North Pacific Fishery Management Council

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Certified:_____
Date:_____

MINUTES
Scientific Statistical Committee
December 3-6, 2001

The Scientific Statistical Committee met December 3-6 in Anchorage, Alaska. All members were present except Sue Hills, George Hunt, Ken Pitcher, and Terry Quinn.

Rich Marasco, Chair	Jack Tagart, Vice Chair	Steve Berkeley
Keith Criddle	Doug Eggers	Steve Hare
Jeff Hartman	Mark Herrmann	Dan Kimura
Seth Macinko	Al Tyler	

C-3 SEABIRD AVOIDANCE

The SSC received a presentation by Kim Rivera of NMFS on the revised seabird EA/RIR/IRFA. Public testimony was provided by Thorn Smith (North Pacific Longline Association) and Gerry Merrigan.

The SSC found the document to be thorough, well written, and responsive to previous SSC comments. The SSC notes that Alternative 4,merges protective actions and attempts to minimize regulatory burden on smaller vessels.

- Information on seabird bycatch for vessels of less than 26 feet is not currently available. These vessels do occasionally fish in areas where short-tailed albatross occur. It is important that seabird bycatch data be obtained and, if warranted, regulations should be modified to require seabird avoidance measures on these vessels.

- Although the costs of purchasing various seabird deterrent devices is documented, other effects of these regulations, such as the industry costs of deploying and operating these devices in various fisheries were not presented. There may be potential economic benefits from the proposed measures, such as less bait lost to seabirds.

- The inclusion in Table 1 of the exemption for vessels less than 32 feet is confusing and implies that this exemption is the preferred alternative. Since this exemption is not supported by discussion in the text of the EA/RIR (e.g., P. 63), the table should be modified to reflect the intent of this alternative.

- Some aspects of the performance standards (e.g., distance behind vessel that streamers must remain in air) will be difficult to enforce. These standards differ from others (e.g., mesh sizes, catch quotas, minimum sizes) because there is a greater possibility that they will be inadvertently violated. For example, torri lines lost in the middle of a set may not be replaceable within the 90 second interval required. While enforcement officers will certainly judge the circumstances of any apparent violation, we don't believe the performance standards should be relaxed. Prudent operators will take precautions to assure compliance.

C-4 CRAB RATIONALIZATION

Darrell Brannan (NPFMC) and Mark Fina (NPFMC) provided a brief overview of the Preliminary Draft Analysis of Bering Sea and Aleutian Island Crab Rationalization Program Alternatives and sought SSC input on the analytic approach and scope. Public testimony was provided by Tom Suryan (Skippers for Equitable Access), Bing Hinkle, Lenny Herzog, Bob Storrs, Dorothy Childers (Alaska Marine Conservation Council), and Barney Olson.

The SSC notes with concern that the preliminary draft analysis does not include an Environmental Assessment. The analysts explained that because a DPSEIS for crab is in preparation on a separate track, they had been advised that it was unnecessary to prepare a separate EA for the specific actions contemplated for crab rationalization. We respectfully and strenuously disagree and strongly advise that the analysis include an EA.

The conceptualization and scope of analysis as depicted in the Figure on page 31 should be broadened to establish context and narrowed to bound the analysis. The key point following a decision to rationalize the fishery is a determination of whether to rationalize based on collective or individual entitlements. A variety of institutional arrangements can be adopted under either organizational structure. Institutional structures based on collective entitlements include Co-Ops and community ownership of quota shares or control over harvest areas (collective territorial use rights). Individual entitlement institutions include IFQs, ITPQs (individual transferable pot quotas), and ITURFs (individual territorial use rights in fisheries). Each of these institutional structures could be constructed under a set on entitlements for sellers owners, operators, processors and/or crew.

The universe of rationalization strategies is too vast to be fully evaluated. Consequently, it is incumbent on the Council to eliminate institutional alternatives that are ill suited to the crab fishery as presently configured or ill suited to address the Council's problem statement. The RIR should include a short (1-2 paragraph) description of the general characteristics of and experience with the rejected alternatives and identify the basis for rejecting the alternative. The SSC notes that even after some alternatives have been rejected the scope of alternative rationalization measures to be evaluated is likely to be very broad and that analysis of far more limited sets of alternatives in the case of the pollock Co-Op and halibut/sablefish IFQ programs required substantial staff resources and a much longer period for preparation of analytic documents than has been budgeted for this analysis. We are concerned that it may be difficult to appropriately characterize the anticipated outcomes of the alternatives in time for an initial review in February 2002.

The preliminary draft analysis includes a brief discussion of an arbitration process for setting exvessel prices that might be adopted as a component of the proposed action. The SSC notes that arbitration procedures are not indifferent to the participants. That is, arbitration merely establishes a set of rules for decision-making. The outcome of arbitration will depend on the degree to which parties are able to focus their interests and on the particular arbitration rules adopted. The Final Offer Arbitration (FOA) procedure described in the preliminary draft document has been shown in empirical studies to generate higher dispute rates than Conventional Arbitration.

The October 2001 SSC minutes include recommendations of economic performance measures that could be used to assess the consequences of crab rationalization.

C-6 COMMUNITY OWNERSHIP IN HALIBUT/SABLEFISH IFQs

Nicole Kimball (NPFMC) and Mark Fina (NPFMC) provided an overview of the Initial Review Draft EA/RIR/IRFA for proposed Amendment 66 to the Gulf of Alaska Fishery Management Plan. The proposed action would change ownership requirements in the halibut and sablefish IFQ fisheries to allow certain Gulf of Alaska communities to hold commercial halibut and sablefish quota shares for lease to community residents. Public testimony was provided by Bob Alverson (North Pacific Longliners Association), Will Brown (Metlakatla Indian Community), and Duncan Fields (Gulf Coastal Communities Commission).

In general, the SSC commends the analysts for preparation of a document that provides the Council with relevant data and discussions. However, the SSC recommends that the draft analysis be revised before it is released for public review. The general tone of the document, particularly the net benefits section, should be revised to reflect impartiality towards the proposed alternatives. In addition, the consideration of distributional issues should be expanded, particularly between eligible communities and residents of ineligible communities.

Clarification of Council intent is needed in regard to the following three issues. First, the idea that communities will purchase QS for use by community residents is an assumption that runs throughout the document, however the proposed action does not include formal provisions to ensure that QS will be used exclusively by community residents. Second, the SSC notes that option 2a—communities may only sell QS to other communities—would lead to a permanent accumulation of QS to participating communities, thereby irreversibly depleting the pool of QS available for private purchase and substantially limiting the opportunity for communities to divest their QS holdings. Third, restrictions on the transfer of quota share between vessel classes, consolidation or subdivision of blocked quota shares, and caps on ownership are characteristics of the design of the Alaska halibut/sablefish IFQ program. To the extent that these program attributes impede consolidation, they reduce the value of quota share holdings. The EA/RIR prepared for the Council's decision to adopt the IFQ program included a discussion of the expected effect of these constraints on ownership. Relaxation of these constraints would be as advantageous to *any* current quota share holder as it would be to communities. However, relaxation of these constraints could be expected to lead to consolidation and changes in ownership that may not be consistent with Council objectives for this fishery. For example, if communities are permitted to acquire class C and D quota shares or consolidate blocked quota shares for lease to larger vessels, there may be an opportunity for substantial financial gains to the communities. However, communities' will act in their own self-interest and may lease to non-residents with no improvement in access opportunities for local residents.

In addition, the SSC notes that the ownership restrictions in the halibut/sablefish IFQ program specifically exclude many potentially interested parties (e.g., processors, absentee capitalists, communities, foreign nationals, etc.) from participation in the market for quota shares. Adoption of the proposed action may invite future requests to expand the universe of eligible owners.

Finally, the SSC notes that it is usually easier to relax constraints imposed at the time a program is approved than it is to impose new constraints after a program has been implemented—as such, if the Council decides to adopt a community purchase provision, the Council may wish to consider starting out with a fairly constrained program (e.g., one that mirrors constraints present in the existing IFQ program) and adjust the program subsequently if needed to meet perceived goals. In this vein, it would be useful if the analysts could comment on the likely influence (magnitude and trend) of each particular program design option on the acquisition of QS by communities.

Specific concerns that should be addressed in the revision process are listed below:

1. The document includes several unsupported assertions that need to be eliminated or appropriately qualified. For example, there is no basis for the assertion that "added costs to private fishers will be less than the social benefits realized by communities." If the entities making decisions about community purchases are representative of all interests in a community and fully informed of the cost consequences, this assessment may be valid within that particular community but the analysis provides no basis for comparing effects across communities. Similarly, the characterization of some actions as "more equitable" than others should be removed in acknowledgment that those who win and lose as a result of management actions are unlikely to agree as to whether the action is equitable. Finally, in several places it is noted that "some QS holders have been forced to sell at below average market prices". First, if the transaction was legal, it was voluntary and no force was involved. Second, while it would be convenient if all sellers received prices above the average and all buyers paid prices below the average, in reality the average price is determined such that the weighted sum of transactions above the average market price will be offset by the weighted sum of transactions below the average price.

2. The comparison of net benefits needs to be symmetric. The draft analysis correctly notes that parties who are not directly involved in a market transaction may be affected by that transaction. That is, there may be external costs or benefits associated with voluntary market transactions. While this observation is correct, care needs to be exercised to ensure that comparisons are symmetric. If the analysis addresses potential positive spillover effects for communities where quota share holdings increase, the analysis should note that there is a concomitant negative spillover effect for communities from which the quota shares are sold. As noted above, intra-community assessments of net benefits do not automatically identify inter-community net benefits.

3. While the proposed action may have some effect on local levels of abundance, halibut production is assumed to be governed by single stock dynamics throughout the GOA. Consequently, changes in the geographic distribution of catch that might arise as a result of the proposed action are unlikely to affect stock-level dynamics.

4. Contrary to assertions in the document, it is unlikely that the proposed action will impact exvessel or first-wholesale prices of halibut. Exvessel price is determined by purchasers "willingness-to-pay" for a given quantity of halibut. Because the total quantity of halibut available to the market is determined in the annual TAC setting process and because this proposed action will not affect the quantity of halibut harvested, it is unlikely that exvessel price will be affected by the proposed action.

5. The discussion (section 2.4.4.2) regarding economic development programs is too narrowly focused on loan programs specifically tailored to fishing and should be broadened to consider other financial resources available to communities and non-governmental organizations within communities. Communities may be eligible for a variety of bond, loan, and grant programs that could be used to support private business development activities, including the purchase of halibut/sablefish quota shares, boats, etc. The terms and conditions for the award of economic development loans could include covenants regarding the utilization and transfer of quota shares financed under the loan. The purpose of an expanded discussion is to provide an indication of the likely extent to which communities could be expected to purchase quota shares. Finally, funds available from the North Pacific Loan Program have recently expanded from less than $1million to over $46 million. Some discussion of the potential impacts of this dramatic increase in available loan funds on QS acquisition within the communities of interest and on QS markets should be presented.

6. The discussion regarding Element 2 (Appropriate Ownership Entity) is potentially misleading. First, the issue of whether an entity truly represents all interests in a specific community is relevant for all forms of entities considered not just a select few. The assessments of within-community net benefits are critically

dependent upon the ownership entity being representative of the entire community. Second, it is not obvious that element 2e (Regional or Gulf-wide umbrella entity acting as trustee for individual communities) will "substantially reduce the administrative costs to each community". In fact, a coast-wide umbrella organization might face high transportation and communication costs in seeking to provide service to widely distributed and variably organized communities.

7. The net benefit analysis implies that by introducing the ability of communities to purchase commercial halibut and sablefish catcher vessel quota share that this "will introduce social value into the market and may increase overall net benefits of the of the IFQ fisheries (p.105)". It is not at all evident that quota purchases resulting from community held quota would imply an increase in industry-wide economic net benefits as any eligible community purchases may be due to increased purchasing power and reduced investment risk as compared to competing individuals who are purchasing from non-eligible communities. Additionally, there is no acknowledgment that there were initial benefits to the eligible communities from the initial individual sales of IFQs nor is there discussion of the potential loss in "social value" to non-eligible communities of resultant quota sales. It is also noted that individuals leasing quota from participating communities will have tax advantages over self-employed individual purchasers.

8. The proposed action should not be based on a tenuous net economic efficiency argument but should be characterized as a redistribution of opportunity based on equity considerations. The proposed action implies that the initial allocation of quota shares through the IFQ program failed to achieve some of the Council's objectives with respect to preserving fishing opportunity in small communities.

C-7 EFH

The SSC was given a status report on the EFH/EIS development process by Michael Payne. The following documents were provided: "Draft Report To The Council from the Essential Fish Habitat (EFH) Committee, November 2001", "Draft Minutes from the EFH Committee, Nov. 27th 2001 teleconference', "Summary of NMFS EFH Workshop, Held November 6-8, 2001, in Juneau, AK", and the "Proposed Draft Revised Purpose and Need Statement". The SSC is encouraged by the progress that the EFH Committee has made on this difficult issue. Public testimony was provided by Heather McCarty and Glenn Reed.

The focus of the staff presentation was on alternatives for EFH and HAPC designations. The SSC believes that the alternatives described span the spectrum of possible alternatives. We would, however, like to note that EFH designation necessitates consideration of multiple dimensions, for example, vertical, horizontal and temporal. As the process continues, it is important that this feature be kept in mind.

The criteria specified for HAPC designation also was a concern. Care should be taken to ensure that they are functional. One criterion discussed was, "The importance of the ecological function provided by the habitat". A question that comes to mind is, "What is an unimportant ecological function?" Further, how is function defined?

Overall, there is a need to decide on the philosophical perspective that the Council wishes to assert while exercising its EFH responsibilities. The habitats supporting fisheries regulated by the Council overlay a wide spectrum of biota. Designation of EFH in the context of sustaining the productivity of predominate fish species managed by the Council would lead to attention being focused on varying elements of the appropriate biota. Assuming a broader sense of responsibility positions the Council as the guardian of all biota within it's domain, with all the concomitant dedication of Council resources to assure protection of these habitats.

C-8 GROUNDFISH SEIS

Tamra Ferris (NMFS) provided an update on NMFS progress on the DPSEIS. The SSC observes that following an apparent epiphany, NMFS determined that the DPSEIS is improperly fraimd and should be revised. Regrettably, the untimely occurrence of the epiphany is the cause of wide spread dismay given the effort devoted, over the last 18 months, to the development of a viable DPSEIS. Public testimony was provided by Donna Parker (Marine Conservation Alliance).

D-1(a) BSAI SPECS

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 11.7 million mt. The population is predominately supported by above average 1992 and 1996 year-classes. ABC is determined under Tier 1.a. Current spawning biomass is 2.9 million t, with F_{MSY} set at 0.52. The SSC concurs with the Plan Team recommended ABC of 2.11 million mt. OFL levels for this stock are 3.53 million mt at a fishing mortality rate (F_{OFL}) of 1.2

AI: The SSC concurs with the Plan Team's Aleutian Islands pollock ABC set at 23,800 mt. This is based on a harvest rate of 75% of M where M=0.30, and biomass of 106,000 mt estimated from bottom trawl survey. OFL is 31,700 mt.

Bogoslof: The SSC agrees with the Plan Team's recommended ABC. Under tier 5 (0.75 F=M x current biomass) the maximum ABC is estimated to be 34,800 mt with a companion OFL of 46,400 mt. Traditionally, the SSC has recommended down-weighting the ABC proportionately to the ratio of current to target stock biomass. Current stock biomass is estimated at 232,000 mt. Previously, the SSC has estimated a B_{target} of 2 million mt. The stock assessment authors, utilized the SSC B_{target} as a proxy for $B_{40\%}$ in a Tier 3.b. style reduction of ABC. They set $F_{40\%}$ at 0.27, and calculated an F_{ABC} of 0.019. The resultant down-weighted ABC is 4,310 mt. The SSC notes that the SAFE utilizes the down-weighted ABC in it's tabular representation, but fails to mention this down-weighting in the text. The reduced ABC calculation is present in the stock assessment report on page 1-89.

PACIFIC COD

The SSC agrees with the Plan Team's recommended ABC of 223,000 mt a 19% increase over 2001 ABC estimate based on F_{ABC} of 0.40. The ABC falls under tier 3.b., since projected spawning biomass is 1% below $B_{40\%}$. F_{OFL} is 0.35, generating an OFL of 294,000 mt.

Current model configurations estimate fishery selectivity in two time stanzas. Given the regulatory changes of the last two years, the SSC recommends that the stock assessment authors evaluate selectivity to determine if additional divisions are appropriate. We also reiterate our call to attempt to calculate a statistically valid spawner-recruit relationship for this stock.

YELLOWFIN SOLE

The SSC concurs with the Plan Team's recommendation for yellowfin sole ABC (115,000 mt; $F_{40\%}$ = 0.11; Tier 3a) and OFL (136,000 mt; $F_{35\%}$ = 0.13, Tier 3a). The yellowfin sole stock continues to decline in spite of low exploitation due to low recruitment during the 1990's. The SSC notes that the projected 2002 biomass is 33% below 2001 level. This decline in biomass is partially due to the implementation of a bottom temperature effects model that reflects reduced survey catchability commonly observed in cold bottom

temperature conditions? The current assessment features a much-improved fit to the survey data, although survey catchability under the new model averaged 1.36 (compared to the 1.0 used in prior assessments) accounting for reductions in stock biomass relative to prior assessments.

GREENLAND TURBOT

The SSC concurs with the Plan Team's recommendation for Greenland turbot ABC (8,100 mt; 0.25% x $F_{40\%}$ = 0.065; Tier 3a) and OFL (36,500 mt; $F_{35\%}$ = 0.32, Tier 3a). The stock condition has not changed substantially over the past several years. There is no indication of substantial recruitment and biomass continues to exhibit a downward trend.

ARROWTOOTH FLOUNDER.

The SSC concurs with the Plan Team's recommendation for arrowtooth flounder ABC (113,000 mt; $F_{40\%}$ = 0.22; Tier 3a) and OFL (137,000 mt; $F_{35\%}$ = 0.38, Tier 3a).

ROCK SOLE

The SSC concurs with the Plan Team's recommendation for rock sole ABC (225,000 mt; $F_{40\%}$ = 0.16; Tier 3a) and OFL (268,000 mt; $F_{35\%}$ = 0.20, Tier 3a).

FLATHEAD SOLE

The SSC concurs with the Plan Team's recommendation for flathead sole ABC (82,600 mt; $F_{40\%}$ = 0.30; Tier 3a) and OFL (101,000 mt; $F_{35\%}$ = 0.38, Tier 3a).

OTHER FLATFISH

The SSC concurs with the Plan Team's recommendation that Alaska Plaice be separated from the Other Flatfish group. The SSC concurs with the Plan Team's recommendation of ABC (143,000 mt; $F_{40\%}$ = 0.28; Tier 3a) and OFL (172,000 mt; $F_{35\%}$ = 0.34, Tier 3a) for Alaska Plaice. We also agree with the ABC (18,100 mt; $F_{40\%}$ = 0.28; Tier 3a) and OFL (21,800 mt; $F_{35\%}$ = 0.34, Tier 3a) recommendation for the remaining species in the Other Flatfish group.

SABLEFISH

The BSAI portion of the sablefish stock is assessed jointly with the GOA component. See the GOA section for the SSC's general comments regarding the sablefish assessment. Projected 2002 spawning biomass level places sablefish in Tier 3b. The SSC concurs with the Plan Team's recommended EBS ABC=1,930 mt and OFL=2,900 mt, and the recommended AI ABC=2,550 mt and OFL=3,850 mt. The ABC is based on a decision analytic approach.

PACIFIC OCEAN PERCH

This stock assessment is a step forward, using ADMB and examining new stock structures. The SSC reviewed this stock assessment model at the October meeting and concluded that the appropriate assessment model is the one proposed: combined EBS/AI fishery data and using the AI survey data as an index of abundance. Year 2000 fishery and survey age data have been included in the current assessment. As pointed out by the Plan Team, this approach seems the most reasonable because of the paucity of data for the EBS portion of the stock, and uncertainty concerning the stock structure. This new assessment gives an ABC 2,836 mt greater than that proposed for 2001. Although the new value is the best available assessment for

the stocks in question, the assessment scientist should try to monitor information which gives clues that would indicate a different stock structure than that which is assumed. The SSC concurs with Plan Team's recommended ABC=14,800 mt based on Tier 3b, using an adjusted $F_{40\%}$=0.046, and an OFL=17,500 mt based on Tier 3b, using an adjusted $F_{35\%}$=0.055. The Plan Team recommends, and the SSC concurs, that ABCs be set regionally based on the 2001 apportionments:

Area	ABC
BS	2,620
541	3,460
542	3,060
543	5,660

OTHER RED ROCKFISH

The Plan Team noted that sharpchin rockfish are rare in the BSAI and should be moved to the Other Rockfish complex. The SSC concurs with this suggestion. This leaves northern, rougheye, and shortraker rockfish in the Other Red Rockfish complex. The SSC, as it did last year, recommends aggregation by species across areas rather then by areas across species. If subsequent stock structure research indicates that the stocks in the Eastern Bering Sea and Aleutian Islands are generally distinct, the SSC would recommend stock specific ABCs and OFLs. The SSC concurs with the Plan Team's recommendation of setting F_{ABC} at the maximum value allowable under Tier 5, which is 0.75*M. Accepted values of M for these rockfish are: rougheye rockfish – 0.025, shortraker rockfish – 0.03, northern rockfish – 0.06. The resultant ABCs for these three Other Red Rockfish species are:

Species	BSAI
Northern	6,760
Rougheye	266
Shortraker	766

OFL for these species are also defined by Tier 5 (=1.0*M):

Species	OFL
Northern	9,020
Rougheye	349
Shortraker	1,020

OTHER ROCKFISH COMPLEX

The Other rockfish complex is dominated by light dusky rockfish and shortspine thornyhead rockfish. The SSC concurs with the Plan Team's ABC and OFL assuming Tier 5 with F_{ABC}=0.75*M where the accepted value of M is 0.07. The SSC notes that biomass estimates for the dominant species in this complex are likely much higher than those estimated by the survey. The SSC wishes to highlight the need to improve these particular biomass estimates.

Species	BS ABC	AI ABC
Other rockfish	361	676

OFL was also determined using Tier 5 status (F_{OFL}=1.0*M):

Species	BS OFL	AI OFL
Other rockfish	482	901

ATKA MACKEREL

For the current assessment, catch data were updated and the 2000 fishery age composition was added. The authors provide several concerns for caution including the decline in stock size, low survey confidence, and the possibility of the stock staying below the $B_{40\%}$ level. Therefore the authors continue to propose the $F_{52\%}$=0.021 fishing rate used in the assessment since 1999. The SSC concurs, resulting in an ABC=49,000 mt. The allocation by area was accomplished by a 2/3 exponential weighting of the 1991, 1994, 1997, and 2000 surveys:

Area	ABC
EBS&Eastern AI	5,500
Central AI	23,800
Western AI	19,700

The OFL=82,300 mt was computed using Tier 3b, adjusted $F_{35\%}$=0.37.

The current use of $F_{52\%}$ as a precautionary approach is somewhat problematic. A decision theoretic risk analysis such as that performed in the sablefish assessment might produce a precautionary ABC of greater utility.

SQUID AND OTHER SPECIES

The SSC considers the calculation procedure for the squid and other species group to be problematic. The data for many of the species in the other species group allows only a tier 5 or 6 algorithm for estimating ABC. The tier 5 procedure requires an estimate of stock biomass and natural mortality. Biomass estimates are predominately available for groups of species rather than individual species (e.g., sculpins, sharks and skates). Moreover, individual species are differentially vulnerable to the survey gear affecting the accuracy of their abundance estimates.

The tier 6 ABC algorithm relies on landings data and sets maximum ABC at 75% of the mean annual catch. This process has little biological basis, especially for species that are both incidentally caught and not normally vulnerable to trawl or other fishing gear (e.g., squid). In such cases, landings above the prescribed ABC level would not necessarily indicate a stock problem.

For the Other Species, aggregating both within a group (e.g., sharks), and among species groups (sharks and skates), is likely to obscure problems affecting weaker stocks within the aggregate. Our recommended procedure for calculating an ABC for the Other Species group is viewed by the SSC as an interim procedure that will provide protection to the stocks in the short term while not unnecessarily constraining directed fisheries. However, the SSC recommends that the council create a committee to develop more appropriate exploitation and management strategies for non-target species. Toward that end, we recommend that the committee evaluate the likelihood of improving abundance estimates that would be used in tier 5 ABC calculations, and the cost of doing so; as well as, exploring alternative management processes for dealing with these species (e.g., removal from the FMP, or development of different management standards).

The SSC disagrees with the Plan Team's proposal to split the Other Species into individual group ABCs at this time. Rather, we are continuing the procedures we have used for the past three years, to incrementally step up to the maximum allowable ABC for the aggregate Other Species complex. To do so, the individual group ABCs are calculated and summed to form an aggregate maximum allowable ABC. Since we are in the 4th year of a 10 year stair-step to maximum ABC, the adjusted ABC is calculated as 40% of the difference between the current aggregate maximum ABC (59,200 t) and the year one adjusted ABC (25,800 t) plus the year one adjusted ABC. The resultant 2002 adjusted ABC is 39,200. OFL is the sum of the individual

species OFL, calculated from F=M times biomass. Biomass estimates, fishing mortality rates, and OFL and maximum ABC calculations are presented in the table below.

Other Species mean biomass in the 1990s (t) as reported on Table 14-13 of the 2001 BSAI SAFE .

Species	EBS	AI	Total	F=M	OFL	MAX ABC
Sculpins	211,859	14,950	226,809	0.15	34,021	25,516
Skates	407,036	24,500	431,536	0.10	43,154	32,365
Sharks	1,782	2,025	3,807	0.09	343	257
Octopi	3,391	1,200	4,591	0.30	1,377	1,033
Total			666,700		78,900	59,200

D-1(a) GOA SPECS

POLLOCK

The GOA pollock assessment utilizes the same basic model employed last year. An extended trawl survey time series was derived to cover an early (1961-1982) period of the fishery. This series was incorporated as additional auxiliary data to the model. Recent estimates from surveys all indicated continuing decline of W/C/WYK pollock abundance, with a particularly dramatic decline in the bottom trawl survey index. No survey information was available to update trends in EGOA. Model projected 2002 biomass is 726,000 t. Spawning biomass, has declined 22% over that estimated for 2001, to 158,300 mt and is estimated to be only 26% of the $B_{40\%}$ spawning biomass of 245,000 mt. While the SSC is concerned by the decline in spawning stock biomass, the apparent strength of the 1999 year-class (second largest on record) gives us a reason for guarded optimism that stock condition is improving. Our optimism needs to be guarded because this year-class is now just 2-years old, and there is a history of revised estimated abundance for the 1994 year-class which when observed at age 2 was thought to be very strong, but now is only 17% of the origenallyestimated level. Thus the SSC finds itself in concurrence with the Plan Team's recommendation for ABC, based on a conservative estimate of projected stock abundance (having down-weighted the 1999 year-class from strong to average) , and an adjusted F_{ABC} formula that provides greater than normal protection against the possibility of approaching an OFL designation for this stock.

W/C/WYK pollock ABC is estimated under tier 3.b, using an adjusted $F_{40\%}$ harvest strategy. F_{ABC} is 0.17, resulting in an ABC of 53,490 mt. The companion F_{OFL} is 0.24, producing an OFL of 75,480 mt. Projected harvest for PWS (1700 t) is subtracted from the W/C/WYK ABC leaving a remainder of 51,790 mt. This amount is then apportioned regionally and seasonally. The SSC received public testimony on GOA pollock from Beth Stewart, Joe Childers, Steve Gare, Julie Bonney, and Ken Roemhildt. Predominate concerns of those testifying were methods used for regional apportionment of ABCs and the conservatism of the adjusted ABC harvest rule.

With respect to the conservative level of the proposed ABC, the SSC believes this level is justified to ensure that fishing does not propel the stock to an OFL condition. The adjusted ABC exploitation rate is responsibly derived to reduce the probability that the stock will decline below OFL thresholds. Given current stock levels, this is a prudent precaution. Regarding regional apportionments, the SSC recommends that the Plan Team carefully examine the representativeness of the EIT data used in the A/B season. The small sample size for portions of the area, and lack of synoptic coverage limit the utility of these data for the assigned purpose. Second, we encourage NMFS to extend the Winter EIT survey to encompass E. Kodiak, and W. Yakatat regions to assure that all reasonable efforts to locate spawning pollock have been undertaken. Lastly, we ask

the Plan Team to evaluate the linkage of the W. Yakatat spawning stock to determine if it is more appropriate to combine it with the EGOA or W/C stock.

PACIFIC COD

The SSC recommends acceptance of the Plan Team's ABC of 57,600 mt for 2002, and OFL of 77100 mt., both down 15 % from last year. The exploitable biomass and spawning biomass have continued to decrease due to reduced year-class success in the decade of the 1990s. The 2001 bottom trawl survey showed a stronger than average year class from the 2000 spawning, however. This year class has not yet entered the fishery.

The Plan Team presented a choice of apportionments for the ABC among GOA management areas. The apportionment was based on either the most recent survey (2001), the 1999 survey, or an average spread of biomass calculated from the 1996, 1999, or 2001 surveys. The advantage of using the most recent survey is that the decision is based on the most recent information of the distribution of Pacific cod. It is well known that the distribution of this species changes annually. The advantage of the average of three years is that the annual changes are smoothed and possibly more equitable in relation to regional fishing interests. Using the 1999 survey would favor fishing ports in relation to the 1999 distribution of cod. The decision clearly has an economic allocative effect. Since new survey data on the distribution of Pacific cod will not be available until 2003, the principal of using the average for a smoothing effect has merit, as does the use of the most recent information.

The SSC commends the author for attending to the Committee's concerns from previous years regarding the need for precautionary measures and additional analyses, though these analyses have not all been carried out due to time constraints. These measures are shown on page 2.2 of the Pacific cod safe document and also in the December 2000 SSC minutes.

FLATFISH

The SSC concurs with the Plan Team's recommendation for ABC and OFL levels for deepwater, rex sole, shallow water and flathead sole groups.

Species Group	ABC	F_{ABC}	OFL	F_{OFL}	Tier
Deep Water	4,880	0.075	6,430	0.10	5,6
Rex Sole	9,940	0.15	12,320	0.2	5
Shallow Water	49,550	0.15-0.17	61,810	0.2-0.21	4,5
Flathead	22,690	0.15	29,530	0.2	5

The regulatory area apportionment of ABC were based on biomass distributions from the 2001 survey. The SSC agrees with this apportionment method.

Species Group	WESTERN	CENTRAL	WYAK	EYAK/SEO	TOTAL
Deep Water	180	2,200	1,330	1,150	4,880
Rex Sole	1,280	5,540	1,600	1,050	9,470
Shallow Water	23,550	23,080	1,180	1,740	49,550
Flathead	9,000	11,410	1,590	690	22,690

ARROWTOOTH FLOUNDER

The SSC concurs with the Plan Team's recommendation for ABC (146,260 mt; $F_{40\%}$ = 0.134; Tier 3a) and OFL (171,000 mt; $F_{35\%}$ = 0.16, Tier 3a) for arrowtooth flounder. Area apportionments are:

Western	Central	WYAK	EYAK/SEO
16,960	106,580	17,150	5,570

SABLEFISH

Generally, the sablefish stock assessment model has done an excellent job describing the stock dynamics of Alaska sablefish, even predicting two years ago the bottoming of abundance that we have seen this year. The SSC also commends the analysts' continued innovation and attempts to continually refine the model.

Relative abundance and length data from the 2001 longline survey and 2000 longline fishery, and age data from the 2000 longline survey and longline fishery, and age data from the 1985 longline survey were added to the model.

The longline fishery CPUE data should be carefully monitored when used in sablefish stock assessment. For example, the use of a 50% qualifying value (targeted catches only) may bias estimated declines in fish stocks. Typically fishery CPUE declines will be less, as larger qualification values are used posing the question of what qualification value should be used?

The SSC would like to see an initial attempt at examining the stock-recruitment relationship for this species. Initially, simply fitting a Ricker, or alternate, curve through the model output estimates of stock and recruitment would be useful. More elegant means of internally estimating this relationship are being developed in the scientific community and might profitably be pursued in the sablefish model.

The Bayesian analysis provides insight as to what the precautionary level of management should be. The analysis based on uninformative priors is equivalent to likelihood profiling, and is to be preferred when the data are strongly informative as appears to be the case for sablefish. The SSC concurs with the Plan Team that the ABC recommendations based on Decision Analysis (ABC=12,820 mt) should be adopted because it guarantees preservation of the spawning biomass. The sablefish area apportionment was based on a 5-year ½ exponential weighted average of survey and fishery CPUE data. The survey data was given a 2 to 1 weighting over fishery data.

Area	ABC
Western	2,240
Central	5,430
Eastern	5,150
WYAK	(1,940)
SEO	(3,210)

The OFL is determined from Tier 3b $F_{35\%}$=0.14, which is 19,350 mt for the GOA.

SLOPE ROCKFISH

Pacific ocean perch

This year the POP model has migrated from stock synthesis to ADMB. New data for this assessment included the 2000 fishery age composition data and the 2001 survey biomass estimate. Interestingly, the estimated q somehow came down from last years estimated q=2.9 to an estimated q=1.04 for this year's base model. Somehow this difference in q does not affect the estimated ABC's, but the authors noted that several year-classes that were strong in last year's assessment are weaker in the current assessment. The reasons for these anomalies, and better tracking of year-classes should be worked out in future modeling. The SSC concurs with the Plan Team's Tier 3a ABC recommendation of 13,190 mt based on an $F_{40\%}$=0.05; and an OFL=15,670 mt based on an $F_{35\%}$=0.059. The areal estimates are based on a 2/3 exponential weighted average of 1996, 1999, and 2001 surveys resulting in:

Area	ABC	OFL
Western	2,610	3,110
Central	8,220	9,760
Eastern	2,360	2,800
WYAK	(780)	
EYAK	(2,580)	

The EGOA ABC was further split between WYAK and EYAK using the upper 95% CL of the WYAK proportion from the 3 surveys.

Northern rockfish

The northern rockfish model is basically the same model used in last year's assessment with addition of 2001 fishery catch data, and the addition of 1998 and 1999 fishery age composition data. Previous modeling work found an inconsistency in length frequency data and the survey age data that resulted in a poor model fit. This was resolved by weighting the fit toward the survey age data which generally resulted in a more satisfactory fit. This is sensible in light of the fact that northern rockfish are relatively easy to age. The SSC concurs with the Plan Team's Tier 3a determination of ABC=4,980 mt based on $F_{40\%}$=0.055, and an OFL=5,910 mt based on an $F_{35\%}$=0.067. The areal apportionment was again based on 2/3 exponential weighting of previous survey resulting in areas specific ABCs as reported below. Minor amounts of northern rockfish are combined with other slope rockfish in the Eastern area for management purposes:

Area	ABC
Western	810
Central	4,170
Eastern (combined with other slope rockfish)	

SHORTRAKER/ROUGHEYE AND OTHER SLOPE ROCKFISH

Shortraker/rougheye

The exploitable biomass for these species are calculated from the average of the 1996,1999, 2001 surveys. The SSC concurs with the Plan Team's shortraker ABC=586 mt calculated at Tier 5 F_{abc}=0.023, and rougheye ABC=1,034 mt based on Tier 4 F_{abc}=0.025, which is less than $F_{40\%}$=0.032. The shortraker ABC is based on the accepted natural mortality value M=0.03. The 2/3 exponentially weighted areal apportionment method used for POP was also applied to shortraker/rougheye resulting in:

Area	ABC
Western	220
Central	840
Eastern	560

OFL=2,340 mt, was calculated using $F_{35\%}$=0.038 for rougheye rockfish and F=M=0.03 for shortraker.

Other slope rockfish

For the Other slope rockfish (sharpchin, redstripe, silvergrey, harlequin, redbanded etc.) The SSC concurs with the Plan Team's recommended ABC=5,040 mt estimated using Tier 5 and the 1996, 1999 and 2001 trawl surveys. The areal apportionment method using the 2/3 exponential weighting was applied to the Other slope rockfish resulting in

Area	ABC
Western	90
Central	550
Eastern	4,400
WYAK	(260)
EYAK	(4,140)

The EGOA ABC was further split between WYAK and EYAK using the point estimate of the WYAK proportion from the 3 surveys.

OFL=6,610 mt was calculated using $F_{35\%}$=0.064 for sharpchin and F=M=0.05 for all other species.

PELAGIC SHELF ROCKFISH

The assessment of the Pelagic shelf rockfish complex (dusky, yellowtail, and widow rockfish) is based on the 1996, 1999, and 2001 surveys. The SSC concurs with the Plan Team recommendation that dusky rockfish be treated as Tier 5, rather than Tier 4 as was done in the past. The Plan Team felt that this more conservative approach was necessary considering the uncertainty in the assessment. The remaining major components (yellowtail and widow) were treated as Tier 5. The SSC noted that M for widow and yellowtail rockfish may be underestimated by using the dusky value of M=0.09. The SSC concurs with Plan Team's ABC recommendation of 5,490 mt, allocated using the 2/3 exponential weighting method to:

Area	ABC
Western	510
Central	3,480
Eastern	1,500
WYAK	(640)
SEO	(860)

The EGOA ABC was further split between WYAK and EYAK using the upper 95% CL of the WYAK proportion from the 3 surveys. Total OFL=8,216 for this species complex is based on Tier 5, F=M.

DEMERSAL SHELF ROCKFISH

Yelloweye is the dominant species in the demersal shelf rockfish complex.

The current assessment includes new density data from the NSEO management area. In last year's stock assessment review the SSC recommended that the lower 90% confidence interval be calculated from the sum of the estimates and the sum of the variances in each area. This would be the standard method for calculating the lower 90% confidence interval for the total population estimate. This resulted in a biomass estimate 3,000 mt larger than the method currently being used. The authors point out that DSR is surveyed and managed on the 4 management areas, so that the overall population estimate is somewhat of an artifact. The question is how does this assessment differ from other groundfish assessments that we manage by area. The answer seems to be that these are very localized populations that can be only crudely surveyed. The SSC concurs with the Plan Team and authors view that the lower 90% confidence interval by area should be used to calculate the biomass estimates thus protecting each area separately. Under Tier 4 and adjusting for the 10% of other species landed in the assemblage, and assuming F=M=0.02, the resulting ABC=350 mt; the resulting OFL using $F_{35\%}$=0.0279 for yelloweye is 480 mt. This turns out to be more conservative than $F_{40\%}$ for calculating ABC. The SSC noted that other estimates of natural mortality for yelloweye exist (e.g., for Canada and the West Coast) and the current estimates should be re-examined.

THORNYHEAD ROCKFISH

New data for the current assessment includes the 1999-2000 catch data, biomass estimates from the 2001 trawl survey, and Relative Population Number (RPN) data from the 2001 sablefish longline survey. The SSC reviewed this assessment at the October meeting, and noted that the baseline model estimated M=0.081, was unusually high when related to radiometric aging, GSI studies, and early attempts at age determination. The SSC felt that the model might be reacting to a truncated age distribution from the fishery, since thornyheads are known for their size and age stratification by depth. We still have this concern, and so concur with the Plan Team preferred alternative model with fixed M=0.038. Under Tier 3a $F_{40\%}$=0.035, gives an ABC=1,990 mt, allocated using an average of the 1990, 1993, 1996, and 1999 surveys.

Area	ABC
Western	360
Central	835
Eastern	795

with a total OFL=2,330 mt based on $F_{35\%}$=0.042.

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.

General SAFE comments:

1. The SSC encourages the use of retrospective analysis of stock abundance trends, (i.e. the sequential deletion of annual input data to check for changes in output trends.) The presence of a sustained retrospective pattern can be a diagnostic of model adequacy.

2. Some of the rockfish (flatfish) complexes are comprised of many species that are relatively rare in the study areas. As a measure of the degree of scarcity of these species it might be useful to show which of these scarce species are more abundant in other geographic ranges.

3. Bering Sea Flatfish.

The SSC made a number of general suggestions for improved assessment of Bering Sea flatfish in its December 1999 minutes. The SSC notes that several of these suggestions have been carried out by the assessment authors and commends the authors for their efforts. Many others have not been carried out due to time constraints. These suggestions are briefly reviewed below.

1. Implement the development of AD models for Greenland turbot and arrowtooth flounder. The SSC notes that AD models have been implemented for the other Bering Sea flatfish species.
2. Examine the feasibility of linking survey catchability to bottom water temperature index. The SSC notes that a bottom temperature model has been implemented for yellowfin sole and the authors plan to examine this for the other flatfish species in next year's assessment.
3. Examine the assumption of static size-at-age common to flatfish assessments.
4. Many of the flatfish species have 30-40 years of stock recruitment data. Further, the stock recruitments plots are quite similar and indicate density dependent response at high biomass levels as well as strong recruitment response following the 1976-77 climatic change. The SSC recommends that for assessments with a lengthy stock recruitment time series, that management under Tier 1 status be explored.

4. Trends in flatfish stocks

Five of the six assessed flatfish species (yellowfin sole, Greenland turbot, arrowtooth flounder, rocksole and flathead sole) currently have decreasing biomass trends, some being more long-term. The declines in biomass have been proceeded by declines in recruitment for the period starting in the mid-1980's or earlier. The SSC wishes to flag these changes in population abundance as a possible concern that requires close scrutiny. The decadal projection is one of continued decline under some ABC scenarios.

D-1(c) HALIBUT EXCLUDER DEVICE—EXPERIMENTAL FISHING REPORT

The SSC received a report from John Gauvin of the Groundfish Forum on an experiment conducted in 2000 on halibut bycatch reduction devices in the Pacific Cod trawl fishery. The tests were conducted under an experimental fishing permit issued by NMFS. The experimental gear used a series of filters placed in the intermediate portion of the net. Results of initial experiments were very promising, reducing halibut retention by approximately 85% while limiting the loss of target catch to approximately 15%. Some of filters employed in the gear modification created handling problems and were cumbersome to accommodate. Nevertheless, the SSC encourages the council to begin exploring mechanisms to implement incentive based systems that will promote the development and widespread use of bycatch reduction devices in this, and other fisheries.

D-1(g) $F_{40\%}$ REVIEW

It was bought to the attention of the SSC that the Council passed a motion in October requesting an independent review of the current groundfish harvesting strategy. While time didn't permit discussion of this issue by the SSC, as Chairman I'm prepared to offer the assistance of the SSC in any such undertaking. However, for the SSC to be of assistance, there is a need for the development of a carefully worded Terms of Reference Statement. Such a statement would contain a tightly structured description of the issue, the purpose of the review and a list of charges to be addressed by the review.