

# North Pacific Fishery Management Council

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Certified: \_\_\_\_\_  
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## SCIENTIFIC AND STATISTICAL COMMITTEE to the NORTH PACIFIC FISHERY MANAGEMENT COUNCIL February 4-6, 2008

The SSC met during February 4-6, 2008 at the Renaissance Hotel, Seattle, Washington. Members present were:

Pat Livingston, Chair

*NOAA Fisheries—AFSC*

Sue Hills

*University of Alaska Fairbanks*

Kathy Kuletz

*US Fish and Wildlife Service*

Lew Queirolo

*NMFS—Alaska Region*

Doug Woodby

*Alaska Department of Fish and Game*

Keith Criddle, Vice Chair

*University of Alaska Fairbanks*

Anne Hollowed

*NOAA Fisheries—AFSC*

Seth Macinko

*University of Rhode Island*

Terry Quinn II

*University of Alaska Fairbanks*

Robert Ames

*Oregon Department of Fish and Wildlife*

George Hunt

*University of Washington*

Franz Mueter

*SigmaPlus Consulting*

Farron Wallace

*Washington Dept of Fish and Wildlife*

Members absent were:

Bill Clark

*International Pacific Halibut Commission*

Gordon Kruse

*University of Alaska Fairbanks*

### Election of Officers

Pat Livingston was re-elected to chair the SSC. Keith Criddle was re-elected as vice-chair.

### B-2 Crab OFL

Diana Stram (NPFMC) and Jack Turnock (NMFS-AFSC) reported on minor corrections to the crab overfishing definitions. There was no public testimony on this agenda item.

During the certification process for Amendment 24 to the Fishery Management Plan for the BSAI King and Tanner Crabs, NMFS reviewers noted some inconsistencies in the draft crab overfishing definitions.

**The SSC concurs with the proposed changes to the formula for the overfishing level under stock status ‘c’ in Table 6-1 and associated changes in the text.** These changes are consistent with the Crab OFL EA. The SSC also noted a typo in the document: the default value for  $\alpha$  under the Five-Tier system should be changed from  $\alpha = 0.05$  to  $\alpha = 0.1$ .

### B-8 Protected Species

The SSC received informational updates on the progress and timelines for various SSL issues from Bill Wilson (NPFMC). No public testimony was heard on this topic.

The Recovery Plan is scheduled to be released in early March 2008, the Steller Sea Lion Mitigation Committee (SSLMC) will meet in late March to review the Recovery Plan and to develop an initial set of recommendations for presentation at the April Council meeting. The SSLMC will finalize its recommendations in May, after the draft status quo BiOp is released. At the June meeting, the Council will select a preferred alternative to be considered in an EIS and in a revised BiOp. The SSLMC noted that significant SSL issues are likely to be on the agenda for both the April and June meetings.

The SSLMC suggests that two of the proposals are unlikely to have adverse effects on SSL and could be moved forward more quickly than the rest of the package. One proposal would change the start date for the GOA C-season pollock fishery by a week. The other would make a change in the AI Atka mackerel fishery. Both of these proposals will be brought to the Council during this (the February 2008) meeting.

The NMFS Protected Resources' informal consultation on the Alaska Board of Fish proposal to allow a harvest of some 400mt of pollock in Kanaga Sound resulted in a determination that a formal ESA Section 7 consultation will be needed if the Council were to pursue this proposal.

A new request from the Qayassiq Walrus Commission was presented. They request a closure area of 10nm around Round Island. However, there already is a 12nm closure around Round Island and several other walrus haulout areas in Bristol Bay from April 1 through September 30, so it is unclear what purpose would be served by this request. Clarification will be sought from the proposers.

## **C-1 BSAI Crab Issues**

Public testimony on items (a-c) was provided by Leonard Herzog (Homer), Frank Kelty (City of Unalaska), Ernie Weiss (Mayor of King Cove), Arni Thomson (Alaska Crab Coalition), and Steve Minor (North Pacific Crab Association).

### **C-1 (a) Crab Advisory Committee report**

Mark Fina (NPFMC) provided a preview of issues that will be addressed in an analysis of possible changes to the crab rationalization program and how the analysis of these changes will likely be informed by reports that are being prepared for the 3-year review.

### **C-1 (b) Data quality, validation audit protocols, organization of metadata, and data confidentiality**

Brian Garber-Yonts (NMFS—AFSC) presented a synopsis of reports on data quality, validation audit protocols, and organization of metadata. The report on data confidentiality has not been completed and was not presented.

The Crab EDR data are submitted to Pacific States Marine Fisheries Commission (PSMFC). PSMFC examines the data for missing observations and matches the data to other databases, such as the CORE reports. PSMFC strips unique identifiers from the records before providing the data to NMFS. Audits have been performed on an increasingly large fraction of the submitted observations—in 2006, approximately 29% of the records were audited. A random draw is used to select firms for audit, but this does not ensure a stratified random sample for each variable included in the database. The audit results indicate that data for 1998 and 2001 represent the best information available, but are of “low quality”, except for records of catch, gross revenue, and crew settlements; data for 2004-06 are believed to be “better quality”. It is important to recognize that, as used here, data “quality” refers only to the extent to which the auditors judged that specific EDR data could be “supported” during the audit process; “supported” (i.e., precise) answers to the questions should not be confused with accurate characterizations of production and operating costs. **Nonetheless, it is important to recognize this information**

**represents a vast improvement over all previous information on these fisheries and is vastly superior to information currently available on any other Alaska region fishery.**

#### **C-1 (c) Outline of studies planned for 3-year review**

Ron Felthoven (NMFS-AFSC) described several analyses that are planned by the AFSC to assist the Council in the 3-year review. These studies include analysis of: changes in the distribution of quasi-rents among vessel owners, crew, captains, and quota share holders; assessment of regional impacts based on a Social Accounting Matrix methodology; an ethnographic analysis of the post-rationalization fishery; an analysis of the distribution of rents between harvesters and processors; and a vector autoregression analysis of crab trade flows and prices. These studies are possible, in large part, because of EDR data. The SSC looks forward to seeing these reports.

#### **C-1 (d) Initial review of ‘C’ share active participation**

Mark Fina (NPFMC) summarized the initial review draft analysis of proposed revisions to the active participation requirements for ‘C’ shares in the BSAI crab rationalization program. There was no public testimony on this agenda item.

The SSC has provided the analysts with some suggested technical edits and recommends that the discussion of exvessel prices and price differentials be characterized as being anecdotal. **The SSC recommends that this draft analysis be released for public review, once the above concerns have been addressed.**

#### **C-1 (f) Initial review of amendments to the arbitration program**

Mark Fina (NPFMC) summarized the initial review draft analysis of proposed revisions to the arbitration program. There was no public testimony on this agenda item.

These amendments are intended to address issues related to the timing and preparation of market reports and price formulae that are used in the price-setting process, but do not directly affect the price-setting mechanisms. Development of market reports for fisheries that have not opened since implementation of the crab rationalization program is problematic. The SSC provided the analyst with suggested technical edits. **The SSC recommends that this draft analysis be released for public review.**

#### **C-1 (g) Discussion paper on potential grants of immunity under the arbitration program**

This item was dropped from the SSC agenda.

#### **C-1 (h) Initial review of extension of “cooling-off” and right of first refusal for St. George**

Mark Fina (NPFMC) summarized the initial review draft analysis of a proposed extension of “cooling-off” and right of first refusal for St. George. There was no public testimony on this agenda item.

The draft analysis provides a balanced discussion of the implications of the proposed alternatives. The SSC provided the analyst with suggested technical edits. **The SSC recommends that this draft analysis be released for public review.**

#### **C-6 CGOA Rockfish**

The SSC received a preliminary report on the Central Gulf rockfish pilot program from Julie Bonney (Alaska Groundfish Databank). Mark Fina (NPFMC) presented an outline for the program review report

after its first year. There was no public testimony. The SSC looks forward to reviewing the completed analysis during the June meeting.

### **C-7 Data Collection**

Mark Fina (NPFMC) provided a brief overview of the initial meeting of the comprehensive data collection committee. There was no public testimony on this agenda item.

The SSC has repeatedly noted that a comprehensive time series of financial and economic data would provide an improved basis for completing analyses required for Council decision-making, and is encouraged by progress that is being made.

### **D-1 (a) BSAI salmon bycatch**

Diana Stram (NPFMC) briefly reviewed the history and status of the BSAI salmon bycatch reduction measures under consideration. Scoping for an EIS on bycatch reduction measures has been initiated. Alternatives for analysis will be refined at this meeting, finalized in April, and initial review of the EIS is currently scheduled for June.

Public testimony was received from Ed Richardson (Pollock Conservation Cooperative), Becca Robbins Gisclair (Yukon River Drainage Fisheries Association), Donna Parker (Arctic Storm), Jon Warrenchuk (Oceana), and Brent Paine (United Catcher Boats).

The SSC received the following presentations related to this issue:

- Final report on 2007 EFP (VRHS program)
- New stock-of-origin information
- Bycatch quotas and salmon fees
- Monitoring and Enforcement issues
- Area closure options

#### Final report on 2007 EFP

Karl Haflinger (SeaState) and John Gruver (United Catcher Boats; Inter-Cooperative manager) presented a final report on the 2007 EFP for implementing the VRHS closure program to reduce salmon bycatch in the pollock fishery. The SSC previously endorsed the approach to estimate the effectiveness of the closures.

Based on simple extrapolations, the report suggests a substantial reduction in the number of Chinook salmon caught relative to what may have been caught if the VRHS closure program had not been in place. For Chinook salmon, a majority of the VRHS closures occurred within the established Chinook Salmon Savings Area (CSSA) where bycatch rates tended to be higher than in surrounding areas. This agrees with the original analysis that led to the establishment of the CSSA and suggests that the CSSA may, indeed, be effective in reducing salmon bycatch.

The vessels that participated in the VRHS program were exempted from the CSSA closure, under the terms of the EFP. Therefore it is uncertain how effective the VRHS program is in reducing salmon bycatch, relative to leaving in place the CSSA measures for all vessels (i.e. no EFP). While extrapolation of the salmon savings, based on reductions in catch rates, show the program potentially saved salmon, it has clearly failed to reduce the absolute amount of Chinook salmon bycatch, which was at its highest level in 2007. As the SSC stated in its October 2006 minutes: "... the SSC notes that the goal should be to reduce the number of salmon caught, whereas the VRHS closure system focuses on salmon per ton of pollock."

In contrast to Chinook bycatch amounts, non-Chinook (primarily chum) salmon bycatch decreased substantially, from a peak of over 600,000 in 2005 to ~ 91,000 in 2007. At least some of the reduction may be attributed to the VRHS closure program, which seems to be more effective for chum salmon than for Chinook salmon. Extrapolation suggests a 70% savings in both the 2006 and 2007 B-seasons.

The SSC appreciates the thorough reporting of the performance of the program.

#### New information on stock of origin

Jim Seeb (UW) and Bill Templin (ADF&G) presented ongoing work on the stock composition of Chinook salmon caught incidentally in the BSAI pollock trawl fishery. The original purpose of their project was to refine stock-of-origin information, to estimate a time series of AYK-origin Chinook bycatches, for use in a run-reconstruction of AYK salmon. The stock composition results are generally consistent with earlier work by Kate Myers (UW) and showed similar proportions of AYK Chinook salmon in the bycatch, but a larger proportion of Chinook salmon from Pacific Northwest (BC/WA/OR) stocks, particularly in bycatches from the area immediately to the north of the Alaska Peninsula.

The stock composition results indicate substantial temporal and spatial variability in stock composition, and the samples that were included in the genetic analyses may not be representative of the overall salmon bycatch. Biases in the samples may arise from a lack of representative sampling in both spatial and temporal dimensions, as well as from the potential for clustering of samples from schools of fish that are genetically similar. It may be possible to post-stratify the samples by month, region, and haul to assess or eliminate sampling bias and improve estimates of bycatch composition with respect to stock of origin.

The SSC is pleased to learn that UW researchers, Jim and Lisa Seeb, will be able to continue to explore the stock composition of current Chinook salmon bycatch and may be able to greatly increase the number of samples by isolating genetic information from historic archives of salmon scales. Samples from these scale archives could greatly improve estimates of stock composition over time.

**In addition to summarizing information about the stock composition of Chinook and chum salmon bycatches, the EIS should summarize current information on hatchery outputs of chum salmon from Japan, Russia, the US, Canada, and elsewhere, as well as an analysis of how these (reportedly) large releases may affect the alternatives.**

#### Monitoring and Enforcement issues

Sally Bibb (NMFS-AKR) gave a brief overview of bycatch monitoring and enforcement issues that could arise under bycatch allocations to individual vessels, cooperatives, or sectors. She indicated that the current monitoring system would not provide an adequate basis for enforcing Chinook salmon bycatch allocations to individual vessels or cooperatives under Option 6 of Alternatives 2 and 4 in the discussion paper.

**The EIS should include a discussion of how monitoring and enforcement activities would need to be changed in order to ensure compliance under the bycatch allocation alternatives. In addition, the EIS should describe why salmon bycatch in the pollock fishery is more difficult to monitor than other PSC limits, such as halibut or crab PSC in the flatfish trawl fisheries.**

#### Bycatch quotas and salmon fees

Alan Haynie (NMFS-AFSC) presented a discussion paper on market-based policy options that, if authorized by Congress and approved by the Administration, could be used in conjunction with options 5 and 6 under Alternative 2 (hard cap) or Alternative 3 (triggered caps) in the EIS. The options discussed include quota allocations to individual vessels or cooperatives and fee per salmon caught that could, for example, be redistributed to the fishery, thus penalizing vessels or cooperatives with high bycatch rates.

The author notes, and the SSC agrees, that in the absence of market-based options, a hard cap on Chinook salmon bycatch is very likely to generate undesirable changes in fleet behavior and may lead to a renewed “race for fish”. **The EIS should fully explore market-based options as possible elements of the alternatives. The market-based options should explore the continuum from individual vessel allocations to cooperative or sector level allocations.** As noted above, it is not clear to the SSC why current levels of monitoring are inadequate to enforce a hard cap, allocated at the cooperative level. **Including the options outlined in this discussion paper, with an analysis of possible changes in the structure of monitoring and enforcement activities would be an informative addition to the EIS, despite the legal limitations, effectively precluding their use, at present.**

#### Area closure options

Diana Stram (NPFMC) provided a summary of efforts to map potential closures under Alternatives 3 (fixed closures) and 4 (triggered closures). **The SSC supports a conceptual approach of frameworking the methods for setting boundaries on area closures, to allow modifications to the boundaries as conditions change between years. For fixed closures, the SSC would like to see an analysis of how different closed areas would have performed historically, in terms of salmon saved, by way of a retrospective study using different sequences of bycatch data (e.g., the most recent 3, 10, 15 years).**

#### Other suggestions for refining Alternatives under consideration:

- The list of suboptions under Option 1 of Alternative 2 (hard caps based on historical catches) could be reduced to a few contrasting hard cap levels that span the range of options considered. **If it is the intent of the Council to reduce salmon bycatch from current levels, the EIS should clearly identify what the “current level” is, and limit options to those that are consistent with that objective.**
- The discussion of Alternative 2 should clearly outline how a hard cap relates to the salmon FMP. For example, any fixed cap would have to be modified if affected salmon stocks are determined to be overfished and a rebuilding plan is developed under the salmon FMP.
- The EIS should include an analysis of salmon values that includes commercial, subsistence, recreational, and cultural values for users throughout Alaska and the Pacific Northwest, as well as an analysis of the ecological role of salmon across this same geographic range.
- The SSC supports further development of the “adult equivalency” model to both develop a method for setting abundance-based caps, as well as a tool for evaluating impacts on salmon fisheries in the EIS.
- The analysis of a change in the accounting year (i.e. basing caps, etc. on a “biological” year rather than a calendar year) should examine the size and presumed age composition of salmon bycatch to determine which cohorts are caught in each pollock season. For example, if salmon caught in the B-season are primarily adults returning to spawn, the current accounting system based on calendar year would be more appropriate.
- From the discussion paper, it is not clear how the VRHS closure program will be incorporated in the EIS. The analysis should clearly lay out how the program may interact with the different alternatives.
- The SSC has previously suggested options for temporal closures or adjustments to the fishing season based on seasonal differences in catch rates. Information on weekly bycatch rates in the discussion paper suggests that closures in the latter part of the B-season, when Chinook bycatch rates tend to increase drastically (while pollock catches are typically low), could result in substantial savings. **The SSC recommends including an option that shortens the B-season.**

### **D-1 (b) GOA salmon and crab bycatch**

The SSC did not have time to address this agenda item.

### **D-2 (a) Initial review of GOA ‘other species’ catch specifications amendment**

Diana Evans (NPFMC) presented the initial review document that describes a proposed procedure for setting ABC and OFL for the GOA ‘other species’ aggregate. There was no public testimony on this agenda item.

The proposed procedure mirrors the procedure used for the BSAI other species complex. This is envisioned as an intermediate step in the process of breaking-out component groups for ABC/OFL-setting. **The SSC recommends that the EA be released for public review.**

### **D-2 (d) Report on Pacific cod scientific studies**

Jane DiCosimo (NPFMC) introduced the issue, which is whether there is now sufficient biological information and rationale to split BSAI Pacific cod into separate EBS and AI components for stock status determination. Kerim Aydin (NMFS-AFSC) presented a discussion paper that reviewed regional exploitation rates, population trajectories, and ecosystem effects. Mike Canino (NMFS-AFSC) provided evidence for different genetic components between the Aleutian Islands and Unimak Pass, although there are additional genetic samples from that area that need to be examined. Olav Ormseth (NMFS-AFSC) provided information on differences in fatty acid composition. Public testimony was provided by Donna Parker (Arctic Storm), Ed Richardson (Pollock Conservation Cooperative), and Clem Tillion (Aleut Corp.).

The SSC notes that, at present, some data support the split, other data do not, and there are major information gaps related to recruitment, reproductive potential, and stock structure. The 2007 NPRB request for proposals solicited proposals to identify Pacific cod movement. The SSC anticipates that if these proposals are funded, the results may improve our understanding of mixing between regions. **What is needed is a comprehensive review of relevant information related to stock structure.** The most straightforward approach would be to include this review as an appendix to the cod chapter of the BSAI SAFE, so that it gets proper review by the Plan Team and Council family. However, the SSC emphasizes that the main priority with BSAI Pacific cod is to work on the EBS cod stock assessment model.

In the development of the comprehensive review, authors should consider the following questions.

- If there are breaks in the genetic stock structure in the BSAI, where do those occur? Is it possible that there are multiple breaks? Processing the genetic samples that have not been analyzed will be useful in this regard.
- What criteria should be used to indicate when genetic differences are large enough to necessitate management as separate stocks? That is, stocks can be defined for management purposes alone; to what extent does genetic knowledge inform management issues?
- Is there a conservation concern for cod in either the EBS or in the AI?
- Is information available for reliable assessments if a split is made?

- What implementation issues would arise with respect to the various fishery sectors if a split is made? Would the management system be able to resolve the allocations among these sectors?
- What research issues remain unresolved regarding stock structure, and are these serious enough to argue against making a split? For example, sources of recruitment of fish to the AI region appear to be unresolved.
- What model structure is needed to represent the population dynamics of Pacific cod in the BSAI? There has been some AI cod stock assessment modeling work by UW researchers Kinzey and Punt that may be useful to examine.

#### **D-2 (e) Report on flatfish stock assessment CIE review**

Tom Wilderbuer (NMFS-AFSC) gave a presentation on two topics, a CIE review of selected flatfish assessments and a new stock projection approach using Tier 1 parameters. It is clear that the CIE review was helpful in suggesting improvements to the assessments and AFSC stock assessment staff will be following many of CIE recommendations over the next few years. If assessment authors intend to employ the new Tier 1 projection approach as a replacement for the current approach for Tier 1 stocks, a proposal should be vetted through the Plan Teams and SSC in conjunction with the October meeting, so that a consistent approach can be developed.

#### **D-2 (f) Preliminary analysis of seabird deterrence exemption in IPHC Area 4E**

The SSC received a presentation from Bill Wilson (NPFMC) and Kristin Mabry (NMFS-AKR) on the preliminary draft EA/RIR/IRFA for “A regulatory amendment to revise regulations for seabird avoidance measures in the hook-and-line fisheries off Alaska to reduce the incidental take of the Short-tailed Albatross (STAL) and other seabird species.” No public testimony was received.

The proposed amendment considers relaxation of seabird deterrence requirements for a subarea of IPHC area 4E. A spatial analysis of STAL habitat use was presented. The final boundary area is being determined in consultation with USFWS. The tentative STAL area incorporates the southern boundary of IPHC area 4E and follows major latitudinal and longitudinal boundaries to keep the area definition as simple as possible. However, it appears that the northern portion of the tentative STAL area and the eastern portion in Bristol Bay are also areas of low probability of encountering STALs. Consequently, it may be advantageous to consider appropriate revisions to the proposed STAL area. **The SSC notes that, in contrast to typical actions, the Council MUST adopt one of the two options and does not have flexibility to select other options without triggering additional consultation.**

The spatial analysis was based on data (Suryan et al.) from 20 STALs that were satellite-tagged during field seasons from 2002-2006. It appears from the preliminary analysis that hatching year birds are most likely to appear in the southwest corner of 4E. The 2007 tag results have not been incorporated into the analysis. The analysts indicated that they intend to incorporate additional data sets into the spatial analysis.

The SSC notes that this EA/RIR/IRFA incorporates many of the suggestions and requests made by the SSC in its February 2007 review of the previous amendment to the seabird protection regulations. In addition to editorial comments forwarded to the authors, **the next draft of this analysis should address the following, more substantive issues:**

- Black-footed albatross (BFAL) may become a new species of conservation concern, but have not been included in this analysis. Analysis of BFAL data should be included in order to be proactive in identifying potential impacts on this species.



- The analysis should note that the small vessels fishing within 3nm of shore are exempt from seabird avoidance requirements and will continue to be so under all of the proposed alternatives. Maps and text should make this clearer.
- The analysis should differentiate between the southeastern and southwestern portions of IPHC Area 4E, as it seems unlikely the short-tailed albatrosses frequent inner Bristol Bay at this time.
- The analysis should include a description of when the various fisheries are prosecuted in Area 4E and how the timing of the fisheries affects their likely interaction with seabirds. For example, shearwaters are present in the region in high numbers in summer, but not in winter. Likewise, eiders are present mostly/only in winter. Clarifying temporal overlap patterns might further reduce concern about seabird bycatch in the area.
- If STAL numbers increase, it is likely that they will increasingly occupy areas of their former range, including inshore habitats. When this occurs, either special protection measures will no longer be required, as they will have been de-listed, or appropriate measures for protecting them can be instituted.
- The analysis should clearly indicate that the standards in the alternative are minimum standards.
- The analysis would be clearer if the alternatives were reworded to only apply to the STAL area, rather than all of 4E, and then have the options refer to the STAL area.

### **D-3 (c) Draft EA/RIR/IRFA for an Arctic FMP**

Bill Wilson (NPFMC) presented a preliminary draft EA/RIR/IRFA for an Arctic Fishery Management Plan. Chris Krenz (Oceana) and Donna Parker (Arctic Storm) presented public testimony on this issue.

¶In June 2007, the Council directed staff to begin preparing a draft analysis. The motion was made in response to heightened interest in the Arctic, due to climate change and its associated warming trend, and sea ice recession. As presently conceived, this FMP would encompass all invertebrates and non-salmonid fishes.

### **The SSC reviewed the draft analysis and suggests that the drafting team consider the following comments.**

- The Council has the opportunity to develop an FMP that will be useful as the foundation for future fisheries management for the region. The FMP should be written with a framework that closes fisheries in Federal waters, until sufficient scientific information is accumulated, particularly on stock status, which would justify rescission of the closures. **The SSC agrees that current information does not provide a sufficient basis for opening the Arctic region to commercial fishing.** This approach is consistent with the National Standard 2 requirement that conservation and management measures shall be based on the best scientific information available. If criteria for opening a fishery are included in the FMP, the SSC suggests that the drafting team examine the State of Alaska policies for developing new fisheries.
- The MSFCMA and National Standards require definitions of MSY, an MSY control rule, and MSY stock size, and reference points for overfishing and overfished levels. Consequently, the FMP should include these reference points and control rules, defined at the stock level or in aggregate. The lack of information is not an appropriate rationale for failing to define the methods for estimation of MSY and overfishing levels. These concepts can be defined based on existing knowledge, regarding acceptable

harvest control rules, and can be modified as required and as information accumulates. **The definitions currently applied to BSAI and GOA fish and invertebrate stocks could be used as examples of a framework for management in the Arctic.**

- **The species or species groups to be covered by the Arctic FMP should be reviewed. For example, consideration should be given to whether whitefish, herring, clams, and a host of other species are to be included.** Input from the State of Alaska should be sought in this regard. The rationale for inclusion or exclusion of particular species should be articulated in the analysis. For example, although it may be premature to categorize many Arctic species as “forage fish,” there may be sufficient data on some species to make recommendations (e.g., juvenile Arctic cod are known to be important to black guillemots in the Arctic). In addition, the species or species groups included under the FMP should be reviewed in light of the current deliberations of the non-target committee.
- **Conservation measures to address the sensitivity of the Arctic ecosystem could be addressed as an OY consideration.** The current draft analysis argues that the uniqueness of the Arctic ecosystem is a rationale for closing the region to directed fishing. All ecosystems are unique and, therefore, this argument alone is not sufficient to justify a blanket prohibition on fishing. Instead, the analysis should draw attention to particular attributes of the Arctic ecosystem that elevate the likelihood of adverse outcomes.
- Where possible, the EA/RIR/IRFA should include existing information from various surveys and reviews of the Arctic. A survey of the Beaufort Sea is planned for 2008, and there have been University of Alaska RUSALCA surveys in the Chukchi Sea. These surveys may provide some quantitative estimates of fish abundance for the region. Also, a recent National Research Council (NRC) review of available information on the Beaufort Sea benthic ecosystem could be referenced. This review concluded that the productivity of the area is low and may be sensitive to benthic impacts. Likewise, the analysis should address available information about the experience of other nations that conduct fishing in Arctic regions (e.g., Russia, Chukchi Sea; Norway, Barents Sea; Canada, Arctic). Inclusion of additional information on food habits of marine mammals and seabirds in the Arctic region would also enhance the document.
- **The SSC is supportive of stakeholder outreach activities that have occurred during development of this EA/RIR/IRFA.** If the drafting team adds technical information regarding biological reference points, the outreach staff should make sure that the potentially impacted communities are apprised of the additional information and the rationale for its inclusion, and that they understand the Council process that would be required to undertake changes to the FMP.
- The description of cumulative effects, included in the draft analysis, should be expanded to include a discussion of the impacts of oil and gas leases in the region.
- The draft analysis should be revised to more fully explain the differences between Alternatives 3 and 4, in terms of the effect of exempting the Kotzebue Sound red king crab commercial fishery and deferring management to the State.

#### **Other Ecosystem Issues:**

The SSC received testimony from John Hoyer (Greenpeace) on the HAPC process.

The SSC received an informational report about the Alaska Marine Ecosystem Forum, which met during the Alaska Marine Science Symposium.

Sea Grant is seeking input to establish a research plan for the AI.