categorizing of large and small entities is done solely by considering revenues from groundfish fishing. These vessels are almost all also involved in fishing for other species in Alaska and these revenues have not been considered here. These tables are known to be subject to other shortcomings as well. They do not take account of revenues that may have been earned in fisheries outside of Alaska, and they do not take account of possible affiliations between vessels, or between vessels and processors.

[74]Terry Hiatt. NMFS, Alaska Fisherie Science Center. Personal communication, Sept. 27, 2001.

addition to significant statewide revenues from sablefish ($54 million) and halibut ($45 million), these vessels obtained large revenues from Pacific cod ($9 million). DSR incidental catch revenues for 2000 in the SEO (estimated in Table 9) were about $176,000; total statewide DSR revenues (from incidental catch and directed harvests) were about $793,000 (estimated from Tables 7 and 9). These revenue estimates only include revenues from groundfish and halibut; many of these entities would also have earned revenues from other fisheries, of which Alaska's salmon and herring fisheries were probably most important. DSR incidental catch revenues were about 0.16% of the fleet's total statewide groundfish and halibut revenue; if probable herring and salmon revenues are also considered, DSR incidental catch revenues are even a smaller percentage of overall revenues. DSR incidental catch revenues in the SEO were about 0.53% of the fleet's groundfish and halibut revenues from Federal waters in the SEO.

Shoreside processors buying DSR also bought other groundfish, halibut, salmon, herring and crab. In 2000, the 22 firms processing groundfish in Southeast Alaska, had total gross revenues from all fish processing activities of about $262 million, or an average per plant of about $12 million. Several larger plants dominate the average calculation; the median gross revenues were about $5 million. Groundfish (which does not include halibut) were a relatively minor component of the processing activity, accounting for about 20% of aggregate firm gross revenues. Total groundfish revenues were about $52 million, or about $2.4 million per plant. The importance of groundfish varied across firms. Nine firms earned more than 10% of their gross revenues from groundfish, while five earned between 30% and 50% of their revenues from groundfish. No plant made more than 50% from groundfish. In comparison, the total first wholesale value of DSR products in 2000 (processed by 19 plants) was about $1.2 million, or about $60,000 per plant.[75]

5.9 Adverse economic impacts on small entities

Under Alternative 3, fishermen will be required to retain and deliver to shore all DSR bycatch. As the estimated bycatch discard column in Table 8 suggests, this could be on the order of 150 to 350 metric tons annually, spread over the eight month IFQ fishing season. Fishermen may experience increased costs associated with handling the additional DSR, of storing them on the vessel until it reaches port, and of unloading and disposing of the fish. Some fishermen may incur additional costs by changing their fishing patterns for their target species in order to avoid DSR bycatch. Handling and delivery costs would primarily take the form of increased work effort required on the vessel. Costs may be higher on smaller RSW vessels which lack deck space for special DSR totes, or on vessels that would otherwise have filled their holds with their target fish, but are unable to do that, given the need to retain a larger amount of DSR. Fishermen will also face costs of disposing of the excess DSR onshore. They will not be allowed to sell it; they may use it for personal use, donate it for charitable purposes, or discard it.

The primary effect of Alternative 3 would be on the operations of these entities during their halibut fishing operations in Federal waters in the SEO. As noted, this fleet earned about $12 million (about $28,000 on average) of its $110 million (about $262,000 on average) halibut and groundfish total statewide gross revenues from this part of its activities. The actual average statewide fishing revenues were almost certainly larger than $110 million since many of these vessels are likely to be active in

[75]Terry Hiatt. NMFS, Alaska Fisheries Science Center. Personal communication2, Sept. 27, 2001, and Dec. 12, 2002..

Alaska's salmon and herring fisheries. Thus 11% ($28,000/$262,000) is a high estimate of the percentage of the total gross revenues these operations obtain from halibut fishing in Federal waters in the SEO.

Small processors would face the costs of weighing and recording additional DSR that may be landed. They are likely to play a role in helping vessel owners delivering excess DSR to dispose of this excess. These actions could include allowing employees to fillet and take home excess DSR, adding DSR waste to their waste streams, or coordinating with donation programs to take excess DSR. Processors would no longer be able to sell excess DSR from federal waters. Table 3 suggests that this was about ten metric tons in 2001 (the largest annual volume listed). Using the bycatch ex-vessel round price for 2001 from Table 9, this implies gross revenues foregone from this source of about $16,000.

5.10 Recordkeeping and reporting requirements

The IRFA should include "a description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record . . ."

The Council's preferred alternative does not impose new recordkeeping or reporting requirements on the regulated small entities.[76]

5.11 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 Council's preferred alternative.

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[76]The focus of the IRFA is on adverse impacts on regulated entities. However, as noted in the discussion of benefits to the commercial industry in Section 4.8, the preferred alternative may reduce some paperwork burdens for regulated commercial fishermen. Currently fishermen with overages are paid for those overages. The money is then turned over to the Federal government in response to a "summary settlement offer." Under Alternative 2, the fish buyer would likely turn the payments for the overages over to the State of Alaska, directly, without involving the fishermen (Falvey, *supra*, note 30 Behnken, note 32). Note also, however, that some recordkeeping requirements for entities not directly regulated (fish buyers) may increase under Alternatives 2 or 3 (Pearson, *supra*, note 37).

5.12 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 Magnuson-Stevens Act and any other applicable statutes and that would minimize any significant economic impact of the proposed rule on small entities."

This EA/RIR/IRFA has evaluated four alternatives: (1) the status quo, (2) full retention allowing excess DSR to enter the stream of commerce, (3) full retention prohibiting excess from entering the stream of commerce, and (4) use of an observer program. The Council has chosen Alternative 3 as its preferred alternative. Table 11 compares the four alternatives analyzed in this EA/RIR/IRFA on the basis of the ability of each to achieve the objectives of this action. As noted earlier, these objectives are::

1. To improve the gathering of information on the bycatch of DSR in the halibut longline fishery and other fisheries in the SEO, in order to get a more accurate picture of DSR mortality and to enable biologists to improve the annual stock assessments.

2. To avoid, in the process of implementing a full retention program, either increasing incentives to target on DSR or increasing incentives to discard bycatch in excess of the amount that can legally be sold.
3. To minimize waste to the extent practicable while meeting these goals.

4. To achieve consistency between State and Federal regulations that govern the retention and disposition of DSR harvested in the SEO.

Table 11. Comparison of the alternatives

Alternative	Does this alternative have adverse impacts on small entities?	Did this alternative meet the objectives of the action?	Why wasn't this alternative selected?
Alt 1 - the status quo	This is the baseline alternative and imposes no new adverse impacts on small entities.	Provides no new information on status of DSR stocks. Does not increase incentives for targeting DSR. Continued waste. Continued conflict between State and Federal regulations.	This alternative does not meet the action objective of providing better information on DSR bycatch mortality in the SEO. Nor does it meet the objectives of reducing waste and increasing consistency between state and federal regulations.
Alt 2 - full retention - possible disposal over 10% to buyers or processors	Fishermen face additional costs of storage, reduced space for target species, delivery, unloading, weighing and disposal.	Provides new information on status of DSR stocks. Does not increase incentives for targeting DSR. Reduces waste of DSR. Reduces conflict between State and Federal regulations.	This was the Council's original preferred alternative, but Alt. 3 was adopted in its place, after NOAA General Counsel identified serious legal issues with Alt. 2. The key problem is that Alt. 2 appears to exceed the authority granted to NMFS under the MSA. This issue is discussed in Sec. 2.1 of the EA and in detail in Appendix to this EA/RIR/IRFA.
Alt 3 - full retention - DSR over 10% limit cannot enter the "stream of commerce"	Fishermen face additional costs of storage, reduced space for target species, delivery, unloading, weighing and disposal. Processors would no longer be able to sell fishermens' excess DSR. Processors are likely to become involved in helping fishermen to dispose of excess DSR.	Provides new information on status of DSR stocks. Does not increase incentives for targeting DSR. May **not** reduce waste of DSR to the same extent as Alternative 2. Partially reduces conflict between State and Federal regulations.	This was adopted by the Council as its preferred alternative at its February 2003 meeting.
Alt 4 - observers	Fishermen face additional costs for observer, including travel and logistical expenses for observers, and an additional cost of about $330/day for 30% of days at sea.	Provides new information on the status of DSR stocks. Does not increase incentives for targeting DSR. Does not reduce waste of DSR. Does not reduce conflict between State and Federal regulations.	This would extend the groundfish observer program to a vessel size class (<60 feet) and a target species (halibut) for which the program was not designed. Fishermen would be responsible for paying for observer coverage. Non-monetary costs of carrying observers on small vessels may also be burdensome.

6.0 REFERENCES

Alaska Department of Fish and Game. 2000. "Community Profile Database Technical Documentation. Microsoft Access 97 Version." Division of Subsistence, Alaska Department of Fish and Game. Anchorage: 2000. Accessed at: http://www.state.ak.us/local/akpages/FISH.GAME/subsist/download/tecdoc00.pdf on March 24, 2003.

Bass, R. E., A. I. Herson, and K. M. Bogdan. 2001 (2nd edition). *The NEPA Book. A step by step guide on how to comply with the National Environmental Policy Act.* Solano Press Books. 475 p.

Daniels, Mitchell E. 2003. Director of the U.S. Office of Management and Budget. Memorandum for Heads of Departments and Agencies on 2003 Discount Rates for OMB Circular No. A-94. M-03-08. January 20, 2003. Accessed at http://www.whitehouse.gov/omb/memoranda/m03-08.html on February 27, 2003.

Francis, R. C. 1985. Fisheries Research and its Application to West Coast Groundfish Management. In T. Frady (editor). *Proceedings of the Conference on Fisheries Management: Issues and Options. p. 285-304. Alaska Sea Grant Report 85-2.*

Geernaert, T. O., H. L. Gilroy, S. M. Kaimmer, G. H. Williams, and R. J. Trumble. 2001. *A Feasibility Study that Investigates Options for Monitoring bycatch of the Short-tailed Albatross in the Pacific Halibut Fishery off Alaska.* Prepared for the National Marine Fisheries Service by the staff of the International Pacific Halibut Commission. February 1, 2001.

Haigh, R, J. Schnute, L. Lacko, C. Eros, G. Workman, B. Ackerman. 2002. "At-sea observer coverage for catch monitoring of the British Columbia hook and line fisheries." Fisheries and Oceans Canada. Science Branch, Pacific Region, Pacific Biological Station. Nanaimo, B.C. 2002.

Hiatt, Terry. 2002. "Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of he Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2001. Alaska Fisheries Science Center, National Marine Fisheries Service. Seattle: November, 2002.

Hubartt, D. J., A. E. Bingham, and B. J. Frenette. In preparation. *2001 ADF&G Marine Creel FDS report.* ADF&G, Sportfish Division. Douglas, Alaska.

Leaman, B. M. and R. J. Beamish. 1984. Ecological and management implications of longevity in some northeast Pacific groundfishes. *Env. Biol. Fishes.* 30:253-271.

Livingston, P. and B.J. Goiney. 1983. Food habits literature of North Pacific marine fishes: A review and selected bibliography. In NOAA Tech. Memo. NMFS F/NWC-54 USDOC, NOAA. 81 p.

NMFS. 1997a. Amendment 49 (Improved Retention/Improved Utilization) to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish. NPFMC, 605 W 4th Avenue, Suite 306, Anchorage, AK 99501. 200 p.

_____. 1997b. Amendment 49 (Improved Retention/Improved Utilization) to the Fishery Management Plan for the Gulf of Alaska Groundfish Fishery. NPFMC, 605 W 4th Avenue, Suite 306, Anchorage, AK 99501. 130 p.

_____. 1998. Amendment 55 (Essential Fish Habitat) to the Fishery Management Plan for the Gulf of Alaska Groundfish Fishery. NPFMC, 605 W 4th Avenue, Suite 306, Anchorage, AK 99501. 364 p.

_____. 2001a. EA/RIR/IRFA for the Environmental Assessment for the Interim and Final Total Allowable Catch Specifications for the Year 2002 Alaska Groundfish Fisheries. NOAA, NMFS, AKRO, P.O. Box 21668, Juneau, AK 99802. 70 p.

_____. 2001b. Final EIS for Steller Sea Lion Protection Measures. NOAA, NMFS, AKRO,, P.O. Box 21668, Juneau, AK 99802. 3 volumes.

_____. 2003. Alaska Groundfish Fisheries: Revised Draft Programmatic Supplemental Environmental Impact Statement. NMFS, P.O. Box 21668, Juneau, Alaska 99802. 8 volumes.

North Pacific Fisheries Management Council (NPFMC). 2001. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Gulf of Alaska and Bering Sea/Aleutian Islands Region (2002 SAFE). Compiled by the Plan Team for the Bering Sea/Aleutian Islands Groundfish Fisheries. NPFMC. 605 W. 4th Avenue, Suite 306, Anchorage, Alaska 99501-2252.

O'Connell, V., C. Brylinsky, and D. Carlile. 2002. Demersal Shelf Rockfish Stock Assessment for 2003. ADF&G RIR 1J02-44. pp 48. Also published as Section 8 of Appendix B (GOA) to the *2002 Groundfish Stock Assessment and Fishery Evaluation Reports.* November 2002. North Pacific Fisheries Management Council, 605 W. 4th Ave., Suite 306, Anchorage, AK 99501. Available on the Internet at http://www.afsc.noaa.gov/refm/docs/2002/GOAdshelfrck.pdf .

O'Connell, V. M. and D. W. Carlile. 1993. Habitat specific density of adult yelloweye rockfish in the eastern Gulf of Alaska. Fish Bull. 91:304-309.

O'Connell, V. M., and C. Brylinsky. 2001. The southeast Alaska demersal shelf rockfish fishery with 2002 season outlook. ADF&G Commercial Fisheries RIR 1J01-37. 43 pp.

O'Connell, Victoria. 1987. Reproductive seasons for some *Sebastes* species in Southeastern Alaska. ADF&G Information Leaflet 263. 21 p.

Queirolo, L., L.W. Fritz, P. A. Livingston, M. R. Loefflad, D. Colpo, and Y. L. DeReynier. 1995. Bycatch, utilization, and discards in the commercial groundfish fisheries of the Gulf of Alaska, eastern Bering Sea, and Aleutian Islands in NOAA Tech. Memo. NMFS-AFSC-58. USDOC, NOAA. 148 p.

Rohlf, D. J. 1989. The Endangered Species Act, A Guide to its Protections and Implementation. In: *Stanford Environmental Law Society*, Stanford Law School, Stanford, CA 94305. 207 p.

Rosenthal, R. J., V. Moran-O'Connell, and M. C. Murphy. 1988. Feeding ecology of ten species of rockfishes (Scorpaenidae) from the GOA. *Calif. Fish and Game* 71(1):16-37.

United States Fish and Wildlife Service (USFWS). 1989. Endangered Species Act. Section 7 Consultation on the Effects of the Groundfish Fisheries Conducted under the Bering Sea and Gulf of Alaska Fishery Management Plans of the North Pacific Fishery Management Council (Seabirds; Biological Opinion)," U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, AK 99503.

_____. 1995. Endangered Species Act. Section 7. Reinitiation of Consultation on the Effects of the Groundfish Fisheries Conducted under the Bering Sea and Gulf of Alaska Fishery Management Plans of the North Pacific Fishery Management Council (Seabirds; amended Biological Opinion from July 3, 1989)," U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, AK 99503.

_____. 1997. Letter from Ann G. Rappoport to Steven Pennoyer *re.* Endangered Species Act Formal Section 7 Consultation and Biological Opinion on Effects of the 1997 Total Allowable Catch Specifications and Environmental Assessment for Groundfish Fisheries in the Gulf of Alaska and Bering Sea-Aleutian Islands on Short-tailed Albatrosses. U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, AK 99503.

_____. 1999. Endangered Species Act Formal Section 7 Consultation for 1999-2000 Hook-and-Line Groundfish Fisheries of the Gulf of Alaska and Bering Sea and Aleutian Islands Area (Short-tailed Albatross). U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, AK 99503.

_____. 2001. Letter from Ann G. Rappoport to James W. Balsiger *re.* Endangered Species Act Formal Consultation for the 2001-2004 Total Allowable Catch Specifications and Environmental Assessment for the Gulf of Alaska and Bering Sea-Aleutian Islands Groundfish Fisheries. FWS Log No. WAES-01016. U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, AK 99503.

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APPENDIX A

Explanation of Legal Issues with Council's Preferred Action on DSR

Prepared by GCF and GCAK as Attachment to a September 27, 2002 letter to Council from NMFS

The following describes the legal issues identified by NOAA General Counsel in reviewing the draft proposed rule to require full retention of demersal shelf rockfish (DSR) onboard Federally-permitted vessels participating in the hook-and-line and jig fisheries within Federal waters of the Southeast Outside District (SEO) of the Gulf of Alaska.

The subject regulatory amendment seeks to improve the information collected on the incidental catch of DSR in the hook-and-line and jig fisheries conducted within the SEO of the Gulf of Alaska. According to the draft proposed rule, improved information collection will be used to "more accurately estimate DSR fishing mortality, improve DSR stock assessments, and evaluate whether 10 percent is the appropriate maximum retainable percentage limit for DSR in the SEO." In order to improve the accuracy of the data concerning DSR incidental catch, the draft proposed rule requires full retention and the landing, weighing, and reporting (on State of Alaska fish tickets) of all DSR incidentally caught by federally-permitted vessels fishing for IFQ Pacific halibut or engaged in directed fishing for groundfish with hook-and-line or jig gear in the SEO. Furthermore, to avoid unwanted directed fishing incentives for DSR, the draft proposed rule permits fishermen to sell and keep sale proceeds for retained DSR up to an amount that is equivalent to 10 percent of the aggregate round weight of IFQ halibut and groundfish species open to directed fishing that are landed during the same fishing trip (hereinafter referred to as the "10 percent sale limit"). Amounts of retained DSR that are in excess of the 10 percent sale limit could be disposed of in one of two ways: (1) sell the excess DSR and relinquish all sale proceeds from such excess DSR to the State of Alaska within 60 days, or (2) retain the excess DSR for any use except sale, barter or trade. This second option could include personal use or donation to a non-profit charitable organization.

Although NOAA GC initially thought that the management scheme proposed by the Council was within the rulemaking authority of the Magnuson-Stevens Act (MSA), on review of the draft proposed rule developed by NMFS to implement the DSR measures, serious legal concerns were identified with Option 1 and its extension of MSA authority to the regulation of sale proceeds. While there is no caselaw regarding the extent of MSA authority to regulate the disposition of sale proceeds from legally harvested fish, NOAA GC has determined that such a provision likely exceeds the rulemaking authority provided by the MSA.

The MSA authorizes NMFS to take conservation and management measures "applicable to foreign fishing and fishing by vessels of the United States." 16 U.S.C. 1853(a). The MSA defines "fishing" to include the actual or attempted catching, taking or harvesting of fish, "any other activity which can reasonably be expected to result in the catching, taking or harvesting of fish, or any operations <u>at sea</u> in support of, or in preparation for" the harvesting of fish (emphasis added). 16 U.S.C. 1802(15). Based on these and other provisions, the MSA is focused on harvesters. The Councils and NMFS have interpreted the MSA as providing authority to regulate what a fisherman can do with legally harvested fish as long as conservation and management reasons exist for such regulation. Regulations have been implemented by

NMFS that regulate processing activities by harvesters and at-sea processors, such as the roe-stripping and forage fish regulations in the North Pacific, and regulations that prohibit the sale of legally harvested fish.[77] These activities have been determined to fall within the MSA authority to regulate "fishing." However, regulation of activities that occur after the fish has left the harvester's control is less related to "fishing" and to the MSA's conservation and management goals than to "the business arrangements between processors and harvesters."[78] The draft proposed rule's regulation of proceeds from the sale of legally harvested fish is one step beyond the MSA's fishing focus and the authority granted to NMFS to regulate fishing.

Additionally, if the excess DSR is allowed to be sold to the processor via an ability to relinquish the harvester's proceeds to the State of Alaska, more DSR than contemplated by the 10 percent sale limit could enter the stream of commerce, and could create incentives for arrangements between harvesters and processors that would undermine the rule's objective of discouraging fishermen from targeting on DSR or fishing in areas where high DSR incidental catch is anticipated.[79]

Therefore, Option 1 for the disposal of DSR in excess of the 10 percent sale limit appears to exceed the rulemaking authority of the MSA and should not be part of the draft proposed rule.

Possible modification of the draft proposed rule to circumvent the identified legal issues

NMFS staff asked NOAA GC whether the draft proposed rule could be modified such that the Federal regulations would require full retention of DSR caught in the SEO but contain no provisions as to the disposition of DSR and sale proceeds. Under this Federal regulatory scheme, State of Alaska regulations would require that proceeds from the sale of DSR caught in the EEZ that is in excess of a 10 percent sale limit be relinquished to the State of Alaska. With this modification, NOAA GC examined whether, under the Supremacy Clause of the United States Constitution, the regulatory scheme implemented by the State of Alaska would be preempted by the Federal regulatory scheme in the EEZ.

The Supremacy Clause of the United States Constitution, Article IV, cl. 2, "nullifies state laws that 'interfere with, or are contrary to' federal law." Louisiana Seafood Management Council, Inc. et al. v. Foster, 917 F. Supp 439, 442 (E.D. La. 1996) (*quoting* Gibbons v. Ogden, 22 U.S. 1 (1824)).

State law is found to conflict with an FMP regulation either when dual compliance with the state and federal laws is impossible[80] or when the state law "stands as an obstacle to the accomplishment of the

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[77]See National Fisheries Institute, Inc. v. Mosbacher, 732 F. Supp. 210, 216 (D.D.C. 1990) (upholding NMFS prohibition against sale of legally harvested billfish finding that billfish were in need of conservation and that no-sale provision was rational way to achieve conservation objective).

[78]1989 Memorandum entitled "Limitations on Roe-Stripping," co-authored by GCF and GCAK for the North Pacific Fishery Management Council, at 13.

[79]Compare National Fisheries Institute, Inc. v. Mosbacher, 732 F. Supp. at 216 (Secretary of Commerce reasonably determined that "no-sale" provision would discourage harvest of Atlantic billfish by preventing development of commercial billfish market.)

[80]Florida Lime & Avocado Growers, Inc. v. Paul, 373 U.S. 132, 142 (1963).

full purposes and objectives of Congress."[81] The former test is broad, including literal impossibility of dual compliance as well as scenarios where state standards are more stringent than their federal counterparts. In Vietnamese Fishermen Ass'n of America v. California Department of Fish and Game, 816 F. Supp. 1468 (N.D. Ca. 1993), the court held that a California law prohibiting the use of gill or trammel nets for taking rockfish in federal waters off the coast of California was preempted by a Pacific Council FMP prohibiting the use of such nets only in waters north of 38 degrees north latitude. The court found that, by its silence regarding waters south of this line, the FMP intended to allow gill and trammel nets in this area. The California law, establishing a stricter standard, was thus in conflict with the FMP and therefore preempted by it. Vietnamese Fishermen Ass'n of America, 816 F. Supp at 1475. However, the mere existence of federal regulations in the relevant subject matter does not automatically establish preemption.[82] The existence of an FMP regulation merely opens the way for further analysis of whether state and federal laws conflict.

As explained above, a modified Federal proposed rule would require only that all DSR caught in the EEZ be retained, landed, weighed and reported and there would be no limitations placed on the disposition of such fish or how much of the proceeds from the sale of such fish could be retained by the fisherman. Furthermore, there is an extensive administrative record that demonstrates Federal consideration but rejection of a limitation on the amount of sale proceeds that can be retained by the fisherman that could be used to help interpret any ambiguity as to what the Federal regulatory scheme intended, thus creating an even stronger presumption that no limitations be placed on the disposition of sale proceeds under the Federal regulatory scheme. However, State regulations would require that proceeds from the sale of DSR caught in the EEZ that is in excess of a 10 percent sale limit be relinquished to the State of Alaska. This scenario creates a situation wherein fish that would be required to be retained in the EEZ without any other limitation under Federal law would be required to be sold and the proceeds relinquished to the State of Alaska under State law. A reviewing court may find that the Federal law supersedes the State law because the State law of limiting receipt of sale proceeds could be found to interfere with and be contrary to the Federal law which sets no limit on receipt of sale proceeds and has an administrative record that considered but rejected such a limitation.

This situation is similar to the facts in State v. Sterling, 448 A. 2d 785, 787 (R.I. 1982). In State v. Sterling, a Rhode Island law purported to impose a landing-possession limit on yellowtail flounder of 3,000 pounds per boat per trip, without regard to the area of capture. An FMP regulation governing the fishing of yellowtail flounder in the same region established no per-trip possession or landing limits. Finding the Rhode Island statute in conflict with the FMP regulation, the court held that the state law was preempted.

Given the above, there could be preemption problems with the suggested Federal-State approach to limiting sale proceeds of DSR retained in excess of a specified amount. However, should the Council and NMFS ultimately adopt the modified draft proposed rule as suggested, it would be up to the State of Alaska to determine the defensibility of state regulations that placed limits on the disposition of sale proceeds.

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[81] Hines v. Davidowitz, 312 U.S. 52 (1941).

[82] See State of Alaska v. Painter, 695 P. 2d 241, 243 (Ct. App. Alaska 1985) (no preemption where trial court found state and federal regulations to be "substantially the same.")

nmollett and ben muse 1/9/2003
bmuse changes following regional economist comments 3-26-03
bmuse comments from reg econ 3-27-03
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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

JUL 14 2004

MEMORANDUM FOR: Distribution*

FROM: Galen R. Tromble
Chief, Domestic Fisheries Division

SUBJECT: Amendment 48 to the Fishery Management Plan (FMP) for Groundfish of the Gulf of Alaska (GOA) and Amendment 48 to the FMP for the Groundfish Fishery of the Bering Sea and Aleutian Islands Management Area (BSAI)

The North Pacific Fishery Management Council (Council) has submitted the attached subject amendments for formal agency review, approval, and implementation by the National Marine Fisheries Service (NMFS). In addition to the amendment, an environmental assessment, a regulatory impact review and an initial regulatory flexibility analysis are also attached. NMFS published a notice of availability of the amendment for public review and comment. The proposed rule will be published soon.

The amendments would revise the administrative process used to establish annual harvest specifications for the groundfish fisheries of the GOA and the BSAI and would update the FMPs by revising the description of the groundfish fisheries and participants, revising the name of the BSAI FMP, revising text to simplify wording and correct typographical errors, and revising the description of the Council's Groundfish Plan Teams' responsibilities.

Please provide your comments (including "no comment") by September 10, 2004. If you have any questions, please call Regina Spallone at 301-713-2341.

Attachments

*Distribution

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