AGENDA D-1(b-d)
OCTOBER 2003

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

DATE: September 29, 2003

ESTIMATED TIME
6 HOURS
all D-1 items

SUBJECT: Groundfish Management

ACTION REQUIRED

(b) Receive NMFS response to F40% Report.
(c) Receive report from non-target species ad hoc working group and Council committee.
(d) Take final action to adopt preliminary and interim 2004 groundfish specifications and GOA Plan Amendment 63 to separate skates from "other species" category.

BACKGROUND

NMFS response to F40 Report

In October 2001, in conjunction with the actions taken to address Steller sea lion issues, the Council approved a motion to conduct an independent scientific review of our basic F40 harvest policy relative to National Standards. The intent of this review was to determine whether changes need to be made to account for individual species needs or ecosystem needs. In December 2002, the Chair of the panel, Dr. Dan Goodman, provided the Council with a final report (available on our web site). In summary, the review panel found that the current harvest strategies were sufficiently conservative for most stocks. However, the panel recommended that alternative harvest strategies be explored for some species, notably rockfish. The panel also recommended well designed monitoring programs be implemented as an approach to ecosystem-based management. The Council requested that NMFS scientists review the review panel's report, and provide recommendations to on how to incorporate the findings into our management process. A letter from Dr. DeMaster, attached as Item D-1(b)(1), outlines the NMFS response to the F40 panel report, which includes an updated report (Item D-1(b)(1)).

Non-target Species Management

In 2002, an ad hoc working group was formed to address management issues related to sharks and skates (before the Council during 1998-2000), the "other species" category (circa 2000-2001), and all non-target groundfish species (since 2002). At its fourth meeting, held in September 2003, the group examined several case studies for how the proposed management system might work. The minutes from all four meetings are attached (Item D-1(c)(1)).

In August, 2003, the Council appointed a Non-target Species Committee (Item D-1(c)(2)). An organizational meeting is scheduled for the evening of October 8. The proposed tasking for this committee include

identification of efficient methods for monitoring non-target catch, improving abundance estimates of non-target species, and development of harvest recommendations that build sustainable populations of non-target species. A committee report will be provided during the Council meeting.

Preliminary and interim 2004 groundfish specifications and GOA Plan Amendment 63

At this meeting, the Council will recommend interim catch specifications for BSAI and GOA groundfish. Specifications include catch limits (OFLs, ABCs, and TACs) and prohibited species bycatch limits. Final specifications, which are adopted by the Council in December and approved by the Secretary each year, supercede the proposed and interim specifications sometime in February of the new fishing year.

The Groundfish Plan Teams met in September to prepare recommended interim specifications for 2004, based on updated projections. Since 2002, the Plan Teams provided interim projections of next year's OFLs and ABCs based on estimates from the previous year's SAFE report, rather than simply 'rolling over' the specifications. Only species in Tiers 1-3 (age structured assessments) have projections, others are rolled over (Item D-1(d)(1)). Using the newer methodology, the Plan Teams recommended projected groundfish specifications for 2004 are attached as Item D-1(d)(2). Reports from the BSAI, GOA, and joint plan team meetings are provided under Items D-1(d)(3-5). The EA/RIR/IRFA for the 2004 specifications was mailed to you on September 29, 2003. The executive summary of the analysis is under Item D-1(d)(6).

TAC Considerations for State Pacific Cod Fishery

Since 1997, the Council has reduced the GOA Pacific cod TAC to account for removals of not more than 25% of the Federal Pacific cod TAC from the state parallel fisheries. Preliminary information indicates that neither Chignik nor Cook Inlet achieved its GHL, and therefore would remain at its current allocation. Using the area apportionments of the 2003 Pacific cod proposed ABC recommended by the Plan Team, the federal TAC for Pacific cod would be adjusted as listed at right.

Proposed 2004 Gulf Pacific cod ABCs, TACs, and State guideline harvest levels (mt).

Specifications	Western	Central	Eastern	Total
ABC	18,649	26,254	2,897	47,800
BOF GHL	4,662	6,038	290	10,990
(%)	25	23	10	23
TAC	13,987	20,216	2,607	36,810

Prohibited Species Catch Limits

In the Gulf of Alaska, Prohibited Species Catch (PSC) limits are established for halibut. The total PSC limit for all fisheries and gear types totals 2,300 mt. The following 2003 halibut PSC apportionments were instituted for the Gulf of Alaska groundfish fisheries:

2003 Trawl		**2003 Hook and Line**		
Jan 20 - Apr 1	550 mt	1st trimester	Jan 1 - Jun 10	250 mt
Apr 1 - Jun 29	400 mt	2nd trimester	Jun 10 - Sep 1	5 mt
Jun 29 - Sep 1	600 mt	3rd trimester	Sept 1 - Dec 31	35 mt
Sept 1 - Oct 1	150 mt			
Oct 1 - Dec 31	300 mt	DSR	Jan 1 - Dec 31	10 mt
TOTAL	2,000 mt			300 mt

	Trawl fishery categories		
Season	Shallow Water	Deep Water	Total
Jan 1 - Apr1	450 mt	100 mt	550 mt
Apr 1 - Jun 30	100 mt	300 mt	400 mt
Jun 30 - Sep 1	200 mt	400 mt	600 mt
Sep 1 - Oct 1	150 mt	any rollover	150 mt
Oct 1 - Dec 31	no apportionment		300 mt
TOTAL	900 mt	800 mt	2,000 mt

For the 2004 fishery, NMFS in-season management states that the third seasonal halibut PSC allocation in the GOA and BSAI will be available on July 4th.

In the BSAI, PSC catch limits are established for halibut, red king crab, Tanner crab, opilio crab, and herring. These PSC limits are further allocated among gear types and apportioned by target fisheries. The 2003 bycatch limits and apportionments are attached as Item D-1(d)(7).

GOA Plan Amendment 63 to separate skates from the "other species" category

The analysis prepared for specifications also includes GOA Plan Amendment 63 to separate GOA skates from the "other species" category (which also includes sharks, squids, sculpins, and octopus). The proposed action is an interim measure to address conservation concerns for a rapidly developing fishery around Kodiak for two skate species, and the need to have this fishery develop in a sustainable manner. It includes two alternatives for managing GOA skates and three options for how to set specifications. Currently skates are managed under the "other species" category TAC. The GOA FMP does not authorize a separate ABC or TAC for the skate complex, nor for any of the individual species which make up that complex. Instead a TAC is calculated for the five taxonomic groups as a percent (5%) of the total TAC for all of the combined GOA species. The proposed action would allow specifications to be set for two skate species and/or a skate complex and allow for regional apportionments. The ad hoc working group recommended Alternative B. The Joint Plan Teams recommended Alternative B, Option 3. The executive summary of the analysis is under Item D-1(d)(6). The alternatives and options are listed below.

Alternative A. No action.

Alternative B. Remove skates from the "other species" category and add them to the target category.

- Option 1. A single GOA wide OFL for the skate group, and management area ABCs for the skate group.
- Option 2. A single GOA wide OFL for skates, and ABCs for key skate species in each management area
- Option 3. Management area OFLs and ABCs for each key skate species.

AGENDA D-1(b)(1)
OCTOBER 2003

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Alaska Fisheries Science Center
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N.P.F.M.C

Mr. Christopher Oliver
Executive Director
North Pacific Fishery Management Council
605 W 4th, Suite 306
Anchorage, AK 99501-2252

Dear Chris,

Recent discussions with Council staff have highlighted the need for input from the Center regarding the Goodman et al. report and future plans for rockfish management. We offer the following plan.

1. September 9, 2003: Grant Thompson will brief the Plan Teams on the Goodman et al. report by giving the power point presentation that he prepared for the April 2003, Council meeting.

2. October 6-10, 2003: After the Plan Team meetings, NMFS will finalize a response to the Goodman et al. report in a separate report. This response will describe research activities that will help to address issues raised in the report and through SSC comments. We anticipate that the Council will be interested in our response to two issues in particular. Therefore, we provide a brief outline of our approach.

SSC comment 1: *whether a more conservative harvest rate (such as F50%) would be desirable for rockfish species in the GOA and BSAI.*

Prior to the Council meeting, rockfish stock assessment authors will meet to discuss analytical approaches for evaluating alternative harvest policies for rockfish. Based on these discussions, stock assessment authors will include a range of rockfish harvest policies in their assessment documents. This range may include model runs that incorporate process error and measurement error as described in the Programmatic Supplemental Environmental Impact Statement bookend 3b.

SSC comment 2: *whether changes are needed in the Tier formula for ABC and OFL. These changes might be warranted to account for resiliency of the species or to incorporate greater caution for species with less information.*

The SSC's comment echos the review panel's recommendation for a Management Strategy Evaluation (MSE). In the October report, AFSC will elucidate recently completed or on-going research activities that pertain to the SSCs question. For example, the recently completed Draft Programmatic Supplemental Environmental Impact Statement provided an assessment of a range of management strategies and evaluated the tradeoffs across a range of management objectives. The forecast modeling addressed a range of uncertainties and tested the performance of each strategy against the simulated real world operating model. Also consistent with recommendations of the review panel, AFSC provided a statistical analysis of the costs and benefits of alternative TAC setting approaches as part of the Draft EA/RIR for amending the process by which annual harvest specifications are established for Alaska Groundfish Fisheries. Thus, the Agency is making progress towards a management strategy evaluation. The document presented to the Council in October will highlight these activities.

Sincerely,

Douglas P. DeMaster
Science and Research Director
Alaska Region

cc: F/AK - James Balsiger

Comments on the 2002 Independent Scientific Review of the Harvest Strategy Currently Used in the BSAI and GOA Groundfish FMPs

Staff
Alaska Fisheries Science Center
7600 Sand Point Way NE
Seattle, WA 98115
September 30, 2003

Introduction

At its October 2001 meeting, the North Pacific Fishery Management Council passed a "final motion on Steller sea lions" (Council Newsletter, October 2001, Attachment 1). As part of this action, the Council moved "to seek an independent scientific review of the F40 harvest policy relative to national standards". At its February 2002 meeting, the Council broadened the purpose of the review as follows:

> "To critically review the current harvest strategies applied to our FMP fisheries with an emphasis on accounting for ecosystem needs."

Also at the February 2002 meeting, the Council approved the following list of charges to be addressed by the reviewers:

a) Define and explain the harvest strategy currently used in the management of the BSAI and GOA groundfish fisheries; i.e., develop an educational primer on the Council's current procedure.
b) Determine if the current quota setting approach (tier ABC determination, OFL derivation, and TAC specification) is consistent with the Magnuson-Stevens Act. Determine if $F_{40\%}$ is an appropriate MSY substitute for all species? If not, what are the alternative(s) and are data available to determine the value(s) of the substitute?
c) Is the approach considerate of ecosystem needs in the BSAI and GOA?
   i. If not, how should it be changed?
   ii. Are sufficient data available to allow implementation of the alternative approach?
   iii. How would the transition from the current approach to the proposed revised one be handled?

In addressing the above questions, the reviewers were asked to:

a) use whatever scientific information or methodology is appropriate and practicable within the time allotted for the review;
b) describe the role played by the $F_{40\%}$ reference point in their findings; and
c) relate their findings to the MSFCMA's National Standards, particularly NS 1.

Overview

Overall, the reviewers have done a very good job of addressing the charges presented to them by the Council. While there are a number of specific points to which some objection could be made, for the most part, AFSC agrees with the Panel's depiction of our current harvest system. The Council was extremely fortunate to obtain reviewers of the caliber represented on the review panel.

The review is divided into four main sections: Section 1 (15 pages) consists of the executive summary, introduction, terms of reference, and glossary. The other three sections correspond approximately to the reviewers' three charges. Section 2 (43 pages) contains a primer on fishery management as conducted in the BSAI and GOA groundfish fisheries. Section 3 (22 pages) discusses single-species issues. Section 4 (51 pages) discusses multispecies and ecosystem issues.

The report addresses the first two charges in Sections 2 and 3. Section 2 not only contains the requested primer on the current harvest strategy (CHS), but a helpful introduction to the subject of fishery management in general. The discussion of single-species issues in Section 3 describes the use of both $F_{35\%}$ and $F_{40\%}$ in the current harvest strategy, discusses consistency with the MSFCMA, and contains recommendations for possible improvements.

The authors conclude that they are unable to define "ecosystem needs," let alone determine the extent to which the current approach is "considerate" of ecosystem needs. In the event that the reviewers determined that the current approach was not sufficiently considerate of ecosystem needs, they were asked to suggest changes to the current approach, including specification of needed data and a method for transitioning to the new approach. Although the reviewers were not able to determine whether the current approach was sufficiently considerate of ecosystem needs, they nevertheless produced a great deal of material on possible alternative approaches. It is not always clear which parts of the possible alternative approaches the reviewers are actually recommending and which parts they are simply mentioning in an effort to be thorough.

The spirit of the "primer" runs throughout the report. That is, much of the material is presented in the form of an introductory course. The major advantage of such a presentation is that it makes the material relatively simple to understand. However, one disadvantage is that, in an effort to make the material as simple as possible, the authors occasionally overstate things or otherwise make conclusions sound more general than they truly are. Readers should be cautioned that some of the material in the report is best viewed as an introduction to the subject, not as the final word on the subject.

Summary of Conclusions

The report does not identify a comprehensive list of major conclusions. However, the following list appears to be a fair summary of the major conclusions given at various locations in the report.

1) The current harvest strategy (CHS) is consistent with many/most aspects of the MSFCMA but inconsistent in some aspects.
   (Sections 1.1.4, 1.1.5, 3.5, 3.5.1, 3.7, and 4.4)

2) The CHS performs adequately with respect to most target stocks.
   (Sections 1.1.4, 3.1.3, 3.2, 3.6.1, 3.7, and 3.9)
3) The CHS does not perform adequately with respect to rockfish.
   (Sections 1.1.3, 1.1.4, 1.1.5, 3.1.3, 3.2, 3.12, and 4.4.1)
4) A management strategy evaluation is necessary to provide additional assurance that the current NPFMC ABC harvest stategy is a robust one and is likely to meet the objectives of MSFCMA and of NPFMC itself.
   (1.1.4, 3.10.5, 3.11.1, 3.11.2, 3.12, 4.3.3)
5) The performance of the CHS with respect to the ecosystem is unclear.
   (Sections 1.1.3, 1.1.5, 4.1.1, 4.4, 4.4.1, and 4.4.2)

Our response will evaluate each of these conclusions.

Summary of Recommendations

The report does not identify a comprehensive list of major recommendations. However, the following list appears to be a fair summary of the major recommendations given at various locations in the report.

1) The harvest control rules should be improved.
   1.1.3, 1.4, 3.1.3, 3.2
2) The OY specifications should be improved.
   1.1.4, 3.6, 3.7
3) A management strategy evaluation should be conducted.
   1.1.4, 3.10.5, 3.11.1, 3.11.2, 3.12, 4.3.3
4) Adaptive management should be tried.
   1.1.5, 4.4.2, 4.3.1, 4.3.3
5) Ecosystem modeling should be done the right way.
   1.1.5, 4.3.2, 4.4.2
6) Monitoring efforts should be continued and expanded.
   1.1.5, 3.12, 4.3.6, 4.4.2
7) Marine reserves should be investigated.
   1.1.5, 4.3.5, 4.4.2

The agency agrees with these recommendations and staff are pursuing research that focuses on these issues. The recently completed draft Programmatic Supplemental Environmental Impact Statement (PSEIS) and the Essential Fish Habitat Environmental Impact Statement (EFHEIS) represent a comprehensive evaluation of the impact of status quo and alternative harvest practices that supplement on-going research in support of fisheries and ecosystem assessment The PSEIS and EFHEIS provide the foundation for proposals for improved harvest policy which are likely to include many of the panel recommendations .

Evaluation of Conclusions

Conclusion 1. The current harvest strategy (CHS) is consistent with many/most aspects of the MSFCMA but inconsistent in some aspects.

Background

From the perspective of this exercise, the most important part of the MSFCMA is National Standard 1, which 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." The MSFCMA defines overfishing to mean "a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis." The MSFCMA defines optimum yield (OY) as the amount of fish which:

- "will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems";
- "is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor"; and
- "in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery."

Note that the definitions of both overfishing and optimum yield refer to maximum sustainable yield (MSY). The MSFCMA does not define MSY, but the National Standard Guidelines (NSGs) define it as "the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions." The NSGs also introduce the concept of the "MSY control rule," defined as "a harvest strategy which, if implemented, would be expected to result in a long-term average catch approximating MSY." The MSY control rule can take a wide variety of forms. The NSGs offer the following advice regarding MSY control rules:

> "In choosing an MSY control rule, Councils should be guided by the characteristics of the fishery, the FMP's objectives, and the best scientific information available. The simplest MSY control rule is to remove a constant catch in each year that the estimated stock size exceeds an appropriate lower bound, where this catch is chosen so as to maximize the resulting long-term average yield. Other examples include the following: Remove a constant fraction of the biomass in each year, where this fraction is chosen so as to maximize the resulting long-term average yield; allow a constant level of escapement in each year, where this level is chosen so as to maximize the resulting long-term average yield; vary the fishing mortality rate as a continuous function of stock size, where the parameters of this function are constant and chosen so as to maximize the resulting long-term average yield. In any MSY control rule, a given stock size is associated with a given level of fishing mortality and a given level of potential harvest, where the long-term average of these potential harvests provides an estimate of MSY."

Under the NSGs, the MSY control rule plays a key role in making the MSFCMA's definitions of overfishing and OY operational. In the case of overfishing, the MSY control rule serves as an upper limit on permissible specifications of the "maximum fishing mortality threshold"

(MFMT). The MFMT specifies the fishing mortality rate (F) above which overfishing is defined to be occurring (i.e., if F>MFMT, overfishing is occurring). The MFMT, in turn, plays a role in defining the "minimum stock size threshold" (MSST). The MSST specifies the biomass (B) below which the stock is defined to be overfished (i.e., if B<MSST, the stock is overfished). Specifically, the MSST is defined as whichever of the following is greater: one-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years if the stock or stock complex were exploited at the MFMT. Taken together, the MFMT and MSST constitute the set of "status determination criteria" which the NSGs require each FMP to specify whenever possible.

In the case of OY, the MSY control rule is key to interpreting the MSFCMA's requirement that OY must be prescribed "on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor." According to the NSGs, this requirement means, in part, that the OY in any given year "must always be less than or equal to the harvest level that would be obtained under the MSY control rule." Therefore, if the MSY control rule were of the "constant catch" form, then a constant OY might be permissible, but if the MSY control rule were to associate different levels of catch with different stock sizes, then a constant OY would not be permissible (unless, perhaps, OY was set *very* conservatively).

As noted earlier, the MSFCMA states that OY is to be prescribed "on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor." According to the NSGs, this requirement means, in part, that the OY in any given year "must always be less than or equal to the harvest level that would be obtained under the MSY control rule." Thus, in order to determine whether the OY specification complies with the MSFCMA, it is necessary to know the form of the MSY control rule. This is problematic in the case of the BSAI and GOA Groundfish FMPs, because the Council declined to specify an MSY control rule in Amendment 56. Based on the methods used to specify the current OY range and the fact that it does not vary with biomass, it could be inferred that the Council's implicit MSY control rule is of the "constant catch" form. However, this interpretation would mean that the OFL control rules in at least some of the tiers violate the NSGs' requirement that the MFMT not exceed the MSY control rule (in Tiers 1-2, for example, OFL exceeds MSY whenever biomass exceeds B_{MSY}). On the other hand, if it is assumed that the OFL control rules correspond to the Council's implicit MSY control rule, then the adequacy of the current OY specification is called into question, because the entire OY range will exceed the harvest associated with the MSY control rule if biomass is low enough.

Evaluation of Specific Statements

1A) "*In terms of Optimum Yield, there is uncertainty about the conformity of the FMP definitions with the MSFCMA.*" (Sections 1.1.4 and 3.7)

We agree with Conclusion 1A . We recommend that the Council should revisit the OY specifications. To some extent, this recommendation is already being considered in the context of the PSEIS. Depending on the preferred alternative that emerges from the PSEIS, a more thorough evaluation of the OY specifications could be conducted.

1B) *"The MSY based approach in the setting of F_{ABC} in the current NPFMC system for groundfish management ... is consistent with the explicit OY goals of the MSFCMA...."* (Sections 1.1.5 and 4.4)

It is not clear how to reconcile Conclusion 1B with Conclusion 1A. Perhaps Conclusion 1B is simply meant to imply that the current procedure for setting ABC does not prevent OY from being achieved. This is accurate, given the fact that the FMPs do not prescribe any particular relationship between catch and ABC (i.e., the FMPs allow catch to be higher than, lower than, or equal to ABC).

1C) *"The MFMT definitions ... in the Tier system are consistent with the NSGs."* (Section 3.5)

We agree with conclusion 1C.

1D) *"While the FMPs specify only one of the two status determination criteria that are required by NMFS' National Standard Guidelines, the FMPs are sufficiently conservative, with respect to the target stocks evaluated from a single-species perspective, and incorporate automatic rebuilding plans to such a degree ... that this lack of conformity with the Guidelines should not pose a conservation danger from a single species viewpoint...."* (Sections 1.14 and 3.7)

We agree with conclusion 1D.

1E) *"The Tier system used by the groundfish FMPs has no explicit definition of Minimum Stock Size Threshold (MSST) and, therefore, one would conclude that the Plans are inconsistent with this aspect of the NSGs. But this conclusion has to be examined in a larger context in order to understand its relevance. The reasons for not including an explicit definition of MSST in the FMP were explained in a May 10, 2000, memorandum from the Council to NMFS. In it, the Council argues that the NSGs' requirement for an MSST definition is more of a suggestion from NMFS than a requirement of the law (MSFCMA). The memorandum also highlights some of the scientific and logistical difficulties that the Council has in defining an MSST.... All of the issues raised by the Council are important and largely valid from a single-species perspective...."* (Section 3.5.1)

Consideration of the impact of explicitly defining MSSTs in the FMP is being considered in the context of the PSEIS. Depending on the preferred alternative that emerges from the PSEIS, a more thorough evaluation of the need for explicit definitions of MSSTs could be conducted.

2. The CHS performs adequately with respect to most target stocks.

Evaluation of Specific Statements

2A) *"In a single-species/target-stock context, the TAC-setting process employed by the Council is a very conservative one ... and the in-season monitoring and management system seems adequate for implementing the TACs with little risk of exceeding them."* (Sections 1.1.4 and 3.7)

We agree with Conclusion 2A.

2B) *"Overall, target catches, as measured by TACs, are set very conservatively, from a single-species/target-stock standpoint, and they are implemented conservatively from this same standpoint."* (Section 3.6.1)

We agree with Conclusion 2B.

2C) *"Although there have been changes in the detail of NPFMC harvest strategies over time (Section 2.12 of this report, and Witherell et al. 2000), it can be argued that the basic approach has delivered good outcomes with no groundfish stocks currently classified as overfished according to NMFS' Guidelines."* (Section 3.9)

We agree with Conclusion 2C.

2D) *"The $F_{35\%}$ and $F_{40\%}$ proxies for MSY used in the groundfish FMPs are defensible, for this purpose, in that these values are supported by a body of scientific literature as being reasonable F_{MSY} proxies for "typical groundfish" species."* (Section 3.2)

Considerable confusion continues to exist as to the use of F_{MSY} proxies in the current harvest strategy. According to the EA/RIR for Amendments 56/56, $F_{35\%}$ is used as a proxy for FMSY, but $F_{40\%}$ is not. However, Conclusion 2D is correct in the sense that either $F_{35\%}$ or $F_{40\%}$ *could* be defended as an appropriate F_{MSY} proxy for "typical" groundfish stocks.

2E) *"The OFL values that are set according to Tiers 5 and 6 seem reasonable as conservative estimates of F_{MSY} levels in data-poor situations. While it may be possible to set up simple simulation studies to evaluate the performance of Tier 5 and 6 proxies, it is better to improve the general knowledge about these stocks in order to facilitate their classification into more data-rich tiers."* (Section 3.1.3)

While the OFL values defined by Tiers 5 and 6 could be viewed as reasonably conservative proxies for MSY, the FMPs do not define them as such. Whether resources should be expended in an effort to promote all stocks into Tiers 1-3 is an open question which is currently being investigated by a Council working group.

Comment 3. The CHS does not perform adequately with respect to rockfish.

Background

Currently, all BSAI and GOA rockfish are managed under Tiers 3-5. Eight rockfish stocks or stock complexes are currently managed under Tiers 3-4:

1) BSAI Pacific ocean perch (Tier 3b)
2) GOA POP (Tier 3a)
3) GOA northern rockfish (Tier 3a)
4) GOA thornyheads (Tier 3a)
5) GOA rougheye rockfish (Tier 4)
6) GOA sharpchin rockfish (Tier 4)
7) GOA dusky rockfish (Tier 4)
8) GOA demersal shelf rockfish (Tier 4)

Seven rockfish stocks or stock complexes are currently managed under Tier 5:

1) BSAI northern rockfish
2) BSAI shortraker and rougheye rockfish
3) BS "other" rockfish
4) AI "other" rockfish
5) GOA shortraker rockfish
6) GOA "other slope" rockfish excluding sharpchin rockfish
7) GOA pelagic shelf rockfish excluding dusky rockfish

Spawning per recruit (SPR) is a key quantity in the current harvest strategy. It is usually expressed in relative terms. Specifically, relative SPR is the ratio between lifetime egg production of two hypothetical cohorts, one of which is fished and one of which is not. The cohort that is fished produces fewer eggs over the course of its lifetime than the cohort that is not, because the process of fishing removes some fish from the cohort and these removed fish are no longer able to contribute to egg production. Thus, relative SPR is a number that ranges between 0 (obtained in the case of extremely intense fishing) and 1 (obtained in the case of no fishing), and is often displayed as a percentage. For example, $F_{35\%}$ is the fishing mortality rate that reduces the lifetime egg production of a cohort to 35% of what it would be in the absence of fishing, $F_{40\%}$ is the fishing mortality rate that reduces the lifetime egg production of a cohort to 40% of what it would be in the absence of fishing, and so forth. For a given stock, $F_{35\%}$ will always be higher than $F_{40\%}$, because more fishing is required to reduce lifetime egg production to 35% of the unfished level than is required to reduce lifetime egg production to 40% of the unfished level.

Evaluation of Specific Statements

The following statements within the report provide the foundation for conclusion 3. These statements raise issues that are interrelated, thus, we developed a single comprehensive response to the statements.

3A) *"This surrogate [$F_{35\%}$] is now believed to be inappropriate for less productive stocks, such as sharks and* ***rockfish****, and it is now thought that considerably lower harvest rates (considerably lower than $F_{40\%}$ as well) should be applied for those stocks."* (Section 1.1.3)

3B) *"It is thought that for most of the target species in the FMP, a fishing mortality rate of $F_{35\%}$ would be appropriate for achieving ... MSY.... The main exceptions among the target species are the* ***rockfish****, which apparently need a considerably lower fishing mortality rate to avoid overfishing. That the actual target fishing rate is $F_{40\%}$ rather that $F_{35\%}$ creates some additional margin of safety, from a single-species perspective, for target species excluding* ***rockfish****."* (Sections 1.1.5 and 4.4.1)

3C) *"A recent study by MacCall (2002) suggests that harvest policies that used $F_{35\%}$ to $F_{40\%}$ as targets may have been "too aggressive" for several groundfish stocks off the west coast of the U.S. Furthermore, Clark (2002) suggested that it may be necessary to have targets of $F_{50\%}$ to $F_{60\%}$ for stocks with low resilience in order to maintain a proper balance between average yields and average abundance. Here, "resilience" refers to a stock's capability to recover from*

*overfishing. Long-lived stocks that are characterized by an old age at first maturity-such as many **rockfish**-have low resilience."* (Section 3.1.2)

3D) *'In practice, this management system seems to have worked well.... The definite exceptions to this empirical record of success are the **rockfish**, which were overfished early on, and have not recovered (except that GOA Pacific ocean perch have rebuilt above the $B_{40\%}$ level)."* (Section 1.1.3)

3E) *"The tier system in the groundfish FMPs is a blanket system that covers all stocks in the two Plans without making allowances for the diversity in life-history types present. As suggested by Clark (2002), $F_{35\%}$ harvest rates may not be sufficiently conservative for stocks with very low productivity, such as rarely-recruiting and long-lived **rockfish** species."* (Section 3.1.3)

The development of the current harvest strategy for Alaska groundfish was motivated by the need to develop harvest strategies that provided yields approximating MSY in cases where MSY could not be calculated with sufficient reliability. The concept of $F_{xx\%}$ strategies was evaluated by Clark (1991), which refers to fishing at a rate that reduces the potential spawning biomass per recruit to *xx%* of the value for an unfished stock. Because such a policy is intended to be used in lieu of estimation of a stock-recruitment curve and MSY, it would be best if such a policy were robust to a wide variety of stock-recruitment relationships. In deterministic calculations, Clark (1991) found that a fishing rate of $F_{35\%}$ closely approximated F_{MSY} for a wide variety of stock-recruitment curves. When stochastic variability is considered, $F_{40\%}$ is preferable because it reduces the likelihood of low spawning biomass (especially when faced with autocorrelated recruitment) (Clark 1993).

Goodman et al. (2002) suggest that $F_{35\%}$ is too high to serve as an appropriate F_{MSY} proxy for BSAI and GOA rockfish, citing research by MacCall (2002) and Clark (2002) indicating that $F_{35\%}$ and $F_{40\%}$ rates were too aggressive for several species of West Coast rockfish. The relationship between sustainable yield and relative spawning per recruit has not been directly investigated for most BSAI and GOA rockfish stocks because age-structured stock assessments cannot be conducted for most of these stocks.

The relationship between sustainable yield and relative spawning per recruit has been investigated for one or more of the Alaskan Pacific Ocean Perch (POP) stocks (Ianelli and Heifetz,1995; Ianelli and Heifetz, unpublished; and Dorn, 2002). Neither of the studies by Ianelli and Heifetz attempted to estimate F_{MSY} per se. Rather, the aim was to estimate an "optimal" harvest rate, which the authors, following Clark (1991), defined as the harvest rate "which maximizes the minimum yield over a range of plausible stock-recruitment relationships." The first study by Ianelli and Heifetz focused on GOA POP and concluded that $F_{44\%}$ was the optimal harvest rate for that stock. The second study by Ianelli and Heifetz repeated the analysis conducted in the first study using updated data and estimated an optimal harvest rate that was well in excess of $F_{40\%}$ i.e. $F_{40\%}$ was estimated to be too conservative Heifetz et al. (1996) pointed out that the concept of an optimum implies some stationarity of the stock recruitment relationship where historical data is used to provide a reliable basis for determining future stock productivity. The estimate of optimum F appeared to be very sensitive to each update of data which can be interpreted as "unreliability" of the estimate. Based on these considerations Heifetz et al recommended that $F_{40\%}$ be used to compute ABC for POP

The only research that simultaneously evaluates harvest rates for Alaska rockfish stocks and West Coast rockfish stocks is that of Dorn (2002). The three Alaskan stocks included in this study were BS, AI, and GOA POP (at the time of the study, the BSAI POP stock was assessed separately in the BS and AI). Dorn concluded that F_{MSY} for the AI and GOA POP stocks probably exceeded $F_{30\%}$, whereas F_{MSY} for the BS POP stock was probably in the $F_{40\%}$-$F_{50\%}$ range. (For the West Coast rockfish stocks, Dorn's study confirms other studies which show that these stocks appear to be less resilient than typical groundfish stocks.) Thus, the most recent studies indicate that $F_{35\%}$ is a safe estimate of F_{MSY} for GOA POP and, given the fact that the bulk of the BSAI POP stock appears to reside in the AI, $F_{35\%}$ is probably a safe estimate of F_{MSY} for the BSAI POP stock as well.

None of the other six rockfish stocks and stock complexes managed under Tiers 3-4 has been subjected to an analysis of this type, and the available data are insufficient to subject any of the seven rockfish stocks and stock complexes managed under Tier 5 to an analysis of this type. Also worth remembering is the fact that F-based ABCs for stocks in Tier 5 are the product of our estimates of biomass and these biomass estimates have a great deal of uncertainty.

Apart from the question of the appropriateness of the $F_{35\%}$ rate for Alaska rockfish, Goodman et al. (2002) also suggest that general $F_{xx\%}$ policies are inappropriate because they do not account for a variety of life-history types. However, it must be recalled that the computation of $F_{40\%}$ explicitly involves several life-history parameters, including growth rates, maturity ogives, and natural mortality rates. Thus, the absolute fishing mortality rate at $F_{40\%}$ will differ between species with differing life-histories. This point is clearly illustrated by Clark (2002), who reproduced the analysis of Clark (1991) but with the instantaneous natural mortality rate (M) set at 0.05, and the age at 50% recruitment and maturity set at 10 years; the original values in Clark (1991) were $M = 0.2$ and age at 50% recruitment and maturity set at 5 years. For stocks with similar stock-recruitment relationships but differing in these life-history parameters, the relationships of yield and biomass to each other and to spawning biomass per recruit show nearly identical patterns, with differences only in the absolute value of instantaneous fishing rate.

Clark (2002) also evaluated $F_{xx\%}$ policies for stocks with differing stock-recruitment relationships (but otherwise similar life-history parameters), and demonstrated that $F_{40\%}$ may be too aggressive for stocks with low resilience. However, this analysis does not necessarily imply that stocks with older ages of maturity and increased longevity have lower resilience, as will be discussed in detail in the paragraphs below. Clark's (2002) analysis implicitly assumed that each stock had identical $F_{xx\%}$ rates, thus allowing the focus on the shape of the stock-recruitment curve. However, when comparing two or more actual stocks with respect to their ability to withstand $F_{40\%}$ fishing rates, it is likely that both the absolute value of fishing mortality associated with $F_{40\%}$ and the estimated stock-recruitment curve differ, thus complicating the analysis.

Resilience can be defined in many ways. Because Goodman et al. (2002) seem to suggest that fishing at $F_{40\%}$ may be dangerous for stocks with low resilience, it is most convenient to define resilience in a way that pertains to SPR and that permits identification of a "danger" level. For example, it is possible to define resilience in terms of the relative SPR that results in extinction. Consider two hypothetical stocks A and B. For stock A, reducing the lifetime egg production of a cohort to 10% of the unfished level causes the stock to be unable to sustain itself, meaning that continual fishing at a rate of $F_{10\%}$ would cause the stock to go extinct. For stock B, reducing the

lifetime egg production of a cohort to 15% of the unfished level causes the stock to be unable to sustain itself, meaning that continual fishing at a rate of $F_{15\%}$ would cause the stock to go extinct. Resilience can be computed by subtracting the relative SPR corresponding to extinction from 100%. Thus, the resilience of stock A is 100%-10%=90% and the resilience of stock B is 100%-15%=85%. Stock A is more resilient than stock B because stock A can sustain itself at a lower relative SPR than stock B.

Goodman et al. (2002) imply that rockfish stocks are inherently less resilient than other groundfish stocks. Some simple examples will show that this is not the case. Consider four hypothetical stocks called Flatfish1, Flatfish2, Rockfish1, and Rockfish2. Rockfish1 and Rockfish2 have a lower natural mortality rate, higher age at first recruitment, and lower stock-recruitment slope than Flatfish1 and Flatfish2. More specifically, the four hypothetical stocks have the following characteristics:

Stock:	Flatfish1, Flatfish2	Rockfish1, Rockfish2
Natural mortality rate:	0.20	0.05
Age at first recruitment:	3	12
Stock-recruitment slope:	0.80	0.20

In terms of the above parameters, Flatfish1 and Flatfish2 are indistinguishable from one another, as are Rockfish1 and Rockfish2. Furthermore, *except* for the above parameters, Flatfish1 and Rockfish1 are indistinguishable from one another, as are Flatfish2 and Rockfish2. The sustainable yield of each stock is maximized by fishing at a rate equal to natural mortality. Figure 1 compares some of the life history characteristics of Flatfish1 and Rockfish1, and Figure 2 compares some of the life history characteristics of Flatfish2 and Rockfish2. In these figures, blue lines or curves correspond to the flatfish stocks and red lines or curves correspond to the rockfish stocks. The curves in each figure represent stock-recruitment relationships. The solid lines in each figure show the slope of the respective stock-recruitment relationship at the origin. The dashed lines in each figure show how much spawning biomass would be generated by any given level of recruitment in the absence of fishing (these are sometimes called "replacement lines," because the stock can replace (i.e., sustain) itself at a given level of spawning biomass only if the stock-recruitment relationship is above the line).

The relative SPR corresponding to extinction can be computed for any of the four stocks by dividing the slope of the dashed line by the slope of the solid line and expressing this ratio as a percentage. Resilience is then computed by subtracting this value from 100%. According to Goodman et al. (2002), both of the flatfish stocks should be more resilient than either of the rockfish stocks. However, the resiliences of the four stocks are as follow:

Stock	Resilience	Relative SPR @ extinction
Flatfish1	89%	11%
Rockfish1	90%	10%
Rockfish2	91%	9%
Flatfish2	93%	7%

Three features in the above table are worthy of note: First, the resiliences of the four stocks are quite similar (the coefficient of variation for the resiliences in the above table is less than 2%). Even though the life history characteristics of the four stocks are very different, the four stocks have approximately the same resilience when measured in terms of relative SPR, which helps to illustrate the usefulness of the SPR approach. Second, fishing at a rate of $F_{40\%}$ would not be at all dangerous for any of the stocks, including the two rockfish stocks, because the numbers in the right-hand column are all much less than 40% (in fact, the relative SPR corresponding to MSY for each of the four stocks is less than 40%, with values ranging from 32% to 36%, meaning that $F_{40\%}$ would be an underestimate of F_{MSY} for all four stocks). Third, there is no consistent relationship between resilience and life history type. For example, Flatfish2 has greater resilience than either of the two rockfish stocks (as suggested by Goodman et al.), but Flatfish1 has *lower* resilience than either of the two rockfish stocks (opposite to the relationship suggested by Goodman et al.)

Finally, Goodman et al. (2002) state that Alaska rockfish have been overfished and have failed to recover from overfishing. Note that a definition of overfishing can only be made for a stock classified in tiers 1-3 of Amendment 56 to the Alaska groundfish FMPs, which include GOA POP, GOA thornyheads, GOA northern rockfish, and BSAI POP. All of these stocks are above the $B_{35\%}$ proxy for B_{MSY}, and would thus not be classified as overfished. Although GOA and BSAI POP were below $B_{35\%}$ until the late 1990s and mid-1990s, respectively, relatively rapid growth beginning in the late 1980s have allowed these stocks to increase to their current levels. This pattern of recovery is considerably different than that observed in west coast rockfish, resulting from the strong estimated recruitment at low stock sizes that led Dorn (2002) to conclude that Alaskan POP stocks have exhibited greater resilience than west coast rockfish

It is important to note that the control rules under the current harvest policy specify only a *maximum* ABC level, and that the recommended ABC may be lowered when extra caution is warranted. In fact, this is a common process in Alaska groundfish stock assessments, and in recent years several stocks (e.g., sablefish, BSAI Atka mackerel, and some rockfish) have implemented ABCs lower than the maximum allowable ABC due to uncertainty or conservation concerns. The statement of Goodman et al. (2002) that "*the Council should be aware that harvests taken at these levels [i.e., $F_{35\%}$ and $F_{40\%}$] may be too high for species that have very low productivity and that are characterized by highly episodic recruitment*" is thus technically correct, and is the reason why the harvest control rules define an upper bound to ABC rather than ABC itself. It is important to note that, of the eight BSAI and GOA rockfish stocks or stock complexes currently managed under Tiers 3-4, only two (GOA POP and GOA northern rockfish) currently set F_{ABC} equal to $F_{40\%}$. For the other six rockfish stocks or stock complexes, F_{ABC} is lower than $F_{40\%}$.

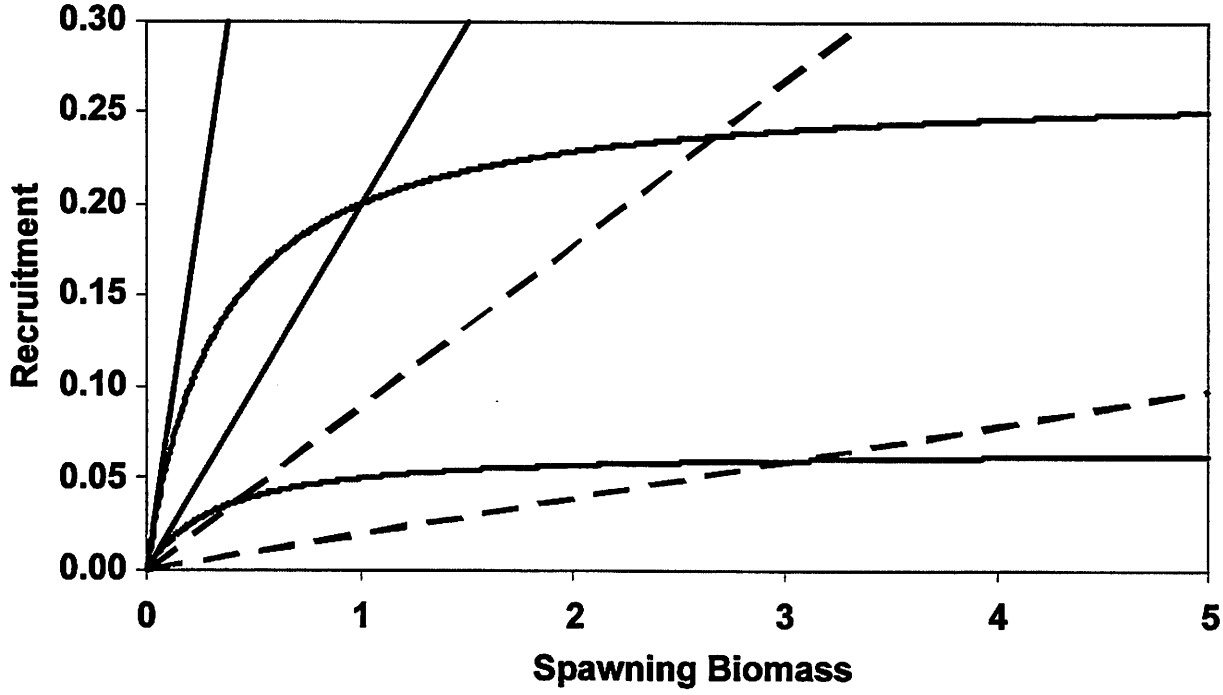


Figure 1. Features used to compute resilience of Flatfish1 (blue) and Rockfish1 (red). Curves represent stock-recruitment relationships. Solid lines show the slope of the stock-recruitment relationship at the origin. Dashed lines show how much spawning biomass would be generated by any given level of recruitment in the absence of fishing.

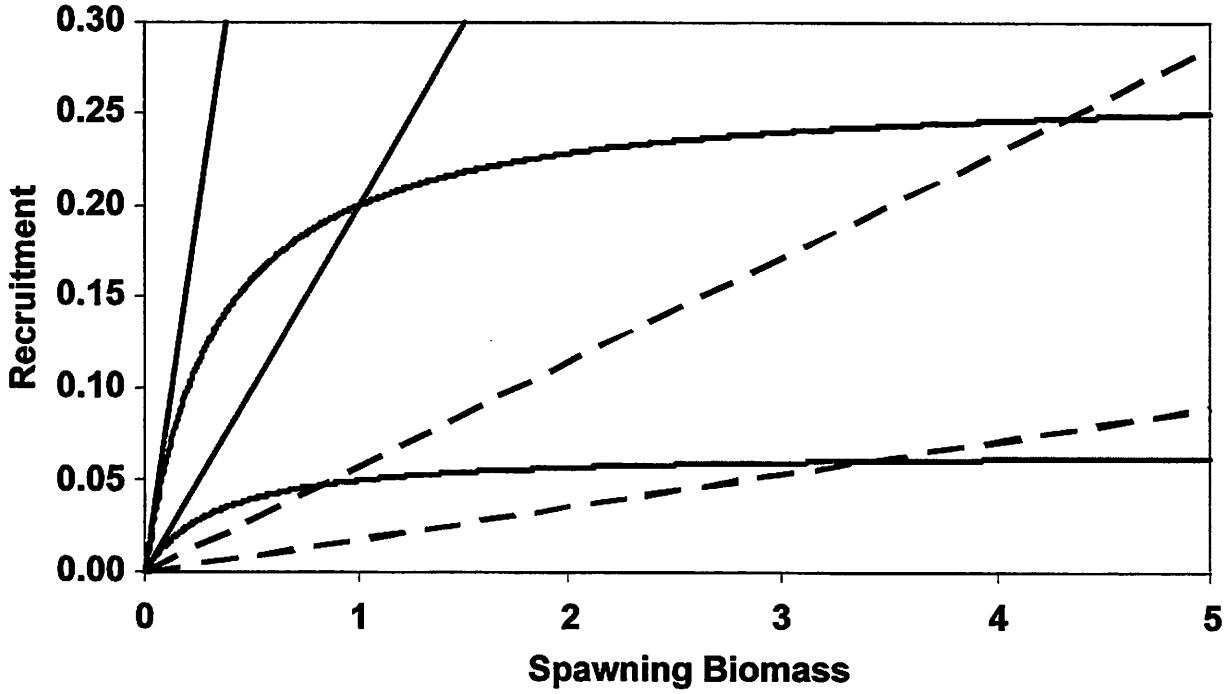


Figure 2. Features used to compute resilience of Flatfish2 (blue) and Rockfish2 (red). Curves represent stock-recruitment relationships. Solid lines show the slope of the stock-recruitment relationship at the origin. Dashed lines show how much spawning biomass would be generated by any given level of recruitment in the absence of fishing.

Conclusion 4. A management strategy evaluation is necessary to provide additional assurance that the current NPFMC ABC harvest stategy is a robust one and is likely to meet the objectives of MSFCMA and of NPFMC itself.

The Panel's Recommendation

Goodman et al. (2002, pages 5 and 74) state:

> *"We recommend that a management strategy evaluation ... be undertaken to provide additional assurance that the current NPFMC ABC harvest strategy is a robust one and is likely to continue to meet the objectives of MSFCMA and of NPFMC itself.... We recognize that an MSE analysis can be potentially a time consuming and technically difficult undertaking. Sufficient resources in time and people would need to be allocated to undertake the work. The skills and expertise to undertake the work already reside within AFSC."*

What is a Management Strategy Evaluation?

Goodman et al. define a management strategy evaluation (MSE) as follows (p. 70) as follows:

> *"In its most general use, management strategy evaluation (MSE) involves assessing the performance of a range of (possibly adaptive) management strategies, and evaluating the tradeoffs across a range of management objectives (Smith et al. 1999). The approach involves explicitly testing the robustness of each strategy to a range of uncertainties (such as those listed in chapter 2 of this report).... This approach captures (albeit in a simulation) all aspects of the application of a harvest strategy (monitoring, assessment, control rule and implementation), and differs from the types of projections that are often undertaken in a stock assessment, which assume some fixed sequence of catches or fishing mortality rates into the future, but which do not capture the feedback nature of the decision making process."*

Because it is explicitly concerned with uncertainties, MSE is closely related to risk analysis. In fact, Goodman et al. (p. 20) view MSE as a preferred method of conducting risk analysis:

> *"This sort of analysis [MSE], which is aimed at systematically revealing how different management approaches compare in meeting sets of objectives (but which does not necessarily forecast an expected outcome for any particular approach), in principle allows a better integration of risk assessment and risk management with clear roles for scientists and managers"* (term in square brackets added).

What is Risk Analysis?

Goodman et al. are somewhat unclear as to what they mean by risk analysis. Generally, there are two approaches to risk analysis. One approach is to measure the costs and benefits of the various possible outcomes, weight those costs and benefits by their respective probability of occurrence under each alternative harvest strategy, compare the expected net benefit ("utility") across alternative harvest strategies, then choose the harvest strategy with the highest expected net benefit. This is the approach, for example, was used to determine the upper limit on ABC in Tier 1 of the current harvest strategy. Sometimes, Goodman et al. appear to endorse this approach. For example, on page 19 the authors state:

"The best that science can do is to use models to calculate the expected amount of utility ... that will result from a proposed management plan. If there is an agreed upon utility measure that can apply to all the various objectives, the science can also optimize the management plan by seeking plans that maximize utility, within the stated constraints."

Similarly, on page 107 the authors state:

"The most sophisticated and rigorous approach to dealing with uncertainty is the fully quantitative statistical decision theory (Berger 1985), which takes account of costs of errors of omission and errors of commission, and is very formal about the quantification of uncertainty."

The other approach to risk analysis is much less sophisticated and does not result in optimal decisions. This approach works as follows: First, the range of possible outcomes is divided into "good" and "bad" subsets. All "good" outcomes are treated as though they are equally good and all "bad" outcomes are treated as though they are equally bad. Second, a critical probability value (say, 5%) is chosen. Third, the probability of a "bad" outcome is computed for each alternative harvest strategy. Fourth, the harvest strategies which generate a "bad" outcome with probability greater than the critical value are eliminated. Finally, of the remaining harvest strategies, the one which produces the highest average yield (or some other performance measure) is chosen. Sometimes, Goodman et al. appear to advocate this approach. For example, in their discussion of the Tier 1 harvest control rules on pages 2-3 the authors state:

"The harmonic mean has the mathematical property that it is less than the simple average (roughly, the point estimate) by an amount that increases with the spread of the distribution, so this establishes a margin that increases with the uncertainty in the estimate. However, this mechanism for adjusting the F_{ABC} downward from the F_{OFL} does not have the statistical property of ensuring a constant specified confidence that the F_{ABC} does not exceed the true F_{MSY}, as would be ensured by using a lower confidence limit of the estimate of F_{MSY} for the F_{ABC}."

One way to characterize the difference between the two approaches is that the first approach (i.e., the approach currently used in Tier 1) attempts to achieve an optimal result determined by the costs, benefits, and probabilities of the various possible outcomes, while the second approach (second sentence in the above quote) attempts to achieve an apparently arbitrary probability of avoiding F_{MSY} without regard to the costs or benefits of doing so. In the Center's view, moving from the current approach to the one described in the second sentence of the above quote would be a step backward.

Types of Management Strategy Evaluations Already Undertaken

Goodman et al. make several specific recommendations regarding MSE and risk analysis. Many of them have already been implemented. These are itemized below.

"There is obviously a wide range of alternative harvest strategies that might be considered, and MSE methods are a useful way to design and evaluate alternatives. If this "comparative" approach is used, a wider set of performance measures, including utilization as well as conservation objectives, should be evaluated and the tradeoffs across objectives highlighted. We

suggest that wider stakeholder discussion ... on alternative approaches be held before embarking on a major exercise to evaluate alternatives" (p. 5 and 75). The new draft PSEIS analyzes a wide range of alternative harvest strategies, using MSE as the main analytical tool. Utilization as well as conservation objectives are evaluated and the tradeoffs across objectives are highlighted. The alternative approaches were developed through an exhaustive process of which broad stakeholder discussion was a central feature.

"Apart from exploring and evaluating generic harvest strategies, several of the target species in the BSAI/GOA groundfish fishery are of sufficient value (and importance) to warrant the effort to formally evaluate species-specific harvest strategies (e.g., for pollock)" (p. 5 and 76). The new draft PSEIS analyzes species-specific harvest strategies for several individual species such as walleye pollock, Pacific cod, and Atka mackerel.

"We recommend that additional work be undertaken to more formally test the robustness of the current NPFMC harvest strategy to various uncertainties, and to explore alternative harvest strategies that may be more appropriate for some groups of species or individual species" (p. 6 and 76). The new draft PSEIS tests the robustness of the current harvest strategy and several alternatives to various uncertainties, including uncertainty due to random natural variability in future recruitment and uncertainty in future annual estimates of abundance and age structure. In addition to the species-specific harvest strategies noted above, the new draft PSEIS also explores alternative harvest strategies that may be more appropriate for groups of species such as rockfish.

"Alternatives to F40%: Section 3.1 noted that $F_{40\%}$ may be too high a harvest rate for some species or groups of species. Alternative values should be evaluated for these groups" (p. 75). The new draft PSEIS evaluates alternatives to $F_{40\%}$ for several individual species and groups of species, including those for which Goodman et al. felt that $F_{40\%}$ was too high.

"Form of harvest control rule: The location of thresholds in the current harvest control rules could be altered (e.g., value of biomass threshold at which zero ABCs are set; use of BMSY as a breakpoint in Tiers 1-3). Note that to speed up the "search" for improved values, the utility function approach suggested and previously used by Thompson (ref) might be used to identify candidate control rules. These should then be further evaluated using the MSE approach" (p. 75). The new draft PSEIS uses a utility function approach, incorporating a formal definition of risk aversion, to compute an optimal harvest rate for Tier 3 stocks. This optimal rate is then incorporated into a control rule which is evaluated along with the other harvest alternatives using the MSE approach.

"Multi-annual catch limits: MSE methods have been used to evaluate the costs and benefits of annual versus multi-annual TAC setting (e.g., Punt et al. 2001). Some work along these lines has already been done in the NPFMC setting, because NPFMC is considering a Plan Amendment to change the TAC-setting process." (p. 75). Goodman et al. are correct that much work has already been done in this area as part of the proposed plan amendment dealing with the annual specifications process.

In addition to the above recommendations which have already been implemented, the new draft PSEIS also incorporates into its MSE a number of features that go far beyond those recommended by Goodman et al. For example, whereas Goodman et al. suggest that the MSE

should assume that TAC=ABC for all stocks regardless of the OY cap (p. 5 and 74), the MSE used in the new draft PSEIS uses a state-of-the-art model incorporating bycatch and technical interactions and which adjusts TACs downward in a way that satisfies the OY cap and mimics the pattern of such adjustments observed in recent years (although Goodman et al. acknowledge the existence of such models, the authors mistakenly conclude that "there appears to be little or no use of these models in framing management advice for the BSAI/GOA FMP" (p. 73)).

Of course, Goodman et al.'s MSE recommendation also contains some features which were *not* implemented in the new draft PSEIS, largely due to time constraints. The Center looks forward to considering these features for use in future MSEs. An appropriate opportunity for future development of MSEs will likely arise when the Council moves toward implementing a preferred alternative following finalization of the PSEIS.

Conclusion 5. The performance of the CHS with respect to ecosystem needs is unclear

The reviewers considered ecosystem needs to be interpreted as needs of the species that are part of the ecosystem. As such, species needs include those related to predation, competition, habitat and environment.

The reviewers are essentially correct that the present tier system does not necessarily take explicit account of needs related to predation, competition, or habitat. Environmental aspects are taken into account in a variety of ways in the calculation of biological reference points, such as using the time period since the 1977 regime shift in the estimation of average recruitment. The tier system provides a mechanism for protection of target species. As such, the tier system does provide a key role in protecting those ecosystem components that are the main focus of our harvesting activities.

Although the review panel did a good job at outlining the present aspects of the current harvest policy that address ecosystem concerns, they could have emphasized more the importance of these other strategies in providing protection to other ecosystem components in the face of uncertain knowledge of the quantitative links between species. They acknowledged that our present strategies include a whole suite of measures such as: the OY cap on BSAI groundfish harvest, restrictions to prevent targeting on forage fish, bycatch and discard controls, spatial closures to protect marine mammal foraging areas, minimum biomass thresholds for Steller sea lion prey, short-tailed albatross take restrictions, gear modifications to protect seabirds, trawl closures, pollock bottom trawling restrictions, and EFH designations. These conservation and management measures provide protection with regard to important species such as forage fish, top predators such as birds and mammals, nontarget species, and habitat.

The recent draft PSEIS and EFH EIS evaluated the present management system with respect to its performance with regard to the ecosystem indicators relating to predator/prey relationships, energy removal, and biodiversity to be largely successful at protecting most target, forage species, prohibited and endangered species. Possible improvements in the policies for protecting nontarget species and habitat have been identified in the EIS alternatives. Improvements in the present harvest strategy with regard to many of these issues are ongoing and linked to research and monitoring on Steller sea lions, monitoring effectiveness of seabird protection devices, the role of climate in influencing species production, evaluation of predator/prey relationships, life history characteristics of nontarget species, and effects of gear on bottom habitat.

One aspect of employing the precautionary approach in an ecosystem context was recommended by the panel, with regard to possible adverse impacts that might arise due to quickly developing fisheries with little information prior to the onset of fishing. The panel recommended a fisheries development framework that incorporates a number of regulatory requirements that might be employed to avoid adverse impacts in these situations. The work of the NPFMC ad hoc working group on revising the management of target and non-target groundfish species, and the newly appointed Council working group on non-target species is working on this issue.

The panel also acknowledged that our current state of knowledge *"does not allow precise scientific specification of what margin or threshold would be appropriate to achieve what level of protection of various ecosystem properties."* The panel offers multispecies and ecosystem modeling of hypothetical scenarios to illustrate various possible outcomes, acknowledging that these models may not be fully developed but that continued investment and testing of such models is warranted along with expanded regular monitoring in the ecosystem. Ultimately, the panel offers the expectation that this research and monitoring (including oceanographic monitoring) will improve our general understanding of the BSAI/GOA ecosystems that may allow us to specify more quantitative ecosystem control rules, thus allowing us to move from the more implicit ecosystem effects being managed to a more explicit management procedure that takes predator/prey and environment into consideration.

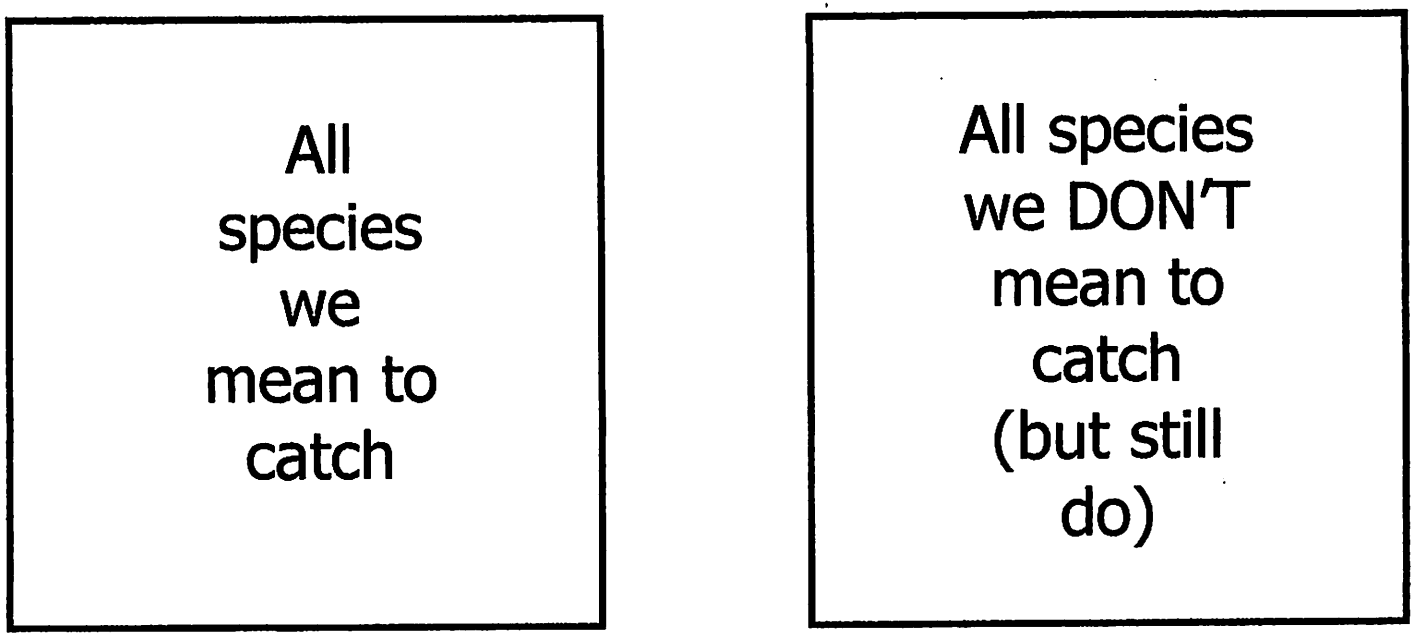
The AFSC is continuing with its improvement of information contained in the Ecosystem Considerations section of the BSAI and GOA SAFE documents. This information provides a quantitative historical perspective on trends in important ecosystem indicators at species, community, and ecosystem levels. A qualitative assessment procedure using this information in single species stock assessments has been developed and will lead to quantitative additions to stock assessment models when these improvements are warranted and data are available.

The AFSC is continuing with development and improvement of several multispecies and ecosystem models that may be used to evaluate hypothetical future scenarios to illustrate possible effects of fishing and/or climate on ecosystem processes. In the short term, these models can be used to provide additional indicators of possible future ecosystem impacts of various management strategies or climate regimes. Research is also continuing on developing statistically-based ecosystem indicators such as regime shift predictions. Continuation and improvements to our ecosystem monitoring system including climate, lower trophic level, habitat and predator/prey relationships are important in making progress in these areas.

Ad hoc committee on species complexes and non-target species management

Report for October 2003
Council meeting

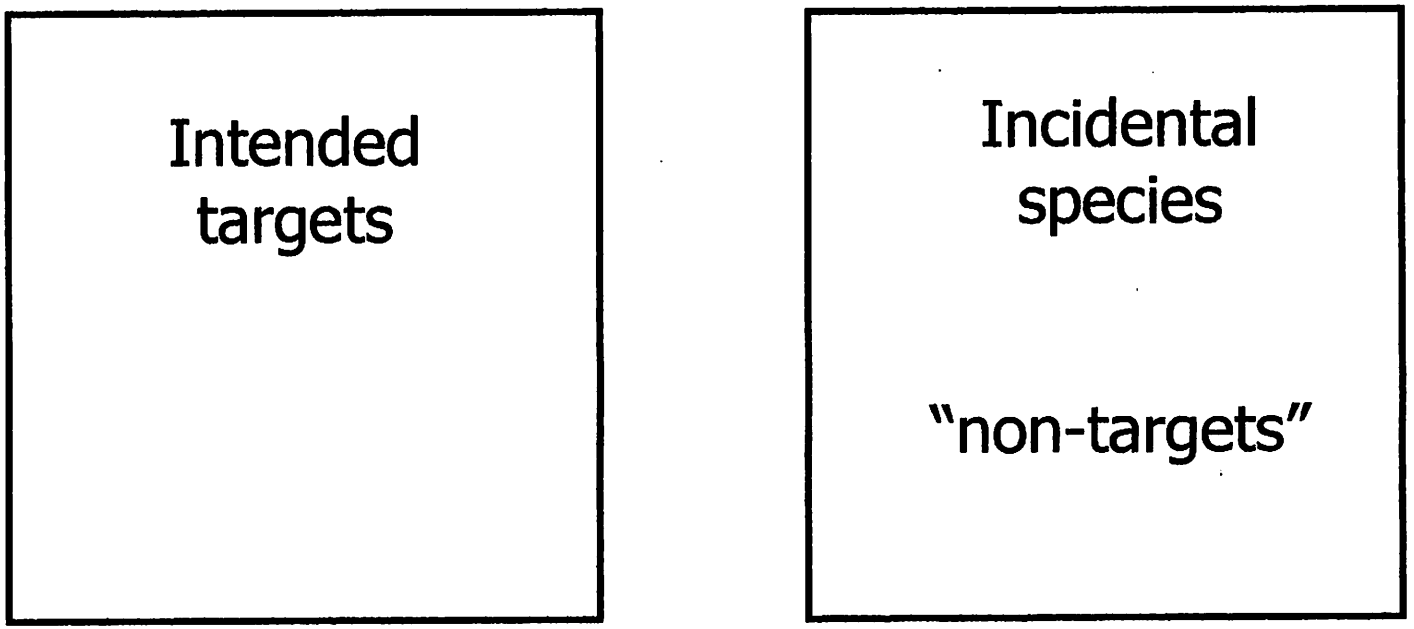
The committee lumped...



Because there are different management objectives within these categories,
We apply different management tools

First name them to distinguish from what we have now

The committee lumped…



Management objective:

Optimize sustainable yields

Management objective:

Protect from fishing effects

Then the committee split...

Intended targets

- Managed with *single species* ABC, TAC, OFL
- Data quality goal is assessment at Tier 3 or above (Tier 6 phased out)
- No complexes allowed in this category (except*)

Who is in this category?

Pollock, Pacific cod, Sablefish, Atka mackerel,
Rock sole*, Yellowfin sole, Flathead sole, Dover sole, Rex sole, Greenland turbot,
Pacific Ocean perch, Shortraker rf, Rougheye rf*, SS Thornyheads, Yelloweye rf,

Then the committee split…

- No directed fishing allowed
- Managed with Maximum Retainable Allowance (MRA)

- Divided into two further categories:
  - Monitor only
  - Monitor with additional management measures

Incidental species

"non-targets"

Who is in this category?

Every species not listed as a target…
Real bycatch complexes (observed to be caught together) are allowed

Criteria for the major division:

- Is it actually caught in the groundfish fishery?
  - Threshold of x% of observed catch to get on the radar
  - Monitoring will allow us to add species for consideration
- Is it retained and landed (as other than fishmeal)?
  - Threshold of y% retention and landing
  - Market currently exists
- Do people want to catch it?
  - If we did not restrict fishing would they target it?

- Species that people want to catch are on the list.
- Species that people keep, but are secondary, are not considered targets till they reach the retention/landings threshold. Unless they say they want to keep little bitty amounts of species.

Species to emphasize: targets

- Current target species specification process is unchanged
- Improvements could include:
  - A systematic approach to improving assessment data quality
    - Still aiming for minimal Tier 3 designation if possible
    - Tier 6 not used (target species require biological data)
    - Include explanation in SAFE of why species is in given tier, and what it would take to improve data to change tiers
  - Focus resources on target species

Species to emphasize: non-targets

- Non-target species management (i.e., protection) would be *enhanced*.

- Improvements could include:
  - Monitoring for groups formerly unmonitored (the current "non-specified" category)
  - Control of new target fishery development via MRAs
  - More flexible management tailored as necessary to species sensitivity, ecological, and economic concerns

Species to emphasize: transitions

- Non-target species can still become targets
  - As increased retention is detected, data collection can increase
  - Interested industry can participate in collecting adequate data to support new fishery (EFP like system)
  - Fishery develops sustainably
- Target species can still become non-targets
  - If interest/market wanes, no need to continue management infrastructure, redirect resources to higher priorities

The details: non-targets

- Monitoring of catch for all groups
  - Selected (sensitive) groups monitored at species level
  - Other groups monitored at complex level
- MRAs defined with flexibility depending on goal
  - Can be single species or complex level
  - Can vary by target fishery for a given non-target group
  - Percent retainable may be set:
    - to zero in some cases (prohibited status)
    - to allow "natural" bycatch to be retained if desired
    - to allow some limited fishery/market exploration
  - But, does not allow for full blown directed fishery

The details: non-targets

- Additional management measures are developed for non-target species/groups sensitive to fishing effects where MRA alone is inadequate protection
- Sensitivity is multifaceted, considers
  - Current abundance level and trend
  - Life history traits
  - Range and habitat associations
  - Ecological role
  - Potential for future market value
- non-target species groups with high sensitivity in several areas have higher priority for management

A suggested process: non-targets

- Selected (sensitive) non-target species/groups would have regular evaluations, with authors compiling:
  - Current abundance level and trend (direction and uncertainty)
  - Information on life history traits (average size trend?)
  - Range and habitat (expansion, shrinkage, change?)
  - Ecological role (diet change, predator abundance change?)
  - Potential for future market value (markets exist/developing?)
  - Catch information (amount, location, retention change?)
- Review panel evaluates all non-target indices together to address concerns and prioritize further data collection and or management action

A suggested limit: non-targets

- If no OFL can be calculated, when should management be concerned enough to take action to reduce fishery impacts to non-targets? What is the limit?
- Some viewpoints:
  - Limit could be don't let any species go extinct
  - Limit not necessary if we follow National Standard 9 and minimize bycatch to extent practicable
  - Limit could be similar to tier 6 for target species, don't let catch exceed average observed catch over some time
  - Limit could be similar to tier 5 for target species, don't let catch exceed natural mortality rate times current biomass
  - We could combine these as data and concern allow, and include interactions other than catch alone

Why do this? What problems are we trying to solve?

- Some current management problems
  - BSAI rockfish
    - Northerns
    - Duskys (part of complex)
  - Other species complex
    - CDQ "squid box"
    - new GOA skate target fishery

BSAI northern rf single spp

- Problem: setting appropriate TAC by area (stock id), sensitive life history and poor biomass data

- Little corner of EBS, combine or not

BSAI dusky rf in (Other rf) complex

- Problem: sensitive life history traits combined with apparently high exploitation rates due to poor biomass estimates—can not set TAC

- Shortspine thornyhead and dusky rockfishes are primary components, not targets

BSAI squid complex

- Problem: a small TAC based on tier 6 is partitioned to CDQ groups which constrains target fishery but there is no evidence of damage to squid stocks

GOA atka mackerel

- Transition from "target" to "non-target"?

GOA skate complex

- Problem: uncontrolled fishery development combined with high complex-level TAC
- Sub-problems:
  - Target is one or two among ~12-14? skate species
  - No observers (small vessels and low volume plants)
  - Species id by processors problematic
  - No life history information from Alaska
  - Skates relatively long lived, late maturing, low fecundity as a group

Non-target Species Ad Hoc Working Group
September 4, 2003

Participants in the fourth meeting of the ad hoc working group included: Pat Livingston, Joe Terry, Anne Hollowed, Sarah Gaichas, Sue Hills, Tom Pearson, Sandra Lowe, Paul Spencer, Andy Smoker, Rebecca Reuter, Jane DiCosimo, Tory O'Connell, Ivan Vining, Mike Ruccio, and Melanie Brown. Bill Karp, Doug Limpinsel, Dave Clausen, Jon Heifetz, John Lepore, Jason Anderson, Dave Ackley, Obren Davis, Bubba Cook, and Jim Ianelli participated for parts of the meeting.

Jane DiCosimo provided an overview of past group discussions, staff reports to the Council, and the formation of a Council committee to address the management aspects of the group's recommendations. The committee chair indicated an interest in meeting for two days before the December Council meeting at the AFSC to provide for interaction with the ad hoc group. Paul Spencer was appointed to the committee and Jane DiCosimo and Sarah Gaichas will provide staff support. The group will continue to meet to guide the Council and its committee on the development of appropriate biological reference points for managing these species.

Ad hoc committee progress to date

The fundamental management division is between target and non-target groundfish species. This distinction is being made for two reasons. First, it may be appropriate to have different management objectives for these two groups of groundfish species. Second, different management tools may be appropriate for their management.

The group was more successful in resolving discrete biological and management issues than complex policy and legal issues. It corrected its listing of target species on the Council website. Clarification was made that there is no true targeting of shortraker/rougheye rockfishes in the longline fishery and that northern rockfish, dusky rockfish, Arrowtooth flounder, and skates are a target in the GOA. It also noted that there are management overlaps with other Council management initiatives on bycatch reductions, essential fish habitat, observer program, and GOA groundfish rationalization. The proposed actions may simplify some of the bycatch aspects of the proposed rationalization program, but add to observer duties.

The target species management objective is to optimize sustainable yield. The Council will continue to apply quota specifications and in-season management as the best tool to achieve this goal. Some improvements to stock assessment summaries might be suggested, such as identifying what tier species are in, why a species is in a particular tier (what data put them there) and what might be necessary to progress to the more data rich tiers. The TAC management system will only apply to single species (there will be no complex level TACs). The exception is for species that may be genetically distinct but morphologically indistinguishable right now (e.g., the several rougheye rockfish species). However, species in completely different genera or families or phyla would not share a TAC. Therefore, there would not be a TAC for "other species". Definitions of target species were discussed, but the group's consensus was to not devise hard and fast rules because 95% of the target species definitions are obvious (e.g., pollock, P cod). Difficult cases could be determined by the Council with assistance from its committee, the Plan Teams, SSC, and AP. The group continues to recommend the objective of having sufficient data for at least tier 3 for each target species, but accepts the SSC recommendation to allow tier 4 management on a case by case basis.

The non-target species management objective was discussed at great length. In general, the objective is to monitor catch and the stock, discourage targeting and minimize bycatch to the extent practical, which includes providing additional protection from the unintended negative fishery effects where appropriate. The objective is NOT to optimize yield for non-target species, therefore setting MSY-based ABCs, OFLs, or TACs is inappropriate. First, there may not be sufficient information to set a MSY-based OFL. Second, it may not make sense to manage some species under one, even if there was sufficient information. The MSA defines the term "conservation and management" as all the rules and regulations, methods, and other measures that are designed to assure that irreversible or long-term adverse effects on the marine environment are avoided. It states that there will be a

multiplicity of options available with respect to future uses of these resources, some of which might include future fishery yield potential.

All groups in the non-target category would be monitored at the most detailed practicable taxonomic level in surveys and at some pre-agreed grouping level in fisheries for catch reporting, depending on initial priorities set for monitoring certain groups based on either future yield potential, sensitivity to harvest, or other ecological reasons. Monitoring may include age-structured population modeling for non-target stocks of interest, and often would increase the amount of scientific information about the stock. All species would be subject to at least a Maximum Retainable Amount (MRA) to discourage targeting, but the proposed system would allow for some use of incidental catch and some limited market exploration. The idea is to have new fisheries develop with constraints until sufficient data is collected to determine an appropriate harvest limit. The group understands that some non-target species are more sensitive to unintended negative fishing effects than others. Thus, it attempted to define criteria for sensitivity and additional management measures to protect more sensitive species. These additional management measures would be implemented above and beyond the MRA and monitoring put in place for all non-target species. There always will be reasons that necessitate management changes, such as uncertainty and new information, but the appropriate level of protection for non-target species should be provided in a way that is more flexible, effective, efficient, and responsive to their sensitivity. For example, in order to ensure that precautionary biological reference points are not exceeded, protection could be provided by time/area closures, gear restrictions/modifications, size limits, or bycatch allowances. Clearly, some stocks are sensitive to fishing pressure resulting from bycatch alone.

- There was general agreement that the management objectives for non-target species include the following: monitoring catch and the status of stocks, discouraging targeting, and minimizing bycatch to the extent practical using one or more of a variety of management measures, including those listed above. The group proposed language adapted from USFWS[1] for a draft management objective and process of prioritizing species for management action:

  > To conserve fish diversity and to preserve future options with respect to resource use in the North Pacific, reducing the likelihood of having to propose any groundfish species for Federal listing as endangered or threatened, (maintain system integrity as a whole, sustain populations, prevent significant fishery related adverse impacts), a committee (perhaps the groundfish plan teams) would assign each non-target complex a ranking, ranging from 1 (low) to 5 (high) priority for each of the following factors: spawning distribution, non-spawning distribution, relative abundance, fishery related impact in and out of spawning season, population trend, are of importance. Higher scores reflect more concern.

The group discussed but has not identified a process for transitional species, i.e., those that may be moved from non-target to target categories as a fishery develops. The group proposed that the experimental fishing permit process, with data and observer requirements, may be an appropriate process to allow a limited fishery to develop.

Once target species are defined, the non-target category contains all other species. Note that this does not apply to species we never or rarely catch in the fishery. Just because a species is identified in a survey does not mean it is in the FMP. The groundfish plan team meetings have already refocused their efforts to concentrate on target species management at their November meetings. The September meetings could focus on ecosystem issues and non-target species management.

NMFS has the responsibility to rebuild stocks that are overfished, to prevent overfishing (where overfished and overfishing may each have different definitions for target and non-target species), and ensure that management actions would not result in a species becoming endangered or threatened. NMFS, the State of Alaska (ADF&G) and academic institutions have the responsibility to inform the Council on biologically acceptable methods of managing fisheries. The Council's responsibility is to identify issues and develop methods for efficiently

[1] NonGame Birds of Management Concern – The 1995 List; Source: http://migratorybirds.fws.gov/reports/speccon/intro.html and Birds of Conservation Concern 2002; Source: http://migratorybirds.fws.gov/reports/BCC02/BCC2002.pdf

managing marine stocks. But that discussion is dependent on the development of appropriate biological reference points for non-target species. To that end, the group addressed seven questions raised by Anne Hollowed.

1. **If we re-name non-specified, other species, and selected members of species complexes will they still be covered by the FMP?** John Lepore summarized some of the same legal issues that are also being addressed in (separate) NOAA GC and NMFS discussions regarding National Standard 1[2].The Council has a responsibility to develop an FMP for each fishery under its authority that requires conservation and management. The management structure of an FMP, addressing both required and discretionary provisions under MSFMA, depends on how the fishery management unit (FMU) is described. A Council may develop management objectives for a fishery or portion of a fishery identified in the FMP, with advice from its scientific and public advisors. The group was attempting to resolve whether different rules could be applied to components of an FMU, e.g., some species are managed under OFLs while others are not. Target and other species are in the FMU (and are managed under an OFL). Prohibited and non-specified species have been determined not to be in the FMU (and are not managed under an OFL). Forage fish was identified as a model for proposals for non-target species management. It was not a category at the time of that legal determination, so a legal decision on that category has not been made. Some believe that forage fish should not be considered part of the FMU because we don't have an OY for it.

The group discussed whether its recommendations increased the management burden of the Council by adding all the non-specified species to the FMU (they are already in the FMP) relevant to the management objectives. If species management is relevant to FMP objectives, then it is in the FMU. The group posed the question of whether separate FMUs could be named in the FMP (one for optimizing yield and one for conserving non-target species). Creating the forage fish category did not itself increase the burden on observer program or in-season management. Management actions determine the burden. Even though species are caught incidentally in the target fishery, they are still included in the FMP. The proposal is to specifically list them as non-targets because they are: (1) caught in the fishery; (2) are often not intended to be caught; and (3) are not retained or marketed. The Magnuson-Stevens Act authorizes that MSY and OY requirements can be applied at the "fishery" level, however, it is currently applied at the individual stock level within a fishery. The Magnuson-Stevens Act also requires objective and measurable criteria for defining when a fishery is overfished, including an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery.

The group discussed whether to move non-target species out of the FMU, or keep them in with different rules. It discussed how forage fish and prohibited species are handled. All species that are caught are included under an FMP, but there is a subset relevant to the management goals that are in the FMU. The group could not resolve this issue. The Council should address which species are in the FMU and NOAA GC should advise the Council if more than one FMU may be defined in an FMP.

2. **Will they still be covered by MSFCMA?** The short answer to this question is yes.

3. **If all non-specified species are now in our FMP and they are no longer called "fisheries" are we responsible for managing them as single species? A key point of MSFCMA was that it allows us to manage complexes as "fisheries" if we remove this designation will we be mandated to set retention limits or time area restrictions specific for each species?** Much more information is needed to address the legal issues this question poses.

4. **If we designate the species currently covered by the FMP as "non-targets" does this mean that we can assume that we can overfish these species as long as we do not drive them to a threatened or endangered status?** Section 303(a)(1)(a) of the Magnuson-Stevens Act requires that FMPs contain conservation and management measures for a fishery to prevent overfishing and rebuild overfished stocks. The group discussed whether there is some other level of conservation that precedes ESA. The forage fish

[2] 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.

model was discussed again in this context and it was noted that the implementation of National Standard 9 could require the use of biological reference points for bycatch species..

The following policy questions were identified as being more appropriately addressed by the Council or its committee.

5. **Is it okay for these species to fall into an overfished status as long as they are not threatened or endangered?**
6. **If we go forward with the non-target designation what are the criteria for establishing retention limits or time area closures? How will we ensure that species are sustainable if we do not have these criteria defined (e.g. they will not become endangered)?**
7. **The prioritization matrix could be used to identify high priority species currently managed within a complex. If we used this matrix to identify candidates for breakout from complexes would we achieve the same level of conservation under status quo as we would if we re-named the complexes "non-targets?"**

The group reviewed some draft case studies for the proposed management process:

- BSAI northern rockfish (not in a complex but not necessarily a target species, definition of stock structure, and small TACs),
- BSAI dusky rockfish (in a complex and not a target species but bad information to provide protection just with a TAC so need ability to apply alternative management measures),
- BSAI squid (not a target complex, information to set TAC is very weak, CDQ squid box issue made us remove them from that program, so already bending our rules indicating the need for more flexibility, could manage bycatch of squid just with closures of some portions of shelf break to EBS pollock pelagic trawl fishery),
- GOA Atka mackerel (not a target species anymore, very poor information, why treat like a target when nobody fishes for them in the area anymore), and
- GOA skates (rapidly developing target fishery on two species within a 12-14 species complex that is managed without OFL or ABC and under a five group aggregate TAC.

Jane DiCosimo raised the question of Council process for how to implement this major change to groundfish management. It could be completed in one large BSAI/GOA plan amendment that would identify a new non-target species category, and implement unique MRAs for each species/group. Sensitive non-target species, currently covered by at least complex level TACs (rockfish complexes, flatfish complexes), would remain under target species management as a complex until separate, specific, additional management measures are designed to provide better protection than the complex level TACs. Under another approach, three separate BSAI/GOA plan amendments could be developed for rockfishes, flatfishes, and other species. The Council or its committee would identify which approach to initiate and the priority for development of the three analyses if that approach is selected. Three separate analytical teams could be assembled to concentrate on each complex with concurrent or sequential timelines.

The group addressed the following management issues but did not develop recommendations.

- Outline a process for monitoring and identifying species of conservation concern to ensure the protection of these stocks at current or an increased level. Bycatch reduction (National Standard 9[3]) is one way to achieve the goal of protection from negative fishery effects. The proposed action to create a new non-target species category may be better than managing those species under the OFL tier system. What non-target indicators trigger an action, and when is it no longer needed? Can it be addressed reasonably (acceptable cost)?
- How to define the non-target complexes? How to assess appropriate MRA level for each species/complex as a minimum measure. MRAs should be constraining enough to ensure fisheries develop under control but not

[3] 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.

so restrictive that fishery/market exploration can't happen How to identify whether MRA is sufficient protection?

- How do we manage the remaining species?
- Revise the overfishing level tier system to eliminate tier 6 for target species, because a target fishery would not occur if the biomass is unknown under the proposed system.
- What are the problems in the fishery? What are the potential losses and gains from the proposed system? Examples would be dusky or northern rockfish and GOA skates.
- Encourage the continuing efforts to revise the observer program.
- Is there a process to transition target species to non-targets? GOA Atka mackerel may be a good example. Would this require a plan amendment or could it be part of the specification process?
- Define the threshold between target and non-target (tells you when to move between categories). Is it a target fishery if one guy is catching it and selling it? A rapid increase in catch or retained catch, or a change in average fish size over time are possible indicators.
- Define role of (target and non-target) groundfish species in the ecosystem
- Define the role of the groundfish plan teams.
- Expand in-season authority (prohibited species status, hotspot closures) to protect non-target species.

After reviewing the BSAI/GOA skate case study, the ad hoc working group recommended that the Council separate skates from the GOA "other species" category and set species-level OFLs, ABCs, and TACs, where possible. The group deferred the issue of whether to set the overfishing levels for the Gulf or by area to the GOA Groundfish Plan Team.

Ad hoc meeting on non-target species management
May 5-6, 2003

The ad hoc group on non-target species management convened on May 5-6, 2003 for its third meeting. Sue Hills, Pat Livingston, Sarah Gaichas, Jim Ianelli, Grant Thompson, Joe Terry, Paul Spencer, Andy Smoker, Tom Pearson, Galen Tromble, Ivan Vining, Mike Ruccio, and Jane DiCosimo attended the entire meeting. Anne Hollowed, Terry Quinn, Doug Limpinsel, Kerim Aydin, Rebecca Reuter, Mary Furuness, David Ackley, and John Lepore attended part of the meeting.

Review. Sarah Gaichas and Jane DiCosimo presented a quick overview of previous group discussions and April 2003 Council meeting comments.

Stock Assessment Improvement Plan. Life history information is generally not available, so monitoring of minor species is a critical feature of proposed management changes. Increasing knowledge of "other species" is the most pressing issue. Anne Hollowed reported that AFSC received $2.1 M for 2003 and $1.9 M for 2004. Projects that got funded include: (1) developing aging techniques for non-target species; (2) increased observer sampling; (3) investigate changes to observer sampling protocol; (4) systematics of "other species" components; (5) additional stock assessment staff for other species and other flatfishes and rockfishes; (6) improving MACE division staff for research vessel operations; (7) maintain bottom trawl survey; (8) pilot or single year projects : (a) catchability of other species in bottom trawl surveys to improve biomass estimates, (b) investigation of juvenile flatfishes in the inner front in the GOA and BS, (c) habitat of juvenile rockfishes around Pribilofs; (d) survey standardization; (e) add assessment scientist at Auke Bay Lab for sharks and grenadiers; (f) enhance BS trawl survey funds; (g) development of molecular markers for species identification; (h) sampling of SR/RE bycatch in the sablefish fishery; (i) fisheries oceanography program to bridge gap between at-sea fishery programs and ecosystem integration in stock assessments.

Anne continued with a summary of proposed $2.9 M rockfish research for 2003/2004 that was presented to the Council in April 2003. **The group recommended that the Council send a letter to Dr. Hogarth supporting the 2003/2004 Other Species Research Plan funding and for full funding of the North Pacific Rockfish Research Plan for 2004 and beyond that were developed under the Stock Assessment Improvement Plan.** The letter also should note the need for full funding of ongoing research surveys so that new monies are spent on new research.

Doug Limpinsel reported on an AFSC pilot program which temporarily funded paired observers to collect additional life history information and species identifications on shortraker and rougheye rockfishes in longline fisheries. Coordination with the Observer Program will be critical for the proposed management program to succeed. The program will need to increase sample sizes to improve estimates for rarer species. **The group also recommended that the Council send a letter to Dr. Hogarth supporting the incorporation of additional data collection on minor species into the national observer program design.**

Developing Kodiak skate fishery. Mike Ruccio reported on a developing skate fishery near Kodiak in spring 2003 (Appendix 1). Under a 1998 State action that placed skates on bycatch, a Commissioner's permit was required to target skates in state waters. Participants requested permits after the cod fishery closed. Boats fishing for skates in federal waters are under the radar—no logbooks, no observers, no plant observers (plant too low volume). Mike reported that Bathyraja are going to meal plants. No one at the state has experience in ageing skate species. NMFS and ADFG staff will measure skates in dockside sampling to reconcile NMFS data and ADFG data. Due to other state management priorities, sampling skates dropped from #3 to #7. Two

processors are processing skates. Landings in 2002 went mostly to meal; directed harvest of skates in the 2003 longline fishery increased tenfold. Trawl catch is increasing also. The dried product is shipped to Korea. No additional Federal staff are available to sample this fishery, although some observers received training to identify skate species, but were not assigned to these vessels. Skate ID manuals were produced but not distributed to all observers. **The group recommended that additional manuals be distributed widely to the observer corps, cadre, and fleet to collect as much voluntary information as possible.**

The group recommended restarting the analysis to separate GOA skates from the "other species" complex as listed below. The proposed FMP amendment could create new data collection/reporting/observer requirements, provide Assistant Administrator authority for an EFP-type program, include estimate of economic cost of management program.

Alternative 1. No action

Alternative 2. Separate GOA skates from the "other species" complex, assign OFL, ABC, TAC,.

Option. Place skates on bycatch status

Council comments. Grant Thompson led a discussion of whether the Council has legal authority to create a new category in the groundfish FMPs for groundfish species that would not be subject to OFLs, ABCs, or TACs. The question posed by the Council was: *Does every stock of fish within the Council's geographical area of authority have to be a member of some group for which OY and OFL are specified?* The Short Answer: No. (See Appendix 2 and 3 for the long answer).

The group noted that Councils prepare FMPs "for each fishery that requires conservation and management." There is not an intent to conserve and manage everything with an OFL and OY. "Fisheries" describe those that are "managed," the rest include those that are protected. The distinction between the two are addressed in the management objectives. The group noted the creation of a forage fish category in 1998, which are not managed under an OFL or OY. The group discussed, but did not recommend, having a separate FMP for non-target species to alleviate the misperception that all fisheries must be managed under MSY. The group discussed "active" versus "passive" management, and concluded that monitoring species would be characterized as "management."

SSC comments and "when bad things happen to good species:" The group discussed the SSC response to its March 2003 recommendations on separate management strategies for target and non-target groundfish and the application of Tier 3 as a minimum standard for allowing target fisheries to occur. The SSC approved of the former, but disagreed on the latter, favoring an ad hoc approach with the stock assessment authors, plan teams, and SSC. Identifying a threshold below which we wish to avoid driving a species/stock is at the heart of this proposal. Management goal for target species is to optimize yield; management goal for non-target species is keep "bad things" from happening.

Some suggestions for management objectives in the non-target category include the following:

- Fisheries will not cause unacceptable risk of extinction.
- Non-target population should be healthy, sustainable.
- Don't let populations dive (steep decline over short time is bad).

Defining the bad things provides action triggers. Criteria based on extinction can be set very conservatively to make the risk of extinction very low. The new system should provide a warning when bad things are happening and an opportunity to take some action to avoid harm. Bad things happening to non-target species

may not indicate that we HAVE to constrain target fisheries. The new system may allow harvest rates to exceed MSY for non-target species (since this is not an appropriate tool for these species), as long as these rates do not result in these bad things happening. The status quo would be to not go below where we are now. The group may wish to develop a threshold for non-target species, similar in construct to MSY for target species (**next meeting**). Tier 3 (or some standard very much like it) is sufficient, but what standard may be necessary? We are fairly confident that our current targeting level is not impacting the stock negatively. The PSEIS model could be adapted to this analysis to determine the effect of not having constraints.

The group identified two main goals for management of non-target species:

1. **Keep bad things from happening to a species/stock**
2. **Standardize data collection/monitoring process**

Secondary goals include:

- Preventing "squid boxes" (a constraint on a target fishery resulting from the fishery hitting its catch limit of a nontarget species before hitting the limit of the target)
- Determining whether cost of recovering a stock may exceed the benefits
- Developing an accounting system that provides "early warning"
- Examine distribution effects of : (a) chasing a fishery into different bycatch areas because of closed areas for a given non-target species and (b) shrinking species distribution as a result of indirect fishery effects.

Observer Program. The proposed management program would serve as an early warning system. The North Pacific and National Observer Programs will be critical components of this program. Collection of additional information on more species will require either: (1) reallocation of current observer program costs or (2) increased observer program costs. The group discussed how much observer time should be spent on collecting data on rare species. The fishery and survey data may be used to identify sensitive, nonsensitve, and uncommon species. The goal would be to make the best use of existing data, not to expand hugely beyond what we have now. The group needs to further discuss how we account for rare species to assess their biomass (**next meeting**).

The observer program does not sample the small boat fleet, a significant portion of the current directed fisheries. The group noted that data collection/monitoring issues are being discussed in other management initiatives: (1) improved retention/utilization in the BSAI; (2) GOA groundfish rationalization; (3) restructuring of the observer program and its funding mechanism. Monitoring is key under all management programs. Each of these analyses (including non-target species) should be analyzed under all these management scenarios.

The group discussed categorizing species as sensitive or non-sensitive. Some complexes may be either due to trophic role, ecological importance, low abundance, low fecundity, long life, slow growing, poorly understood, current stock trend, historical abundance. Life history traits may lead to a determination of sensitive. Non-sensitive species were identified as high r-selected[1] species; squid and Alaska plaice are examples. Sensitive species were identified as low r-selected species, such as rockfish and sharks. Sensitivity to negative fishery

[1] r selected species are defined by an unstable environment; density independent; small size of organism; energy used to make each individual is low; many offspring are produced; early maturity; short life expectancy; each individual reproduces only once; most of the individuals die within a short time but a few live much longer

effects would determine the priorities for data collection. Non-sensitive species may be limited to a monitoring program. A research plan would be needed to develop an optimal sampling methodology. The group identified tentative non-target monitoring categories: high, medium, low (uncommon).

A species may be a target species in one management area and an non-target or transition species in another. For example Dover sole is a target species in the GOA, but may be a non-target species in the BSAI. Pollock could be a target species in the BS, a non-target species in the Bogoslof area, and a transition or target species in the AI. **The group identified the following case studies to be prepared by AFSC staff for the next ad hoc meeting.**

non-sensitive: BSAI and GOA squid (Sarah Gaichas)
sensitive: BSAI northern rockfish (Paul Spencer)
transition: BSAI and GOA skates (Sarah Gaichas)

Two methods for opening a target fishery were discussed: (1) industry would request a directed fishery or (2) the Plan Teams would report that the retention rates of a particular species are maximized and may warrant consideration to transition them from the non-target category to a directed fishery under a plan amendment. The first year could be an experimental fishery (issue a permit and attach conditions, for example, small vessels using longlines have to take a VMS or observer. The groups needs to address whether an EFP is an appropriate process for a developing fishery (**next meeting**). The group also needs to identify appropriate monitoring/observer programs or do it case by case (**next meeting**). The new NMFS catch accounting system was implemented with the goal of computing catch of species using the same method as for PSC. Which species appear enough in the observer sampling that makes it reasonable to do estimates? Species that are rare might be most sensitive to harvest (and are also more subject to sampling error).

The proposed process would involve the Groundfish Plan Teams. AFSC staff monitors harvests and reports to the Plan Teams at their September meetings. Plan team looks at trends, picks from management options depending on category of species and severity of problems. It forwards recommendations either for additional targeted data collection or fishery restriction to the SSC and Council. The SSC makes its recommendations to the Council, and the Council recommends to NMFS.

Next meeting: tentatively scheduled for 1-2 days either during the week of August 18th, or September 4/5 preceding the Groundfish Plan Team meeting.

AD HOC WORKING GROUP ON GROUNDFISH MANAGEMENT, MAY 5 and 6
Overview of ADF&G skate fishery management and data collection, 2003

Skate fisheries in state waters:

- Alaska Board of Fisheries requires a Commissioner's permit for vessels targeting skates in state waters (adopted 1998). Permit stipulations can:
  - Restrict depth of fishing operations
  - Specify season dates
  - Specify areas of fishing to district, subdistrict, or other portions of a management area
  - Establish minimum size limits
  - Specify legal gear types and configuration
  - Require completion of logbooks
  - Require other conditions determined to be necessary for conservation and management purposes. On our permits these include:
    - Vessels required to notify ADF&G of deliveries (to ensure dockside sampling can occur) when skates landed in state waters total more than 20% of the total skate poundage
    - ADF&G reserves the right to deploy staff as onboard observers
    - Bycatch limits mirror those in place for adjacent federal fisheries
    - Permits are valid for 90 days at a time

- To date, ADF&G has only issued skate permits for state waters when the 'other species' assemblage is open in adjacent federal waters and the gear type to be used is open. It is not ADF&G's intention to develop a state water fishery that operates independently of the federal TAC.

Shark Fisheries in state waters:

- There is no open season for sharks, except sharks may be retained as bycatch in state waters (adopted 1998).
  - Any person that retains any shark species must sell or utilize the shark and the fins, head, and tail must be attached at the time of sale.

- ADF&G Sport fishing restrictions limit harvesters to two sharks per year.

NOT VALID FOR REGISTRATION

Commissioner's Permit Requirements for Directed Skate Harvest

1. Valid CFEC interim-use permit card for miscellaneous finfish required.

2. This permit is valid for 90 days from issuance only if adjacent federal waters are open for the "other species" category and gear type operated. Bycatch allowances will mirror those in place for the federal fishery.

3. Fishing may only occur in the _____groundfish registration area as specified in 5AAC 28.____.

4. A fishing logbook is required and must be submitted with the fish ticket at the time of landing directed fishing amounts of skates.
   Logbook must contain the following information:
   - Date fished
   - Each set location by latitude and longitude of beginning and ending location
   - Average depth of each set
   - Average soak time for each set
   - Number of skates per set
   - Number of hooks per skate
   - Number of skates, Pacific cod, pollock, halibut, dogfish, Pacific sleeper sharks, salmon sharks, other flat fish, sculpins, crabs and other fishes caught per set

5. Only longline, mechanical jig or hand line gear may be used.

6. ADF&G must be notified about all deliveries (including advance notice for evenings and weekends as needed, 486-1840 message phone) when skate poundage exceeds 20% of the delivery.

7. The department reserves the right to deploy ADF&G personnel as an onboard observer with cost borne by the department.

8. Failure to complete all fields requested in the fishing logbook, notify ADF&G of deliveries, or comply with the other stipulations specified above will result in revocation of this Commissioner's permit.

Department Representative	Date	Operator	Date
Vessel Name	ADF&G #	CFEC Permit Number	

Table 1. Kodiak vicinity of the CGOA skate harvest from state and federal waters through April 21, 2003

	State waters			Federal waters			Total		
Gear	Pounds	Metric Tons	Vessels	Pounds	Metric Tons	Vessels	Pounds	Metric Tons	Vessels
Trawl	6,972	3	3	315,641	143	29	322,613	146	34
Longline	332,192	151	34	1,231,312	559	39	1,563,504	709	51
Total	339,164	154		1,546,953	702		1,886,117	856	

Source: Alaska Department of Fish and Game fish ticket database, 4/21/03

Table 2. Kodiak vicinity of the CGOA skate harvest from state and federal waters, 2002.

	State waters			Federal waters			Total		
Gear	Pounds	Metric Tons	Vessels	Pounds	Metric Tons	Vessels	Pounds	Metric Tons	Vessels
Trawl	19,500	9	13	1,333,019	605	29	1,352,519	614	30
Longline	29,577	13	17	120,599	55	37	150,176	68	44
Total	49,077	22		1,453,618	659		1,502,695	682	

Source: Alaska Department of Fish and Game fish ticket database, 4/29/03

- This includes all skate information sampled before May 1, 2003

Skate deliveries sampled

State-waters only:	3
Federal waters only:	16
Mixed state and federal waters:	1
Total skate samples:	20

Species and sex composition of samples

Total skates: 962

- Big skates 79%
  - Females: 529 78%
  - Males: 148 22%
  - Total big skates: 677

- Longnose skates 21%
  - Females: 97 52%
  - Males: 88 48%
  - Total longnose skates: 185

- *Bathyraja* spp. skates
  - Females: 77
  - Male: 23
  - Total *Bathyraja* spp. skates: 100

These are sampled opportunistically, so the proportion sampled is not the same as the proportion in the catch and is not included in the overall percentages of big and longnose skates

Bathyraja spp. breakdown

Bathyraja aleutica

Females:	63	79%
Males:	17	21%
Total *Bathyraja aleutica:*		80

Bathyraja parmifera

Females:	1	

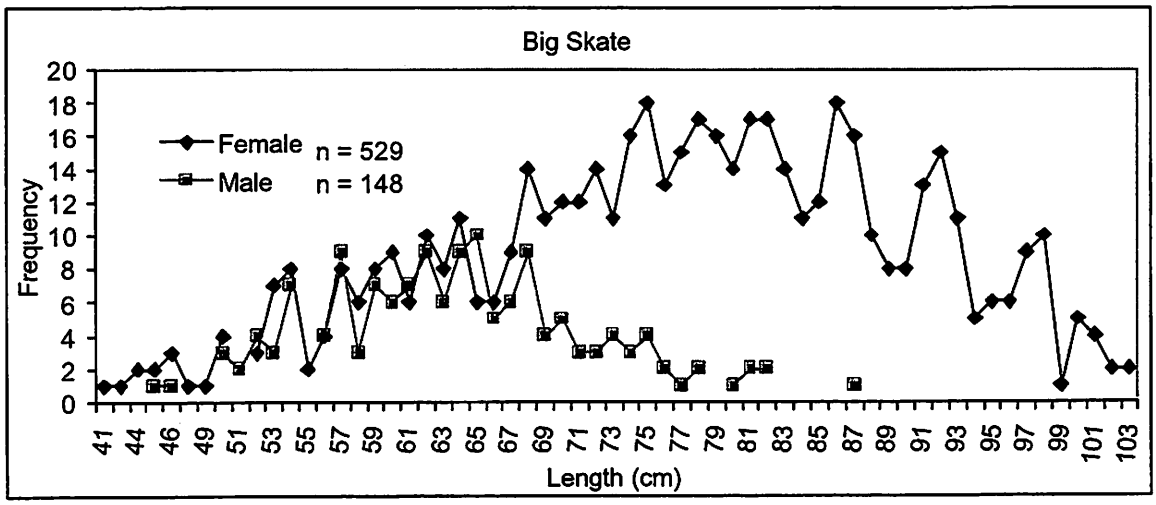
Bathyraja spp. (unidentified)

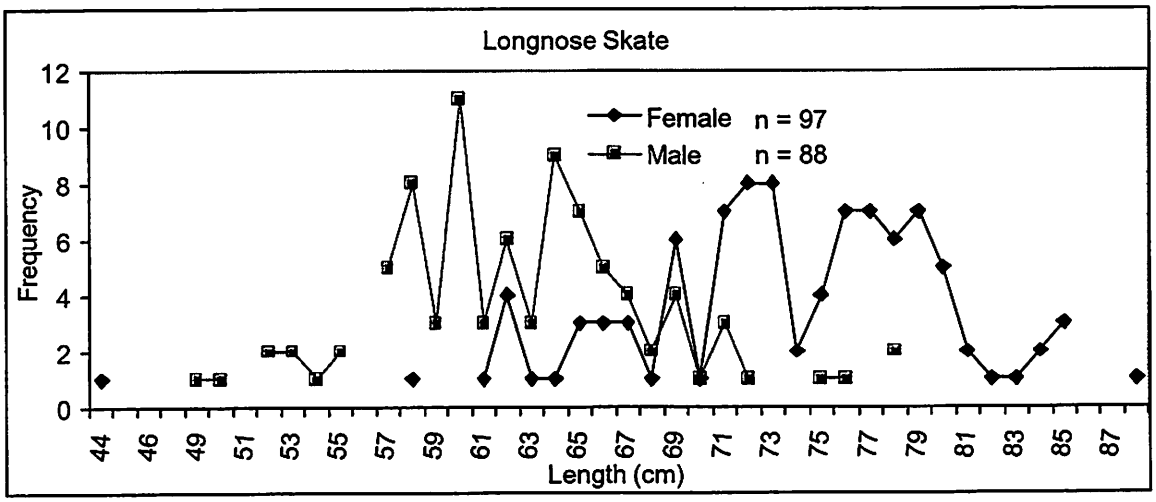
Females:	13	68%
Males:	6	32%
Total *Bathyraja* spp.:		19

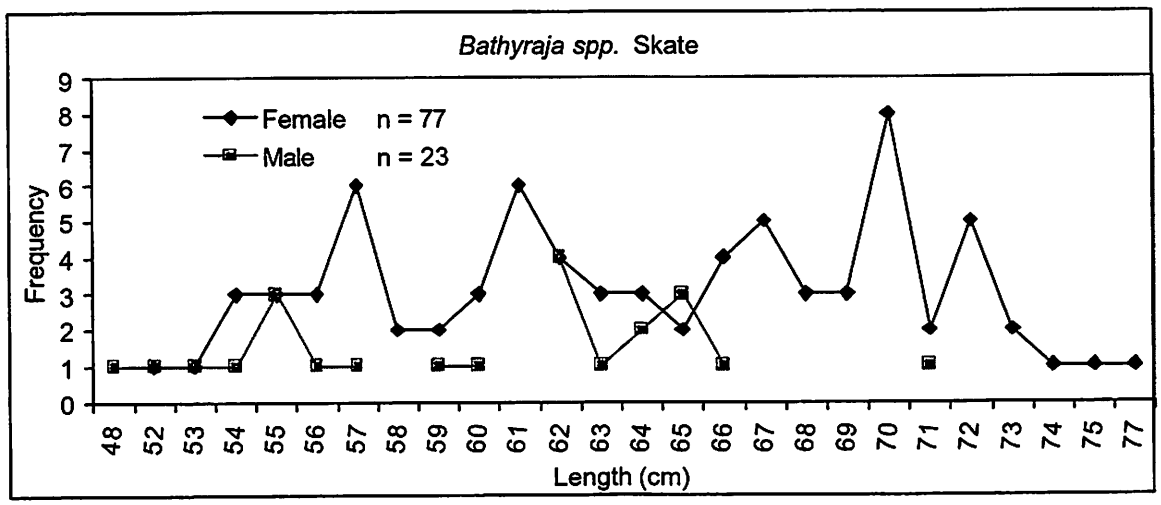
Number of vertebrae collected

Big skate:	29
Longnose skate:	16
Bathyraja aleutica:	15

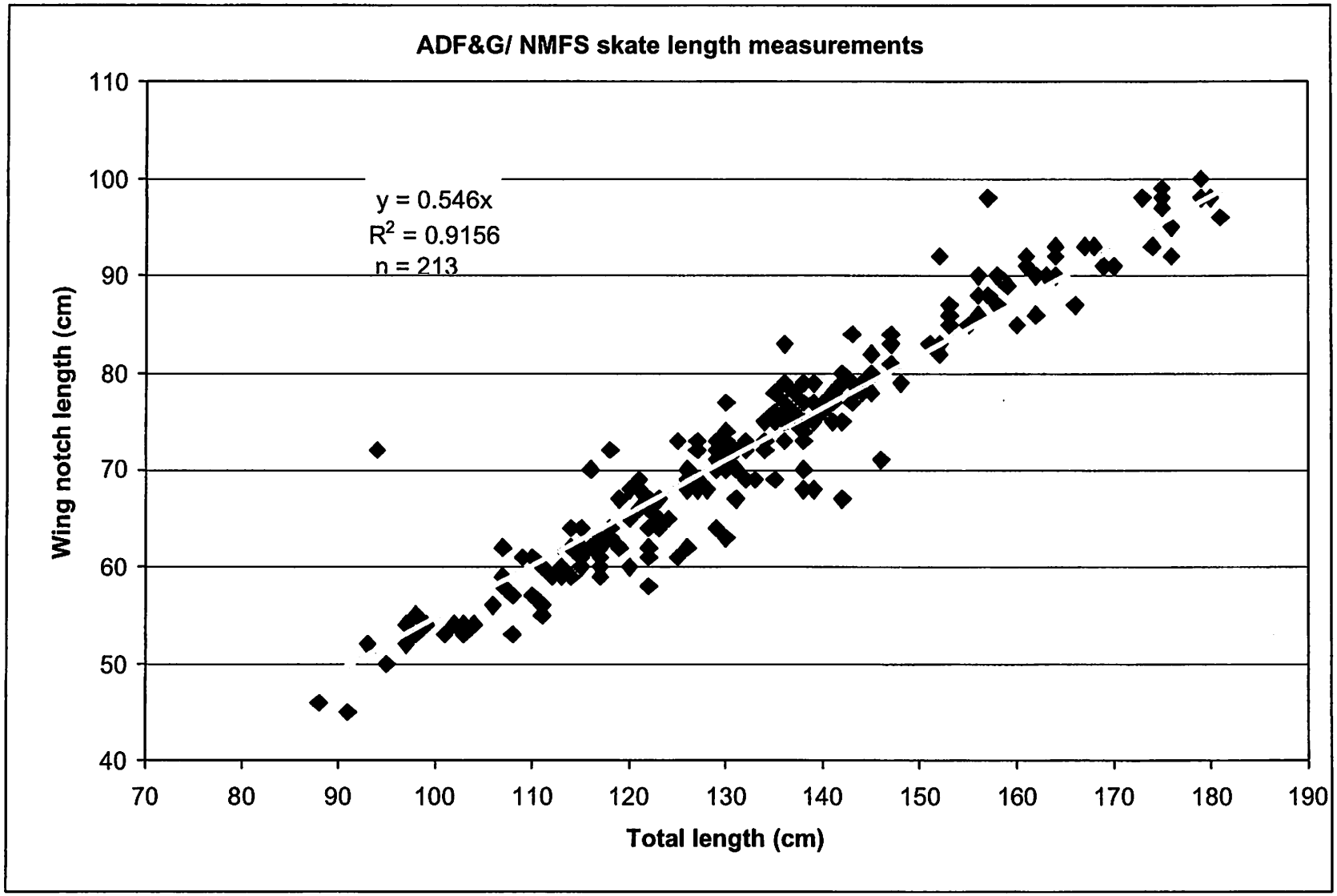
Deliveries with both F&G (wing notch) measurements and NMFS (total length) measurements taken: 5







ADF&G collected skate length frequency samples, 2003.
(Tip of snout to wing notch measurement)



Note- for all species of skates, includes five skates with damaged but not missing tails

Appendix 2:

Does every stock of fish within the Council's geographical area of authority have to be a member of some group for which OY and OFL are specified?

A Longer Answer: First, it is important to remember the statutory definition of "fish," as shown below from the Magnuson-Stevens Act. Experience with FMPs developed by Councils in other parts of the country provides many examples in which numerous stocks of "fish" are not members of any group for which OY and OFL are specified. To craft OY and OFL specifications for all forms of marine animal and plant life (even if marine mammals and birds are excluded) would be a massive task.

3(12) The term "fish" means finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds.

Second, the Act itself implies that some stocks do not require Federal management, as stated below:

302(h) FUNCTIONS.–Each Council shall, in accordance with the provisions of this Act–
(1) for each fishery under its authority ***that requires conservation and management,*** *prepare and submit to the Secretary (A) a fishery management plan, and (B) amendments to each such plan that are necessary from time to time (and promptly whenever changes in conservation and management measures in another fishery substantially affect the fishery for which such plan was developed);* [emphasis added]

Inclusion of the phrase "that requires conservation and management" implies that some fisheries *do not* require conservation and management. A "fishery," in turn, is defined as follows:

3(13) The term "fishery" means–
i. one or more stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics; and
ii. any fishing for such stocks.

Thus, if a fishery is defined as one or more stocks of fish, if some fisheries do not have to be governed by an FMP, and if OYs and OFLs are specified only for fisheries governed by an FMP, it follows that some stocks do not have to be members of any group for which OY and OFL are specified. NOAA General Counsel staff will provide additional guidance prior to the June 2003 Council meeting.

Can Some Stocks be Protected Under the MSFCMA Without Engendering a Need to Specify MSY, OY, and Overfishing Criteria?

(A Draft Paper Intended for Purposes of Discussion Only)

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May 22, 2003

Scenario: Suppose that a stock S_X is the target of a fishery F_X managed under a fishery management plan P_X. Suppose that another stock S_Y is part of the environment of S_X and is taken incidentally in F_X but is not the target of any fishery.

Question: Can P_X can impose conditions on F_X designed to protect S_Y from irreversible or long-term adverse effects without first determining the existence of a fishery F_Y that requires development of a fishery management plan P_Y containing all of the provisions described in §303(a), including specification of MSY, OY, and objective and measurable criteria for identifying when F_Y is overfished?

Argument in Favor: Every FMP must contain "conservation and management measures" (§303(a)(1)) and an "optimum yield" specification (§303(a)(3)). Conservation and management measures are defined, in part, as those which are "useful in rebuilding, restoring, or maintaining, any fishery resource ***and the marine environment***" and which are designed to assure that "irreversible or long-term adverse effects on fishery resources ***and the marine environment*** are avoided" (§3(5), emphasis added). The specification of optimum yield is defined, in part, as the amount of fish which "will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account ***the protection of marine ecosystems***" (§3(28), emphasis added). Thus, the definitions of both "conservation and management" and "optimum yield" allow for the imposition of measures designed to maintain/protect the marine environment/ecosystem apart from measures designed to maintain fishery resources or to produce food and recreational opportunities. Furthermore, 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" (§301(a)(9)). Therefore, in the special case where incidental catches of S_Y taken in F_X are not sold or kept for personal use (§3(2)),

the Act not only allows but requires P_X to impose conditions on F_X designed to protect S_Y.

Argument Against: A Council must submit a fishery management plan "for each fishery under its authority that requires conservation and management" (§302(h)). A "fishery" is defined, in part, as "one or more stocks of fish which can be treated as a unit for purposes of conservation and management" (§3(13)). The imposition of conditions on F_X designed to protect S_Y from irreversible or long-term adverse effects necessarily means that S_Y itself is being managed. If a stock is being managed, it meets the statutory definition of "fishery" even if it is neither targeted nor retained. Therefore, the fact that S_Y is being managed means that a fishery F_Y exists. Finally, the fact that S_Y is being managed in order to protect it from irreversible or long-term adverse effects proves that management of F_Y is required. Therefore, development of a fishery management plan P_Y containing all of the provisions described in §303(a) is also required.

Rebuttal of Argument Against: The "argument against" consists basically of the following syllogism: (A) If S_Y is being protected from F_X, S_Y is being managed. (B) The only legal justification for protecting S_Y from F_X is a determination that a fishery F_Y exists and that F_Y requires conservation and management. (C) Therefore, if S_Y is being protected from F_X, F_Y must exist and it must require conservation and management. There are several reasons why this syllogism is problematic.

1) While (A) may be *consistent* with the Act, it is not *required* by the Act, because the Act does not contain a definition of "managed." The Act does contain a definition of "conservation and management," but this definition does not directly address (A).
2) (A) is contrary to common sense. For example, it would be nonsensical to claim that a regulation requiring drivers to yield to pedestrians means that pedestrians are being managed. Likewise, it is nonsensical to claim that a regulation protecting S_Y from the effects of F_X means that S_Y is being managed.
3) (B) is not consistent by the Act, because the Act explicitly allows for the use of measures designed to protect the marine environment/ecosystem and to minimize bycatch, in addition to the use of measures designed to conserve and manage fisheries.
4) If the implications of the "argument against" were acted upon, the result would be a grossly inefficient system of management. Vast resources would be wasted in developing specifications of OY and overfishing criteria–both of which are defined in terms of MSY–for countless stocks that produce neither food nor recreational opportunities.
5) A reasonable alternative exists. Instead of endlessly identifying alleged "fisheries" where none exist and attempting to optimize production of food and recreational opportunities from stocks which provide neither, Councils could focus on managing *real* fisheries (human activity which is intended to result in the capture of fish from a particular stock or group of stocks) while requiring protection of the marine environment (the things that might be impacted unintentionally by the real fisheries).

Selected Excerpts from the Magnuson-Stevens Conservation and Management Act:

*§3(2) The term "**bycatch**" means fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch and release fishery management program.*

*§3(5) The term "**conservation and management**" refers to all of the rules, regulations, conditions, methods, and other measures (A) which are required to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining, any fishery resource and the marine environment; and (B) which are designed to assure that–*

1. *a supply of food and other products may be taken, and that recreational benefits may be obtained, on a continuing basis;*
2. *irreversible or long-term adverse effects on fishery resources and the marine environment are avoided; and*
3. *there will be a multiplicity of options available with respect to future uses of these resources.*

*§3(12) The term "**fish**" means finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds.*

*§3(13) The term "**fishery**" means–*

i. one or more stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics; and

ii. any fishing for such stocks.

*§3(14) The term "**fishery resource**" means any fishery, any stock of fish, any species of fish, and any habitat of fish."*

*§3(28) The term "**optimum**", with respect to the yield from a fishery, means the amount of fish which–*

(A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems....

*§3(37) The term "**stock of fish**" means a species, subspecies, geographical grouping, or other category of fish capable of management as a unit.*

§301(a)(9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

§302(h) FUNCTIONS.–Each Council shall, in accordance with the provisions of this Act–

(1) for each fishery under its authority that requires conservation and management, prepare and submit to the Secretary (A) a fishery management plan, and (B) amendments to each such plan that are necessary from time to time (and promptly whenever changes in conservation and management measures in another fishery substantially affect the fishery for which such plan was developed);

§303(a) REQUIRED PROVISIONS.–Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, shall–

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are–

(A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery;

(B) described in this subsection or subsection (b), or both; and

(C) consistent with the national standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law;

(2) ...

(3) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery, and include a summary of the information utilized in making such specification;

REPORT
AD HOC WORKING GROUP ON GROUNDFISH MANAGEMENT
MARCH 4-5, 2003

The Scientific and Statistical Committee/Plan Team/Alaska Fisheries Science Center ad hoc working group met on March 4-5, 2003 to continue its discussions of revising management of BSAI and GOA target and non-target species. Sue Hills, Steven Hare, and Pat Livingston represented the SSC; Grant Thompson, Sarah Gaichas, and Jane DiCosimo represented the Plan Teams; Galen Tromble represented the NMFS Regional Office; and Paul Spencer, Rebecca Reuter, Doug Limpinsel, and Joe Terry represented the NMFS AFSC. The group made significant progress in identifying goals and an overall approach to modifying the existing management categories. This report summarizes the progress made by the working group to date. It should be emphasized that this report is neither a complete nor a final description of the modifications to the existing management categories that might result from the approach currently envisioned by the working group. Several issues remain to be addressed and the working group's thinking continues to evolve as the approach is developed. Some informal notes on such issues are included in the appendix to this report. Material contained in the appendix should be viewed as a preliminary discussion of possible future directions rather than a final recommendation.

At its March meeting, the working group reviewed the current groundfish categories in the North Pacific and reached two general conclusions.

1. Some stocks/species are true targets of groundfish fisheries, in the sense that groundfish fishermen actively seek to catch and market fish from these stocks/species in significant quantities. The groundfish FMPs need to insure that these stocks/species are managed on the basis of National Standard 1, where both optimum yield and overfishing are defined relative to maximum sustainable yield.

2. Some stocks/species are not true targets of groundfish fisheries, in the sense that groundfish fishermen do not actively seek to catch and market fish from these stocks/species in significant quantities. The groundfish FMPs need to insure that these stocks/species are adequately protected, but such protection need not always be based on criteria related to maximization of yield from these stocks/species.

GOALS

- Provide appropriate protection for all species in the ecosystem impacted by the groundfish fisheries, including species for which little biological information is available.
- Provide appropriate opportunities for all groundfish fisheries, including those which might be impacted by measures designed to protect species for which little biological information is available.

APPROACH

- Divide the BSAI and GOA groundfish species into two categories:
  (1) species intended to be caught ("target" species)
  (2) species not intended to be caught ("non-target" species)
- Clarify that the fisheries being managed under the groundfish FMPs are the fisheries for the target groundfish species.
- Manage the target groundfish fisheries accordingly, for example by:
  (1) specifying optimum yield and overfishing definitions for the target species relative to MSY and
  (2) establishing additional management measures such that all species in the ecosystem receive appropriate protection from potential impacts of the target groundfish fisheries.
- Establish a mechanism for transitioning species between the categories.

OVERVIEW: TARGET SPECIES (THOSE FOR WHICH FISHERIES ARE DESIGNED)

All target species will be listed individually in the groundfish fishery management plans. They will be managed under OFLs, ABCs, and TACs with the objective of optimizing yield while preventing overfishing, as defined under the Magnuson-Stevens Act. Complex-wide OFL, ABC, and TAC specifications will exist only in those cases where identification to the species level is not practical or as a temporary measure during transition to the new approach. For the most part, these species are already being managed under Tiers 1-3. For those few cases in which *de facto* target species are not already managed under Tiers 1-3, a high priority will be placed on obtaining the data necessary to manage them under Tiers 1-3 as soon as possible. For all future transitions between categories, Tier 3 management will be a minimum condition of becoming a target species.

Broadly speaking, management of target species in the new approach will be similar to the current approach. Clear priorities for management and research will typically arise from the objectives for in-season management and stock assessment preparation, which then filter down to the observer program and AFSC survey designers to collect appropriate data on these species, etc.

OVERVIEW: NON-TARGET SPECIES (THOSE WE DON'T MEAN TO CATCH)

Non-target species will not necessarily be listed individually in the FMPs, but will be monitored at the lowest practical taxonomic level. This category would include most species currently in a target category management complex but not specifically assessed, and all those currently in the nonspecified category. The target groundfish fisheries will be managed such that the non-target species are provided appropriate protection from potential impacts of the groundfish fisheries. This protection will be based on criteria such as maintaining healthy populations of the non-target species and maintaining the non-target species' roles in the overall functioning of the ecosystem. Such protection will typically *not* be related to maximizing the sustainable yield from the non-target groundfish species. Therefore, if stock assessments for non-target species are conducted, they will not include OFL and ABC recommendations, and TAC specifications will not be set.

Catch of species in this category would continue to be monitored and managed (at incidental levels) with Maximum Retainable Allowances (MRAs) or other mechanisms. Additional management measures may be applied to increase protection of particularly sensitive non-target species. While some level of retention and utilization will be permitted to avoid waste, target fisheries (intentional exploitation) would not be allowed to develop on these species without the information necessary to conduct stock assessments and set quotas using at least Tier 3 criteria.

These species will be monitored using fishery-independent information (abundance/biomass estimates, planned schedule for research, rotating through species, collecting life history data for major bycatch species), and annual total catches. Species complexes will be allowed in this category if the species are actually caught together and share some form of life history or habitat characteristics, or if species are currently indistinguishable to fishery observers.

One objective of AFSC research would be to increase the amount of information available for species in this category. Such new information could be used to allow development of future target fisheries, but its primary purpose would be to provide a basis for evaluating the appropriate level of protection and both the adequacy and efficacy of existing or potential protective measures. It is likely that such research would require the observer program and surveys to collect baseline and monitoring data on these species—but not necessarily annual age collections or other stock assessment data on the same scale as would be expected for target species.

APPENDIX:

INFORMAL NOTES ON SOME IDEAS DISCUSSED BUT NOT FULLY DEVELOPED

Process and criteria for distinguishing intended target species from non-target species

Intended target species:

- Are already target species with fully developed fisheries (e.g., pollock, Pacific cod)
- Have market value and are currently marketed
- Are species fishermen say they want to catch (because they have market value)
- Would be the targets of fisheries if we allowed them (currently on bycatch only status)??
- Are caught and retained over threshold levels (set by NMFS)??

If it is not defined as an intended target species, it is automatically a non-target species.

Transition between categories

Transition between categories can happen two ways:

1. Fishermen request that the Council/NMFS create a target fishery on species that is not currently listed as a target species. NMFS may initiate an experimental fishing permit regulatory analysis to collect appropriate data to manage the species at Tier 3 (minimum criteria for target fishery) or
2. NMFS staff or Council Plan Teams may identify an increasing trend in capture and retention of a non-target species (e.g., at or above the MRA) that is not currently on the target list. The Council or NMFS may initiate an EFP to get collect data to manage the species at Tier 3.

In either case, additional protection measures (unspecified as yet) will go into effect for the transitional species until data are adequate to set quotas. The transitional management objective is to protect species from fishing effects until NMFS has appropriate information to responsibly optimize yield. Transitional fisheries may take one to two years to become fully open with a quota, depending on time needed to collect necessary data.

Note on Tier 3 level data quality

The transition procedure described above requires data quality standards that are recognized to provide quality stock assessments at Tier 3. The working group noted that determining when the appropriate level of data quality has been achieved for Tier 3 assessment is at the discretion of the SSC. These criteria can be used to move new target category species to Tier 3 management and to improve target species to a higher tier level. The working group requests that the SSC provide guidelines for the collection of data necessary to meet Tier 3 data quality requirements.

Process and criteria for determining sensitivity and additional management measures for non-target species and complexes

All species not listed as targets will continue to be monitored. Targeting will be discouraged by the use of MRAs or other management measures. Monitoring will include both fishery dependent and fishery independent elements. NMFS staff will monitor survey biomass and or abundance trends, fishery catch-per-unit-effort trends, and fishery retention rates at the lowest practical taxonomic level (although bycatch MRAs might be set at higher, complex levels). In addition, "representative species" from each major taxon will be monitored for changes in length composition or age composition if ageing methods exist. Representative species would be most useful indicators for a group if they were the most commonly encountered in the fishery. Improvements to fishery species identification, which are already in progress in the observer program, will be required for this program to succeed.

Non-target species will be divided into two general categories: (1) those unlikely to suffer negative population effects from fishing and (2) those more likely to suffer negative population effects even as bycatch. The latter category is termed "sensitive" non-target species. The only management measure proposed for non-sensitive non-target species will be monitoring and an MRA. Sensitive non-target species may require additional management measures to ensure protection from fishing effects.

The working group identified four possible criteria for defining non-target species as sensitive (formerly known as "vulnerable" in previous reports):
(1) rapidly declining abundance trend,
(2) sensitive life history traits,
(3) restricted range and or specific habitat, and
(4) crucial role in ecosystem (predator prey or other dependent association).

The working group attempted to outline methods for assessing species sensitivity within each of these broad criteria. It is possible to specify criteria for *rapid decline in an abundance trend* (x% per year) although the working group did not do so at this meeting.

Sensitive life history traits were identified as those contributing to the overall potential for a population to increase (the "r" parameter in the logistic growth equation or its equivalent). A spectrum of life history patterns were identified which ranged from "high resilience" to "very low resilience" categories. In general, "high resilience" species with high potential rates of population increase have one or more of the following traits: fast growth rates, low age at maturity, high fecundity, and are relatively short lived. At the other end of the spectrum, "very low resilience" species with low potential rates of population increase may have slow growth rates, late age at maturity, low fecundity, and / or very long lives. Two intermediate categories were identified, such that species could be classified generally as high resilience, average resilience, moderate to low resilience, and very low resilience. Perhaps non-target species could be classified as having sensitive life history traits if they were classified as moderate to low resilience or very low resilience species. No strict boundaries were drawn between these categories at this meeting, nor was it clear to all working group members that strict boundaries are necessary.

The working group discussed definitions for *restricted range* and *habitat specificity*. The working group agreed that these characteristics should be examined, but it was difficult to establish criteria for the amount of range restriction that would cause concern. However, because we know so little about the specific habitat associations of most current target species, let alone non-target species, the working group agreed that observed restricted range or occurrence in specific locations over time might indicate a habitat association and be evidence enough for additional management measures (likely spatial) to protect the species from fishing effects.

Crucial role in the ecosystem also remains undefined at this time. The main questions that can be answered with current data are who eats the species, and who is eaten by the species? The working group suggested that simply gathering adequate data to address this would be useful and would likely identify which non-target species were candidates for special management under this criterion. One example would be the already existing Forage Species FMP category where multiple families were placed off limits as target species because of their collective importance as prey for marine mammals, birds, and target groundfish. It may be possible to assign other non-target taxa to this existing category as it becomes clear that they are essential forage species (e.g., squid, octopus, and eelpouts).

Additional management measures would be designed to apply to the criterion of highest concern. For example, a non-target species with an extremely restricted range would receive additional protection from fishing effects by closing part or all of the range to fishing (with certain gear types, during certain seasons, as appropriate). Alternatively, a more evenly distributed species with sensitive life history traits and a severely declining abundance trend might be managed with a bycatch cap to limit take to a known amount each year.

Real life details:

Current intended target species are pollock, Pacific cod, sablefish, Atka mackerel, rock sole*, yellowfin sole, flathead sole, rex sole, Dover sole, Greenland turbot, Pacific ocean perch, shortraker rockfish, rougheye rockfish*, shortspine thornyheads, northern rockfish, yelloweye rockfish (perhaps Arrowtooth flounder and dusky rockfish). All these would be managed under single species TACs at Tier 3 or above. Species with asterisks include more than one species (e.g., rock sole and a newly identified sister species). Management agencies would have to decide whether to separate the rock sole species (can be distinguished in observer data, but not by industry), and what to do about species that can only be distinguished genetically at present.

Some of the species identified above as intended targets are not currently assessed at Tier 3 or above. It might be prudent to recommend that within one year of implementation of the proposed management regime, NMFS would be required to implement a plan to improve data quality to the level established by the SSC for Tier 3 assessment (getting the appropriate data may take longer than one year, but the plan must be done within a year). If NMFS and the SSC determine that it is not cost effective to improve data quality to Tier 3 for any intended target species, then no target fishery would be allowed on that species and it would be moved to the non-target species category and protective measures would be implemented for it

All current rockfish and flatfish complexes would be eliminated in the following manner. An intended target species (or multiple species if appropriate) from each complex would be split out to the individual species level. The remainder of the complex will go into the non-target category and be managed under MRAs or other management measures. It appears that some complexes, like GOA Other Slope Rockfish, are entirely non-target species. This resulted from a long history of splitting out target species. These complexes would be moved to the non-target species category. If the remaining non-target species are caught together in real life then the MRA may be set at the complex level; if they are not then non-target catch complexes should be reorganized based on which species are actually caught together as bycatch of target fisheries to determine what MRA(s) should be by target fishery.

The working group may determine that some species currently managed with a single species TAC are not in fact the intended target of any fishery. BSAI Alaska plaice is one example. The working group would not recommend that a TAC be set for these species, and annual stock assessments would not be necessary. AFSC staff may continue to prepare full age structured stock assessment for non-target species, but highest priority would be given to improving stock assessments for intended target species (e.g., shortraker and rougheye rockfishes), for those non-target species proposed for target fishing, or for those non-target species whose ecosystem role is deemed important to assess annually (e.g., Arrowtooth flounder).

REPORT
AD HOC WORKING GROUP ON GROUNDFISH MANAGEMENT
AUGUST 5-6, 2002

The Scientific and Statistical Committee/Plan Team/Alaska Fisheries Science Center working group (Dan Kimura, Steve Berkeley, Sue Hills, Sandra Lowe, Jim Ianelli, Grant Thompson, Sarah Gaichas, Andy Smoker, Tom Pearson, Paul Spencer, Ivan Vining, Jane DiCosimo) met on August 5-6, 2002 to discuss management of BSAI and GOA other species and BSAI other red rockfish and other rockfish. Additional NMFS Regional Office staff attended the meeting. The group discussed the need to develop criteria for separating species from aggregate complexes for all groundfish species and assemblages, rather than the current ad hoc approach. The objective is to protect species that need protection and not to lump and split species aggregates just for the purpose of standardizing procedures. The group made the following recommendations.

Criteria for splitting/lumping species for all groundfish

After considerable discussion, the group developed a decision matrix (below) of when to split or lump species out of or into assemblages. One participant questioned the notion that all species or assemblages must be maintained above B_{MSY} as the Magnuson-Stevens Act defines overfishing at the unit of "fisheries," not individual species. Others stated concern over overfishing individual species even if the MSA did not require preventive measures. The risk of overfishing/extinction was identified as unknown, along with risk of unknown ecosystem effects (at both the fishery and species levels). The group identified its preference for proactive and precautionary fisheries management. The case for lumping species into assemblages occurs with poor data and low vulnerability. The case for splitting assemblages into species occurs with good data and high vulnerability. Lumping can occur with good data and low vulnerability, if convenient for management. The group also discussed which species could be lumped into an assemblage, regardless of the data quality/vulnerability issue. Considerations should include if they are caught together, have the same possible or recommended exploitation rate, similar life history, etc. (Dissimilar life histories, rather than insufficient data, would lead to a recommendation to not lump sharks and skates).

Data and vulnerability are defined below. The source and age of data should be considered in determining placement in the overfishing tier categories.

Data quality — defined by: 1) the appropriateness of the survey coverage in space (relative to the species range and to its habitat), time (of year), gear; and 2) the precision of the survey estimate (i.e., the CV).

Vulnerability — defined by life history, habitat, economic value, co-occurrence with target fishery, easily misidentified, risk of disproportionate harvest to biomass, current management measures, exploitation rate, biomass

The group is developing a table of species managed at Tier 5 to identify current patterns of splitting and lumping, with the assistance of stock assessment authors. The table will compare MSA requirements and North Pacific fisheries management. It will be available for review prior to the Plan Team meeting.

	Vulnerability	
Data Quality (tier-specific)	**high**	**low**
good survey coverage	single species	complex if needed for management or single species
poor survey coverage	single species	complex or single species
	start high quality data collection	collect additional data if possible
	interim quality, precautionary	
	no directed fishery	
	alternative management strategies	
	under alternative management schemes,	
	low MRB, area/time closures, creative thinking.	

Need for additional action

"Other species" are described in the BSAI groundfish FMP as, "species groups which currently are of slight economic value and not generally targeted upon. This category, however, contains species with economic potential or which are important ecosystem components, but sufficient data are lacking to manage each separately. Accordingly, a single TAC applies to this category as a whole. Catch of this category as a whole must be recorded and reported. The category includes sculpins, sharks, skates, and octopus (and squid in the GOA). Eulachon, smelts, capelin were removed from the other species category and placed in a newly created forage fish category beginning in 1998.

The FMPs describe forage fish species as "those species not included in the target species category and which are a critical food source for many marine mammal, seabird and fish species. The forage fish species category is established to allow for the management of these species in a manner that prevents the development of a commercial directed fishery for forage fish. The forage fish plan amendments: 1) prohibited directed fishing; 2) established a 2 % maximum retainable bycatch limit; and 3) limited their sale, barter, trade or processing above the MRB amount. AFSC assessments are poor due to lack of survey coverage, squid are important prey species, and it would be precautionary to foreclose development of a commercial fishery.

The forage fish species have been grouped together because they are considered to be primary food resources for other marine animals and they have the potential to be the targets of a commercial fishery. As described in the EA/RIR/IRFA for FMP Amendments 36/39 (Forage Fish), "Forage fish comprise an important part of the diet of commercial groundfish species, marine mammals and seabirds in the Gulf of Alaska (GOA) and the Bering Sea and Aleutian Islands management area (BSAI). Significant declines in marine mammals and seabirds in the GOA and the BSAI have raised concerns that changes in the forage fish biomass may contribute to the further decline of marine mammal, seabird and commercially important fish populations. Members of the fishing industry and public have expressed concern that the current FMP structure with respect to forage fish may allow unrestricted commercial harvest to occur on one or more of these species. One of the recommendations from the International Council for the Exploration at Sea (ICES, 1994) indicated that fishery managers should develop measures to avoid the commercial targeting of food resources that are key to marine mammals and seabirds. The Council's 1995 Stock Assessment and Fishery Evaluation Report states that if any significant directed fishing on any component of the "other species" category develops, particularly those that serve as prey for marine mammals and seabirds, then future assessments should reflect this change by separating these species out (SAFE, 1995)."

Capelin, eulachon, and other Osmeridae (other smelts) were within the "other species" category of the FMPs. Sand lance, Pacific sandfish, lanternfish and Bathylagidae were within the "nonspecified species" category of the FMPs. A TAC for the "nonspecified species" category is not specified or managed but is defined in the FMPs as the amount taken incidentally while fishing for other groundfish. No reporting is required and no ABC is estimated for this category.

The species in the "other species" category could be moved into the forage fish category if they can be identified as a critical food source for many marine mammal, seabird and fish species since that is how the FMPs define the category. Or they can be reclassified in a new non-target category. This new category could unclude grenadier and perhaps other species that would be identified in the analysis.

Recommendations

Other Species

For 2003, the committee recommends the following interim actions to address the 1998 State proposal. However, no conservation issues were identified for 2003 should the Council prefer to analyze the impacts of the proposed interim action before its implementation. The committee acknowledged that more, smaller quotas would be created with potential economic impacts on the non-CDQ fisheries and CDQ fisheries.

- Separate sharks and skates from the other species category in the GOA and BSAI groundfish FMPs; Provide OFL and ABC recommendations for sharks (the shark complex could be broken out to the individual species level)and skates;
  -Recommend that the Plan Team and SSC consider whether to combine the two groups into a management assemblage or set separate specifications. For management convenience, the Council might choose to lump species, genera, or phyla, but only if the species contained therein did not fall into the poor data/high vulnerability category (described below).
  -Recommend that TAC(s) be set at bycatch levels. (*Conforms with State action, but not their stated preferred alternative*)
- In the GOA, the remaining other species complex (squids, sculpins, and octopus) TAC would continue to be set equal to 5% of the cumulative GOA groundfish TACs until revised by FMP amendment. Note that the other species TAC (set equal to cumulative groundfish TACs) would be marginally higher for 2003 as a result of creating the additional sharks and skate TAC category(ies).
- In the BSAI, squid are already broken out. Recommend that the Plan Team and SSC consider whether to leave sculpins and octopus in the other species category or break them out. Separate ABCs are currently calculated and summed for the other species total.

For 2004:

- Revise Amendments 63/63 alternatives to:
  - revise management of sharks and skates:
    1. place sharks and skates on bycatch (unless already addressed under specifications)
    2. defer to State management
    3. remove sharks from the FMPs (*State recommendation*) (and skates?)
    4. move sharks and skates into the forage fish category
  - revise management of octopus:
    1. move octopus into the forage fish category
    2. remove octopus from the FMPs and defer management to the State (would the State want management of octopus?)
  - move squid into the forage fish species category
  - manage sculpins as a target category (tier 5)
  - add grenadier as a target category (tier 5)
  - add data collection requirements

ADDENDUM

To address the recommendations of the ad hoc committee, **Council staff will submit a plan amendment proposal for Plan Team adoption** that would develop criteria for splitting/lumping species and for identifying when sufficient data is available to allow a target fishery on the species or assemblage. The proposal takes the ad hoc committee one step further and suggests analyzing the creation of a new "non-target" category that would include "other species" and additional species that are not targets of directed fisheries now, but may be so in the future (e.g., grenadiers).

The analysis could explicitly include the State recommendations for action on sharks and skates, if the State still supports its stated preferred alternative of removing sharks (but not skates) from the groundfish FMPs and deferring to State management. Staff has initiated consultation with ADFG staff to determine the State's current position. This is Scenario 1.

Scenario 2 is the staff's recommended approach. It allows for the Council to take action that mirrors State action on sharks and skates either under the annual specifications process or through management of non-target species while addressing the overall management issues that face the Council in management of all groundfish assemblages (i.e., flatfish, rockfish, other species). It also adds other species that have been identified for additional management consideration (e.g., grenadiers).

Scenario 3 combines the measures of scenarios 1 and 2 and allows the Council to consider all proposed options in revising groundfish management. Scenario 1 (and therefore Scenario 3) might be eliminated if the State identifies that its principal goal was to set sharks and skates as bycatch rather than assuming all management for sharks (and skates?).

Scenario 1

Alternative 1: No action.

Alternative 2: Separate sharks and/or skates from the "other species" category through the annual specifications process and enact federal regulations to prohibit directed fishing of those species.

Alternative 3: Amend the BSAI and GOA groundfish FMPs to separate sharks and/or skates from the "other groundfish" species category and defer management to the State of Alaska.

Alternative 4: Amend the BSAI and GOA groundfish FMPs to delete sharks and/or skates from the BSAI and GOA groundfish FMPs.

Or the analysis could implicitly address management of sharks and skates within the newly defined "non-target species" category, under the following alternatives.

Scenario 2

Alternative 1. No action.

Alternative 2. Revise the BSAI and GOA groundfish FMPs:

- Action 1. Identify the fishery management units in the groundfish FMPs to include only target, non-target and forage fish species categories (non-specified species allow for incidental catch measures and monitoring but are outside of the FMP).
  - Option. Move all non-target species into the forage fish category.
- Action 2. List the species in the target, non-target, and forage fish species categories that are within the FMP management area.
  - Option. List non-target and forage fish species.
- Action 3. Identify a *policy* based on scientific *criteria* to determine single species or assemblage management (split or lump);
- Action 4. identify a *policy* based on scientific *criteria* to determine when sufficient data is available to move species from the non-target to target species categories.

Or the analysis could explicitly address both management of sharks and skates as interim measure and address management of "non-target species" under the following alternatives.

Scenario 3

Alternative 1. No action.

Alternative 2. Revise management of sharks and skates in the BSAI and GOA groundfish FMPs:

- Action 1. Separate sharks and/or skates from the "other species" category through the annual specifications process and enact federal regulations to prohibit directed fishing of those species.
- Action 2: Amend the BSAI and GOA groundfish FMPs to separate sharks and/or skates from the "other groundfish" species category and defer management to the State of Alaska.
- Action 3: Amend the BSAI and GOA groundfish FMPs to delete sharks and/or skates from the BSAI and GOA groundfish FMPs.

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- Action 4. identify a *policy* based on scientific *criteria* to determine when sufficient data is available to move species from the non-target to target species categories.

Non-Target/Other Species Committee

Appointed 7/25/03

AGENDA D-1(c)(2)
OCTOBER 2003

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Replace pages in
AGENDA D-1(b-d)

Catch estimation methods used for preliminary 2004 TAC setting specifications

James Ianelli, Tom Pearson and Mary Furuness

NMFS

Introduction

The NMFS and Council continue to evaluate revising the harvest specification process (TAC setting process). The main motivation for this stems from a need to provide for adequate time for the rulemaking process and to accommodate the mandatory public comment periods (on the TACs). In the interim (prior to the approval and implementation of any changes to the process), preliminary 2004 TACs need to be implemented. The first step in setting a TAC is to provide reasonable estimates of ABC. Rather than simply rolling over the 2003 ABC values as was done in the past, projections of 2004 ABCs based on estimates from the 2002 SAFE are provided. This will be an improvement over the earlier practice as the proposed values will be based on projected values that will be more likely to equal or approximate the final ABC, enhancing the public review and comment process. Only species in Tiers 1-3 (age structured assessments) have projections, others will be the same as the 2003 values.

At the September 2002 NPFMC Plan Team meetings preliminary TACs for 2003 were presented for TAC setting purposes. The SSC subsequently requested that further documentation on the rationale and methods used for projecting the anticipated catch for the latter third of 2002 (based on assessments conducted in 2001). The purpose of this document is to detail the rationale and method for doing these projections. As before (incremented by one year), these projections are based on age-structured stock assessments published in 2002 and estimated catches expected for 2003 to provide preliminary ABC projections for 2004.

Methods

This analysis is a simple update of the methods used in each assessment chapter of the SAFE for EA specifications and MSST determinations. The age-structured projection model (requiring inputs on 2002 estimates of numbers at age, a time series of recruitment estimates (since 1978) and age-specific schedules of average weight, maturity, natural mortality, and selectivity) is used with the following modification: the catch for 2003 is based on the estimates (presented below) rather than expected based on harvest control rules as specified in the SAFE.

2003 Catch estimation

To meet the deadline of presenting 2004 preliminary ABCs at the September Plan Team meetings, the expected 2003 catch-projections were prepared and distributed in mid-August, 2003. The most accurate information at this time would be estimates of actual catch through early August added to an estimate of anticipated catch through the end of the fishing year. By this time of the year many of the directed fisheries have concluded for the year and an estimate of anticipated catch through the end of the year would be based on anticipated incidental catch in the years remaining directed fisheries. Incidental catch can vary greatly from year to year. For example, in the Central GOA Shortraker/Rougheye is on bycatch status year round resulting in annually varying catch levels. In 2001 the incidental catch was 998 mt and in 2002 the incidental catch was 631 mt through the fishing year. Similarly, the Aleutian Islands shortraker/rougheye rockfish had a 2001 incidental catch 721 mt while for 2002, the incidental catch was 477 mt. For these reasons, using only the most recent year's data may be highly variable and provide a poor estimate of the anticipated catch through the end of the current fishing year. To dampen this inter-annual variability, we used an average of the most recent three years catch between early August and the end of December. For species where TAC is seldom equal to ABC, three years rather than a longer

period were selected to best reflect recent stock abundance, recent fishing practices, and recent changes in the management of the fisheries. For those fisheries where the total of the 2003 year-to-date catch and the average of the most recent three years catch between early August and December sum to an amount that exceeds the 2003 TAC, the 2003 TAC was assumed. These stocks are BSAI "other flatfish," yellowfin sole, Greenland turbot, arrowtooth flounder, and Aleutian Islands Region pollock.

There are some specific fisheries where it is clearly preferable to assume the entire annual TAC or ABC will be harvested. For these fisheries, assuming that the entire TAC will be harvested will represent a logical upper limit which will result in slightly more conservative estimates of future stock biomass and ABC projections (TACs are very rarely exceeded for fully exploited species). In the GOA the following stocks were assumed to have their 2003 catch levels equal to their TACs: GOA-wide sablefish, western and central GOA Pacific cod and pollock. In the BSAI, the following stock components were assumed to have their 2003 catch levels equal to their TACs: Aleutian Islands Region Pacific ocean perch and Atka mackerel; Eastern Bering Sea pollock, and BSAI Pacific cod.

These values were then submitted to the 2002 configuration of the projection model and the fishing mortality rate for the 2003 catches (as estimated below) were used to determine projected numbers at age in 2004 for subsequent ABC estimates. These projections were computed for the Plan Team during the September 2003 meeting and presented in their report to the Council.

Tables

Table 1. Estimated 2003 GOA catch projections year-to-date though 8/9/03 + 2000-2003 average catch after 8/9/2003*.

Area	610	620	630	C GOA	WYK**	SEO***	E GOA	Gulfwide
Target								
Pollock****	16,788	19,685	10,339		947	5		47,764
P cod	20,600			29,000			83	49,683
DW Flat	31			741	33	5		810
Rex	609			2,367	2	1		2,979
Flathead	540			1,613	2	0		2,155
SW Flat	156			4,945	14	0		5,115
Arrow	8,387			15,519	67	87		24,060
Sable	2,570			6,440	2,320	3,560		14,890
POP	2,022			7,881	605	0		10,508
SR/RE	197			966			488	1,651
OS Rock	102			679	232	23		1,036
North Rock	433			4,861				5,294
PS Rock	96			2,252	632	10		2,990
Thornyhead	298			760			216	1,274
DS Rock						256		256
Atka M								339
Other S								5,847

* 2002 wed 8/10 to 12/31, 2001 wed 8/11to 12/31, 2000 wed 8/12 to 12/31; source NMFS Blend Estimates

** includes areas 640 and PWS (area 649) except as noted below

*** includes areas 650 and SEI (area 659)

**** does not include harvests of pollock in PWS

Table 2. Estimated 2003 BSAI catch projections year-to-date though 8/9/03 + 2000-2003 average catch after 8/9/2003.

	TAC	YTD Catch	Remaining TAC	Average Catch (Aug-Dec)**	Projected Catch*
Bering Sea					
Other Rockfish	960	274	686	64	338
Pacific ocean perch	1,410	735	675	207	942
Northern Rockfish	121	46	75	61	107
Shortraker/Rgheye Rockfish	137	93	44	30	123
Sablefish	2,900	620	2,280	238	858
Greenland Turbot	2,680	2,113	567	695	2,808
Pollock	1,491,760	1,026,097	465,663	503,720	1,491,760
Pollock, Bogoslof***	50	24	26	13	37
Aleutian Islands					
Other Rockfish	634	270	364	241	511
Pacific ocean perch (E)	3,500	3,836	(336)	129	3,500
Pacific ocean perch (C)	3,340	2,372	968	327	3,340
Pacific ocean perch (W)	5,850	5,283	567	409	5,850
Pacific ocean perch (all AI)	*12,690*	*11,490*	*1,200*	*865*	*12,690*
Northern Rockfish	5,879	1,300	4,579	2,684	3,984
Shortraker/Rgheye Rockfish	830	240	590	91	331
Atka mackerel (E)	10,650	8,083	2,567	3,051	10,650
Atka mackerel (C)	29,360	12,571	16,789	11,657	29,360
Atka mackerel (W)	19,990	7,397	12,593	7,252	19,990
Atka mackerel (All AI)	*60,000*	*28,052*	*31,948*	*21,960*	*60,000*
Sablefish	3,100	767	2,333	353	1,120
Greenland Turbot	1,320	471	849	209	680
Pollock, ICA***	1,000	1,514	(514)	114	1,628
Bering Sea Aleutian Islands					
Alaska Plaice	10,000	6,321	3,679	2,071	8,392
Arrowtooth Flounder	12,000	8,997	3,003	4,686	13,683
Flathead Sole	20,000	10,434	9,566	4,804	15,238
Other Flatfish	3,000	2,431	569	2,146	4,577
Other Species	32,309	16,509	15,800	12,202	28,711
Pacific Cod	207,500	135,186	72,314	60,232	207,500
Rock Sole	44,000	32,588	11,412	3,839	36,427
Squid	1,970	521	1,449	813	1,334
Yellowfin Sole	83,750	57,344	26,406	36,691	94,035
Total	2,000,000	1,344,437	655,563		1,987,814

*Projected catch is either:

1. 2003 TAC amount - highlighted. TAC amounts are used for these species because they are fully utilized.
2. 2003 open access + CDQ catch through 8/9/03
   + 2000-2002 average catch from August 10 - December 31 (includes CDQ)

** 2002 wed 8/10 to 12/31, 2001 wed 8/11to 12/31, 2000 wed 8/12 to 12/31 source NMFS Blend Estimates

***Pollock ICA CDQ is included in open access pollock ICA

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*** includes areas 650 and SEI (area 659)

**** does not include harvests of pollock in PWS

Table 2. Estimated 2003 BSAI catch projections year-to-date though 8/9/03 + 2000-2003 average catch after 8/9/2003.

	TAC	YTD Catch	Remaining TAC	Average Catch (Aug-Dec)**	Projected Catch*
Bering Sea					
Other Rockfish	960	274	686	64	338
Pacific ocean perch	1,410	735	675	207	942
Northern Rockfish	121	46	75	61	107
Shortraker/Rgheye Rockfish	137	93	44	30	123
Sablefish	2,900	620	2,280	238	858
Greenland Turbot	2,680	2,113	567	695	2,808
Pollock	1,491,760	1,026,097	465,663	503,720	1,491,760
Pollock, Bogoslof***	50	24	26	13	37
Aleutian Islands					
Other Rockfish	634	270	364	241	511
Pacific ocean perch (E)	3,500	3,836	(336)	129	3,500
Pacific ocean perch (C)	3,340	2,372	968	327	3,340
Pacific ocean perch (W)	5,850	5,283	567	409	5,850
Pacific ocean perch (all AI)	*12,690*	*11,490*	*1,200*	*865*	*12,690*
Northern Rockfish	5,879	1,300	4,579	2,684	3,984
Shortraker/Rgheye Rockfish	830	240	590	91	331
Atka mackerel (E)	10,650	8,083	2,567	3,051	10,650
Atka mackerel (C)	29,360	12,571	16,789	11,657	29,360
Atka mackerel (W)	19,990	7,397	12,593	7,252	19,990
Atka mackerel (All AI)	*60,000*	*28,052*	*31,948*	*21,960*	*60,000*
Sablefish	3,100	767	2,333	353	1,120
Greenland Turbot	1,320	471	849	209	680
Pollock, ICA***	1,000	1,514	(514)	114	1,628
Bering Sea Aleutian Islands					
Alaska Plaice	10,000	6,321	3,679	2,071	8,392
Arrowtooth Flounder	12,000	8,997	3,003	4,686	13,683
Flathead Sole	20,000	10,434	9,566	4,804	15,238
Other Flatfish	3,000	2,431	569	2,146	4,577
Other Species	32,309	16,509	15,800	12,202	28,711
Pacific Cod	207,500	135,186	72,314	60,232	207,500
Rock Sole	44,000	32,588	11,412	3,839	36,427
Squid	1,970	521	1,449	813	1,334
Yellowfin Sole	83,750	57,344	26,406	36,691	94,035
Total	2,000,000	1,344,437	655,563		1,987,814

*Projected catch is either:

1. 2003 TAC amount - highlighted. TAC amounts are used for these species because they are fully utilized.
2. 2003 open access + CDQ catch through 8/9/03
   + 2000-2002 average catch from August 10 - December 31 (includes CDQ)

** 2002 wed 8/10 to 12/31, 2001 wed 8/11to 12/31, 2000 wed 8/12 to 12/31 source NMFS Blend Estimates

***Pollock ICA CDQ is included in open access pollock ICA

BSAI ABC/OFL Plan Team Recommendations for 2004

					Projected		
		2003	2003	2003	2004	2004	
Species	Area	ABC	OFL	TAC	ABC	OFL	Notes
Pollock	EBS	2,330,000	3,530,000	1,491,760	2,127,700	2,636,000	F40%
	AI	39,400	52,600	1,000	*39,400*	*52,600* *	
	Bogoslof	4,070	45,300	50	*4,070*	*45,300* *	
Pacific cod	**BSAI**	223,000	324,000	207,500	245,000	359,000	0.80 * F40%
Yellowfin sole	**BSAI**	114,000	136,000	83,750	109,600	130,000	F40%
Greenland turbot	**BSAI**	5,880	17,800	4,000	6,900	16,755	0.5 * F40%
	BS	3,920		2,680	4,600		
	AI	1,960		1,320	2,300		
Arrowtooth flounder	**BSAI**	112,000	139,000	12,000	142,200	175,800	F40%
Rock sole	**BSAI**	110,000	132,000	44,000	99,900	119,400	F40%
Flathead sole	**BSAI**	66,000	81,000	20,000	61,100	74,100	F40%
Alaska Plaice	**BSAI**	137,000	165,000	10,000	138,200	166,300	F40%
Other flatfish	**BSAI**	16,000	21,400	3,000	*16,000*	*21,400* *	
Sablefish	EBS	2,900	4,290	2,900	2,658	3,818	0.806 * F4(
	AI	3,100	4,590	3,100	2,842	4,082	
True POP	**BSAI**	15,100	18,000	14,100	14,900	17,600	F40%
	EBS	2,410		1,410	2,378		
	Eastern	3,500		3,500	3,454		
	Central	3,340		3,340	3,296		
	Western	5,850		5,850	5,773		
Northern RF	**BSAI**	7,101	9,468	6,000	*7,101*	*9,468* *	
	EBS			121			
	AI			5,879			
Short/Rougheye	**BSAI**	967	1,289	967	*967*	*1,289* *	
	BS			137			
	AI			830			
Other rockfish (incl. sha	**BS**	960	1,280	960	*960*	*1,280* *	
	AI	634	846	634	*634*	*846* *	
Atka mackerel	**AI**	63,000	99,700	60,000	61,600	104,100	0.66 * F40%
	Eastern	10,650		10,650	10,413		
	Central	29,360		29,360	28,708		
	Western	22,990		19,990	22,479		
Squid	**BSAI**	1,970	2,620	1,970	*1,970*	*2,620* *	
Other species	**BSAI**	43,300	81,100	32,309	*43,300*	*81,100* *	
BS/AI	TOTAL	3,298,792	4,867,309	2,000,000	3,210,402	4,022,858	

* Indicates rollover from previous year (no age-structured projection data available)

Gulf of Alaska Groundfish Plan Team Recommendations for 2004

SPECIES		ABC (mt) 2003	TAC 2003	OFL 2003	*Projected* ABC (mt) 2004	*Projected* OFL 2004	Notes
Pollock	W (61)	16,788	16,788		16,788		
	C (62)	19,685	19,685		19,685		
	C (63)	10,339	10,339		10,339		
	WYAK	1,078	1,078	69,410	1,078		
	SubTotal	47,890	47,890	69,410	47,890	90,900	Rollover
	EYAK/SEO	6,460	6,460	8,610	6,460	8,610	
	TOTAL	54,350	54,350	78,020	**54,350**	99,510	
Pacific Cod	W	20,600	15,450		18,649		
	C	29,000	22,690		26,254		
	E	3,200	2,400		2,897		
	TOTAL	52,800	40,540	70,100	47,800	63,700	0.87 * F40%
Deep water flatfish[1]	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	6,430	4,880	6,430 *	
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	12,320	9,470	12,320 *	
Shallow water flatfish[2]	W	23,480	4,500		23,480		
	C	21,740	13,000		21,740		
	WYAK	1,160	1,160		1,160		
	EYAK/SEO	2,960	2,960		2,960		
	TOTAL	49,340	21,620	61,810	49,340	61,810 *	
Flathead sole	W	16,420	2,000		14,916		
	C	20,820	5,000		18,914		
	WYAK	2,900	2,900		2,634		
	EYAK/SEO	1,250	1,250		1,136		
	TOTAL	41,390	11,150	51,560	37,600	46,600	F40%
Arrowtooth flounder	W	17,990	8,000		18,670		
	C	113,050	25,000		117,320		
	WYAK	18,190	2,500		18,877		
	EYAK/SEO	5,910	2,500		6,133		
	TOTAL	155,140	38,000	181,390	161,000	188,300	F40%
Sablefish	W	2,570	2,570		1,968		
	C	6,440	6,440		4,931		
	WYAK	2,320	2,320		1,776		
	SEO	3,560	3,560		2,726		
	TOTAL	14,890	14,890	20,020	11,400	16,500	0.806 * F40%
Other Slope rockfish	W	90	90		90		
	C	550	550		550		
	WYAK	270	150		270		
	EYAK/SEO	4,140	200		4,140		
	TOTAL	5,050	990	6,610	5,050	6,610 *	

Northern rockfish	W	890	890		789		
	C	4,640	4,640		4,111		
	E	0	0		0		
	TOTAL	5,530	5,530	6,560 [3]	4,900	5,800	F40%
Pacific ocean perch	W	2,700	2,700	3,220	2,728		
	C	8,510	8,510	10,120	8,597		
	WYAK	810	810		818		
	SEO	1,640	1,640	2,900	1,657		
	TOTAL	13,660	13,660	16,240	13,800	16,400	F40%
Shortraker/rougheye	W	220	220		220		
	C	840	840		840		
	E	560	560		560		
	TOTAL	1,620	1,620	2,340	1,620	2,340 *	
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	8,220	5,490	8,220 *	
Demersal Shelf Rockfish		390	390	540	390	540 *	
Atka Mackerel	GW	600	600	6,200	600	6,200 *	
Thornyhead rockfish	W	360	360		360		
	C	840	840		840		
	E	800	800		800		
	TOTAL	2,000	2,000	3,050	2,000	3,050	F40%
Other Species	GW	NA	11,260	NA	NA	NA	
TOTAL		416,600	236,440	531,410	409,690	544,330	

1/ Deep water flatfish includes dover sole, Greenland turbot and deepsea sole.

2/ "Shallow water flatfish" includes rock sole, yellowfin sole, butter sole, starry flounder, English sole, Alaska plaice, and sand sole.

3/ The EGOA ABC of 5 mt for northern rockfish has been included in the WYAK ABC for other slope rockfish.

* Indicates rollover from previous year (no age-structured projection data available)

NOTE:

ABCs and TACs are rounded to nearest 10 mt.

GW means Gulfwide.

Catch data source: NMFS Blend Reports.

JOINT PLAN TEAM MEETING

September 8-10, 2003

Minutes

The Joint Plan Teams convened from September 8-10, 2003. Members in attendance were: Loh-lee Low (BSAI chair), Jim Ianelli (GOA co-chair), Diana Stram (GOA co-chair), Jane DiCosimo, Sandra Lowe, Bill Bechtol, Jeff Fujioka, Jon Heifitz, Mike Ruccio, Tory O'Connell, Tom Pearson, Beth Sinclair, Farron Wallace, Sarah Gaichas, Bob Foy, Brenda Norcross, Mike Sigler, Andy Smoker, Grant Thompson, Ivan Vining and Kerim Aydin. Kathy Kuletz, Bill Clark and Lowell Fritz, were absent. NMFS staff, stock assessment authors and about 20 members of the public also attended. The meeting convened on September 8, 2003 at 1pm.

TAC Setting

Melanie Brown from NMFS AKR presented an update on the TAC-setting EA/RIR/IRFA and highlighted areas of particular interest to the Plan Teams.

It was pointed out that the "18-month" TAC setting proposal (Alternative 5) was most likely to be 15 months in practice.

The Team noted that some BSAI species might be appropriate to be on a bi-annual basis (e.g., Pacific ocean perch, and rockfish).

Alternative 3 was thought to be problematic from an industry point of view and from stock assessments (since data would require a fair amount of reorganization). The Plan Teams reached a consensus that Alternative 5 is preferred if the status quo was no longer possible for legal reasons. Of the stand-alone options, the Teams recommended option C. Option A (TAC reserves) was noted to be somewhat difficult for management and had some potential consequences for exceeding ABC thus the teams did not reach consensus on recommending this option. Option C (biennial specifications for long-lived GOA species) was recommended by the Plan Teams.

The option for sablefish (under Alternative 5) was discussed at length. The Team failed to see the justification for going to a full year lag between assessment and ABC recommendations (for setting TAC). The permit writing period will remain the same (i.e., during the first part of the year) hence it seems reasonable to have the most recent ABC recommendation (and subsequent TAC) be used in its formulation. There was concern that failure to use the most recent data for sablefish would be problematic. The team recommended that an option to keep sablefish on an annual (status quo) specification process with separate rulemaking be examined.

Council update

The Council staff updated the Teams on the status of the PSEIS, the EFH EIS, and the GOA groundfish rationalization EIS. These are all available on the web.

Socio-economics reports

Dr. Chang Seung presented an analysis of regional economic models in Alaska.

Dr. Jennifer Sepez presented analyses on community profiles.

Current Harvest strategies report

Dr. Grant Thompson presented a summary of the report on current harvest strategies requested by the Council. The conclusions were highlighted and some points were clarified. Specifically, the review indicated that the current harvest strategy was inappropriate for rockfish but it failed to provide evidence documenting those conclusions. Also, some misinterpretation on stock resiliency as related to the current harvest strategy approach (using spawning biomass per recruit) was demonstrated. The current harvest strategy does explicitly take longevity, natural mortality, and age at maturity into account, contrary to the report's conclusion.

SAIP Report

Dr. Anne Hollowed presented an update on the national Stock Assessment Improvement Plan (SAIP). This included developments to improve age-determination methods for a number of rockfish species, sculpins, and three species of skates. Collaboration with NMFS staff in Woods Hole in using carbon-14 for age validation approaches has been established. Greenland turbot age-determination research is being undertaken with the University of Washington as part of these funds.

Ad-hoc working group on non-target species

Sarah Gaichas presented a summary of the non-target species working group meetings held Sept. 4-5, 2003 in Seattle. The teams were updated on the current progress of this working group, as well as the newly formed Council committee.

It was noted that the GOA skate complex is an immediate concern that should be resolved on as part of the specifications process for the 2004 fishery. There are concerns regarding the rapid development of the skate fishery in the Gulf, and the need to have this fishery develop in a sustainable manner. Currently skates are managed in the Gulf under the Other Species category, and there is neither a separate ABC or TAC for the skate complex, nor for any of the individual species which make up that complex and are the intended targets of this fishery. Currently there is no ABC determined for Other Species in the GOA, instead an Other Species complex-wide TAC is calculated each year as a percent (5%) of the total TAC for all of the combined GOA species. If GOA skates were removed from the other species complex, it would allow for individual ABCs to be calculated for these skate species and allow for the ABC to be allocated regionally. Observers are currently being trained in skate identification for next year.

The Joint Plan Teams recommend the following immediate action: That GOA-wide OFL and regional (GOA) ABCs for skates be established. Skates should be divided into three groups for management: 1) big skate, 2) longnose skate, and 3) the remaining skate species. While a stock assessment on skates and ABCs was not available at the September meeting, the Joint Plan teams recommend the process Sarah Gaichas proposed in calculating these ABCs. These values will be available for the GOA Plan Team's review in November. Actual recommendations to the author included: using alternative approaches to calculate the ABCs, including information on survey catchability (herding potential), examining halibut survey data for trends in temporal and spatial patterns in skate abundance, and evaluating skate bycatch levels in different fisheries. Concerns were raised by members of the industry that were present regarding the potential bycatch of halibut in a developing skate fishery.

Ecosystem Considerations Chapter and Ecosystem Assessment

Jennifer Boldt gave a general overview of the contents of the Ecosystem Considerations chapter. This chapter is being initially presented at the September meeting (rather than the November Plan Team meeting) in order to give stock assessment authors time to incorporate some ecosystem considerations concerns into their stock assessments as is individually applicable by the November meeting.

Pat Livingston presented a new Ecosystem Assessment chapter. The purpose of the chapter is to summarize the historical climate and fishing effects on the shelf and slope regions of the eastern Bering Sea and GOA from an ecosystem perspective as well as to provide an impact assessment of the potential future effects of climate and fishing on ecosystem structure and function. This assessment utilizes an effects analysis similar to that incorporated into the 2003 PSEIS impact analysis. It is not yet clear how this chapter will be incorporated into the SAFE documents, though it could possibly be an appendix to the existing Ecosystem Considerations chapter or a preface to the SAFE report itself. Further decisions on this will be made at the November Plan Team meetings.

Dr. Jim Ianelli gave an overview of the technical interaction model which was utilized in the PSEIS effects analysis. This multi-species model links single-species assessment results (population dynamics) with species composition patterns found in different fisheries. This provides a more realistic framework than single-species approaches since most north Pacific groundfish fisheries are managed based on constraints (e.g., prohibited species limits, incidental species TACs etc.).

Jesus Jurado-Molina presented the methodology for multi-species forecasting models (MSVPA and MSFOR) for the EBS. He went over the methodology of the model and its possible applications for different stocks, including estimating the combination of predation and natural mortality.

Dr. Kerim Aydin gave an update on the on-going ecosystem modeling work at the center. Ecosystem models of the GOA, BS, and AI are under development and included as sections in the Ecosystem Considerations chapter.

UAF Student PresentationUAF graduate student Mike Palmer presented a report on his thesis at UAF on the environmental influence of fish growth in the southeast Bering Sea.

Economic SAFE report

Dr. Joe Terry reviewed the contents of the Economic SAFE report.

Methodology for 2004 ABC and OFL projections

Dr. Jim Ianelli reviewed the paper on the 2003 catch-estimation methods used to compute Preliminary TAC setting specifications for 2004. This paper was written in response the SSC's request in October of 2002 for further documentation on the catch projections used in the 2003 specifications process. Last year was the first time that these projections were used for stocks in Tiers 1-3 rather than rolling over the previous year's final specifications for preliminary specification for the new fishing year. Individual questions regarding stock specific projections were deferred to the separate plan team (GOA and BSAI) meetings.

Sablefish risk analysis

Dr. Michael Sigler presented a paper on alternative harvest policies for recommending Alaska sablefish ABCs. The assessment authors have recommended ABCs less than the maximum permissible ABC in the last several sablefish assessments given the stock's low and sometimes decreasing abundance. The paper was presented to address concerns raised by the Joint Plan teams, an AP member and the SSC at the December 2002 Council meeting whereby it was requested that "adjustments to the maximum permissible ABC should utilize harvest policies like the biomass-based policy established by the Council"(December 2002 SSC minutes). The 2003 ABC was based upon a constant catch scenario thus the authors were requested to estimate the projected biomass over time using scenarios of catch varying with abundance. The Teams recommended that to the authors add ½ B_{35} to their projection graphs as a benchmark (currently B_{35} is listed as the low benchmark), as well as to add a 5-year projection. The teams agreed that some fraction (0.806) of the maximum permissible ABC is appropriate at this time for sablefish given concerns with the stock abundance, and they recommended the preliminary specifications for the

2004 sablefish ABC. For the GOA, 5% of the SEO ABC is moved to the WYAK region to accommodate the trawl closure as has been done each year as a policy since 1998.

Pacific cod stock assessment overview

In September 2002 the Joint Plan teams requested that a comparison of GOA and BSAI stock assessments be scheduled each September. Dr. Grant Thompson presented a comparative assessment of the stock assessments for Pacific cod in the GOA and BSAI regions. At the November 2003 meeting the teams will select next September's joint presentation.

The meeting of the Joint Plan Teams adjourned at 5pm on Wednesday, September 10, 2003.

Bering Sea/Aleutian Islands Groundfish Plan Team
September 11, 2003

The Bering Sea Plan Team convened on Thursday, September 11, 2003 at 8:30 am. Loh-lee Low was re-elected as chair. Mike Sigler was elected as vice-chair. Grant Thompson will continue to present the SAFE Report to the SSC. Additional members in attendance were Andy Smoker, Kerim Aydin, Brenda Norcross, Ivan Vining, Farron Wallace, and Jane DiCosimo. Bill Clark, Lowell Fritz, and Kathy Kuletz were absent.

Flatfish

Tom Wilderbuer presented Tier 1 considerations for yellowfin sole and rock sole. Both flatfish species have long time series of recruitment estimates. Stock-recruitment parameters were estimated for the entire recruitment time series as well as shorter time intervals. The shorter time intervals were chosen based on patterns in the Arctic oscillation.

The time series chosen affects estimated stock-recruitment relationships, implying that the environment influences stock. This influence muddies the choice of the appropriate stock-recruitment relationship if Tier 1 is applied. The Plan Team felt that the author did a thorough job of analyzing the stock-recruitment data. The Team recommends that Tier 1 ABC recommendations be included in the assessments to compare with Tier 3 ABC recommendations, if time allows. This information would help reviewers of the assessment understand the consequences of relying on stock-recruitment relationships to recommend ABC. The Team supports the author's plan to simulate harvest strategies for the environment-influenced stock-recruitment relationships.

Rockfish

Paul Spencer presented a preliminary assessment for northern rockfish using an age-structured model. The Plan Team supports further development of the model for November. The author also presented an outline for additional methods for rockfish stocks that do not have age composition data, ultimately intended for application of a surplus production model using the Kalman Filter to the shortraker/rougheye complex. A report was distributed at the meeting. The Team concurred with the author that the proposed approach was an improvement over the current method of averaging recent survey biomass estimates.

Bering Sea bottom trawl survey

Gary Walters briefly summarized the 2003 Bering Sea trawl survey. The Team noted that the pollock biomass estimate for 2003((8.5 M mt) is much higher than 2002 (4.8 M mt).

Aleutian Islands Pollock

Steve Barbeaux presented an examination of AI pollock data to develop an assessment approach that accounts for spatial distribution of the stock. This approach would employ the "Toolbox" software previously used for GOA Atka mackerel in 2002. Three areas were proposed for setting ABCs for the stock: NRA (Near, Rat, and Andreanoff island groups) West (174W-170E), NRA East (170W-174W), and Unalaska-Umnak area (165W-170W) which correspond to INPFC Areas 541, 542, and 543. Two alternative data structures were proposed to reflect the survey coverage and pollock spatial distribution. The Plan Team concurred with the authors' proposed approach.

2004 preliminary and interim specifications

The Team left unchanged the OFL and ABC projections for BSAI groundfish. The projection methodology was approved during the joint team meeting.

Gulf of Alaska Plan Team Meeting
September 10, 2003
Minutes

The GOA groundfish Plan Team meeting convened on September 11, 2003 at 9am. The team members present were: Jim Ianelli, Diana Stram, Sandra Lowe, Bill Bechtol, Jeff Fujioka, Jon Heifitz, Mike Ruccio, Tory O'Connell, Tom Pearson, Beth Sinclair, Farron Wallace, Sarah Gaichas, and Bob Foy. Joint team members Kathy Kuletz and Bill Clark were absent. NMFS staff, stock assessment authors and several members of the public also attended.

After 12 years of outstanding service as the NPFMC GOA Plan Team Chair, Sandra Lowe has decided to step aside. Diana Stram and Jim Ianelli were elected as co-chairs. Fortunately, Sandra will remain an active member and contributor to the Plan Team.

GOA Biennial survey design

Michael Martin presented and overview of this year's NMFS bottom trawl survey. Three new vessels (to the survey) were chartered and two began on May 20th and the third vessel began one week later. Due to wire limitations, the vessels could not survey depths greater than 700 meters (the plan was to survey down to 1,000 m). About 812 tows were successful and editing of these should be complete in mid September. Extra effort was made to conduct net mensuration and wire measurements. Unlike the 2001 survey, the entire GOA was surveyed, including the eastern GOA. For the 2005 GOA survey, input was requested from the Plan Team regarding the survey design and prioritization of sampling species and areas. The Plan Team recommended using the NMFS CIE (Center of Independent Experts) group to evaluate the GOA survey priorities and design. Guidance for the CIE group would come from stock assessment authors, previous Plan Team minutes and research recommendations, the Economic SAFE and the Ecosystem Considerations chapter.

Report from Hydroacoustic surveys

Mike Guttormsen presented the results from the 2003 EIT pollock survey from February and March. The full report was made available to the Plan Teams and public. The regions surveyed included the Shumagin Islands, Sanak Trough, Shelikof Strait and the shelf break near Chirikof Island and Middleton Island areas. Results are summarized in the report. One preliminary figure from the recent summer acoustic survey was presented at the meeting. This is the first time the acoustic survey has been done in the summer, and while efforts were focussed upon pollock, the survey holds potential to provide abundance indices for other species. Ideally the survey would be expanded in area and trawling in the future. The winter survey for 2004 will focus on Chirikof, Shelikof, Middleton Island/Kodiak area and the Amatuli trench. The Shumagin Islands area will not be done on this survey due to boat availability.

Results from pollock review

Dr. Martin Dorn discussed the CIE review of the pollock survey and assessment methodology tat was recently completed by CIE. The report was recently completed and was not available at that time but will be made available to the Plan Team shortly.

Forage Fish assessment

Mark Nelson presented the preliminary assessment for forage fish. This is the first assessment for forage fish in the GOA and the intent was to exhibit the available data on species in this complex and to build upon and expand this chapter in following years. Currently this chapter is being

considered as an appendix to the GOA SAFE since the Team felt that explicit ABCs were not required.

Dover sole preliminary assessment

Teresa A'mar presented a preliminary assessment on Dover Sole and the modeling work done to date. The intention of this chapter is to utilize the model next year to estimate a 2005 ABC for Dover Sole. The model is not being used to estimate a 2004 ABC. Currently this chapter is being presented as an appendix to the Other Flatfish chapter in the GOA SAFE document. Preliminary assessment results indicate that while biomass has declined there appears to be no conservation concerns given that the catch is still considered a very low percentage of the total estimated biomass. It was suggested to the author to also consider Greenland turbot and deepsea sole with this chapter as these are the other stocks which are make up the Deep water Flatfish complex. For management purposes the Team felt that Dover sole should remain in the deep-water flatfish complex. However, the Team acknowledged that in the future Dover sole may be considered as a target fishery while Greenland turbot and deepsea sole would remain as non-target fisheries given the current direction by NMFS and the Council in considering changes to groundfish target and non-target management groups.

GOA rockfish

Jon Heifetz presented the summary of changes and new approaches being taken for rockfish assessments in the coming year. The Plan Team approved the approach to split the slope rockfish assessment into three separate chapters. This should improve the readability of the assessments. The Team also approved of the new developments in the Pacific ocean perch assessment model but were concerned that the value estimated for the survey catchability was still quite high (indicating that the survey estimates are nearly double the actual population estimates). They requested that the authors investigate some model miss-specification issues since the biological reasons for this result seem somewhat questionable.

Recommend projected ABCs for the first half of 2004

The Plan Team recommended the proposed specifications for the first half of 2004. The proposed specifications included projected ABCs and OFLs for all stocks in Tiers 1-3, and rollover ABCs and OFLs for those stocks in tiers 4-6 according to the methodology presented by Dr. Jim Ianelli during the Joint Plan Team meeting (see Joint Plan Team meeting minutes, September 2003).

The following stocks represent the exception to that general rule:

GOA Pollock:
The Plan Team expressed concerns regarding the projected ABC for pollock of 65,400 mt. The team discussed the vulnerability of the stock, the potential for the A-season catch to be taken prior to the final specifications superceding the preliminary specifications, and the need for cautionary preliminary specs given historical concerns with this stock's status. While results from the stock assessment analyses will not be available until November, the Shelikof survey estimates indicate that the biomass level is lower than expected. Although the projection used a conservative estimate for the size of the 1999 year-class (the average instead of the estimate indicating above-average recruitment), the Plan Team chose to use the more precautionary number of the 2003 ABC rollover for the preliminary specification. This was justified as being appropriate given the apparent pessimistic survey results from the 2003 winter EIT surveys.

Prepared by Jim Ianelli and Diana Stram

Thornyhead rockfish:
The team chose to use the rollover ABC from last year for thornyhead rockfish. Last year there was no projection for this stock and this year the model being used is different from the previous year thus the plan team chose to rollover last year's ABC of 2000mt rather than using the slightly higher (2600mt) projected value.

Sablefish:
During the Joint Plan Team meeting the sablefish ABC was discussed and both teams agreed to use a fraction (0.806) of the maximum permissible ABC as the preliminary ABC for the first half of the year for sablefish (see Joint Plan Team minutes, September 2003). In the GOA, 5% of the SEO ABC is moved to the WYAK region to accommodate the trawl closure in this region. This has been done as a policy since 1998.

The GOA Plan Team adjourned its meeting at 12:45 pm on September 11th.

Prepared by Jim Ianelli and Diana Stram

Executive Summary

The actions evaluated in this document

This document provides environmental and socio-economic analysis for these related actions:

- publication of proposed specifications for the Bering Sea and Aleutian Islands (BSAI)
- publication of proposed specifications for the Gulf of Alaska (GOA)
- publication of interim specifications for the BSAI
- publication of interim specifications for the GOA
- GOA Fishery Management Plan (FMP) Amendment 63 to move skate species from the "other species" complex to the target species list in the GOA
- Specification management methods for skate harvest in the GOA

Purpose and Need

The implementation of the 2004 harvest specifications, and Amendment 63, are necessary for the management of the groundfish fisheries and the conservation of marine resources, as required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The specifications provide the limits, seasonal apportionments and fishing sector allocations for target species and prohibited species. NMFS uses the specifications to control fishing activities in the exclusive economic zone of Alaska waters. The specifications are renewed annually based on the latest stock assessment information, ensuring the fisheries are managed on the best available science.

Amendment 63 to the GOA FMP is necessary to conserve skate species in the GOA. A directed skate fishery developed rapidly in 2003 and concerns exist for potential overfishing of skates by directed fishing or by incidental catch in other fisheries. Placing skates in the target species category will allow specifications to be developed for skates providing the means to NMFS to control the harvest of skates in the GOA.

Environmental Assessment

An Environmental Assessment (EA) was prepared for the 2004 Specifications and Amendment 63 (GOA skates) to address the statutory requirements of the National Environmental Policy Act (NEPA). The purpose of the environmental assessment (EA) is to predict whether the impacts to the human environment resulting from setting the 2004 harvest specifications and implementation of Amendment 63 will be significant. If the predicted impacts from the preferred alternatives are insignificant, and those alternatives are chosen, no further analysis is necessary to comply with the requirements of the NEPA.

2004 Harvest Specifications Alternatives

TAC specifications define upper retained harvest limits, or fishery removals, for the subject fishing year. These specifications are made for each managed species or species group, and in some cases, by species and sub-area. Sub-allocations of TAC are made for biological and socio-economic reasons according to percentage formulas established through FMP amendments.

Each of the five 2004 specifications alternatives represents alternative amounts of total allowable catch that could be set for managed species and species groups for fishing year 2004. The alternatives have been selected to display a wide range of ABCs and TACs and their impacts to the environment. Fishing mortality

(retained and discarded) is indicated as F. TAC specifications are harvest quotas that include both retained catch and discarded catch. The five alternatives for the proposed and interim harvest specifications are:

Alternative 1: **Set TACs to produce fishing mortality rates, F, that are equal to $maxF_{ABC}$.** "$maxF_{ABC}$" refers to the maximum permissible value of F_{ABC} under Amendment 56. Historically, TAC has been constrained by ABC, so this alternative provides a likely upper limit for setting TAC within the limits established by the fishery management plan.

Alternative 2: **Set TACs that fall within the range of ABCs recommended by the Plan Team's and TACs recommended by the Council. (Preferred alternative).** Under this scenario, F is set equal to a constant fraction of $maxF_{ABC}$. The recommended fractions of $maxF_{ABC}$ may vary among species or stocks, based on other considerations unique to individual species or stocks.

Alternative 3: **For Tiers 1, 2, and 3, set TAC to produce F equal to 50% of $maxF_{ABC}$. For Tiers 4, 5, and 6, set TAC equal to 50% of TAC associated with $maxF_{ABC}$.** This alternative provides a likely lower bound on F_{ABC} that still allows future harvest rates to be adjusted downward should stocks fall below reference levels.

Alternative 4: **For Tiers 1, 2, and 3, set TAC to produce F equal to the most recent five year average actual F. For Tiers 4, 5, and 6, set TAC equal to the most recent five year average actual catch.** This alternative recognizes that for some stocks, TAC may be set well below ABC, and recent average F may provide a better indicator of F_{TAC} than F_{ABC}.

Alternative 5: **Set TAC equal to zero.** This alternative recognizes that, in extreme cases, TAC may be set at a level close to zero. This is the no action alternative.

Amendment 63 Alternatives

This EA/RIR/IRFA evaluates two FMP-level alternatives for moving GOA skates out of the "other species" grouping and placing skates in the target species category, setting OFL, ABC, and TAC levels separately for skates.[1] It also evaluates three specifications-level alternatives for incorporating skates into specifications, contingent on an FMP level decision to break them out of the GOA "other species" category.

FMP Amendment 63 Alternatives

Two alternatives are considered for removing skates from the "other species" category in the GOA FMP. These are:

(A) the status quo, no action alternative, under which skates would continue to be managed as a part of the "other species" category, and

(B) an action alternative under which Section 3.1 of the GOA FMP would be amended to remove skates from the "other species" category and add them to the "target species" category.

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[1]The action discussed in this section does not change the BSAI FMP. It does not change the management of skates in the BSAI.

Skate specifications

Three alternatives are considered for skate specifications, contingent on an FMP-level decision to treat skates as a target species: (1) a single GOA wide OFL for the skate group, and management area ABCs for the skate group, (2) a single GOA wide OFL for skates, and ABCs for key skate species in each management area, (3) management area OFLs and ABCs for each key skate species.

Environmental Analysis

The EA evaluated the specifications alternatives and the Amendment 63 (GOA skates) alternatives, with respect to the following classes of effects:

- effects on target species
- effects on incidental catch of non-specified species
- effects on forage fish species
- effects on prohibited species
- effects on marine mammals and ESA listed marine mammals
- effects on seabirds
- effects on marine benthic habitat and essential fish habitat
- effects on the ecosystem
- effects on State of Alaska managed state waters seasons and parallel fisheries for groundfish
- social and economic consequences.

Significance is determined by considering the context in which the action will occur and the intensity of the action. The context in which the action will occur includes the specific resources, ecosystem, and the human environment affected. The intensity of the action includes the type of impact (beneficial versus adverse), duration of impact.

The intent of TAC setting deliberations is to balance the harvest of fish during the 2004 fishing year consistent with established total optimum yield amounts and ecosystem needs. The effect of the alternatives must be evaluated for all resources, species and issues that may directly or indirectly interact with the groundfish fisheries within the action area as a result of specified TAC levels. The impacts of alternative TAC levels are assessed in section 4 of this EA. The Table below provides a summary of the impacts of the proposed and interim harvest specifications alternatives on the human environment.

Summary of significant determinations with respect to direct and indirect impacts.

Coding: I = Insignificant, S = Significant, + = beneficial, - = adverse, U = Unknown					
Issue	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Marine Mammals					
Incidental take/entanglement in marine debris	I	I	I	I	I
Spatial/temporal concentration of fishery	I	I	I	I	S+
Global Harvest of prey species	I	I	I	I	U
Disturbance	I	I	I	I	S+
Target Fish Species					

Coding: I = Insignificant, S = Significant, + = beneficial, - = adverse, U = Unknown					
Issue	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Fishing mortality	I	I	I	I	S+
Spatial temporal concentration of catch	I	I	I	I	S+
Change in prey availability	I	I	I	I	S+
Habitat suitability: change in suitability of spawning, nursery, or settlement habitat, etc.	I	I	I	I	S+
Prohibited Species Management					
Incidental Catch of prohibited species stocks	I	I	I	I	I
Harvest levels in directed fisheries targeting prohibited species	I	I	I	I	I
Bycatch levels of prohibited species in directed groundfish fisheries	I	I	I	I	S+
Northern Fulmar					
Incidental take–BSAI	U	U	U	U	U(S+)
Incidental take–GOA	I	I	I	I	I
Prey availability	I	I	I	I	I
Benthic habitat	I	I	I	I	I
Proc. waste & offal	U	U	U	U	U(S-)
Short-tailed Albatross					
Incidental take	U	U	U	U	U(S+)
Prey Availability	I	I	I	I	I
Benthic Habitat	I	I	I	I	I
Proc. Waste & Offal	I	I	I	I	U
Other Albatrosses & Shearwaters					
Incidental Take	U	U	U	U	U(S+)
Prey Availability	I	I	I	I	I
Benthic Habitat	I	I	I	I	I
Proc. Waste & Offal	I	I	I	I	U
Piscivorous Seabirds (Also Breeding in Alaska)					
Incidental Take	I	I	I	I	I
Prey Availability	U	U	U	U	U
Benthic Habitat	I	I	I	I	I

Coding: I = Insignificant, S = Significant, + = beneficial, - = adverse, U = Unknown					
Issue	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Proc. Waste & Offal	I	I	I	I	I
Eiders (Spectacled and Stellers)					
Incidental Take	I	I	I	I	I
Prey Availability	I	I	U	U	U
Benthic Habitat	U	U	U	U	U
Proc. Waste & Offal	I	I	I	I	I
Other Seabird Species					
Incidental Take	I	I	I	I	I
Prey Availability	I	I	U	I	I
Benthic Habitat	I	I	U	I	I
Proc. Waste & Offal	I	I	I	I	U
Marine Benthic Habitat					
Mortality and damage to HAPC by biota by bottom trawl gear	S-	I	I	I	S+
Modification of Benthic Community Structure	S-	I	I	I	S+
Changes in Distribution of Fishing Effort	BS and GOA = S- AI = I	I	I	I	S+
Ecosystem Considerations					
Predator-Prey Relationships	U	I	U	U	U
Energy Flow and Balance	U	I	U	U	U
Diversity	U	I	U	U	U
State waters seasons					
Pollock PWS	I	I	I	I	I
Pacific cod GOA	I	I	S-	I	S-
Sablefish PWS and SEI	I	I	I	I	I
Parallel seasons BSAI and GOA	I	I	I	I	S-

Coding: I = Insignificant, S = Significant, + = beneficial, - = adverse, U = Unknown					
Issue	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Economic Indicators					
First wholesale gross revenues	S+	I	S-	S-	S-
Operating cost impacts	S-	I	S+	S+	S+
Net returns to industry	S+	I	S-	S-	S-
Safety and health impacts	U	I	U	U	S-
Impacts on related fisheries	U	I	U	U	S-
Consumer effects	S+	I	S-	S-	S-
Management and enforcement	S-	I	I	I	S+
Excess capacity	S+	I	S-	S-	S-
Bycatch and discards	I	I	I	I	S+
Passive use values	U	I	U	U	U
Non-market use values	U	I	U	U	U
Non-consumptive use values	U	I	U	U	U

The proposed action for Amendment 63 is limited in scope and will not likely affect all environmental components of the GOA. The effects discussion for Amendment 63 is limited to groundfish target species impacts (including skates, other species and Pacific cod), Pacific halibut, and social and economic impacts. FMP Alternative B, which provides more protection to the skate stock biomass, has been given an insignificant designation for effects on skate species. The other species TAC will increase with the creation of a new target species TAC because the other species TAC is a percentage of the combined GOA TACs for groundfish target species. Additional Pacific cod and Pacific halibut may also be taken in the skate fishery as incidental catch, reducing the amount of TAC or halibut PSC available for a directed Pacific cod fishery or the shallow water complex fisheries. The effects of increased harvest of other species, Pacific cod, and Pacific halibut is expected to have insignificant effects because of harvest limits for these prohibited and target species and target complex.

The economic impacts of Amendment 63 are discussed in the Initial Regulatory Flexibility Analysis (small entity analysis) in Chapter 7, and in the Regulatory Impact Review (RIR) in chapter 8. The impacts will depend on decisions made by the Council in setting a skate TAC. The purpose of the FMP amendment is to give managers more control over skate harvests in the GOA to constrain harvests if necessary to protect the skate biomass. This action may lead to limits of the gross revenues from fishing in the short run, but as a result of protecting the biomass, may lead to greater gross revenues from a sustainable fishery. Consideration must also be given to the impacts on the Pacific cod fisheries and the shallow water complex fisheries of the GOA which are limited by available halibut PSC. The taking of Pacific cod and halibut in the skate directed fishery may reduce the amount of directed fishing allowed in the Pacific cod directed fishery and in the shallow water complex fisheries. Skate specifications Alternatives 2 and 3 may result in a change in fishing gear or vessels. Given the uncertainties about future Council TAC setting, and with respect to industry's valuation of the trade off between potential short run restrictions and long run sustainability, the significance of socio-economic impacts has been designated, "unknown."

Initial Regulatory Flexibility Analysis

Separate Initial Regulatory Flexibility Analyses (IRFA) were performed for the 2004 Specifications and Amendment 63 (GOA skates) to address the statutory requirements of the Regulatory Flexibility Act of 1980, as amended by the Small Business Regulatory Fairness Act of 1996. These acts require an analysis of the adverse economic impacts of regulatory actions subject to the notice and comment provisions of the Administrative Procedures Act on directly regulated small entities.

The 2004 Specifications establish harvest limits for the groundfish species and species groups in the BSAI and GOA. This action is necessary to allow groundfish fishing in 2004. The IRFA for this action determined that 1,353 small catcher vessels, 33 small catcher processors, and six small CDQ groups would be directly regulated by this action. In the BSAI, overall first wholesale revenues under the preferred alternative would be very similar to those in 2003. There do not seem to have been large shifts in the revenues form the different species that might be masked by the overall BSAI totals. On this basis, the proposed specifications are not expected to adversely affect the cash flow or profitability of small entities operating in the BSAI. A similar situation appears in the GOA. 2004 gross revenues are projected to be very similar to those in 2003. Large changes in revenues from changes in relative species harvests are not apparent. The proposed specifications are not expected to adversely affect the cash flow or profitability of small entities operating in the GOA. The action does not impose new recordkeeping or reporting requirements on small entities. The analysis did not reveal any Federal rules that duplicate, overlap or conflict with the proposed action.

Amendment 63 amends the GOA FMP so as to separate skate species from the "other species" category in the GOA, and add it to the "target species" category. Skates would receive their own OFL, ABC, and TAC. Three alternative ways of incorporating a skate OFL, ABC, and TAC in specifications are under consideration. This action is proposed in order to give fishery managers more power to protect the skate biomass in the face of a fishery that developed rapidly in 2003. The IRFA for this action ascertained that 933 small hook-and-line vessels, 15 small hook-and-line catcher-processors, 117 small trawl catcher vessels, and 4 small catcher processors, might be directly regulated by this action. This action has the potential to limit harvests, and fishery gross revenues, in the short run in order to protect the biomass and preserve the fishery for the long term. The actual impacts would depend on the way the Council chooses to incorporate skates into the specifications, and on the annual specifications recommendations made by the Council. Alternative 3 is likely to be the most burdensome of the specifications alternatives for small entities, since it provides for skate species and area specific OFLs and is most likely to lead to operational constraints on fishing vessels. Alternative 2, which provides for a GOA-wide OFL, and species and area specific ABCs would be less burdensome. Alternative 1 which provides for a GOA OFL and area specific (not species specific) ABCs would be the least burdensome. Alternatives that require species specific ABCs or OFLs will impose new recordkeeping or reporting requirements on the directly regulated small entities. Currently fishermen only report to the skate "group." The analysis did not reveal any Federal rules that duplicate, overlap, or conflict with the proposed action.

Regulatory Impact Review

A Regulatory Impact Review was performed for Amendment 63 (GOA skates) to address the requirements of Presidential Executive Order 12866 (EO 12866). EO 12866 requires a cost-benefit analysis for certain Federal actions. As noted above, this action involves an FMP-level decision (whether or not to move skates from the GOA FMP "other species" category to its "target species" category) and a decision on how to incorporate the skates into the annual specifications process.

Under the status quo (FMP-level Alternative A) the Council does not have the ability to protect the skate species. In 2003, the "other species" complex TAC is larger than the OFL for skates. Harvest by the new targeted skate fishery could drive down the skate biomass and reduce its reproductive potential. This is particularly problematic since there is great uncertainty about the biology and population dynamics of skates. Skate species are believed to have low fecundity, and low growth rates, which would lead to slow recoveries if stocks were fished down. While revenues from the fishery would be higher in the short run, while the biomass was being driven down, they would be lower in the longer run as a reduced biomass supports a smaller skate fishery. Fishing costs might be higher if the biomass were fished down due to lower catch per unit of effort.

This key tradeoff, between the cost of constraints on the fishery in the short run, and the long-run benefits from protection of the stock, with possibly higher harvests and revenues in the long run, will be affected by the way the Council chooses to incorporate the skates into the specifications. Alternative 3 may be the most costly of the specifications alternatives for small entities, since it provides for skate species and area specific OFLs and may be most likely to lead to operational constraints on fishing vessels. However, Alternative 3 is also believed to provide the most protection to the skate stocks. Alternative 2, which provides for a GOA-wide OFL, and species and area specific ABCs would be less burdensome than Alternative 3, but would also provide somewhat less protection for the stocks. Because the management of skates under Alternatives 2 and 3 would be to the area TAC level, the addition of area specific OFLs under Alternative 3 may not add much more protection. Alternative 1 which provides for a GOA OFL and area specific (not species specific) ABCs would be the least burdensome, but creates the possibility of overharvesting of individual skate stocks within the skate group.

The benefits and costs of these alternatives will depend in part on the annual ABC and TAC recommendations made by the Council. They would also depend on future fishing activity in the absence of the action, the impact of the activity on skate biomass, and the choice of a discount rate used to facilitate a comparison of current and future revenues.

Both alternatives do give fishery managers considerably greater control over skate harvests in the face of future uncertainty. Alternative 3 gives more control than Alternative 2. This control may be important as a rapidly expanding fishery begins to harvest this species with relatively low fecundity and relatively low growth rates.

Preferred Alternatives

2004 Harvest Specifications

Alternative 1 would set TACs in the BSAI above the upper limit of 2,000,000 mt for OY. Alternative 5 would set TACs in both the BSAI and GOA equal to zero. Neither Alternative 3 or 4 uses the best and most recent scientific information on status of groundfish stocks nor takes into account socioeconomic benefits to the nation.

Alternative 2 is being chosen as the preferred alternative because: 1) it takes into account the best and most recent information available regarding the status of the groundfish stocks, public testimony, and socio-economic concerns; 2) it sets all TACs at levels equal to or below ABC levels; 3) it falls within the specified range of OY for both the BSAI and GOA, and 4) it is consistent with the Endangered Species Act and the National Standards and other requirements of the Magunson-Stevens Act.

The FMP level alternatives are status quo or move skates from the other species category to the target species category in the GOA FMP. The status quo alternative may have negative impacts on skate stocks by limiting the ability of NMFS to control skate fishing. Because of the potential of a developing skate fishery to harvest at levels too high for the available skate biomass, Alternative B is the preferred alternative. Alternative B will allow NMFS to directly manage the skate group or groups and control directed fishing activities on skates in the GOA.

The skate specification alternatives include a range of levels of management depending on species and area application of ABCs and OFLs. Alternative 1 would manage skates with a single GOA wide OFL and area specific ABCs. This alternative would still allow for a disproportionately high level of harvest of a single species within a narrow geographic range. Alternative 3 is the most protective alternative for the skate stocks by establishing species and area specific ABCs and OFLs. The resultant OFLs would be smaller than a GOA wide OFL, leading to a greater likelihood of closure of other directed species fisheries that take skate as incidental catch if OFL levels were reached. Alternative 2 manages skates with both species and area level ABCs, as does Alternative 3, but with a single GOA wide OFL. The best method for the management of a targeted stock is at the TAC (sometime equal to the ABC) level. The skate fishery or fisheries would be managed to the TAC level so the likelihood of exceeding the OFL level would be reduced. In September 2003, the Groundfish Plan Teams recommended Alternative 2 and the stock assessment author recommended Alternative 3. Additional stock assessment information will be available after the 2003 November Plan Team meeting. A preferred skate specification alternative has not been chosen at this time.

PROHIBITED SPECIES BYCATCH ALLOWANCES
FOR THE BSAI TRAWL AND NON-TRAWL FISHERIES[1]
[All amounts are in metric tons]

TRAWL FISHERIES	Prohibited Species and Zone					
	Halibut mortality (mt) BSAI[7]	Herring (mt) BSAI	Red King Crab (animals) Zone 1	C. opilio (animals) COBLZ[2]	C. bairdi (animals) Zone 1	C. bairdi (animals) Zone 2
Yellowfin sole	886	139	16,664	2,776,981	340,844	1,788,459
January 20 - April 1	262	.....	.....	.....	.....	.....
April 1 - May 21	195	.....	.....	.....	.....	.....
May 21 - June 29	49	.....	.....	.....	.....	.....
June 29 - December 31	380	.....	.....	.....	.....	.....
Rock sole/flat. sole/other flatfish[3]	779	20	59,782	969,130	365,320	596,154
January 20 - April 1	448	.....	.....	.....	.....	.....
April 1 - June 29	164	.....	.....	.....	.....	.....
June 29 - December 31	167	.....	.....	.....	.....	.....
RKC savings subarea[3]	.....	.....	20,924	.....	.....	.....
Turbot/sablefish/arrowtooth[4]	.....	9	.....	40,238	.....	.....
Rockfish (June 29 - Dec. 31)[5]	69	7	.....	40,237	.....	10,988
Pacific cod	1,434	20	13,079	124,736	183,112	324,176
Pollock/Atka/other[6]	232	146	200	72,428	17,224	27,473
Midwater trawl pollock	.....	1,184	.....	.....	.....	.....
TOTAL TRAWL PSC	3,400	1,526	89,725	4,023,750	906,500	2,747,250
NON-TRAWL FISHERIES						
Pacific cod - Total	775					
January 1 - June 10	320					
June 10 - August 15	0					
August 15 - December 31	455					
Other non-trawl - Total	58					
May 1 - December 31	58					
Groundfish pot & jig	Exempt					
Sablefish hook-&-line	Exempt					
TOTAL NON-TRAWL	833					
PSQ RESERVE[8]	342	.....	7,275	326,250	73,500	222,750
GRAND TOTAL	4,575	1,526	97,000	4,350,000	980,000	2,970,000

[1] Refer to § 679.2 for definitions of areas.

[2] C. opilio Bycatch Limitation Zone. Boundaries are defined at 50 CFR part 679, fig. 13.

[3] The Council at its December 2001 meeting limited red king crab for trawl fisheries within the RKCSS to 35 percent of the total allocation to the rock sole/flathead sole/ "other flatfish" fishery category (§ 679.21(e)(3)(ii)(B)). "Other flatfish" for PSC monitoring includes all flatfish species, except for Pacific halibut (a prohibited species), Greenland turbot, rock sole, yellowfin sole, arrowtooth flounder.

[4] Greenland turbot, arrowtooth flounder, and sablefish fishery category.

[5] The Council at its December 2001 meeting apportioned the rockfish PSC amounts from June 30 - December 31.

[6] Pollock other than pelagic trawl pollock, Atka mackerel, and "other species" fishery category.

[7] With the exception of the nontrawl Pacific cod directed fishery, any unused halibut PSC apportionment may be added to the following season's apportionment. Any unused halibut PSC apportioned to the nontrawl Pacific cod directed fishery during the January 1 through June 10 time period will not be available until after August 15.

[8] With the exception of herring, 7.5 percent of each PSC limit is allocated to the multi-species CDQ program as PSQ reserve. The PSQ reserve is not allocated by fishery, gear or season.

BSAI GROUNDFISH PLAN TEAM RECOMMENDATIONS

Bering Sea and Aleutian Islands

2003 Specifications and Recommendations for Preliminary 2004 Specifications (mt)

Species	Area	2003 Biomass	2003 OFL	2003 ABC	2003 TAC	2003 *Catch	2004 OFL	2004 ABC	2004 TAC
Pollock	EBS	11,100,000	3,530,000	2,330,000	1,491,760	1,430,285	2,636,000	2,127,700	
	AI	175,000	52,600	39,400	1,000	1,603	52,600	39,400	
	Bogoslof	227,000	45,300	4,070	50	24	45,300	4,070	
Pacific cod	BSAI	1,680,000	324,000	223,000	207,500	166,208	359,000	245,000	
Yellowfin sole	BSAI	1,550,000	136,000	114,000	83,750	77,643	130,000	109,600	
Greenland turbot	BSAI	112,000	17,800	5,880	4,000	2,886	16,755	6,900	
	BS				2,680	2,291		4,600	
	AI				1,320	595		2,300	
Arrowtooth flounder	BSAI	597,000	139,000	112,000	12,000	12,115	175,800	142,200	
Rock sole	BSAI	877,000	132,000	110,000	44,000	35,741	119,400	99,900	
Flathead sole	BSAI	550,000	81,000	66,000	20,000	13,584	74,100	61,100	
Alaska plaice	BSAI	1,080,000	165,000	137,000	10,000	9,844	166,300	138,200	
Other flatfish	BSAI	107,000	21,400	16,000	3,000	2,736	21,400	16,000	
Sablefish	EBS	31,000	4,290	2,900	2,900	901	3,818	2,658	
	AI	39,000	4,590	3,100	3,100	971	4,082	2,842	
Pacific Ocean Perch	BSAI	375,000	18,000	15,100	14,100	13,813	17,600	14,900	
	Bering Sea			2,410	1,410	1,183		2,378	
	Eastern			3,500	3,500	3,902		3,454	
	Central			3,340	3,340	3,008		3,296	
	Western			5,850	5,850	5,720		5,773	
Northern rockfish	BSAI	156,000					9,468	7,101	
	BS		161	121	121	63			
	AI		9,332	6,980	5,879	4,016			
Shortraker/rougheye	BSAI	32,000	1,290	967			1,289	967	
	BS				137	98			
	AI				830	258			
Other rockfish	EBS	18,000	1,280	960	960	308	1,280	960	
(incl. sharpchin)	AI	15,000	846	634	634	374	846	634	
Atka mackerel	AI	358,300	99,700	63,000	60,000	50,238	104,100	61,600	
	Eastern			10,650	10,650	11,001		10,413	
	Central			29,360	29,360	25,760		28,708	
	Western			22,990	19,990	13,477		22,479	
Squid	BSAI	n/a	2,620	1,970	1,970	1,150	2,620	1,970	
Other Species	BSAI	695,000	81,100	43,300	32,309	22,309	81,100	43,300	
BS/AI TOTAL		19,774,300	4,867,309	3,298,792	2,000,000	1,847,168	4,022,858	3,127,002	

EBS = eastern Bering Sea
BSAI = Bering Sea & Aleutians
BS = Bering Sea
AI = Aleutian Islands
OFL = overfishing level
ABC = acceptable biological catch
TAC = total allowable catch
*through 9/27/03 including CDQ harvest

D-1d
Ben Muse

2004 Specifications (EA/IRFA)

October 2003 NPFMC Meetings
Anchorage, Alaska

Purpose:

- Review the alternatives under consideration
- Describe the derivation of the ABC, TAC, and Interim TACs evaluated in the EA/IRFA
- Brief description of the contents

Alternatives

- Alt 1: Set TACs to produce fishing mortality rates, *F*, that are equal to $maxF_{ABC}$.
- Alt 2: Set TACs that fall within the range of ABCs recommended by the Plan Teams and TACs recommended by the Council. (Preferred alternative)

Alternatives

- Alt 3: For Tiers 1, 2, and 3, set TAC to produce *F* equal to 50% of $maxF_{ABC}$. For Tiers 4, 5, and 6, set TAC equal to 50% of TAC associated with $maxF_{ABC}$.
- Alt 4: For Tiers 1, 2, and 3, set TAC to produce *F* equal to the most recent five year average actual *F*. For Tiers 4, 5, and 6, set TAC equal to the most recent five year average actual catch.

Alternatives

- Alt 5: Set TAC equal to zero.

Sep. 2003 Plan Team recommendations

- Plan team recommendations for Tiers 4, 5, and 6 based on a rollover of 2003 ABCs and OFLs into 2004
- Plan Team ABC and OFL recommendations for Tiers 1, 2, 3 based on projections from 2002 SAFE documents, modified by estimates of 2003 catches.

Exceptions

- Rollover for GOA pollock
- The GOA Plan Team also decided to use a rollover rather than a projection for thornyhead rockfish
- Set sablefish ABC at 80.6% of the maximum permissible ABC

TAC Projections

- It was necessary to make estimates of TACs that might be associated with the Plan Team ABCs
- For the purpose of EA/IRFA analysis of alternatives

TAC Projections

- TAC projections for Alt 1, 3, 4, and 5 were set equal to 2003 ABCs for those alternatives
- TAC projections for Alt 2 were based on Council actions in 2003 and on Plan Team ABC recommendations

Interim TAC Specifications

- Final specifications can't take effect before January 1 because of the need for public review of the proposed specs, therefore we'll use interim specs to manage the fisheries until final specs are effective
- Interim Specifications are set equal to 25% of the annual TAC in the GOA, or of 25% of the ITAC in the BSAI, or the first seasonal allowance (depending on species)

EA/IRFA

- EA contains ABCs, TACs, and Interim TACs for each of the five alternatives
- Evaluates the environmental significance of the environmental impacts for a range of variables
- Contains a small business impact assessment

EA evaluated significance of:

- Target species
- Non-specified species
- Prohibited species
- Marine mammals and ESA listed marine mammals
- seabirds
- Marine benthic habitat and essential fish habitat
- Ecosystem
- State managed fisheries
- Social and economic impacts

EA and significance:

- The analysts contributing to the EA did not find any significant impacts associated with Alternative 2

IRFA

- Review of small business impacts
- The IRFA found that small entities harvesting sablefish in the BSAI and GOA would be adversely impacted by Alt 2 (preferred), as would small entities harvesting Pacific cod in the GOA. Otherwise, 2004 harvests are projected at or close to 2003 levels.

Sources:

- National Marine Fisheries Service (NMFS). 2003. Draft Environmental Assessment/Initial Regulatory Flexibility Analysis for the Harvest Specifications for the Year 2004 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 and Amendment 63 to the Fishery Management Plan for Groundfish of the Gulf of Alaska for Skates Management and Draft Regulatory Impact Review for Amendment 63 to the Fishery Management Plan for Groundfish of the Gulf of Alaska for Skates Management. Juneau: September 2003. Accessed at http://www.fakr.noaa.gov/sustainablefisheries/specs04/ea_irfa_92203.pdf on October 1, 2003.

Available on the internet

- EA/IRFA from NMFS Alaska Region at: http://www.fakr.noaa.gov/sustainablefisheries/specs04/ea_irfa_92203.pdf as on 10-1-03
- EA/IRFA available from the NPFMC at:

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Errata for the EA/IRFA for the 2004 Harvest Specifications

For more information contact Ben Muse at 907-586-7234, or ben.muse@noaa.gov
October 5, 2003

Table 2.1-1 on page 15:

The sum of projected 2004 ABCs should be 3,127,002 mt, not 3,210,402 mt.

Table 2.1-2 on page 16:

the GOA pollock OFL for 2004 should be 99,510 mt, not 54,350 mt. The 2004 pollock OFL for EYAK/SEO should be 8,610 mt, not 6,460 mt. The 2004 pollock OFL for the other areas in the GOA should total 90,900 mt, not 47,890 mt

An error in the spreadsheets used to calculate gross first wholesale revenues associated with the alternatives has been corrected. The changes associated with this are shown on the following pages:

Section 4.10.2. Paragraph at the bottom of page 87 (New values are highlighted):

Alternatives 3 and 4 have a more negative impact on gross revenues. The gross revenue estimates in this analysis may have a downward bias (for the reasons discussed in Appendix H), and they have a large, and unknown, error. A 20% threshold was adopted to determine significance (although it may be possible to justify a large threshold). In other words, only a decline in gross revenues of 20%from 2003 levels will be described as significant. Estimated BSAI ITAC 2003 revenues were about $1,140 million, BSAI CDQ revenues were about $116 million, and GOA revenues were about $172 million. The corresponding significance thresholds are changes of $228 million, $34 million, and $30 million, respectively. Alternative 4 triggered the threshold in the BSAI, alternatives 3 triggered the threshold in the GOA, and alternative 4 triggered the threshold for CDQ groups. Each of these triggering alternatives have been given a rating of "negatively significant."

Figures 4.10-1, 4.10-2, and 4.10-3 on page 89:

Figure 4.10-1 BSAI First Wholesale Value of the ITAC and Unspecified Reserves: Difference Between Estimated 2003 First Wholesale Value and First Wholesale Value of Each Alternative (in millions of dollars)

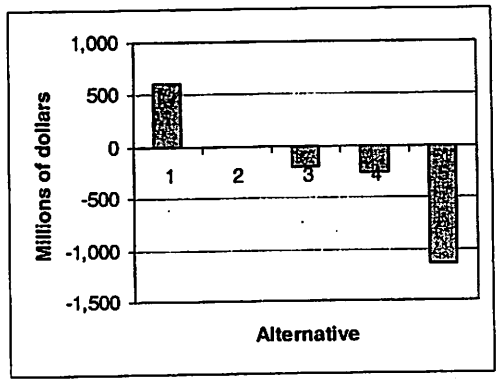


Figure 4.10-2 BSAI First Wholesale Value Estimates for CDQ reserve: Difference Between Estimated 2003 First Wholesale Value and First Wholesale Value of Each Alternative (in millions of dollars)[1]

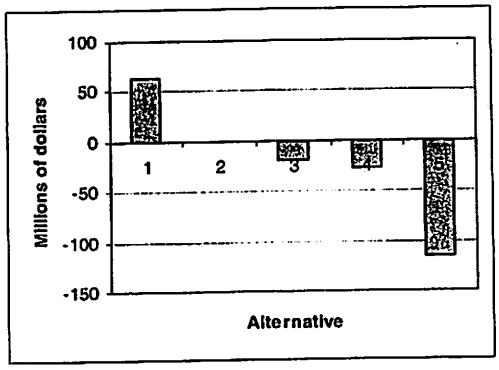
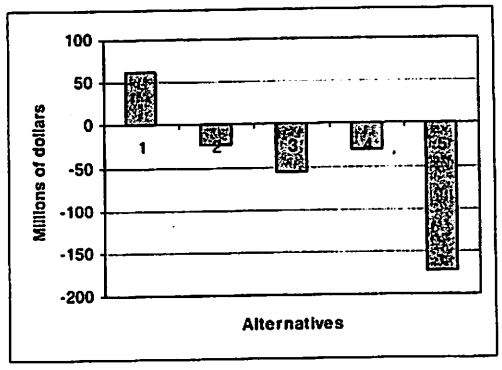


Figure 4.10-3 GOA Gross Revenue Estimates: Difference Between Estimated 2003First Wholesale Value and First Wholesale Value of Alternatives (millions of dollars)



[1]It is important to note that this figure reports the first wholesale value of the CDQ reserve, not the receipts received by the CDQ groups. These receipts will be considerably lower than the first wholesale value since CDQ groups lease out large parts of their allotments in return for royalty payments.

Tables H-1, H-2, and H-3 in Appendix H (new values in the pages are highlighted:

Table H-1 Projected TACs in metric tons (based on plan team 2004 ABC recommendations)

Species group	A1	A2	A3	A4	A5	2003
BSAI						
Pollock	2,373,400	1,492,810	1,279,700	1,128,253	0	1,492,810
Sablefish	7,300	5500	3,650	4,500	0	5000
Pacific cod	278,000	207,500	147,000	168,200	0	207,500
Arrowtooth	112,000	12,000	59,800	7,300	0	12,000
Flathead sole	66,000	20,000	34,800	14,700	0	20,000
Rock sole	110,000	44,000	57,300	34,800	0	44,000
Greenland turbot	14,700	4,000	7,700	5,880	0	4,000
Yellowfin sole	114,000	83,750	58,200	92,600	0	83,750
Flats (other)	160,700	13,000	85,200	26,102	0	13,000
Rockfish	24,659	22,493	12,380	15,952	0	22,561
Atka mackerel	82,800	59,111	45,400	51,000	0	60,000
Other	21,290	34,279	10,645	24,671	0	34,279
Total	3,364,849	1,998,443	1,801,775	1,515,050	0	2,000,000
Potenial max.	2,000,000	2,000,000	1,764,650	1,573,958	0	n.a.
Shortfall	-1,364,849	1,557	-37,125	-46,979		n.a.
GOA						
Pollock	65,668	54,350	33,625	77,605	0	54,350
Sablefish	18,034	11,400	9,301	11,148	0	14,890
Pacific cod	59,900	36,809	31,600	45,000	0	40,540
Arrowtooth	155,140	38,000	79,719	12,820	0	38,000
Flathead sole	41,402	10,770	22,464	2,103	0	10,770
Rex sole	9,470	9,470	4,774	3,053	0	9,470
Flats (deep)	4,880	4,880	2,149	1,400	0	4,880
Flats (shallow)	53,263	21,620	27,668	5,264	0	21,620
Rockfish	35,831	29,190	17,945	17,956	0	29,680
Atka mackerel	4,700	600	2350	182	0	600
Other	22,414	10,854	11,580	8,826	0	11,260
Total	470,702	227,943	243,175	185,357	0	236,440
Potenial max.	470,702	409,690	243,175	187,959	0	n.a.
Shortfall	0	181,747	0	2,602	0	n.a.

Notes: TACs were projected on the basis of 2003 Plan Team ABC recommendations. Actual TACs will be prepared by the NPFMC at its December 2003 meeting. BSAI TAC estimates have been constrained to meet the two million metric ton optimum yield constraint for Alternatives 2-4 but not for Alternative 1. BSAI 2004 projected TACs are equal 2003 TACs for Alternative 2 (unless the 2003 TAC was greater than the proposed 2003 ABC) and equal to proposed 2004 ABCs for Alternatives 3 and 4. (GOA Potential max is sum of ABCs)

Table H-2 Percent differences between BSAI ABCs and TACs for the Alternatives, and 2003 BSAI ABCs and TACs

Species	2003 (mt)	Alt. 1 %	Alt 2%	Alt 3%	Alt 4%
ABCs					
Pollock	2,373,470	0%	-9%	-47%	-53%
Sablefish	6,000	22%	-8%	-39%	-25%
Pacific cod	223,000	25%	10%	-34%	-25%
Arrowtooth	112,000	0%	27%	-47%	-93%
Flathead sole	66,000	0%	-7%	-47%	-78%
Rock sole	110,000	0%	-9%	-48%	-68%
Turbot	5,880	150%	17%	31%	0%
Yellowfin	114,000	0%	-4%	-49%	-19%
Flats (other)	153,000	5%	1%	-44%	-91%
Rockfish	24,762	0%	-1%	-69%	-56%
Atka mackerel	63,000	31%	-2%	-28%	-19%
Other	45,270	-53%	0%	-100%	-100%
TACs (2003)					
Pollock	1,492,810	59%	0%	-14%	-24%
Sablefish	6,000	22%	-8%	-39%	-25%
Pacific cod	207,500	34%	0%	-29%	-19%
Arrowtooth	12,000	833%	0%	398%	-39%
Flathead sole	20,000	230%	0%	74%	-27%
Rock sole	44,000	150%	0%	30%	-21%
Turbot	4,000	268%	0%	93%	47%
Yellowfin	83,750	36%	0%	-31%	-11%
Flats (other)	13,000	1136%	0%	555%	101%
Rockfish	22,661	9%	-1%	-45%	-30%
Atka mackerel	59,111	40%	0%	-23%	-14%
Other	34,279	-38%	0%	-69%	-28%

Notes: Alt 4 estimates are based on Alt 4 projections that may contain errors. As noted in the footnote to Table 2.0-4, the assessment authors may have used a recent 5 year total catch by target over periods ranging from 1995-1999 to 1998-2002. In the final EA for this action these values will be corrected to the average for the period 1997-2001.

Table H-3 Percent differences between GAO ABCs and TACs for Alternatives, and 2003 GOA ABCs and TACs

Species	2003 (mt)	Alt. 1 %	Alt 2%	Alt 3%	Alt 4%
ABCs (2003)					
Pollock	54,350	21%	0%	-38%	43%
Sablefish	14,890	21%	-23%	-38%	-25%
Pacific cod	52,800	13%	-9%	-40%	-15%
Arrowtooth	155,140	0%	4%	-49%	-92%
Flathead sole	41,390	0%	-9%	-46%	-95%
Rex sole	9,470	0%	0%	-50%	-61%
Flats (deep)	4,880	0%	0%	-56%	-60%
Flats (shallow)	49,340	8%	0%	-44%	-87%
Rockfish	33,740	6%	-1%	-47%	-46%
Atka mackerel	600	683%	0%	292%	-62%
Other	0	n/a	n/a	n/a	n/a
TACs (2003)					
Pollock	54,350	21%	0%	-38%	43%
Sablefish	14,890	21%	-23%	-38%	-25%
Pacific cod	40,540	48%	9%	-22%	11%
Arrowtooth	38,000	308%	0%	110%	-66%
Flathead sole	11,150	271%	-3%	101%	-81%
Rex sole	9,470	0%	0%	-50%	-68%
Flats (deep)	4,880	0%	0%	-56%	-71%
Flats (shallow)	21,620	146%	0%	28%	-76%
Rockfish	29,680	21%	-2%	-40%	-40%
Atka mackerel	600	683%	0%	292%	-70%
Other	11,260	99%	-4%	3%	-22%

Notes: Alt 4 estimates are based on Alt 4 projections that may contain errors. As noted in the footnote to Table 2.0-4, the assessment authors may have used a recent 5 year total catch by target over periods ranging from 1995-1999 to 1998-2002. In the final EA for this action these values will be corrected to the average for the period 1997-2001.

Section 7.8 of the IRFA. Page 125. Replace the second and third paragraphs:

Overall first wholesale revenues in the BSAI are very similar to what they were estimated to have been in 2003. There do not seem to have been large shifts in the revenues from the different species that might be masked by overall BSAI totals. On this basis, the proposed specifications are not, in general, expected to adversely affect the cash flow or profitability of small entities operating in the BSAI. The 2003 sablefish TAC is higher than that projected for 2004 under the preferred alternative, and this would have an adverse impact in this sector.

Overall first wholesale gross revenues in the GOA are estimated to drop between 2003 and 2004 under the preferred alternative. An examination of the changes in harvest by species group indicates that the decline in GOA gross revenues earned from sablefish and from Pacific cod would be the key factors in the overall decline. This suggests that the preferred alternative would have an adverse impact on GOA operations harvesting these species.

Page 134:

First paragraph under the heading. "Tables 8-3, 8-4, and 8-5" should read "Tables 8.6-1, 8.6-2, and 8.6-3."

Second paragraph under the heading. "Total hook-and-line and trawl catches in 2003 totaled 3,416 mt." should read "total hook-and-line and trawl catches in 2003 totaled 3,651 mt." The sentence, "Therefore the fishery catch eas 392 mt..." should read "Therefore the fishery catch was 627 mt..."

Page 136

The title of Table 8.6-4 should be "Catcher vessel and catcher processor skate catches retained and discarded at-sea, 2002-2003" The upper right hand cell in the table should read "15" and not "12."

Gulf of Alaska Groundfish Recommendations for 2004 (in mt)

SPECIES		ABC 2003	TAC 2003	OFL 2003	*Catch 2003	SSC ABC 2004	SSC OFL 2004	AP TAC 2004	Council TAC 2004
Pollock	W (61)	16,788	16,788		11,850	16,788		16,788	
	C (62)	19,685	19,685		17,507	19,685		19,685	
	C (63)	10,339	10,339		8,336	10,339		10,339	
	WYAK	1,078	1,078	69,410	943	1,078		1,078	
	SubTotal	47,890	47,890	69,410		47,890	90,900	47,890	
	EYAK/SEO	6,460	6,460	8,610	0	6,460	8,610	6,460	
	TOTAL	54,350	54,350	78,020	38,636	54,350	99,510	54,350	
Pacific Cod	W	20,600	15,450		**15,931**	18,649		13,987	
	C	29,000	22,690		**23,769**	26,254		20,215	
	E	3,200	2,400		56	2,897		2,607	
	TOTAL	52,800	40,540	70,100	39,756	47,800	63,700	36,809	
Deep water flatfish[1]	W	180	180		27	180		180	
	C	2,220	2,220		752	2,220		2,220	
	WYAK	1,330	1,330		2	1,330		1,330	
	EYAK/SEO	1,150	1,150		2	1,150		1,150	
	TOTAL	4,880	4,880	6,430	783	4,880	6,430	4,880	
Rex sole	W	1,280	1,280		709	1,280		1,280	
	C	5,540	5,540		2,390	5,540		5,540	
	WYAK	1,600	1,600		1	1,600		1,600	
	EYAK/SEO	1,050	1,050		1	1,050		1,050	
	TOTAL	9,470	9,470	12,320	3,101	9,470	12,320	9,470	
Shallow water flatfish[2]	W	23,480	4,500		144	23,480		4,500	
	C	21,740	13,000		4,039	21,740		13,000	
	WYAK	1,160	1,160		0	1,160		1,160	
	EYAK/SEO	2,960	2,960		3	2,960		2,960	
	TOTAL	49,340	21,620	61,810	4,186	49,340	61,810	21,620	
Flathead sole	W	16,420	2,000		433	14,916		2,000	
	C	20,820	5,000		1,536	18,914		5,000	
	WYAK	2,900	2,900		0	2,634		2,634	
	EYAK/SEO	1,250	1,250		0	1,136		1,136	
	TOTAL	41,390	11,150	51,560	1,969	37,600	46,600	10,770	
Arrowtooth flounder	W	17,990	8,000		7,901	18,670		8,000	
	C	113,050	25,000		15,359	117,320		25,000	
	WYAK	18,190	2,500		34	18,877		2,500	
	EYAK/SEO	5,910	2,500		22	6,133		2,500	
	TOTAL	155,140	38,000	181,390	23,316	161,000	188,300	38,000	
Sablefish	W	2,570	2,570		1,953	1,968		1,968	
	C	6,440	6,440		**6,875**	4,931		4,931	
	WYAK	2,320	2,320		1,727	1,776		1,776	
	SEO	3,560	3,560		2,907	2,726		2,726	
	TOTAL	14,890	14,890	20,020	13,462	11,400	16,500	11,400	

Gulf of Alaska Groundfish Recommendations for 2004 (in mt)

SPECIES		ABC 2003	TAC 2003	OFL 2003	*Catch 2003	SSC ABC 2004	SSC OFL 2004	AP TAC 2004	Council TAC 2004
Other Slope rockfish	W	90	90		**106**	90		90	
	C	550	550		**710**	550		550	
	WYAK	270	150		**227**	270		150	
	EYAK/SEO	4,140	200		17	4,140		200	
	TOTAL	5,050	990	6,610	**1,060**	5,050	6,610	990	
Northern rockfish	W	890	890		**2003**	789		789	
	C	4,640	4,640		**4,720**	4,111		4,111	
	E[3]	0	0		0	0		0	
	TOTAL	5,530	5,530	6,560	**6,723**	4,900	5,800	4,900	
Pacific ocean perch	W	2,700	2,700	3,220	2,073	2,728		2,700	
	C	8,510	8,510	10,120	7,848	8,597		8,510	
	WYAK	810	810		606	818		810	
	SEO	1,640	1,640	2,900	0	1,657		1,640	
	TOTAL	13,660	13,660	16,240	10,527	13,800	16,400	13,660	
Shortraker/ rougheye	W	220	220		192	220		220	
	C	840	840		**938**	840		840	
	E	560	560		374	560		560	
	TOTAL	1,620	1,620	2,340	1,504	1,620	2,340	1,620	
Pelagic shelf rockfish	W	510	510		101	510		510	
	C	3,480	3,480		2,179	3,480		3,480	
	WYAK	640	640		607	640		640	
	EYAK/SEO	860	860		10	860		860	
	TOTAL	5,490	5,490	8,220	2,897	5,490	8,220	5,490	
Demersal Shelf Rockfish		390	390	540	222	390	540	390	
Atka Mackerel	GW	600	600	6,200	387	600	6,200	600	
Thornyhead rockfish	W	360	360		318	360		360	
	C	840	840		733	840		840	
	E	800	800		101	800		800	
	TOTAL	2,000	2,000	3,050	1,152	2,000	3,050	2,000	
Other Species	GW	NA	11,260	NA	6,498	NA	NA	10,847	
TOTAL		416,600	236,440	531,410	156,179	409,690	544,330	227,797	

1/ "Deep water flatfish" includes dover sole, Greenland turbot and deepsea sole.
2/ "Shallow water flatfish" includes rock sole, yellowfin sole, butter sole, starry flounder, English sole, Alaska plaice, and sand sole
3/ The EGOA ABC of 5 mt for northern rockfish has been included in the WYAK ABC for other slope rockfish.

NOTE: ABCs and TACs are rounded to nearest 10 mt.
GW means Gulfwide.
*Catch through 9/27/03 data source: NMFS Blend Reports. **Bold indicates Catch >TAC**

D-1d

PT/SSC andAP RECOMMENDATIONS

Bering Sea and Aleutian Islands

2003 Specifications and Recommendations for Preliminary 2004 Specifications (mt)

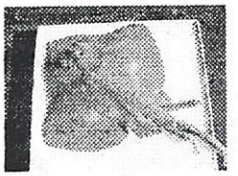
Species	Area	2003 Biomass	2003 OFL	2003 ABC	2003 TAC	2003 *Catch	2004 OFL	2004 ABC	2004 TAC
Pollock	EBS	11,100,000	3,530,000	2,330,000	1,491,760	1,430,285	2,636,000	2,127,700	1,491,760
	AI	175,000	52,600	39,400	1,000	1,603	52,600	39,400	1,000
	Bogoslof	227,000	45,300	4,070	50	24	45,300	4,070	50
Pacific cod	BSAI	1,680,000	324,000	223,000	207,500	166,208	359,000	245,000	207,500
Yellowfin sole	BSAI	1,550,000	138,000	114,000	83,750	77,643	130,000	109,600	83,750
Greenland turbot	BSAI	112,000	17,800	5,880	4,000	2,886	16,755	6,900	4,000
	BS				2,680	2,291		4,600	2,680
	AI				1,320	595		2,300	1,320
Arrowtooth flounder	BSAI	597,000	139,000	112,000	12,000	12,115	175,800	142,200	12,000
Rock sole	BSAI	877,000	132,000	110,000	44,000	35,741	119,400	99,800	44,000
Flathead sole	BSAI	550,000	81,000	66,000	20,000	13,584	74,100	61,100	20,000
Alaska plaice	BSAI	1,080,000	165,000	137,000	10,000	9,844	166,300	138,200	10,000
Other flatfish	BSAI	107,000	21,400	16,000	3,000	2,736	21,400	16,000	3,000
Sablefish	EBS	31,000	4,290	2,900	2,900	901	3,818	2,658	2,658
	AI	39,000	4,590	3,100	3,100	971	4,082	2,842	2,842
Pacific Ocean Perch	BSAI	375,000	18,000	15,100	14,100	13,813	17,600	14,900	13,932
	Bering Sea			2,410	1,410	1,183		2,378	1,410
	Eastern			3,500	3,500	3,902		3,454	3,454
	Central			3,340	3,340	3,008		3,296	3,296
	Western			5,850	5,850	5,720		5,773	5,773
Northern rockfish	BSAI	156,000					9,468	7,101	
	BS		161	121	121	63			121
	AI		9,332	6,980	5,879	4,016			5,879
Shortraker/rougheye	BSAI	32,000	1,290	967			1,289	967	
	BS				137	98			137
	AI				830	258			830
Other rockfish	EBS	18,000	1,280	960	960	308	1,280	960	960
(incl. sharpchin)	AI	15,000	846	634	634	374	846	634	634
Atka mackerel	AI	358,300	99,700	63,000	60,000	50,238	104,100	61,600	59,111
	Eastern			10,650	10,650	11,001		10,413	10,413
	Central			29,360	29,360	25,760		28,708	28,708
	Western			22,990	19,990	13,477		22,479	19,990
Squid	BSAI	n/a	2,620	1,970	1,970	1,150	2,620	1,970	1,970
Other Species	BSAI	695,000	81,100	43,300	32,309	22,309	81,100	43,300	32,309
BS/AI TOTAL		**19,774,300**	**4,887,309**	**3,298,792**	**2,000,000**	**1,847,168**	**4,022,858**	**3,127,002**	**1,998,443**

EBS = eastern Bering Sea
BSAI = Bering Sea & Aleutians
BS = Bering Sea
AI = Aleutian Islands
*through 9/27/03 including CDQ harvest

OFL = overfishing level
ABC = acceptable biological catch
TAC = total allowable catch

D-1d
Ben Muse

GOA Amendment 63
(Making skates a target species)



October 2003 NPFMC Meetings
Anchorage, Alaska

Photo credit: Duane Stevenson, AFSC

1

Topics

- The resource issue
- Alternatives
- Tradeoffs
- Council action and regulatory implementation

2

The resource issue

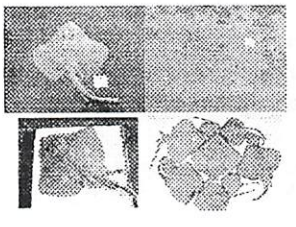
3

Skate management

- In the GOA, skates are managed as a part of the "other species" category
- "other species" includes sharks, skates, squid, sculpin, octopus
- TAC for this category is set GOA-wide, equal to 5% of the TACs for the different target species

4

Lots of skate species

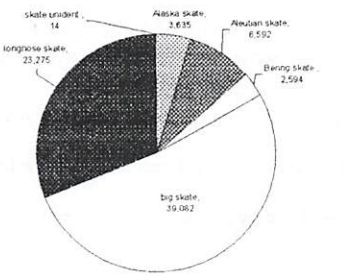


- There are an estimated 12 to 14 skate species in the GOA
- Biomass appears dominated by two species

Photo credit: Duane Stevenson, AFSC

5

2001 GOA survey biomass (no deepwater or Southeast trawl survey)



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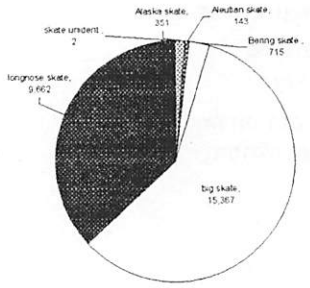
2001 survey biomass for central GOA



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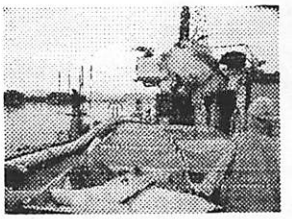
The resource issue



- This past winter a target fishery for skates emerged in the central GOA

Photo credit: Rob Swanson, NMFS Observer Program, Kodiak

8

The resource issue

- Central GOA skate catches jumped up from 1,135 mt in 2002 to 3,131 mt in 2003
- Changes in the East and West GOA were modest

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GOA skate retained catches

	2002	2003
Hook-and-line CV	33 mt	1,309 mt
Non-pelagic trawl CV	473 mt	1,146 mt
Hook-and-line CP	139 mt	164 mt
Non-pelagic trawl CP	137 mt	405 mt

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The biological threat

- Problem: uncontrolled fishery development combined with high complex-level TAC
- Sub-problems:
  - Target is one or two among ~12-14? skate species
  - No observers (small vessels and low volume plants)
  - Species id by processors problematic

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The biological threat

- Little known about skate biology
- Little known about species harvest
- Believed to be slow growing
- Many years to sexual maturity
- Low fecundity
- If these species are fished down, stock recovery is likely to be slow

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Danger of overfishing

Area	Skate OFL (2004 spec Alt 3)	Skate ABC (2004 Spec Alt 1)	Skate harvest (2003)	"Other species" TAC (2003)
Western	4,799	3,599	459	11,260 (GOA-wide)
Central	3,623	2,717	3,131	
Eastern	1,900	1,425	61	

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Alternatives

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Alternatives

- Two FMP-level alternatives
- And three specifications-level options contingent on adoption of the FMP-level action alternative

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Alternatives and Options

	Alternative 2: from "other species"
Alternative 1: no action	Option 1
	Option 2
	Option 3
	Option 4

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Two FMP-level Alternatives

- Alt A. No action, status quo (keep skates in the "other species" category along with sharks, etc.)
- Alt B. Separate skates from the "other species" category, and place it in the "target species" category

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Specifications Option #1

- One OFL for all skates in the GOA
- An "all skates" ABC for each management area (Eastern, Central, and Western)

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Specifications Option #2

- GOA-wide OFLs for big, longnose, and "other skates"
- Separate ABCs for each of these species or species-groups in each management area
- This is the plan team's recommendation

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Big skate

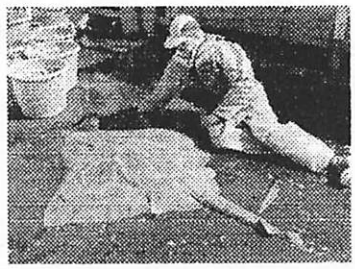

Photo credit: Duane Stevenson, AFSC

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Longnose skate

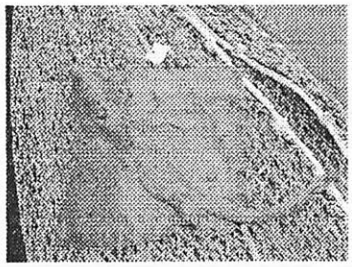

Photo credit: Duane Stevenson, AFSC

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Specifications Option #3

- Separate OFLs, ABCs and TACs for big, longnose and "other" skates in each management area (Western, Central, and Eastern)
- This is the assessment author's recommendation

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Specifications Option #4

- A single GOA-wide OFL and a single GOA-wide ABC for the "skates group"
- Suggested during the Council meeting.

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Tradeoffs

24

The fundamental tradeoff

- Constrain catches in the short run
- With consequent limitation of industry revenue and profits
- In order to preserve sustainable stocks and harvests for the long run
- With long run revenues and profits

25

Pros and cons of no action

- Pros
  - May be higher industry revenue in the short run
- Cons
  - No TAC protection for individual species or for local populations
  - Real potential to drive down stocks which may be slow to recover
  - Potential lower long run revenues

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Pros and cons of O1 - GOA "skate group" OFL

- Pros
  - More control over aggregate skate catch on an area basis
- Cons
  - Doesn't provide species level protection - may allow a disproportionately high harvest of a single skate species in an area

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Pros and cons of O2 - GOA-wide skate species OFL

- Pros
  - Provides more protection to two of the 12-14 skate species
  - Increases likelihood of sustainable fishery
  - This is the plan team's recommendation
- Cons
  - At first, little species level harvest data for setting DFA
  - May constrain short run revenues more than "skate-group" OFL

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Pros and cons of O3 - management area skate species OFL

- Pros
  - Area-species OFL provides somewhat more control over harvest
  - This is the assessment author's recommendation
- Cons
  - This is an unusual, but not unprecedented, approach in the GOA
  - Greater constraints on fishing operations than other options.

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Pros and cons of O4 - GOA "skate group" OFL

- Pros
  - Increased protection for skates over the status quo
  - Least restrictive option for other directed fisheries
  - Doesn't preclude future elaboration
- Cons
  - Least protection of for skates of the four options
  - Lacks species level protections

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Council Action and Regulatory Implementation

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Regulatory process

- Implementation of a skates FMP amendment for 2004 requires coordination of four separate activities :
  - Skates FMP amendment
  - 2004 proposed/final specifications
  - 2004 Interim specification
  - Modifications to skate specifications

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Possible Council action in October

- Recommends proposed 2004 harvest specifications - 2004 Interim specifications are implied by this decision
- Final action on GOA FMP Amendment 63 (proposal to move skates to target species category)
- May recommend how to treat skates in specifications

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NMFS action on FMP Amendment

- Publication of "Notice of Availability" (NOA)
- 60 day public comment period after publication
- The Secretary has up to 30 days to review comments before making a decision

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NMFS action on proposed specifications

- Proposed specifications will explain that parallel action is occurring for Amendment 63 (GOA skates)
- Proposed specifications will retain skates in the other species category

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Possible Council action in December

- Council recommends final ABC and TAC specifications
- If it hasn't already, Council selects its preferred approach for incorporating skates into specifications as a "target species"

36

After the December Council meeting NMFS...

- Will issue proposed specifications for skates with a 15 day comment period
- Do final specs for skates with final for other species
- Or do a separate final skates package, depending on timing

Photo credit: Duane Stevenson, AFSC

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Source:

- National Marine Fisheries Service (NMFS). 2003. *Draft Environmental Assessment/Initial Regulatory Flexibility Analysis for the Harvest Specifications for the Year 2004 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 and Amendment 63 to the Fishery Management Plan for Groundfish of the Gulf of Alaska for Skates Management and Draft Regulatory Impact Review for Amendment 63 to the Fishery Management Plan for Groundfish of the Gulf of Alaska for Skates Management.* Juneau: September 2003.

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Available on the internet

- EA/RIR/IRFA from NMFS Alaska Region at: http://www.fakr.noaa.gov/sustainablefisheries/specs04/ea_irfa_92203.pdf as on 10-1-03

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For more information:

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  - 907-586-7006
- Council contact: Jane DiCosimo
  - Jane.dicosimo@noaa.gov
  - 907-271-2809

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PUBLIC TESTIMONY SIGN-UP SHEET FOR AGENDA ITEM D-1 (b-d)

~~P~~ NON target SPECS including SKATES

	NAME (PLEASE PRINT)	AFFILIATION
1	GERRY MERRIGAN	PETERSBURG VESSEL OWNERS ASSOC=PVOA
2	~~LORI SWANSON~~	~~GHL~~
3	Julie Bonney	AGDB
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NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person " to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.

D-1 d
Gerry Merrigan
Petersburg Vessel
Owners Assoc.

Amendment 63: GOA Skate Management

	SCENARIO 1	SCENARIO 2
Proposed OFL (GOA wide)	10,322 mt	10,322 mt
Proposed ABC (GOA wide)	7,741 mt	7,741 mt
Estimated 1997-99 total catch of skates in GOA groundfish fisheries (retained and discards, assumes 100% mortality). Does not include halibut fishery.	3,199 mt (of which 2,081 mt is in the all gear cod and sablefish fisheries)	
Estimated 1998 total catch of skates in GOA (retained and discards, assumes 100% mortality. Does not include halibut fishery.		4,476 mt (of which 3,707 mt is in the all gear cod and sablefish fisheries).
Incidental catch in halibut fishery in 2C/3A/3B	102,112 skates (estimate) @15lbs/skate avg. = 700 mt	102,112 skates (estimate) @20 lbs/skate avg. = 1000mt
2003 retained skate catch (targeted)	1,673 mt	1,673 mt
ABC Remaining	**2169 mt**	**592 mt**
2003 INCIDENTAL RETAINED	1351 MT	1351 MT

+818 MT −789 MT

This table assumes that the retained incidental catch of skates in 2003 (1,351 mt) would be included in the 3,199 mt box in Scenario 1 and in the 4,476 box in Scenario 2. This assumption would be that the catch is the same as in the past but more is retained in the incidental harvest, i.e. no change in fleet behavior but with increased retention.

Sources: a.) Table 3.2-2, Table 8.6-1, Table 8.6-2, Table 8.6-3 from Amendment 63 EA.
b.) Incidental number of skates in the halibut fishery is an estimate from the IPHC using survey data of skates/hook extrapolated to the commercial halibut fishery.
c.) average size of skate (all species) in the halibut fishery is a WAG.