

**DRAFT REPORT
of the
SCIENTIFIC AND STATISTICAL COMMITTEE
to the
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
March 26-28, 2007**

The Scientific and Statistical Committee met during March 26-28, 2007 at the Hilton Hotel in Anchorage, AK. Members present were:

Pat Livingston, Chair
NOAA Fisheries—AFSC

Gordon Kruse, Act. Vice Chair
University of Alaska Fairbanks

Bill Clark
International Pacific Halibut Commission

Anne Hollowed
NOAA Fisheries—AFSC

Seth Macinko
University of Rhode Island

Franz Mueter
SigmaPlus Consulting

Steve Parker
Oregon Department of Fish and Wildlife

Ken Pitcher
Alaska Department of Fish and Game

Terry Quinn II
University of Alaska Fairbanks

Farron Wallace
Washington Dept of Fish and Wildlife

Doug Woodby
Alaska Department of Fish and Game

Members absent were:

Keith Criddle
University of Alaska Fairbanks

George Hunt
University of Washington

Sue Hills
University of Alaska Fairbanks

Lew Quierolo
NMFS—Alaska Region

B-1 (b) Crab Plan Team Nominations

The SSC reviewed the qualifications of the two individuals nominated for membership to the crab plan team. The SSC notes that both individuals, William Bechtol and Dr. Andre Punt, are well-qualified and would provide much needed biological and modeling expertise to the plan team. **The SSC recommends that Council approves both of these nominations.**

B-2 Annual Catch Limits (ACL)

Galen Tromble (NMFS, Sustainable Fisheries) gave an overview of the requirement and the agency's direction on how it might be implemented with respect to revision of the National Standard 1 guidelines. MSA reauthorization has added new language regarding the requirement of each Council to develop annual catch limits for each managed fishery that may not exceed the fishing level recommendations of its scientific and statistical committee.

The SSC notes that the NPFMC is well positioned to implement ACLs. The SSC anticipates that there may be some need to reorganize assemblages so that they are consistent with the intent of preventing overfishing. The Council's current effort to split the other species complex into its component parts should address this requirement. Increased observer sampling or shoreside observer sampling may be needed to more accurately estimate catch of some species currently managed in the other species complex.

In this Council, **preparing realistic overfishing definitions for stocks in tier 6 has been and continues to be a serious problem.** These are mostly non-target stocks for which fishing mortality is almost certainly very low, but abundance or catch is not estimable with available data and probably will remain

so. **The SSC encourages NMFS to consider an alternative method of guarding against overfishing for these cases when drawing up the guidelines. Increased observer sampling or shoreside observer sampling may be needed to more accurately estimate catch of some species currently managed in the other species complex.**

The SSC encourages NMFS headquarters to consider an approach where performance is quantified as a probabilistic statement. **The SSC suggests that the goal statement to “never exceed the OFL” may be overly constraining. Perhaps the statement should be modified. (This statement may be further refined based on SSC email discussion after the meeting.)**

The SSC notes that a sub-group of the SSC may need to be formed to draft a Council response to draft guidelines, when those are released for public review.

B-6 Protected Species Report

Bill Wilson (Council staff) and Kaja Brix (NMFS Protected Resources Division) provided information on a revised approach and schedule for completion of the SSL Recovery Plan and Biological Opinion. NMFS has decided to complete the Recovery Plan before preparing the Biological Opinion(s). The draft Recovery Plan is scheduled for release and public review in May 2007. NMFS has tentatively scheduled a peer review of the draft Recovery Plan by the Center for Independent Experts during June 2007. The final Recovery Plan would be finalized in late 2007 after consideration of comments received during the review period.

Preparation of a Biological Opinion would resume upon completion of the Recovery Plan. Initial focus would be on the appropriateness of status quo SSL protection measures when considered in light of new biological information. After review and completion of this document, proposed changes to SSL protection measures would be evaluated in a second biological opinion. The revised timelines will result in the delay of any changes to SSL protection measures until late 2009 or 2010. The SSC questioned if it would be more efficient and reduce the amount of time required to prepare a single biological opinion.

The NPFMC contracted with Dr. Tom Loughlin to prepare a scoping document on the utility of an analysis comparing recovery and delisting criteria included in the draft SSL Recovery Plan with those included in a selected group of recovery plans. The SSL recovery and delisting criteria would also be evaluated with guidelines developed by a NMFS Quantitative Working Group. Dr. Loughlin spoke briefly about the project and a copy of his proposal was available for review. **The SSC suggested that it might be appropriate, when selecting a subgroup of recovery plans for comparison, to consider those that shared some similar characteristics; (1) uncertainty about causes of decline and limits to recovery, (2) relatively large population size, and (3) similar basic population recovery rates (r-max). It was also suggested that a comparison of listing factors would be useful.**

The Proposal Ranking Tool developed by the SSL Mitigation Committee has progressed to the point where it can be used to assist in the evaluation of proposals to modify SSL protection measures. The SSL Mitigation Committee is scheduled to meet in April and May to receive detailed information on proposals and to utilize the PRT to evaluate them. The plan was for the committee to develop a package of proposals for pollock, Pacific cod, and Atka mackerel fisheries for consideration by the Council. This schedule was developed before the NMFS decision to delay completion of the Biological Opinion until the Recovery Plan is completed. With the substantial delay in completing the Biological Opinion there is some question about the appropriateness of continued evaluation of these proposals as they may be outdated by the time the Biological Opinion is developed. Conversely, this may be a good opportunity to evaluate the Proposal Ranking Tool utilizing realistic proposals.

The Alaska Board of Fisheries recently considered proposals that would change the amount of Pacific cod TAC that would be allocated to the state waters fishery in the western Gulf of Alaska. Because of the possibility that the proposed actions could have negative impacts on SSLs, the Council and NMFS requested that the BOF delay consideration of the proposals. These proposals are to be discussed at a joint meeting of the NPFMC and the BOF scheduled for late March.

The SSC was briefed about the status of actions resulting from the Humane Society litigation with NMFS regarding issuance of research permits for SSLs and northern fur seals. An EIS has been prepared with a preferred alternative. The EIS is now under public review and the hope is that a Record of Decision can be reached and permits issued in a timely manner.

The SSC supports the concept of conducting workshops on SSL issues of particular concern including reproduction and predation by killer whales. The SSC suggested that another appropriate topic for a workshop would be a “re-evaluation of critical habitat” in light of recent research on SSL movements and foraging.

C-1 Halibut Management

(f) Final Action on Moratorium Analysis

The SSC received a presentation on the Public Review draft of this analysis from Darrell Brannan (NPFMC). The Public Review draft of this analysis is considerably improved over the draft reviewed by the SSC in February. In general, the analysts have admirably attempted to address issues raised by the SSC in February. While it would be preferable for the analysis to have included more quantitative estimates of the impacts of the alternatives, **enough information is presented to provide a basis for decision-making.** The inclusion of Table 8 is particularly helpful.

In the Executive Summary and on page 40, the document states that moratorium permits should be issued to vessel business owners because previous IFQ allocations have been restricted to vessel/business owners. The SSC notes that this a policy decision to be made by the Council. The Council previously chose to issue C-class IFQ to captains in the BSAI crab fishery and the State of Alaska issued permits to vessel operators, not owners, when the salmon limited entry program was created in the 1970s.

(g) Initial Review of Area 2C GHM Measures

The SSC received a presentation on the draft analysis from Jane DiCosimo (NPFMC) and Jonathan King (Northern Economics). Public comment was received from Dan Falvey (Halibut Coalition), Ann Williams (Alaska Longline Fishermen’s Association), Donald Westlund (Silver King Charters), Rick Bierman (Juneau Charterboat Association), and Ken Larsen (Prince William Sound Charterboat Association).

The SSC believes the analysis is reasonable and should be released for public review.

The Council should anticipate implementation problems associated with the delay between fishery data becoming available, management action, and implementation. The proposed methodology may create management responses that are out of phase with the performance of the fishery (as described in the February 2006 SSC minutes).

Several of the proposed options will likely generate relatively minor reductions in GHM (especially in the long term) and if implemented, would likely be combined with other options. **Because the effects of many of the options are not additive, the effect of combinations cannot be predicted** and in the current analysis, combinations are not analyzed due to their sheer number. The lack of data, and low

precision in estimating the effects of combinations, greatly reduces the Council's ability to make strategic choices in combining options.

The SSC notes that it would be helpful if additional clarity could be provided regarding the estimated magnitude of effects. The analysts did the best they could to quantify potential effects given severe data limitations. As they acknowledge, the effects of the proposed actions on total harvests may be diminished in many cases because clients and charter boat operators would change behavior to adapt to new regulations. These behavioral changes include switching to and from unguided sport trips, changing fishing locations, changes in time allocation to halibut fishing, and changes specific to certain fishermen demographics. While such effects are discussed in the text for most options, the estimates provided in tables (e.g. summary in Table 63) should clearly identify what is a "best guess" estimate and what is likely to be a lower or (in most cases) upper bound for anticipated effects. The discussion on sportfishing motives and potential reactions to management actions should be revised to include a review of published surveys on Alaskan sportfishing (p. 19). Four surveys were identified in the February 2007 SSC minutes.

The SSC shares concerns brought forward in public testimony that the upper range of sizes being considered for a minimum size limit (second fish) may be impractical (measuring large fish may be difficult if not dangerous for many operations). One additional aspect of the analysis is that the potential for a given option to produce a one-time decrease in GHF versus a change in the rate of increase in the charter harvest is not described for each option or for the analysis as a whole.

Public testimony (both oral and written) revealed that a "crossover provision" has been proposed (allowing charter operators to purchase/lease commercial quota/IFQ in order to individually adapt to catch restrictions). **The SSC suggests that the Council consider adding the crossover provision into the analytical mix.** The timing of an analysis of the crossover provision proposal is a matter for the Council to determine. The SSC has long been on record as advising the Council to evaluate measures that permit adjustments of catch levels between sectors to take place in a single market for catch shares.

The analysts discuss the possible increase in the average weight of catch resulting from the establishment of a 32" size limit (option 8). However, this effect was not discussed under option 5 (effect of size limit for second fish), although similar dynamics might come into play under this option. A discussion of this issue and potential implications for the estimated effectiveness of option 5 should be added.

The document relies heavily on "key informants" (in addition to the 2006 logbook data) to verify effectiveness and assess desirability of different options. There should be some discussion of how "key informants" were selected and how representative their statements are likely to be. A similar question exists for the logbook data (how representative is it).

C-2 (b) GOA Pacific Cod Sector Splits and (c) Latency

The SSC received a presentation by Mark Fina (NPFMC staff) on discussion papers addressing two agenda items: a sector split for the GOA Pacific cod fishery and potential action to remove latent LLPs from the GOA non-trawl fisheries. These items arose due to the lack of a comprehensive rationalization plan for the western and central GOA groundfish fisheries.

The discussion paper indicates that the motivation for the sector split is concern that the fishery is fully utilized and there is a race for fish not only within sectors but between sectors. Similarly, the motivation for removing latent LLPs is described as the potential reactivation of latent licenses and that this reactivation could exacerbate the race for fish.

For both the sector split and latent permit issues it appears that more direction is needed from the Council before staff can proceed further. **It is not clear to the SSC exactly what "the action" is in each case.**

Staff can offer an informed guess as to the problem being treated but it would be better if the Council provided more clarity.

The SSC notes that action on these two items may not be independent of other present Council actions and of potential long-range developments. In particular, the relationship between these actions and the Council's interest in Gulf "rationalization" warrants careful attention and should be considered in light of constraining future policy options.

C-3 Trawl LLP Recency

Jim Richardson (NPFMC) provided a progress report on the development of an amendment intended to reduce latent effort in trawl groundfish fisheries in the GOA and BSAI and to provide for the development of a fishing fleet in the Aleutian Islands. Glen Merrill (NMFS-Alaska Region) provided NMFS comments on data concerns and other issues involving the interplay the proposed action, the old groundfish moratorium, and the existing license limitation program (LLP). Public testimony was received from Dave Fraser (Adak Fisheries). The Council has yet to determine whether recency will be defined by participation during an 11-year (1995-2005) or 6-year (2000-2005) period. As the LLP program was not effective until 2000, the first option includes 5 years prior to the LLP program. In 2000 and 2001 there were no requirements to report which LLP license was used on which vessel, thus complicating the analysis under either scenario.

In December 2006, the SSC provided comments on the need to define what is meant by "too many" and "not enough" licenses and that further clarification about the problem to be addressed would dictate the type of analysis necessary for the plan amendment. It was reported to the SSC that these comments are being addressed in the development of the plan amendment. A new discussion paper is planned for the June meeting with a revised EA/RIR to follow, most likely at a later meeting date. **The SSC looks forward to reviewing these documents as they are completed.**

C-4 BSAI Crab Management

(a) 18 Month Review

The SSC received a report on the 18-month review of the BSAI crab rationalization program (Mark Fina, NPFMC) and some remarks on the non-binding price arbitration (John Sackton, Price Formula Arbitrator). Public comment was received by Linda Kozak (Independent Crab Harvesters), Simeon Swetzof, Jr. (Mayor, City of St. Paul), Steve Minor (North Pacific Crab Association), and Dave Fraser (Adak Fisheries).

The 18-month review of BSAI crab management indicates that two purposes for the analysis are to examine: (a) the distribution of benefits between harvesters and processors arising under the harvest/processor share allocations and the arbitration system; and (b) the distribution of landings of different harvest share types. The review document provides a nice discussion of the structure and operation of the BSAI crab IFQ/IPQ program. However, as the analysis fails to address the distribution of benefits between harvesters and processors arising under the harvest/processor share allocations and the arbitration system, the document does not meet the two stated purposes of the Council. Also, there is little analysis of the distribution of benefits between participants in the structure crafted by the Council compared to those electing to participate in the general pool. The lack of discussion of the magnitude and distribution of net benefits is disappointing in light of the controversy that has arisen regarding the impacts of the program and given the mandatory reporting of cost data required under the program. The author of the review indicated that limited data were available at this juncture and those data available were not yet ready for analysis. Given this, **it is imperative to include a complete analysis of the distribution of net benefits in the 36-month review.**

Other aspects of the document can be improved. For instance, the document implies that in-depth analysis is not needed because the effects of the program are the effects intended by the Council. Early in the report, the document should provide a straightforward presentation of real or perceived concerns with the program. Then, the document should go on to address these concerns to the extent possible. Some of these concerns were expressed in letters written to the Council at this meeting, as well as testimony to the SSC. For example, the SSC heard public testimony expressing concern about consolidation of the processing sector as a result of this program and potential effects on price. On the other hand, other testimony indicated that this has not occurred. It would seem that this is a knowable feature of the program that could have been documented in the report. As written, it is not possible to develop an understanding of the scope of such concerns or their veracity.

The Council should clarify whether it is intended that the arbitration formula be constructed to preserve the historic allocation of gross revenues or if it was the Council's intent that the arbitration formula be constructed to preserve the historic allocation of profits (net revenues) – see footnote 15 on page 16. When cost structures are changed by a management action, it is possible for the action to lead to no changes in the distribution of gross revenues while simultaneously resulting in substantial changes in the distribution of profits, particularly if the action results in opportunities for one sector to shift costs to the other sector. The report author indicated that it was the intent to preserve the allocation of gross revenues. If so, this should be made clear in the document and evidence of shifts in cost burdens should be examined.

(b) Crab Data Collection

The SSC did not have time to cover this item. Individual SSC reviews and comments on the discussion paper were forwarded directly to the analyst.

C-7 Socioeconomic Data

The SSC did not have time to cover this item. Individual SSC reviews and comments on the discussion paper were forwarded directly to the analyst.

D-1 Scallop SAFE report

The SAFE report and Scallop Plan team report for weathervane scallops was presented by Diana Stram (Council staff), Jeff Barnhart and Gregg Rosenkrantz (ADF&G). Gregg also gave a presentation on machine vision techniques for scallop survey development. There was no public testimony.

The SSC appreciates the addition of new information in the SAFE document such as the Ecosystem Considerations section and updated survey information. The state is anticipating moving to a visually-based survey methodology and is exploring alternative population assessment models as the supporting information is developed. **The SSC is encouraged by the potential for new survey methodologies and modeling approaches to improve and synthesize our understanding of scallop stock dynamics. We look forward to the development of this model and recommend research effort in the areas of stock unit identification and recruitment processes, further development of population survey techniques, and discard mortality, as these subjects will be critical in the development of a stock assessment model.**

The SSC has a few specific suggestions to improve the SAFE document. In describing the state's future approach to managing scallops, it would be useful to add the conceptual framework explaining why the state is moving towards visual assessment techniques and population modeling so the reader understands the direction managers want to go. Including a specific section for responses to SSC comments in the SAFE document itself will enhance communication between the state and the council. There are several

issues in interpreting CPUE indices as a management tool or as a fishery performance statistic. Part of the rationale for moving to a visually-based survey is that CPUE is not reliable as a management tool or an index of population abundance. Therefore, should the CPUE be removed from the SAFE document entirely? At a minimum the SAFE should contain a paragraph describing the limitations of CPUE information and caveats about its use in the SAFE. For clarity, and information synthesis among areas, a “summary of stock status” section would be helpful in comparing information among areas, understanding overall fishery performance, and integrating survey information for the entire managed range.

The SAFE document would be also be enhanced if information was included on natural history characteristics, such age, growth, reproduction, and other biological information to provide biological background and to be used as population models are developed. In addition, a discussion of factors influencing size-based discard and discard mortality would be helpful in the document and would be important in developing a population model. This information would also help to identify and direct future research efforts.

The SSC is pleased at the addition of an ecosystem considerations section. As this section is developed, it should include more info on predator-prey relationships, crab bycatch impacts, and habitat impacts. The National Academy of Sciences report on trawling impacts recommended three mechanisms for habitat impacts to be minimized (creating areas closed to trawling, reducing fishing effort, and modifications to fishing gear). The scallop fishery has already taken measurable steps in these three areas and these could be described in the ecosystem considerations section. Further, the opportunities for the visual survey data to be used to index habitat or other biological features, such as invertebrates, and provides an opportunity for future study as resources allow. In developing the ecosystem considerations section, it may be useful to consult the format used in the ecosystem considerations sections of the groundfish SAFE documents.

D-2(a) Other Species Management

Jane DiCosimo (Council staff) updated the SSC on progress toward an amendment package to refine status determination criteria (ABC, OFL) for the other species group in both the GOA and BSAI. Andy Smoker (NOAA Fisheries) gave a presentation on a discussion paper that gives in-depth information about five alternatives relative to breaking out sharks, skates, squid, sculpins, and octopuses and an option to add grenadiers. There was no public testimony. The SSC commends the author for his useful work, particularly the in-season graphs. The amendment package should be ready by October 2007. **The SSC requests that a clear distinction be made between alternatives and options.** If more than one alternative can be approved, then the word “option” is usually better. **The SSC notes that a major element for consideration is the uncertainty in catch and bycatch estimates.** The SSC requests that a careful explanation of catch accounting be included in the EA.

D-2(c) External Review Policy

The SSC reviewed a document “A Guide to External Reviews of Alaska Groundfish Assessments”, which contains guidelines to rationalize the process by which external reviews are conducted. The document was reviewed by some members of the groundfish and crab plan teams and by the scallop plan team at its recent meeting. The SSC made some minor changes in the document based on these comments and will provide these to the Groundfish plan teams. **The SSC recommends that the guidelines be adopted for groundfish assessments and be modified when necessary by the Groundfish Plan Teams. The SSC encourages the Crab and Scallop Plan Teams to carefully review these guidelines and revise them to provide for a similar process that accommodates their schedules and needs.**

D-2(d) Salmon Bycatch Workshop

The SSC conducted a salmon workshop intended to aid in the discussion and development of bycatch management alternatives, such as biomass-based caps, salmon savings areas, and analysis of the current system under VRHS. The SSC received presentations that provided an overview of recent available information and analyses conducted since the April, 2006 workshop. Presentations were received from Diana Stram (Council staff), Jim Ianelli (AFSC), Karl Haflinger (SeaState), John Gruver (AFA Catcher vessel Cooperative and Pollock Conservation Cooperative), Alan Haynie (AFSC), Jim Murphy (ABL, AFSC), Chris Kondzela (ABL, AFSC), Gene Sandone (ADF&G), and Jim Seeb (ADF&G). The workshop agenda, abstracts, PowerPoint presentations, and a brief synopsis will be made available on the Council website. The SSC appreciates Diana Stram's efforts in organizing the workshop and thanks all speakers for their excellent and informative presentations.

Public testimony was provided by Francis Thompson (commercial and subsistence fisherman, lower Yukon), Don Rivard (US F&WS, representing himself), Jon Warrenchuk (Oceana), Mike Smith (Tanana Chiefs Conference), and Jennifer Hooper (AVCP, representing 56 villages).

Diana Stram provided an overview of the current state of Council activities regarding salmon bycatch reduction measures in the Eastern Bering Sea fishery. The Council in February moved to appoint a workgroup to evaluate approaches for establishing caps and to make recommendations to the Council.

The goals of the workshop were to review any new information that may be helpful in refining the alternatives for Amendment 84B-1. Specific topics for the SSC discussion included the following:

1. Methods for determining annual upper limits of bycatch allowances (hard caps)
2. Developing limits that trigger in-season management closures
3. Alternatives to area closures
4. Methodology for evaluating current VRHS closures

The SSC notes that the new information is still insufficient to establish a cap based on current year biomass. However, presentations by Gene Sandone, Chris Kondzela, and Jim Seeb showed that considerable progress has been made on estimating run-size strength for different Chinook and chum salmon stocks in western Alaska, as well as on identifying stocks of origin of salmon caught in the pollock fishery. This information, together with the estimated number of salmon caught in the pollock fishery, their estimated age composition, and reasonable assumptions about natural mortality and age at maturity, may allow a preliminary assessment, at least at a regional (if not stock-specific) level, of the number of salmon in the bycatch that would have contributed to recent returns relative to the estimated returns (catch + escapement). **At the very least, this information could be used to set caps based on recent average run strengths. This analysis should be able to tell whether there is a conservation concern for the region as a whole, and the information gained could be used as a basis for negotiations in the workgroup for establishing caps. As more detailed information on stocks of origin of bycatch by region, season, and age class becomes available, this analysis can be refined to evaluate impacts on specific stocks.**

With regard to amendment package 84 B-1, the SSC suggests the following alternatives for consideration:

- A cap based on in-season bycatch rates. Difficulties with this approach were previously noted; most notably bycatch rates may not reflect salmon abundance.
- A closed area or areas that may be modified annually or adjusted in-season based on in-season catch rates and/or oceanographic factors related to the distribution of salmon. A detailed analysis of fishery and VRHS spatial bycatch data may be informative in crafting an alternative.
- Temporal closures or adjustments to the fishing season based on seasonal differences in catch rates (e.g., modifying start or end dates of the A and B season).
- Short "stand-down" periods to avoid high bycatch rates during certain hours of the day (based on diel patterns in catch rates resulting from vertical migrations of salmon).

- A sunset period for caps, triggers and closed areas should be considered to ensure that new information is used to revise bycatch benchmarks in a timely manner.

The SSC was encouraged to see continued progress on a salmon excluder device. In addition to estimating the number (or proportion) of salmon escaping, an experimental approach to assessing mortality of escaping salmon should be considered. The effectiveness of the excluder seems to improve as the season progresses. The potential effects of fish size on exclusion rates should be analyzed.

The SSC recommends consideration of a simulation modeling approach using historical data as another way to evaluate the effectiveness of VRHS closures in reducing bycatch of salmon. The SSC also recommends research that would measure post-closure bycatch rates within the VRHS with the intention that a direct comparison can be made with observed catch rates in open areas during the same time frame.

D-3 (a) Bering Sea Habitat Conservation

Cathy Coon (Council staff) and Melanie Brown (NMFS) presented a revised draft of the EA for amendment 89 to the BSAI groundfish FMP for Bering Sea habitat conservation. Greg Balogh (USFWS) provided information on seabirds on the islands proposed for closure as options under Alternative 3, as well as spectacled eiders in the northern Bering Sea and presented his agency's position on the alternatives presented in the EA. Public testimony was given by Don Westlund (Silver King Charters), John Warrenchuk (Oceana), and Dorothy Childers (Alaska Marine Conservation Council).

The SSC received an initial draft analysis of the Bering Sea habitat conservation measures in February 2007, based on alternatives developed by the Council in the preceding year. The purpose of the analysis, as stated in the Problem Statement developed by the Council in 2005, is to "consider practicable and precautionary management measures to reduce the potential adverse effects of fishing on EFH and to support continued productivity of managed fish species."

The Council prepared a revised set of 3 alternatives in February 2007, partially in response to SSC comments. Alternative 1 is to maintain the status quo, alternative 2 is an open area approach to encompass the majority of the area where bottom trawling has occurred, and alternative 3 calls for gear modification to raise the sweep off of the bottom. Five options include a closure surrounding St. Matthew Island, two closure configurations around Nunivak Island/Etolin Strait, a closure surrounding St. Lawrence Island, and an experimental fishing area in waters north of the open area boundary specified in alternative 2.

The SSC commends the authors of the revised EA for addressing many of the SSC concerns raised at the February 2007 meeting. **The document has been nicely restructured around alternatives and options that are more streamlined and not confounded.** Much of the data we asked to be incorporated has been added, and the new maps have been produced at a scale that is easy to interpret and yet dense with data.

The SSC has two comments pertaining to the Council's choice of alternatives. The first comment is **that it is not clear if alternatives 2 and 3 are considered mutually exclusive or if both can be selected.** While these are described as alternatives, the EA appears to consider alternative 3 (gear modifications) to apply only to the open areas under alternative 1 in the analysis of habitat impacts in section 4.1.2 (e.g., paragraph 7, page 45). **If the intent is to be able to select from and combine the current alternatives and options they could simply be provided as a "menu" of 7 options under a single "Action" alternative.** Options 2 and 3 pertain to minimizing conflicts with resource use patterns of local communities, however this goal is not included in the problem statement. Perhaps the problem statement should be expanded.

The SSC suggests the following improvements to the analysis prior to release for public review:

1. Regarding alternative 2, it would be helpful to see a rationale developed for the threshold number of trawls per unit area (2 per 100 km²) that is used to define the open area boundary, and how this conforms to the “first pass is the worst pass” philosophy.
2. It was reported to the SSC that there may be some unresolved issues with implementation of gear modifications required in alternative 3. The status of these should be clarified at the time of publication of the revised EA. Similarly, the revised EA should provide the results of current discussions between the industry and local communities regarding boundaries in the region of Nunivak Island/Etolin Strait (options 2 and 3), as well as possible revisions to the boundaries for closed waters surrounding St. Matthew Island (option 1).
3. The SSC has previously commented on the need for an analysis of the potential habitat effects of pelagic trawls. The EA provides some justification for not including an alternative that requires pelagic trawls to be fished in a manner to avoid bottom contact. However, much of the justification regarding long-term effects applies equally to bottom trawls. In addition, although the “20 crab performance standard” provides some measure of accountability, it is not clear whether this standard is being met considering the apparent high levels of estimated crab bycatch that have been reported. One possibility for including alternatives that address potential effects of pelagic trawls would be to change “bottom trawling” in some or all of the options to “all bottom-contact trawling.”
4. The EA should specifically define a “non-pelagic trawl.” As described, alternative 2 may create an incentive for fishers to develop “pelagic trawl gear” that could access these closed areas. For example, many flatfish trawlers on the west coast fish bottom trawls without discs, and use a bare chain or cable footrope.
5. There is some recognition that area restrictions may change where fishing occurs, and that this may impact incidental catch and PSC. However, the potential changes are qualitatively dismissed. Catch data of incidental catch or PSC species is available and could be presented to support the argument of no effect or to estimate where potential changes in catch composition may occur. It would be best to show spatial data on PSC and incidental catch to evaluate whether particular options may redistribute effort in ways that may change species composition of the catch.
6. The document should include a brief summary of available data on northward progression of fish stocks and fishing effort, by target species. Also, an analysis, or at least a brief discussion is warranted in regards to the likely effects of a continuing trend in the northward movement of flatfish, by species, in relation to the actual reduction in available biomass that might occur under alternative 2. This analysis should consider the buffer between actual catches and the ABC and how this might mitigate northward trends. The motivation for this request is that the color maps presented to the SSC showing the time series of trawl locations since 1991 do not show a strong trend in northward movement of fishing effort.
7. It would be helpful to include potential effects of the alternatives on walrus. The seabird discussion could also be updated to include new information provided by Greg Balogh in his presentation to the SSC.
8. In Table 4.1-2 on page 48, the criterion for a significantly negative effect on fishing mortality is weak: instead of “yield fishable biomass on a continuing basis,” a more appropriate criterion is “provide sustainable yield.”
9. The implementation scoping effort should include coordination with the observer program so that gear configuration data can be collected and analyzed in future trawl performance evaluations.

Minor comments:

- Page 63. There is a reference to Figure 3.2-2 with regard to short-tailed albatross aggregates. However, Fig. 3.2-2 has no information on albatross.
- Page 46, last paragraph: correct reference is Mueter and Litzow (in review).

- Page 29, 3rd paragraph. The first sentence reads that “... fishing, and particularly bottom trawling, has long-term effects on benthic habitat features...”. However, according to Table 3.2-4 on the following page, pollock pelagic trawls have at least the same estimated long-term effect. Hence, the sentence should read “...fishing, and particularly bottom-contact trawling, ...” or simply “...trawling”.
- Figure 3.2-4 should include latitude/longitude and/or a scale.
- Figures 3.2-1, 3.2-2, and other maps: Latitude/longitude labels are unreadable.

D-4 AI FEP

The SSC received a progress report from the AI ecosystem team by Diana Evans (NPFMC) and Sarah Gaichas (AFSC) on a working draft of the “Aleutian Islands Fishery Ecosystem Plan”. The SSC was impressed with the amount of work accomplished since February and appreciates the incorporation of previous SSC comments on the FEP. No public testimony was received.

Despite excellent progress, there are still large gaps in the document and the SSC has substantial recommendations for improvements, as detailed below. **As a result, the SSC recommends that the timeline for completing the document be extended and would like to review an updated draft at a future meeting before it is finalized.**

The SSC requests further clarification of the stated purpose of the document in section 1.1 that includes the additional five purposes stated during the presentation. Also, it should be clearly stated up-front that the FEP has no legal standing for requiring management actions. Definitions of ecosystem health and vibrant communities are needed; they should be provided early in the document to allow the reader to assess whether the FEP has fulfilled its goals.

The introduction section should clearly identify the difference between this document and the PSEIS and subsequent implementation of the PSEIS goals. The SSC recognizes that there is considerable overlap in the goals and objectives associated with the FEP and the PSEIS. The PSEIS evaluated the tradeoffs of selecting different management strategies, it described the ecosystem, and it described the interactions between ecosystem elements and assessed the implications of Council actions on the components of the ecosystem. **The FEP should build upon the foundation of the PSEIS.**

The SSC suggests reorganizing this section to assess the following questions.

- Do existing documents (e.g. PSEIS, BSAI SAFE, NEPA documents) provide Council members with a clear description and understanding of the fundamental physical, biological, and human / institutional context of ecosystems within which fisheries are managed? If not what additional information will be provided by this FEP?
- Do these existing documents allow the Council to set policies by which management options would be developed and implemented? If not what additional information is needed to assist the Council to set policy?

Section 2, as currently written, is not a complete description of the ecosystem. This section should either be renamed or folded into chapter 3 and provide a more detailed rationale for defining the boundaries of the ecosystem.

Descriptions of the physical environment (Section 3.2. and boxes on page 25 and page 38–39) are currently inadequate. For example, throughout the document the AI is identified as a “leaky system”. This understates the amount of exchange between the AI and EBS. The Alaskan Stream is one of the most vigorous currents in the coastal U.S. The connectivity of the AI system to the GOA (via the Alaskan Stream) and the EBS (via the Aleutian North Slope Current) is unique relative to other systems. However

the north- south mixing is not highlighted. Typically, when strong current connections exist, the system is considered one ecosystem. For example, the northern and southern regions of the California Current supports different species, however it is considered one large marine ecosystem because of the connectivity provided by the California Current. Recognition of the consistency in currents and species between the EBS and AI relative to north and south California Current System would be useful.

Although the AI ecosystem could be considered continuous with both the GOA and the BS, recent work has suggested that an oceanographic boundary exists at Seguam Pass and the description of this ecological boundary should be strengthened, as it is the boundary that was adopted for defining the ecosystem. The continuity, or lack thereof, of physical and biological characteristics across both the eastern and western boundaries should be discussed in more detail. A recent paper in the Canadian Journal of Zoology (O'Corry-Crowe et al., 2006) demonstrates difference in the genetic population structure of the western Steller sea lion population east and west of the ecosystem divide at Samalga Pass. Inclusion of this citation would support the selection of the ecological boundary. For example, there is evidence from genetic and other studies that stocks in the Aleutians (e.g., halibut, Pacific cod) may be distinct from those in the EBS and may in fact be contiguous with Russian stocks. Uncertainty about stock structure should be highlighted and the consequences of the existence (or lack thereof) of stock separation between the AI and the EBS should be discussed. The associated risks could be explored in the risk analysis by including an interaction between stock structure and management. In addition, there should be some discussion of the possibility that many of the populations in the AI may be contiguous with Russian populations and its implications for management.

The document should strive for a better balance between the food-web modeling results and other available information on the oceanography of lower trophic levels, fish, seabirds, and mammals (e.g., AI issue of Fisheries Oceanography). A stronger synthesis of the food-web information would provide a clearer understanding of how this information can contribute to the goals of the FEP. In particular, much of section 3.3 focuses on predator-prey interactions and is based on very recent, unpublished work. While it is desirable to incorporate the most recent information, this should be limited to actual findings based on the available diet data. Speculative statements and discussions should be excluded.

The food-web model relies heavily on diet data collected over multiple years. Some discussion of the uncertainties in the diet data in light of seasonal and interannual differences in diet composition and fish distribution should be included. For example, graphs on diet composition, such as Figure 3-17, could include the number of stomach samples on which the estimates are based (for each 2 degree spatial block), as well as the range and number of years over which the data were collected.

Section 5 is very useful because it sets the stage for evaluating current impacts. The workgroup might consider moving this section ahead of the risk assessment to allow the reader to fully understand the rankings and the connection between existing management objectives and the risk assessment. Section 5 should highlight the complex system of management currently in place within the AI. The section should evaluate current exploitation rates relative to standing stock biomass. We suggest inclusion of a graphic showing the fishing mortality of each stock relative to a reference F (e.g., F/F_{35}) against biomass relative to a reference level (e.g., B/B_{35}).

The SSC notes that the PSEIS process recently allowed a public discourse on the tradeoffs of different management strategies. **Results of the workgroup should be reviewed relative to the PSEIS analysis. When the conclusions of the FEP differ from the PSEIS it would be useful to summarize what new information was used to reach revised conclusions regarding the significance of past, present, and future ecosystem impacts.**

The FEP needs to move beyond the risk assessment to a more comprehensive ecosystem assessment. While a table of potential indicators is provided (pp.91-96), the integration of the risk assessment section

with the relevant indicators should be improved. The authors should consider combining the description of interactions (3.6) with the risk assessment (4.1), as well as with the indicators listed in section 4.2 (including an evaluation of the status of these indicators). This would avoid some redundancy and make it easier to follow the linkages between interactions, the associated risks, and relevant indicators. This could be accomplished by modifying section 4.1 and adding, under each interaction, a brief description of the indicator, followed by the existing sections on probability, impacts, and scale, followed by a description of relative indicators, their current status, and likely trends over some agreed-upon timeline. A summary table that provides, for each interaction, ratings or scores for probability, ecological impact, economic impact, as well as the indicator name(s), and their current status (on some appropriate scale such as {0,+,-} or {red, orange, green}). This summary table could replace the current tables on pages 91-96.

To help the Council identify issues deserving attention, it would also help to include a clear distinction between issues that the Council has any control over in the management process, those that are directly relevant to management (e.g., changes in recruitment, natural changes in abundance), and those that are intended to inform management.

The current risk analysis is useful for highlighting issues of concern for the Council. The SSC suggests the following additions to this analysis:

- The risk analysis and ecosystem assessment needs to include a discussion of cumulative impacts, which could draw on existing EIS documents.
- The risk analysis should discuss consistency among ratings obtained by different team members and should describe how low, medium, and high impacts are defined.
- It should be stated clearly whether impact ratings in the risk analysis reflect impacts at the scale at which the interactions operate or whether they reflect an assessment of impacts at the overall ecosystem level. Maybe separate impact ratings at the local and overall ecosystem level are needed?
- The document needs to distinguish hypotheses from the evidence to support them. The workgroup should consider the using the term unknown when there is little data to determine the risk of a proposed interaction.
- Some rationale should be provided for multiplying ecological and economic impacts to obtain a combined impact rating.

Additional detailed editorial comments were compiled and will be provided directly to the authors.

D-5 Arctic management

At the October and December 2006 meetings, the Council directed the staff to prepare a discussion paper on options for managing commercial fishing in the Chukchi and Beaufort Seas, with the general aim of closing the area to any new commercial fisheries unless and until authorized by an FMP. Bill Wilson (NPFMC staff) summarized the latest version, which considers three alternatives: (1) status quo; (2) amending existing FMP's; (3) developing a new FMP for waters north of Bering Strait for species not covered by an existing FMP. Public testimony was received from Chris Krenz of Oceana and Paul MacGregor of APA.

The SSC endorses the Council's precautionary approach to management in this area. The Arctic ecosystem is distinct from the Bering Sea and has a number of unique and probably sensitive stocks, as well as endangered species. It is also likely to undergo rapid change due to warming over the next few decades.

Under present FMP's and Alaska statutes, the Arctic region is already protected against the development of any unregulated fishery. However, **the SSC noted that a comprehensive FMP for the Arctic would advance an integrated ecosystem approach to management in that region. The SSC suggests that a Fishery Ecosystem Plan (FEP) could also be written to accomplish the Council's purpose of setting**

policy for the region. An FEP alternative might not be as simple and direct as developing a regional FMP, but we recommend that it be considered at least briefly in the analysis for completeness. Presumably, an FEP would need to be considered as an option in combination with one of the other alternatives. In view of the lack of any fishery problems in the Arctic at present, we also recommend that the analysis should provide an estimate of the cost in staff time to accomplish the Council's purpose under the different alternatives.