North Pacific Fishery Management Council

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Certified:_____
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DRAFT MINUTES
Scientific Statistical Committee
December 2, December 4, 2002

The Scientific Statistical Committee met December 2-December 4, 2002 in Anchorage, AK. The following members were present:

Rich Marasco, Chair,	Jack Tagart, Vice Chair,	Steve Berkeley,
Keith Criddle,	Gordon Kruse,	Mark Herrmann,
George Hunt,	Dan Kimura,	Ken Pitcher

Doug Eggers, Steve Hare, Sue Hills, and Seth Macinko were unable to participate in committee discussions, Terry Quinn participated via conference call. The committee wishes to express appreciation to Doug Eggers and Steve Berkeley for their many thoughtful contributions across many years of service, since this is their last meeting.

C-1 (a) CRAB MANAGEMENT: Committee Reports and Trailing Amendments

Council staff, Mark Fina and Nicole Kimball presented five trailing amendments on captain quota share, sideboard protection, data collection, mandatory binding arbitration and additional amendments. There was no public testimony.

Trailing Amendment on Captain Quota Share (C shares)

The SSC notes that the final analysis of options to be delivered to the Council has changed very little since the presentation of the Captain share committee report at the October 2002 meeting and has no addition to its prior minutes.

Trailing Amendment on Sideboard Protection

In the presentation on sideboards designed to limit efforts of BSAI crab fishermen in the Gulf of Alaska Pacific Cod fisheries, the most important identified fisheries were the west and central GOA Pacific cod fisheries. Changes from the prior briefing on sideboards included adding information on the catch history of the AFA vessels that are exempt from GOA sideboards. Additional analysis was also presented on whether to place sideboards restrictions on the vessel where the crab quota was generated or the licenses held by the vessel that generated the crab quota. The SSC received the presentation without comment.

Trailing Amendment on Data Collection

Several technical points were discussed with Council staff. It was clarified that the data collection from the processors would be at the plant level and not the firm level. It was noted that as a major area of concern is the collection and allocation of fixed costs to crab-specific operations. It may be helpful for Council staff to differentiate between fixed costs that are unrecoverable (sunk) vs. those that are.

The SSC notes that if the data are aggregated prior to submission, the quality and type of economic analyses will be affected. For example: statistical analysis of variations in reported data would not be characteristic of the actual level of variability in the industry; erroneous conclusions may be made in examining average costs data over a very large and very small processor and/or vessels; it may not be possible, depending on aggregation requirements, to identify economic impacts on some of the more remote Alaska coastal communities; and, observation and reporting errors, or outliers in individual data, cannot be separated out from the aggregated data. The researchers who use the data should both be responsible for the use of the data and accountable (to the extent possible) for the accuracy of data used. **In the opinion of the SSC separating the individual data from the researchers who use the data is undesirable. Therefore, the SSC recommends that the data committee work on resolving issues that currently serve as obstacles to accessing unaggregated data.**

Trailing Amendment on Mandatory Binding Arbitration

The SSC was briefed on the committee progress on binding arbitration. The SSC was informed on the scaling down of the arbitration options to three preseason structures which include a combined fleet-wide processor negotiation, combined fleet-wide negotiation with individual processors and individual vessel negotiations with individual processors. Dr. Charlie Plott (Cal Tech) will provide Council staff with an analysis of arbitration structures using experimental methods. **The SSC agreed with Council staff that the study should be based on generic bargaining structures as opposed to specific features of the crab industry**. The reason for this recommendation is that attempts to represent the levels of strategic knowledge and past bargaining relationships would cloud an exploration of the intrinsic properties of alternative arbitration structures. The SSC looks forward to reviewing the study. **The SSC recommends that the analysis include a review of other applications of binding arbitration in fisheries or similar industries.**

Additional Trailing Amendments

The SSC was presented analysis on: (1) revisions to the rules governing the allocation of catch history to sunken vessels, (2) options for allocating a portion of the Western Aleutian Islands (Adak) golden king crab fishery to the community of Adak; and, (3) options for increased harvest share ownership and use caps for CDQ groups.

The only substantive SSC comment pertained to the issue of community protection. A cooling off period is proposed as a way of protecting communities from rapid reduction in capital. This cooling off period is intended to allow communities time to adapt to economic changes resulting from capital reduction. However, the SSC notes that by the time crab rationalization actually takes place will be, in all likelihood, an off period of several years and that an additional cooling off period for an extended amount of time may not be needed.

C-1 (b) CRAB MANAGEMENT: EIS

The SSC was informed that progress on the EIS is crawling along at a snail pace.

C-1 (c) CRAB MANAGEMENT: Pribilof Blue King Crab Rebuilding Plan

Diana Stram presented directions/alternatives on Pribilof blue king crab rebuilding plan. The SSC notes that in the rebuilding plan and in discussions on why the blue king crab stocks are depressed, there should be an analysis on what predators feed on blue king crab, if there has been a change in the number of predators, and if the predator-prey relationships have been changing.

C-3 Essential Fish Habitat

The SSC heard a report from Cathy Coon summarizing the recommendations of the EFH committee on alternatives to mitigate the effects of the fishery on essential fish habitat. The focus of the proposed alternatives was on reducing the impact of the bottom trawl fishery on benthic fish habitat.

In addition, the SSC received public testimony from Thorn Smith (North Pacific Longline Association), Ben Enticknap (Alaska Marine Conservation Council), Whit Sheard (Ocean Conservancy), Geoff Shester (Oceana), Ed Richardson (Pollock Conservation Cooperative), Simeon Swetzof (Mayor of St Paul), and Lori Swanson (Groundfish Forum).

The SSC found the alternatives difficult to evaluate because there was no statement of goals or objectives of the mitigation effort. There was no clear rationale for the particular closures proposed. We are unable to determine whether the closed areas are intended to achieve a specific reduction in fishery impacts or establish a specific percentage of protected habitat. Nor can we tell whether the emphasis is on protecting habitat that supports commercially important fish species or protecting specific biogenic habitat features. Some benthic habitats are known to be sensitive to and slow to recover from disturbance, e.g., corals and sponges. Mitigation measures may be aimed explicitly at avoiding adverse fishery impacts on this type of habitat. Moreover, simple protection of areas with known catches of adult fishes is not necessarily the only or best way to safeguard EFH. For example, habitats that form juvenile nursery areas may be lightly fished, but could be as important to protect from fishing impacts as those producing more substantial commercial catches of fishes. Thus, it is extremely important that the Council and EFH Committee articulate the specific purpose of the proposed mitigation measure and the criteria for evaluating the effectiveness of the measure in achieving their goals.

The SSC recommends that the document should:

1. Specify the goals of the EFH program so that there is a basis for evaluating the alternatives.
2. Describe the rationale used in developing the alternatives.
3. Explicitly state what the triggers for mitigation are and state at what point mitigation is required.
4. Include an evaluation of ways to mitigate fishery impacts other than time/area closures, e.g., gear modification and effort reduction.
5. Structure alternatives so that we can gather information that allows us to evaluate the effectiveness of mitigation measures on the relationship between fishing and habitat and the resultant impacts on fish productivity.
6. Address mitigation measures for non-trawl as well as trawl gear. (All measures proposed are directed at mitigating only trawl gear impacts).
7. Include MPAs in the suite of possible fishery mitigation measures (these appear to have been summarily rejected from the proposed alternatives.)
8. Evaluate SSL closed areas on their merit as EFH protection, rather than consider them as part of the status quo.

9. Address the extent of fishing effort or fishing area affected by the proposed mitigation measure so there is a common metric to evaluate the impacts of the measures on the fishery.
10. Evaluate the effect of concentrating displaced fishing effort from proposed closed areas into remaining open areas.

D-1(a) Review of BSAI/GOA Groundfish FMP Harvest Management Strategy

A summary of findings and recommendations was reported by Dr. Dan Goodman (University of Montana), chair of the scientific committee commissioned by the Council to review the harvest strategy currently used in the BSAI and GOA groundfish management plans. Public comment was provided by Ed Richardson (Pollock Conservation Cooperative).

The SSC believes that the review committee conducted a thorough and thoughtful analysis of the strengths and weaknesses of the current harvest strategy. It is remarkable that this internationally acclaimed panel of experts could be assembled to participate and complete this detailed review so quickly.

The review committee characterizes the current NPFMC harvest strategy as consisting of four stages: specification of an OY range for the groundfish complex; assignment of stocks to tiers based on the availability of stock characteristic information; determination of OFL, ABC, and status relative to overfishing; and setting TAC as no greater than the ABC. In current practice, the OY specification is historical and has not undergone regular reconsideration or revision. The second and third stages are well-characterized scientific determinations and thus amenable to evaluation. Because the final step is ad hoc, it is amenable to ex post review of actual decisions but unsuited to a priori evaluation of future decisions. Consequently, the review committee report primarily focuses on the second and third stages of the harvest strategy.

Overall, the review committee findings are favorable with respect to the historic record of the current BSAI/GOA groundfish harvest management system:

> *ver time the evolution of this management system has been in the direction, overall, of greater conservatism. By the standards of most of the world large commercial fisheries, this management system is conservative.* [1]

and,

> *"Overall, the current NPFMC approach to advising on ABCs appears to meet the requirements of MSFCMA, from a single-species/target-stock management perspective for most of the target stocks (the exceptions are primarily the rockfish)."2*

Nevertheless, the committee interjects several important caveats regarding potential vulnerabilities of the operation of the management strategy and offers recommendations that warrant timely consideration by the Council, NMFS, and the research community. We highlight a few of the most prominent recommendations in our comments, below.

1. Revisit the BSAI and GOA groundfish OY ranges he current BSAI and GOA groundfish OY ranges were established in 1984 (BSAI amendment 1) and 1987 (GOA amendment 15), respectively. Memory suggests that these limits were intended to be conservative to allow for trophic and technological

[1] Executive Summary, page 4, paragraph 2.

[2] Section 3.12, page 76, paragraph 1.

interactions among target species. Nevertheless, the degree of conservatism and the logical underpinnings for a particular level of conservatism are not clearly explained. In addition, the review committee notes that ocean conditions, target and non-target stock abundances have changed in the ensuing years. Therefore, the review committee recommends that it would be prudent to revisit the rationale for and specific magnitude of the overall groundfish OY ranges, with particular focus on the explicit linkages to environmental conditions that precipitate to changes in ocean productivity and species abundance. **The SSC concurs with this recommendation.**

2. Management Strategy Evaluation he properties of a management system are not the simple union of the properties of the subcomponents. The review committee advises that an MSE could provide a better understanding of the robustness of the ABC harvest strategy relative to alternative harvest management strategies, especially in the context of shifts in ocean productivity. The review committee recommends that the MSE be based on data from an actual fishery, incorporate realistic assessment models, and explicitly represent uncertainty due to process error, observation error, model error, and implementation error. **The SSC recommends that the feasibility of conducting a MSE analyses be assessed and the results reported to the SSC at its February 2003 meeting**

It is important to note that the committee finds that the structure of the current harvest strategy fails to guarantee increasingly conservative harvest strategies at lower information levels within or between tiers. Nevertheless, the committee suggests that the actual implementation of the harvest strategy may ensure increased conservatism at lower levels of uncertainty and suggests that an MSE of the BSAI pollock fishery could be used to explore whether the present tier structure actually provides the intended increase in conservatism for higher tier (lower information/higher uncertainty) stocks.

The review committee also recommends that MSE be used to evaluate the potential utility of multi-species or ecosystem models. **While the SSC is sympathetic to the intuitive appeal of multi-species/ecosystem models, we note that in practice, simple models often outperform complex models due to the sampling error associated with complex interactions present in the more complex models. Thus multispecies models might provide useful projections of the overall change in an ecosystem and yield inaccurate forecasts of individual species population trends. Nevertheless, the SSC encourages continued development of multispecies and ecosystem models because of the potentially beneficial insights that such models may provide to improvement and of single species models. At the same time, the SSC encourages ongoing development of single species models because of their well-defined statistical properties and often sophisticated treatment of uncertainties**.

3. Ecosystem Issues he review committee report concludes that the current single-species MSY-based approach to setting F_{ABC} makes:

> *only a slight adjustment for possible ecosystem needs; while the TAC setting adjustment downward from ABC allows for a considerably (sic) reduction in harvest, but the procedure for doing so is ad hoc.*

The committee recommends: continued and expanded monitoring of the ecosystem; development of adaptive experimental designs incorporating spatio-temporal exclosure zones; and, exploration of harvest strategies that ensure constant prey availability to predators.

In addition, the SSC is interested in exploring modifications to amendments 56/56 that account for differences in life history characteristics among species within tiers, to ensure that harvest strategies are more conservative for high tier (low information) stocks, to modify tiers 4, 5, and 6 to include abundance based adjustments to the ABC and OFL, and to create incentives for moving stocks from higher to lower tiers.

D-1(b) BSAI Rockfish Management

At its October 2002 meeting the Council requested that the National Marine Fisheries Service review rockfish management for 2003. It was suggested that such a review should include an examination of the ability to reliably identify species in the shortraker/rougheye group and the need to apportion the TAC for shortraker/rougheye among the eastern Bering Sea sub-area and three Aleutian Islands sub-areas. The Council also requested a discussion of long-term management of the red rockfish complex. NMFS Regional Office Staff members Sue Salveson and Andy Smoker presented an overview of a discussion paper that was prepared to address the Council request. As noted in our SAFE discussions below, there is a need to examine our approach to rockfish management. The SSC is supportive of the Agency efforts to address this issue.

D-1(d) Final BSAI Groundfish Specifications

SPECIAL CONCERNS
The following concerns apply to both Bering Sea/Aleutian Islands and Gulf of Alaska rockfish resources.

Rockfishes are exceptionally longlived species, characterized by sporadic and infrequent recruitment, low productivity, and for many species, strong site fidelity. These life history characteristics make them especially vulnerable to overfishing, and once overfished, rebuilding can take decades. The SSC is concerned that management of multi-species complexes and management of stocks across broad geographic areas creates the potential to overfish individual stocks. These undesired outcomes could occur particularly if complex exploitation rates are too high for less productive members of the complex or where spatially discrete local stock aggregations go undetected.

The SSC has expressed concerns about species complex management and individual rockfish species management for several years. The first step in addressing these problems was the formation of an ad hoc Other Species working group who are developing a framework for decision-making on the topic of aggregating/disaggregating species within complexes. While the SSC has no evidence to suggest that overfishing any rockfish species or stock is imminent, the SSC cautions that the consequences of overfishing one or more of these rockfish stocks could be severe. Action to prevent this from happening should be undertaken as soon as possible, preferably before the 2004 TAC setting process.

In addition, to the original charge for the working group, development of a framework for splitting out species from complexes, the SSC asks that a white paper be developed that addresses the following specific questions for each species:

1. Are current management approaches appropriate; do they effectively provide for conservation of rockfish resources?
2. Are surveys effectively estimating stock abundance and providing requisite demographic data?
3. What are the strengths and weaknesses of survey data and how might surveys be improved?
4. Is knowledge of individual species life history adequate? Do we have reliable estimates of natural mortality, maturity, and growth?
5. Do we know the stock structure for managed species?

Where data deficiencies are noted, the white paper should identify the specific steps to be taken to acquire the needed data.

The paper should make specific recommendations for determining species-specific and area specific precautionary ABCs where appropriate. We recognize that data voids will exist, but these should not be

used as an excuse to avoid implementing alternative management approaches to effectively conserve rockfish resources.

POLLOCK

EBS: The EBS pollock population continues to be strong, holding at near record levels of abundance. Current age 3+ biomass is estimated to be 11.1 million mt. The population continues to be supported by the above average 1996 year-class. ABC is determined under tier 1.a. Projected 2003 spawning biomass is 3.3 million t, with F_{MSY} set at 0.52. **The SSC concurs with the Plan Team recommended ABC of 2.3 million mt.** OFL levels for this stock are 3.53 million mt at a fishing mortality rate (F_{OFL}) of 1.1

AI: Aleutian Island pollock ABC is set using tier 5 procedures. The 2002 bottom trawl survey estimated biomass has increased 69% compared to the 2000 survey biomass. **The SSC concurs with the Plan Team Aleutian Islands pollock ABC set at 39,400 mt**. This is based on a harvest rate of 75% of M where M=0.30, and biomass of 175,000 mt estimated from bottom trawl survey. OFL is 52,600 mt.

Bogoslof: **The SSC disagrees with the Plan Team recommended ABC**. Under tier 5 the maximum ABC for the Bogoslof area is estimated to be 34,000 mt (Plan Team ABC recommendation) with a companion OFL of 45,300 mt. Traditionally, the SSC has recommended down-weighting the ABC proportionately to the ratio of current to target stock biomass following the tier 3 b procedure. Current stock biomass is estimated at 227,000 mt (down slightly from the 2001 estimate). Previously, the SSC has estimated a B_{target} of 2 million mt. We treat the target biomass as a proxy for $B_{40\%}$. The $F_{40\%}$ level is set at 0.27, and thus the tier 3.b. adjusted F_{ABC} is 0.018.

$$F_{ABC} = F_{40\%}\left(\frac{B_{2002}}{B_{40\%}} - 0.05\right)\Big/(1-0.05) = 0.27\left(\frac{226{,}000}{2{,}000{,}000} - 0.05\right)\Big/(1-0.05) = 0.18$$

The resultant down-weighted ABC is 4,070 mt.

PACIFIC COD

The SSC appreciates the authors attention to SSC comments from the December 2001 minutes with respect to model configuration for selectivity and retrospective analyses, and looks forward to future developments of spawner-recruit relationships for BS/AI cod.

This year biomass estimate from the EBS bottom trawl survey is 26% below the estimate for 2001 and near the historical low. The biomass estimate for the Aleutian Islands survey in 2002 was 39% below the estimate for 2000 and represents the historical low. On the other hand, projected spawning biomass for 2003 is up 4% from the 2002 assessment, and revised $F_{40\%}$ and $F_{35\%}$ are up substantially from last year.

Pacific cod qualify for management under tier 3b, because projected biomass for 2003 is slightly below $B_{40\%}$. Fishing at $F_{40\%}$ = 0.35 would result in a 2003 catch of 278,000 t, which is the maximum permissible ABC under Amendment 56. The authors recommend an ABC of 245,000 t based on a risk-averse optimization procedure that considers uncertainty in estimates of survey catchability and natural mortality.

The Plan Team recommends an ABC for 2003 equal to 223,000 t, which represents the status quo from 2002, corresponding to F = 0.27, owing to the following concerns: (1) a nearly continuous decline in spawning biomass since 1988; (2) of the five most recent year classes, three were below average and two were average; and (3) abundance may be overestimated due to assumed values of survey catchability and natural mortality and their combined effects on estimated parameters for growth and selectivity. Despite

the assumption that trawl catchability is equal to 1, estimated age 3+ biomass is much greater than survey biomass. The team had difficulty to fully accept this discrepancy and they are concerned that a comparison of 2002 shelf and slope surveys may not support the notion that the slope supports large amounts of large cod implied by the assessment to be missing from the shelf survey.

The SSC shares these concerns of the Plan Team, and endorses the team recommended ABC of 223,000 t for 2003. Also, the SSC endorses the Plan Team recommended OFL of 324,000 for 2003, based on F = 0.41 from the tier 3b formula.

YELLOWFIN SOLE

The stock assessment for yellowfin sole is a straightforward update of last year assessment that includes new catch and survey information. The SSC supports the plan team recommendation for ABC and OFL for yellowfin sole:

Age 2+ biomass = 1,550,000 mt
OFL = 136,000 mt
ABC = 114,000 mt

GREENLAND TURBOT

The SSC concurs with the stock assessment authors and the plan team and recommend setting the ABC at a value lower than the maximum permissible (14,700 mt) because of concerns for continued stock decline and lack of substantive recruitment since 1982. Although the stock qualifies for tier 3 management, the plan team recommended using Stock Projection Scenario 4 to set F_{ABC}. This scenario averages model estimated fishing mortality rates from 1997 to 2001, then uses the averaged rate (0.10) to project catch into the future. OFL is calculated using the tier 3 algorithm where F_{OFL} = 0.32. This results in the following values for 2003:

Age 1+ biomass = 112,000
OFL = 17,800
ABC = 5,880

The SSC recommends that this averaging process be re-evaluated following next year slope survey. Should this survey confirm the observed low stock levels found in the 2002 survey, then the SSC recommends that we accept that the stock is in a low productivity regime and calculate ABC as per established procedure (i.e. using the tier 3 methodology).

ARROWTOOTH FLOUNDER

This year assessment includes a new split sex model enabling estimation of a separate natural mortality rate for males and females. The new model also led to a change in estimated selectivity for both males and females that accounts for the relatively large changes in F_{40} and F_{35} levels from previous years. The SSC supports the plan team and stock assessment authors recommendations for arrowtooth flounder values for 2003:

Age 1+ biomass = 597,000
OFL = 139,000
ABC = 112,000

ROCK SOLE

This year stock assessment features several significant changes from previous assessments. These changes have resulted in a large reduction in estimated biomass, ABC and OFL due to a change in model

parameters, notably the estimate of catchability. In this year assessment, catchability was estimated by the model instead of assigning a catchability of 1.0. Doing this, catchability was estimated at 1.8, a value that suggests herding by the trawl warps. The authors corroborated this finding with experimental data indicating that the bridles used on the standard research trawl do, in fact, tend to herd rock sole into the net. The SSC accepts the plan team recommendations for rock sole. The recommended values for 2003 are:

Age 2+ biomass = 877,000
OFL = 132,000
ABC = 110,000

FLATHEAD SOLE

This year assessment is a straightforward update of last year assessment, incorporating new catch, discard, survey biomass, and length composition data. The new model also includes sex specific age-length matrices. The SSC supports the plan team recommendations for ABC and OFL. The values for 2003 are:

Age 3+ biomass = 550,000
OFL = 81,000
ABC = 66,000

The SSC notes that the spawner recruitment function appears to fit the data well, and recommends that movement to tier 1 be evaluated for next year.

ALASKA PLAICE

This year assessment is a straightforward update of last year assessment. The SSC supports the plan team recommendations for ABC and OFL. The values for 2003 are:

Age 1+ biomass = 1,080,000
OFL = 165,000
ABC = 137,000

The SSC again notes that the spawner recruit function appears to fit the data well and recommends that Alaska plaice be re-considered for movement to tier 1.

OTHER FLATFISH COMPLEX

The SSC supports the plan team recommendation for ABC and OFL. The values for 2003 are:

Age 1+ biomass = 107,000
OFL = 21,400
ABC = 16,000

The SSC notes that the stock assessment authors estimated M (natural mortality) for this complex from species not in the complex. These values of M may or may not be appropriate; the SSC recommends that the assessment authors evaluate estimates of M for species in the complex (starry flounder, dover sole, rex sole, etc.).

SABLEFISH

See GOA Sablefish recommendations.

PACIFIC OCEAN PEARCH

This year assessment was updated with 2001 AI fishery age data, updates of 2001 catch data, and preliminary 2002 catch data. The AFSC has initiated a biennial slope survey in 2002 which will be examined for modeling in the future. For the second year, the EBS and AI POP are modeled as a single population. There really is not an alternative, because there is little quality survey data for the EBS population. Biological age-length and weight-length relationships do not indicate that the EBS and AI populations are different.

The SSC concurs with the Plan Team determination under Tier 3b of F_{ABC}=0.047; and F_{OFL}=0.056. These values result in an ABC of 15,100 mt and an OFL=18,000 mt. The areal apportionment based on past AI surveys and the recent 2002 slope survey estimates that 16% of the POP are in the EBS. This results in an ABC apportionment of 2,410 mt in the EBS, and 12,660 mt in the AI. The AI apportionment based on the 5 most recent surveys is: Area 541= 3,500 mt, Area 542=3,340 mt, and Area 543=5,850 mt.

OTHER RED ROCKFISH

The SSC heard public testimony from Carl Haflinger, Ed Richardson, and Dorothy Childers.

The 2001 catches were revised and preliminary 2002 catches were added to the analysis. The 2002 AI survey biomass estimates were also included. Other Red Rockfish consists of Northern rockfish and the Shortraker/Rougheye complex. In 2001 and 2002 it was recommended by the Plan Team and the SSC that shortraker/rougheye be managed at the species level. Resulting meetings by the NMFS regional office and the Observer Program resulted in a project (being tested in 2003) to provide improved data for identification of shortraker and rougheye rockfish in the commercial catch. While the species identification program is being evaluated, and until such a program results in data improvement, the SSC concurs that we cannot manage shortraker and rougheye rockfish at the species level. We remain concerned that management by species complex may not provide adequate conservation benefits to individual species within the complex.

Shrotraker/Rougheye Rockfish: **The SSC concurs with the Plan Team ABC recommendation** for ABC and OFL levels for these species using Tier 5 procedures. Accepted values of M are 0.025 for rougheye and 0.030 for shortraker. Biomass is derived from the EBS and AI slope bottom trawl survey by averaging 1988, 1991, 2002 species estimates for the EBS surveys and 1991-2002 estimates for the AI surveys. The F_{ABC} exploitation rate was set at 0.75M and F_{OFL} was set M.

The resulting ABC and OFL were:

Species	Area	ABC	OFL
shortraker/rougheye	BSAI	967	1,289

Northern Rockfish: For northern rockfish in the AI, the SSC concurs with the stock assessment authors, estimating ABC and OFL using Tier 5 and M=0.06. However, for northern rockfish in the EBS, the SSC concluded that there was no reliable estimate of northern rockfish biomass for the EBS. **Therefore the SSC recommends calculating the northern rockfish ABC and OFL for the EBS using Tier 6 (1978-1995 average catch):**

Species	Area	ABC	OFL
Northern rockfish	EBS(Tier 6)	121	161
	AI(Tier 5)	6,980	9,332

Public testimony by Carl Haflinger indicated that northern rockfish are predominately caught in the EBS in the 80-100 fathom zone. NMFS bottom trawl shelf surveys sample the shelf at depths out to 100 fm, however, as currently executed this survey has very low sampling density in the 80-100 fm depth strata

and thus may be missing northern rockfish. The slope survey begins at the 100 fm isobath and may also miss the center of the northern rockfish distribution. The SSC believes that northern rockfish biomass estimates from a reconfigured shelf survey could improve abundance estimates for this species. We recommend that NMFS examine whether it is practical to amend the bottom trawl shelf survey design to improve sampling of northern rockfish habitats. We also recommend that stock assessment analysts evaluate whether fisheries CPUE data could be used to estimate abundance.

The SSC notes that there remains considerable uncertainty as to whether the tier 6 calculation we are recommending for Bering Sea northern rockfish ABC is sufficiently precautionary. Until reliable estimates of stock biomass are available for the EBS, we caution that this approach may not adequately protect the resource. We strongly urge that NMFS evaluate all fishery independent and dependent data sources to support robust estimates of abundance by species and area.

OTHER ROCKFISH

The 2001 catches were revised and preliminary 2002 catches included in this year analysis. Biomass estimates are included from the 2002 AI and Bering Sea slope surveys. The other species rockfish complex is comprised of 29 species, but shortspine thornyheads and light dusky rockfish (95%) predominante. **The SSC concurs with Plan Team recommendation** of Tier 5 management for this complex assuming M=0.07.

The resulting ABC and OFL are:

Species	Area	ABC	OFL
Other Rockfish	EBS	960	1,280
	AI	634	846

The SSC concurs with the Plan Team recommendation that the decision to manage light dusky rockfish on a single species basis await completion of the Other Species working group analysis.

ATKA MACKEREL

The SSC disagrees with the Plan Team recommended ABC for Atka Mackerel (51,000 mt). Stock condition was estimated with a new model utilizing AD Model Builder. Stock assessment authors explored 13 models in 3 generic classes to test the sensitivity of model assumptions. The SSC agrees with the assessment authors that the new reference mode provides a much improved framework for estimating stock condition and that the reference model is *conservative and reasonable representation of stock dynamics* The stock assessment authors recommend a maximum ABC estimated under tier 3.a. procedures at 82,800 mt. The Plan Team objected to the authors recommended ABC on four grounds: 1) tentativeness of the model structure, 2) uncertainty in the 2002 bottom trawl survey biomass, 3) a projected drop in spawning biomass below the $B_{40\%}$ level in 2004, and 4) the large increase (+69%) in ABC compared to the current ABC. The Plan Team recommended ABC is based on harvest Scenario 4 (p 7 BSAI SAFE), where model estimated fishing mortality rates for 1997-2001 are averaged and used to project stock biomass and expected yields into the future.

The SSC disagrees that model structure is tentative. The assessment authors responsibly explored sensitivity of their assumptions and have adequately rationalized the choice of the preferred model. The trend in survey biomass is increasing. The 2002 bottom trawl survey biomass estimate has a reasonable confidence interval (20% CV) and is improved over past estimates. The projected reference model 2002 biomass is well below the bottom trawl survey estimated biomass suggesting a conservative estimate of stock abundance, at-least compared to that inferred from fishery independent survey data. The Plan Team concern for bottom trawl survey biomass uncertainty seems unwarranted given these facts. The assessment authors presented two means of promoting a more conservative ABC than the maximum

allowable ABC under tier 3.a. One of these fixed the 2003 catch at 63,000 mt. This catch projection essentially maintains stock biomass at or near $B_{40\%}$ effectively eliminating the Plan Team concern for a near term drop in stock biomass. Additionally, the SSC notes that the 1998 year-class appears very strong.

The SSC recommends setting Atka Mackerel ABC at 63,000 mt. This is substantially below the conservatively estimated maximum allowable ABC while providing a suitable increase in allowable harvest commensurate with the improved inference in stock condition generated by the new model. OFL is estimated from tier 3.a. procedures and is set at 99,700 mt.

SQUID AND OTHER SPECIES COMPLEX

The SSC has previously expressed its concern with the estimation of ABC for squid and other species. The multiplicity of species within the complexes and the variety of life histories they represent complicate the task of assuring responsible conservative harvest recommendations. Compounding this difficulty is the paucity of data, and the lack of precision in available estimates of stock condition. Nevertheless, the Council is obligated to stipulate allowable catches for these species. To do so we utilize a mix of survey biomass estimates and historic catch data following Tier 5 and 6 ABC estimation algorithms.

Squid: There are no reliable biomass estimates for squid. **The SSC concurs with the Plan Team recommendation to follow Tier 6 ABC estimation procedures for squid using mean catch for the period 1978 to 1995.** Under this procedure OFL is set at the level of average catch and ABC is 75% of the average catch. The estimated ABC and OFL is 1,970 mt and 2,620 mt respectively.

Other Species: The Plan Team believes that the biomass estimates for sharks and octopi are unreliable. They suggest and the SSC agrees that ABCs for these species be estimated using Tier 6 procedures. Tier 6 stipulates that catch should be averaged for the period 1978 to 1995 or some other appropriate period as recommended by the SSC. Reliable catch data for these complexes is only available since the 1990s. **The SSC concurs with the Plan Team recommendation to base the average catch on 1992-2001 data.** Sculpin and skate ABCs are estimated using Tier 5. The maximum allowable ABC (Plan Team recommendation) for the Other Species complex is shown below.

Species	Biomass	M	Mean Catch	OFL	MAX ABC
Sculpins	213,000	0.15		32,000	24,000
Skates	482,000	0.10		48,200	36,200
Sharks			541	541	406
Octopi			387	387	290
Total				81,128	60,896

In 1998 the SSC recommended using Tier 5 procedures for estimation of Other Species ABC. To do so, exploitation rates based on natural mortality values were assigned to each of the Other Species component complexes (sculpins, skates, sharks and octopi) and multiplied against the estimated bottom trawl survey biomass. The ABCs for each complex were summed to produce the total ABC. At the time, the application of this methodology suggested nearly a 4-fold increase in the maximum allowable ABC. The SSC was uncomfortable adopting such a large increment in allowable catch and implemented a 10-year stair step to move gradually into the ABC. We still have the same concern. Thus we are in the 5th year of the stair-step process.

The SSC stair-step procedure computes the proportion (nth year of the stair-step divided by 10) of the difference between the 1997 Other Species ABC (25,800 mt) and the current estimate of maximum ABC

(60,896 mt) then adds that amount to the 1997 ABC. **Thus the SSC recommended Other Species ABC, after rounding, is 43,300 mt** (25,800 + (5/10)*(60,896-25,800)). OFL is the sum of the Tier 5 and 6 estimated OFL values for each complex within the Other Species category or 81, 100 mt.

The SSC notes that sharks and skates share many of the same life history characteristics of the rockfishes (e.g. late maturity, low productivity, long life spans, low reproductive rates), and warrant particular concern. These life history characteristics make these species especially vulnerable to overfishing and their continued aggregation is not recommended as a long-term management strategy. The SSC strongly recommends that a methodology for ensuring adequate conservation of these species be developed as quickly as possible.

D-1(e) Final GOA Groundfish Specifications

POLLOCK
Dr. Martin Dorn presented the assessment to the SSC. Public testimony was given by Julie Bonnie, Alaska Groundfish Data Bank.

This is an impeccable stock assessment, which fully addresses the concerns raised by the SSC in September. The different model alternatives explore the estimation of catchability and the sensitivity of the stock assessment to data points and data series. In addition, maturity information has been thoroughly reanalyzed. The SSC concurs with the analysts that further research is desirable regarding maturity. It is unclear whether the age and length at maturity are proper random samples from the population, since they are collected only from the aggregated pollock population in Shelikov Strait. Further, it is curious that the age and length at maturity have increased in the last few years, when one might expect a decrease as a population response to decreased abundance.

The GOA pollock stock remains in tenuous condition. The 2001 bottom trawl survey was the lowest on record, and the 2002 Shelikov Strait hydroacoustic survey was also very low. Fortunately, additional survey work in 2002 discovered spawning stock outside of Shelikov Strait in the shelf break and Shumagin Islands areas, suggesting that the proportion returning to Shelikov Strait may have been much lower than in previous years for some reason. This finding is of important consequence to the stock assessment, because it is assumed that a constant proportion of the population returns to Shelikov Strait each year to spawn.

The various surveys are contradictory, in that the Shelikov Strait hydroacoustic survey suggests a declining trend in the 1990 , whereas the bottom trawl and ADF&G surveys have been more stable (except for 2001, as previously mentioned) or even increasing. Consequently, the model verages across these contradictions, attempting to balance the different data sources. The overall trend in the population (Figure 21) suggests a large increase from less than 100,000 mt of female spawning biomass in 1961 to a peak of 750,000 mt in 1983, and then a reduction to 177,000 mt at the present time. (The total population is much larger.) The current level is at about 28% of unfished female spawning biomass and approaching the 20% level that would curtail directed fishing altogether under Steller sea lion protection measures. The current level is also lower than the reference level $B_{40\%}$ of 240,000 mt.

Of the six models evaluated in the analysis, model 2 is the baseline model comparable to last year assessment. Comparison of the results from different models (Table 12) indicates that the most recent data points have strong influence on the estimated biomass (Models 3, 5, 6). Interestingly, removal of the Shelikov Strait survey altogether (Model 4) increases the variability in the assessment, suggesting that removal of this dataset is not warranted. In Model 5, a correction for the underestimate of spawning biomass in 2002 is made, which leads to an increase of biomass. In addition, the data suggest that survey catchability q is well estimated at about 0.7 (Model 1), so that biomass from Model 2, with catchability equal to 1, is probably underestimated. Therefore, the use of the baseline model 2 is likely to be

conservative, because (1) there is no correction for catchability, and (2) there is no correction for a lower proportion returning to Shelikov Strait in 2002, and (3) the biomass and ABC from most other models are higher. Additional conservatism is built into the assessment by: (1) using average recruitment in place of the higher estimated recruitment for the 1999 year-class, and (2) using an even more risk-averse harvest policy than that approved for the Steller sea lion measures.

The SSC concurs with the analysts and the Team in the use of this extremely conservative approach, given the concern about the status of this population. The resulting ABC is 49,590 mt (F_{ABC}=0.24) and the overfishing level is 69,410 mt (F_{OFL}=0.35). The SSC further supports the breakdown by smaller management areas (47,890 mt, W/C/WYK; 6,460 mt, EYK/SEO).

For future stock assessments, the SSC recommends further exploration of the sensitivity of the data series. In particular, it would be interesting to know whether some of the early values have a strong influence on the extent and peak of the pollock buildup in the 1970s. Further exploration of catchability needs to be made, perhaps with field studies, because the data strongly suggest that catchability can be estimated, As previously mentioned, the net effect of including this estimate would increase biomass across the time period accordingly.

PACIFIC COD

As in the analysis of BS/AI cod, the latest assessment includes separate selectivity schedules for the years 1978-1986, 1987-1999, and 2000-present to reflect changes in the character of this fishery. No new survey data are available, but the assessment was updated with new fishery data.

The SSC supports the authors and Plan Team recommendations for the 2003 specifications: ABC = 52,800 mt and OFL = 70,100 mt under the tier 3b approach. The SSC also support their recommended allocation of ABC among regulatory areas according to the biomass distribution from the three most recent surveys: 39% in western, 55% in central, and 6% in eastern.

FLATFISH

The flatfish group is subdivided into deep water flatfish, rex sole, flathead sole, and shallow water flatfish. This year, flathead sole were separated out of the complex and presented as a separate stock assessment. This year assessments are based on the results from the 2001 NMFS trawl survey. There was no eastern Gulf survey in 2001 and biomass for this area was estimated using the average of the 1993-1999 eastern Gulf biomass estimates. The total flatfish ABC for 2003 declined slightly from 2002 because maturity data for northern and southern rock sole allowed estimation of $F_{40\%}$ and $F_{35\%}$, which resulted in smaller ABCs for those species.

The SSC concurs with the recommendations of the plan team and the recommended 2003 ABCs are as follows:

	ABC	**OFL**	**Exploitable Biomass**
Deep Water	4,880	6,430	68,263
Rex Sole	9,470	12,320	71,326
Shallow Water	49,340	61,810	349,992
TOTAL	63,270		489,581

The SSC agrees with the plan team recommendation for regional apportionments:

	WESTERN	CENTRAL	WYAK	EYAK/SEO	TOTAL
Deep Water	180	2,220	1,330	1,150	4,880
Rex Sole	1,280	5,540	1,600	1,050	9,470
Shallow Water	23,480	21,740	1,160	2,960	49,340

ARROWTOOTH FLOUNDER

This year assessment employed a new survey selectivity fit using a two parameter logistic model. The SSC notes that the differences in estimated exploitable biomass between 2002 and 2003 result from the use of a different model, not from a real change in biomass. The SSC also notes that biomass of this species, which has been increasing steadily since the 1970s appears to be peaking. The SSC notes that the biomass of arrowtooth flounder is very large. This species is known to prey heavily on other commercially important species and the SSC recommends that the ecological implications of the continuing increases in abundance be evaluated and possible management options for mitigating these impacts be considered.

The SSC concurs with the plan team recommendations for ABC. The values for 2003 are:

ABC	OFL	Exploitable Biomass
155,140	181,390	1,302,000

Regional apportionments are in proportion to biomass distributions from the 2001 trawl survey.

Western	Central	WYAK	EYAK/SEO	Total
17,990	113,050	18,190	5,910	155,140

FLATHEAD SOLE

The 2003 assessment used an age structured model for flathead sole. The reference rates were much higher than in past assessments because of updated information on length and age-at-maturity. With the adoption of the age-structured assessment, ABC could be estimated under tier 3a procedures rather than tier 5 as used in the past. These changes resulted in a higher ABC estimate for 2003. **The SSC agrees with the Plan Team recommendation for ABC**:

ABC	OFL	Exploitable Biomass
41,390	51,556	132,260

Regional apportionments based on the fraction of 2001 survey biomass in each area are:

Western	Central	WYAK	EYAK/SEO	Total
16,420	20,820	2,900	1,250	41,390

SABLEFISH

Dr. Jim Ianelli gave an overview of the stock assessment. Public testimony was provided by Jerry Merrigan, Prowler Fisheries; Arne Fluglvog, PVOA; Dan Falvey, ALFA; and, Nick Delaney, representing 10 Kokiak longline fishing vessels.

Due to recent increases in survey and fishery CPUE, the status of the sablefish population has changed from small and increasing to moderate and increasing. The stock assessment is contemporary and makes good use of the relevant data sources. The sablefish population increased to a peak in the mid-1960s, declined in the 1970 , increased in the 1980 , declined in the 1990 , and has increased recently. Population biomass is well estimated from the data, with some uncertainty in the future related to the yet unknown strength of the 1998 year-class. The driving factor in sablefish abundance is periodic strong year-classes, the most recent being the 1997 year-class.

The SSC endorses the modeling approach used, the resultant maximum permissible ABC of 25,400 ($F_{40\%adj}$=0.129) obtained from the biomass-based $F_{40\%}$ policy as a starting point for development of an adjusted ABC, and the overfishing level of 30,900 (F_{OFL}=0.159). By using the average recruitment

from the 1982 1998 year-classes, the estimated 2003 spawning biomass of 210,000 mt is 39% of the unfished spawning biomass (541,000 mt) and 97% of the reference $B_{40\%}$ level (216,000 mt).

In the past, the analysts adjusted the ABC downward to prevent the biomass from dropping from the most recent level (bundance trend method). This year, despite the more optimistic view of population status, the analysts have again adjusted the ABC downward to prevent biomass from dropping below the historical low level (bundance status method). The analysts conducted a decision analysis with several values of constant catch, along with the adjusted $F_{40\%}$ policy, and calculated the probability of dropping below the historical level. The resulting ABC is 18,400 mt. Like the Plan Team, the SSC disagrees with this approach, because under some catch values the analysts constant catch policy violates the Council $F_{40\%}$ policy. The Plan Team agreed in principle with a reduction of ABC from the maximum permissible but with a different rationale. They recommended the same ABC of 18,400 mt based on the increase in survey biomass.

An examination of Table 4 of the GOA Summary (p.28) shows that the analysts proposed reduction is much larger than for any of the other stocks, including the walleye pollock stock, which is in tenuous condition. In contrast, the sablefish population is thought to be in moderate condition, near the $B_{40\%}$ level. **The SSC believes that a smaller reduction from the maximum permissible ABC is warranted.**

In order to establish an alternative ABC, the SSC considered the projections from the $F_{40\%}$ policy (Figure 5.13, left panel). Due to the declining trend in future biomass, increased variability in future catches would occur if no adjustment to the maximum permissible ABC was made. To balance out the trend in future catches for a more stable policy, **the SSC recommends using the 5-year average of catches under the $F_{40\%}$ policy (Scenario 1: maximum permissible F, Table 5.11, p 271 of GOA SAFE), or 20,900 mt, for ABC.** One additional reason for the averaging is that this assessment is the first to propose a change in status for sablefish. Future assessments should be able to confirm whether this change is stable.

For future assessments, the SSC recommends two considerations. First, the decision analysis should consider policies that are in concert with Council-established policy. Adjustments to maximum permissible ABC should utilize harvest policies like the biomass-based policy established by the Council. Second, the analysts should reevaluate whether to exclude the 1977 1981 year-classes from the calculation of unfished biomass and reference biomass $B_{40\%}$. The recruitment trends in Figure 5.9 do not suggest the presence of a major regime shift. Their inclusion would increase unfished biomass and $B_{40\%}$ and hence might alter the perceived status of the population.

The final step in the process is to apportion the ABC by regions. The SSC endorses the analysts approach, which is a weighted average of the last five years of both fishery and survey information. This results in final ABC of:

2003 Sablefish ABC Apportionment

REGION	BSAI			GOA					Grand Total
	EBS	AI	Subtotal	WGOA	CGOA	WYK	SEO/EYK	Subtotal	
ABC	2,900	3,110	6,010	2,570	6,440	2,320	3,560	14,890	**20,900**

SLOPE ROCKFISH

Slope rockfish in the GOA are comprised of POP, Northern, Shortraker/Rougheye, and Other slope rockfish. The SSC concurs with the Plan Teams recommendation of dividing this report into three sections: POP, northern rockfish, and shortraker/rougheye with other slope rockfishes so that the assessments will be easier to read.

PACIFIC OCEAN PERCH

The model was updated with catch and age data from the 2001 fishery. For this model q is estimated as being much closer to 1.0 then for the POP model in the EBS/AI. Also, the plot in Fig. 6-10 seems to indicate that q is underestimated. Since this is just the second year under ADMB, further examination of model structure seems warranted. Because results are not out of line with previous assessments including those using the previous stock synthesis models, the SSC concurs with the Plan Team ABC and OFL recommendations under Tier 3a, which utilize an $F_{40\%}$ of 0.05 and an $F_{35\%}$ of 0.06, respectively. The recommended ABC and OFL values are 13,660 mt, and 16,240 mt, respectively. The allocation of ABC in the GOA uses a 2/3 exponential weighting of 1996, 1999, and 2001 survey resulting in ABC and OFL recommendations as follows:

2003 POP Apportionment

REGION	WGOA	CGOA	EGOA	TOTAL
ABC	2,700	8,510	2,450	13,660
OFL	3,220	10,120	2,900	16,240

Appendix 6-1 contains a Bayesian Analysis of the uncertainty in the POP assessment model. This analysis estimated M, rather than fixing it at M=0.05. The result is that M is estimated much lower, q much higher, and ABC is estimated to be much lower. Such an assertion is only appropriate if the data are unbiased and informative concerning M. However, for POP this assumption seems questionable.

NORTHERN ROCKFISH

The model was updated to include 2001 catch, preliminary 2002 catch, fishery age compositions from 2000 and 2001, and fishery length compositions for 1999, 2000, and 2001. **The ABC and OFL for northern rockfish are based on Tier 3a, resulting in an $F_{40\%}$=0.056, and F_{OFL}=0.066, and an ABC=5,540 mt and OFL=6,565 mt respectively.** Area apportionment were done as for POP, resulting in recommended ABC and OFL as:

2003 Northern Rockfish Apportionment

REGION	WGOA	CGOA	EGOA	TOTAL
ABC	890	4,640	10[1]	5,540
OFL				6,565

1 10 mt included in WYAK ABCfor Other Slope Rockfish

The SSC concurs with the Plan Team on these recommendations.

SHORTRAKER/ROUGHEYE

The shortraker/rougheye assessment has not changed since last year. Again, this years assessment is based on 1996, 1999, 2001 trawl surveys, and treats shortraker as Tier 5 (M=0.025) and rougheye as Tier 4 (M=0.025, F40%=0.032). As a precaution rougheye F_{ABC}=M=0.025, and shortraker F_{ABC}=0.75M=0.023; rougheye F_{OFL}=$F_{35\%}$=0.035 and shortraker F_{OFL}=0.025. The resulting ABC=1,620 mt and OFL=2,340 mt, with the ABC further divided using exponentially weighted survey results:

2003 Shortraker/Rougheye Apportionment

REGION	WGOA	CGOA	EGOA	TOTAL
ABC	220	840	560	1,620
OFL				2,340

The SSC concurs with the Plan Team on these recommendations.

The SSC again reiterates its concern for lumping these species. Landings of the complex exceeded ABC in 2001 and were close to the overall complex ABC in 2002. The SSC notes that observer data indicate that approximately 2/3 of the catch of shortraker/rougheye in recent years in the GOA consists of shortraker (Table 6-3b). The individual species ABC for shortraker in 2002 was 586 mt. The 2002 total catch of the shortraker/rougheye complex was 1,391 mt. If 2/3 of that catch was shortraker, then 927 mt of shortraker were caught, which is far in excess of the shortraker ABC.

OTHER SLOPE ROCKFISH

The Other Slope rockfish assessment was not changed from last year. The other slope rockfish are comprised of 12 species. It would be helpful to know which species are more abundant in other regions than the GOA. The Other slope rockfish assessment is unchanged since last year. Harlequin are treated as Tier 4, and all other rockfish treated as Tier 5. This results in a complex ABC=5,040 mt and OFL=6,610 mt. Again, exponentially weighting the survey results in a regional ABC apportionment as follows:

2003 Other Slope Rockfish Apportionment

REGION	WGOA	CGOA	EGOA	TOTAL
ABC	90	550	4,400	5,050
OFL				6,610

The SSC concurs with the Plan Team recommendation.

PELAGIC SHELF ROCKFISH.

This stock assessment was not changed form last year. This complex is mostly light dusky rockfish (99.7% in 2001). Yellowtail and widow are caught in trace amounts, suggesting that these species are primarily west coast species that are not threatened or endangered in Alaska because these species are at the limits of their range. The SSC concurs with the Plan Team recommendation using an F=M=0.09 strategy which is more conservative than a Tier 4, $F_{40\%=}$0.11 strategy. This results in ABC=5,490 mt, and OFL=8,216 mt. Again, using exponential weighting 1996, 1999, and2001 surveys, the following areal recommendations are derived:

2003 Pelagic Shelf Rockfish Apportionment

REGION	WGOA	CGOA	EGOA	TOTAL
ABC	510	3,480	1,500	5,490
OFL				8,220

The SSC concurs with the Plan Team recommendations.

DEMERSAL SHELF ROCKFISH

Over the past 5 years DSR has consisted of 90% yelloweye rockfish. This species is easy to age so age, so the M estimate of M=0.02 should be considered fairly reliable for this species. A discussion of estimates of M was added to this draft at the request of the SSC. The main problem is that trawl and tagging estimates of abundance are not considered effective so ADF&G has used manned submersibles and line transect estimates. This assessment was updated with 2001 average weight data, and an increase in estimated habitat of 280 sq. km.. This resulted in an increase in survey biomass to 17,510t. Using a Tier 4 approach, and adjusting for 10% of species other than yelloweye, F_{ABC}=M=0.02, resulting in an ABC=390 mt. $F_{35\%}$=0.0279 resulting in an OFL=540 mt

Area	ABC	OFL
EYAK/SEO	390	540.

The SSC concurs with the Plan Team recommendations.

SHORTSPINE THORNYHEAD

This year assessment was updated with 2001 catch data and 2002 sablefish longline survey data. The SSC commented in 2001 that the high estimate of M from the model was due to size and age stratification by depth for Thornyhead rockfish. Unfortunately, there does not appear to be sufficient depth stratified size data to currently shed light on this problem. This stock assessment is difficult because thornyhead are difficult to survey and no direct age data are available. Work with radiometric age data seems to be at odds with fishery and survey data. The stock assessment authors have thrown up their hands and gone with a base model, that provided a high M=0.08 and a good model fit, despite GSI and early efforts at direct ageing which indicate they are much older. **The SSC concurs with the Plan Team recommendation** based on last years model using a fixed M=0.038, and Tier 3a, resulting in $F_{40\%}$=0.067 and an ABC=2,000 mt. OFL is calculated using an $F_{35\%}$=0.102, and the base model resulting in an OFL=3,050 mt. Areal ABC was based on the results of 1990, 1993, 1996, 1999 surveys were:

2003 Shortspine Thornyhead Rockfish Apportionment

REGION	WGOA	CGOA	EGOA	TOTAL
ABC	360	840	800	2,000
OFL				3,050

ATKA MACKEREL

The SSC concurs with the authors and Plan Team in concluding that Atka mackerel in the GOA should be a bycatch only fishery with an ABC=600 mt.

Environmental Assessment/Initial Regulatory Flexibility Analysis

NMFS Regional Office staff members Mary Furuness and Tom Pearson presented a brief description of the draft EA/IRFA. No action was taken by the SSC.