

North Pacific Fishery Management Council

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**DRAFT REPORT
of the
SCIENTIFIC AND STATISTICAL COMMITTEE
to the
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
December 6-8, 2006**

The Scientific and Statistical Committee met during December 6-8, 2006 at the Hilton Hotel in Anchorage, AK. Members present were:

Gordon Kruse, Chair
University of Alaska Fairbanks

Pat Livingston, Vice Chair
NOAA Fisheries—AFSC

Keith Criddle
University of Alaska Fairbanks

Steven Hare
International Pacific Halibut Commission

Mark Herrmann
University of Alaska Fairbanks

Sue Hills
University of Alaska Fairbanks

Anne Hollowed
NOAA Fisheries—AFSC

George Hunt
University of Washington

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

B-3 NPRB Report

Clarence Pautzke (executive director NPRB) presented a report on the current activities of the NPRB, including information on funding levels and regional focus. The NPRB Science Plan was mentioned as being the guide for activities in the next 5-7 years. The recent Bering Sea Integrated Ecosystem Research Plan (BSIERP) activities will be coordinated with National Science Foundation's Bering Ecosystem Study (BEST). These two programs, extending over five to six years at an expected funding of about \$35 million, will focus on understanding and predictions of the effects of climate variability on the sustainability of subsistence and commercial fisheries in the eastern Bering Sea. The Council's update of its list of research priorities would be useful to the NPRB if provided after the June Council meeting. Also useful to the NPRB would be an indication of the highest priority research issues, in addition to the complete list of needed research. The SSC commended Dr. Pautzke on his leadership in working with the NSF to coordinate the activities of the NPRB BSIERP and NSF BEST programs. This effort will produce a much more comprehensive and integrated effort than either program could have accomplished on its own.

B-9 Protected Species Report

Bill Wilson (NPFMC) presented the protected species report. It was primarily informational and required no action by the SSC. Additional comments were given by Doug Demaster (AFSC). Four topics were addressed including the List of Fisheries (LOF), SSL ranking tool, SSL and NFS research permits, and the upcoming groundfisheries/SSL ESA consultation. No public testimony was offered.

List of Fisheries for 2007

Previously, the SSC has commented on List of Fisheries (LOF) and the methods used since the change to split out fisheries more finely (October and December 2004, February 2005, June 2006). In December 2004, the SSC commented on a white paper, "Summary of analysis for the proposed list of fisheries for 2005: and in February 2005, additional information was provided by NMML staff, but the SSC provided substantial additional comments. NMFS provided a written response to the SSC and Council's comments on the 2005 LOF, but the SSC continues to request an opportunity to review the methods in detail with the analysts. **The SSC requests that such a presentation be scheduled for the February 2007 meeting.**

The SSC notes that the Council's letter of February 28, 2005 expressed concern over the short time "provided to Councils and the public to meaningfully review the draft LOF, the Federal Register notice, and particularly the data and reports used by NMFS and their resulting rationale for assigning various fisheries to categories." This concern remains for the 2006 and 2007 LOF; the 2007 LOF has not yet been seen by the SSC and the comment period will end in early January, long before the February meeting, making meaningful comment difficult. To reiterate our June 2006 minutes, "in the future, the SSC requests that proposed the Proposed Rule for LOF be scheduled in a way that allows for SSC review before the end of the comment period. Also, the SSC requests the authors to work with the SSC to resolve outstanding analytical issues."

Update on SSL Mitigation

The SSL mitigation committee met after the October Council meeting to consider comments received from the SSC regarding development of a Ranking Tool (RT) to evaluate proposals that modify SSL protection measures. The SSLMC made revisions to the RT based on SSC comments and documented the rationale for assumptions and the hierarchy of the model. Details are provided in SSLMC minutes from their last meeting. The SSLMC plans to meet in January to finalize model develop and documentation. They will prepare a final report for presentation to the Council at the February 2007 meeting. The SSLMC will use this RT in conjunction with the draft BIOP to evaluate proposals that would change SSL protection measures in fisheries for pollock, Pacific cod, and Atka mackerel.

Steller Sea Lion and Northern Fur Seal Research Permits

NMFS reports that the EIS is being developed on the effects of research activities on SSL and NFS and, if it remains on schedule, will be completed by early summer 2007. Once the EIS is completed a Record of Decision will be issued, and research resumed, barring legal challenges. The 2006 SSL survey was only partially completed due to permit and weather issues. Results of the partial survey suggested a continued decline in the western Aleutians and stability throughout the remainder of the range of the western SSL population.

FMP Consultation and Preparation of SSL Biological Opinion

NMFS has changed the schedule for completion of the draft BiOP and now plans on presenting the draft at the June 2007 Council meeting. Based on legal advice, NMFS will develop the BiOP in advance of finalizing the SSL Recovery Plan. The draft Recovery plan and comments received on that draft will be

utilized in preparation of the BiOP. Based on this schedule, the Council would receive recommendations from the SSLMC and comments from the public on proposals to change SSL protection measures at the October 2007 meeting.

C-1 Charter Halibut Management

C-1(a) Status Review of 2005 and 2006 GHLS

Doug Vincent-Lang (ADF&G) responded to questions about recent estimates of charter-based sport fishing catches of halibut in IPHC areas 2C and 3A. Public testimony was provided by Dan Falvey (Alaska Longline Fishermen's Association). Catch estimates for 2005 have been finalized based on the 2005 Statewide Harvest Survey (SWHS) conducted in Spring 2006. The SSC was informed that preliminary catch estimates for 2006 have been derived using two methods: (1) extrapolation of preliminary data extracted from charter harvest logbooks through August 15, 2006; and (2), simple linear projections based on SWHS estimates from the most recent 5 years¹. (The SWHS-based projection for area 2C was not adjusted to reflect the disallowance of skipper-crew retention.) The estimates and projections are presented in the briefing book under agenda C-1(a)(2).

Sport fishing catches of halibut and associated incidental catches of demersal shelf rockfish and sharks represent substantial components of fishing mortality in areas 2C and 3A. Consequently, estimates and projections of sportfishing catches can have important implications for the likelihood of achieving the Council's biological, social, and economic objectives. Therefore, the procedures used to obtain estimates and projections, and associated confidence intervals and biases, should be thoroughly documented for the public and subjected to periodic review by the SSC or specially convened review panels. While ADF&G indicates that some analyses of the confidence intervals of the estimates and properties of the projections have been conducted, those analyses have not been broadly disseminated or reviewed within the Council arena. The SSC encourages the Council to request a review of estimation procedures for charter-based sport fishing catches of halibut and associated incidental catches of demersal shelf rockfish and sharks.

C-1(e) Moratorium Discussion Paper

Nicole Kimball and Darrell Brannan provided an overview of a discussion paper that has been prepared to help the Council shape the alternatives and options to be explored in a draft EA/RIR for a halibut charter moratorium. It is anticipated that a draft EA/RIR for this amendment will be available for Council review in February 2007 and that final action might be taken as early as April 2007.

The features of a moratorium will have important effects on how and where benefits are distributed and on the likelihood that the moratorium will stem the increase in charter catches. The direct and indirect effects of alternative combinations of features will need to be carefully explored to determine whether the moratorium will be efficacious and to identify how those features will affect the distribution of benefits across communities, between large and small operators, between charter businesses and their clients, etc. If the moratorium is envisioned as an interim management structure, it will be important for the analysis to consider how program features might predetermine characteristics of a future management structure and how short-run responses of charter businesses to the implementation of a moratorium might be shaped by jockeying for benefits anticipated under a future management structure.

C-1 Other

Although the SSC did not receive a presentation on management measures under consideration in response to ongoing exceedences of the halibut charter GHLS, we note that the several options for

¹ Prior to 2006, projections for area 3A were based on simple averages of the preceding 5-years.

controlling charter-based sport fishing catches and the likely efficacy of those options are explored at length in our December 1999 minutes and reiterated in our February 2000 and February 2006 minutes.

C-3 Trawl LLP

Jim Richardson (NPFMC staff) provided an overview of the draft problem statement and alternatives for possible amendments to the BSAI and GOA groundfish management plans that would affect area endorsements and numbers of groundfish trawl LLPs. Public comment was provided by Julie Bonney (Alaska Groundfish Databank).

It is anticipated that a draft EA/RIR for this amendment will be available for Council review in February 2007 and that final action might be taken as early as April 2007. SSC review of the draft EA/RIR will likely focus on the extent to which the analysis addresses issues raised in the Council's problem statement. Because the draft problem statement suggests that the primary motivation for this amendment is that "*In the Bering Sea and Gulf of Alaska, there are **too many** latent licenses and in the Aleutian Islands, there are **not enough** licenses available for trawl catcher vessels*", it will be incumbent on the analysts to explain what is meant by "too many" and "not enough" and how it will be determined that an alternative will or will not alleviate the problem. There are many possible frameworks for judging whether there are "too many" or "not enough" licenses; the Council could help focus the analysis by identifying the pertinent objectives for this amendment. For example, if the Council is concerned about capacity utilization/technical efficiency, it would be appropriate to base the analysis of alternatives on multi-product production functions or stochastic production frontiers. If instead, the Council is concerned that reactivation of latent permits might create levels of effort that would be difficult to control with current in-season management measures, the analysis should focus on the likelihood that latent capacity would reenter the fishery and on the likely effects on the timing and duration of fishing seasons. Alternatively, if the Council is concerned that the reactivation of latent permits might lead to undesired shifts in "who lands what where", it would be appropriate to structure the analysis around a regional economic model and to compare percent changes in expenditures, earnings, and employment with performance thresholds, e.g., changes greater or less than 1% in employment are or are not important.

C-5: Seabird protection measures

The SSC received a presentation from Bill Wilson (NPFMC) and Kristin Mabry (NMFS AKR) with additional input from Kim Rivera (NMFS AKR) and Greg Balogh (US Fish and Wildlife Service) on the 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 and other seabird species.. There was no public testimony.

The SSC recommends releasing the draft analysis for public review pending additional consideration of the following issues:

- 1) There should be a brief discussion of other stressors on these seabirds such as risk of oil spills and entanglement in gillnets.
- 2) There should be a brief mention of the possibility that deployment of streamers might increase loss of gear and subsequent entanglement of marine mammals.
- 3) On pages 30 and 45, the habitats used by eiders needs to be clarified. The Steller's eider most likely uses habitats in winter different from those used by spectacled eider. Neither species is likely to be encountered by the hook and line fishery.
- 4) On p. 15 in Melvin et al., 2006, there is mention of an unconfirmed sighting of a short-tailed albatross in the mouth of Chatham Strait. This observation, in addition to those of black-footed albatrosses

in the mouth of Chatham Strait and in Dixon Entrance, despite only modest survey effort in these areas, suggests that Alternative 3 would be considerably more precautionary than Alternatives 1 or 2.

- 5) It would be helpful to the reader to provide the number of observations in each of the statistical areas in Dixon Entrance and the mouth of Chatham Strait.
- 6) In Figure 5, include 2005 data, if available, and include the number of hooks set each year so that one can see the increasing effort.
- 7) In Table 4.2, it would be useful to insert the Alaska populations of each seabird species listed to back up the claim that the numbers taken are trivial on a population level.
- 8) Throughout the document- It would be most helpful to ensure that all figures and tables are fully labeled and presented in the order that they are cited in the text. Table 2.1 had problems in the printing process.
- 9) Kittiwakes are gulls and not Procellariiformes.
- 10) Please check pages 39, 47, 50 and 52 for stray question marks and editorial comments that were not edited from the review copy distributed to the SSC.
- 11) The new information that streamer lines will no longer be available free of cost from the Fish and Wildlife Service needs to be addressed.

The SSC commends the authors and Ed Melvin for conducting the research and helping to redraft regulations such that increased protection of seabirds has been accomplished while at the same time relieving the regulatory burden on a significant proportion of the fishery.

D-1 Groundfish Management

Recommendations to Groundfish Plan Teams:

The SSC has three requests of the GOA and BSAI Groundfish Plan Teams:

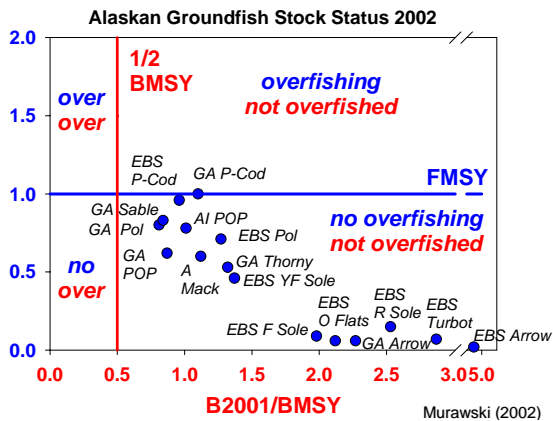
1. Alternative Tier 6 approaches. In reviewing draft “other species” assessments in February 2006, the SSC provided the following comments:

Use of average catch in Tier 6 could be problematic for several reasons: (1) the time series of catches may be of indeterminate accuracy due to difficulties in species identification, (2) the time series may be short because catch monitoring did not separately identify the species in the past, or (3) the bycatch of the species may be very low in relation to its population size, so that average catch is not a meaningful measure of an overfishing limit. The application of Tier 6 calculations could unreasonably constrain any directed fishery that might develop, and overly restrictive OFLs could unreasonably constrain other fisheries, such as the cod pot fishery that takes octopus as bycatch. In these situations, the SSC recommends that the analysts consider reasonable alternative approaches (such as a reasonably low catch that buffers bycatch needs in groundfish fisheries), as permitted in the definition of Tier 6: “OFL = the average catch from 1978 through 1995, unless an alternative value is established by the SSC on the basis of the best available scientific information.” The SSC looks forward to reviewing such alternatives.

At the December 2006 meeting, the SSC received one such alternative proposal from the GOA Plan Team that would establish ABC and OFL as a function of maximum historical catch instead of average historical catch. Two alternative formulations were recommended, one each for short- and long-lived species. Also, in the BSAI octopus stock assessment, adoption of this approach was recommended for the 2007 and 2008 specifications.

The SSC appreciates these efforts, and requests that both plan teams convene a broader discussion on this issue at its joint plan team meeting in September to consider this proposed alternative as well as other novel ideas. The challenge is to develop reference points that reflect best approximations of stock status under situations of severe data limitation. It would also be helpful to develop general guidance to stock assessment authors regarding situations where one alternative or another is most appropriate. The SSC looks forward to reviewing alternative Tier 6 guidelines at a future Council meeting.

2. The SSC requests that the groundfish plan teams review a draft policy paper, titled “A Guide to External Reviews of Alaska Groundfish Assessments.” This request is also made to the crab and scallop plan teams for their review. See SSC comments under D-1: “Other SAFE Issues.”
3. Phase-plane diagram. The SSC appreciates the addition of phase-plane diagrams to most stock assessments and reiterates interest in these diagrams for all stock assessments in which it is possible to do so using standardized axes (i.e., X axis of B/B_{target} ; and Y axis of F_{catch}/F_{OFL}), formatted relative to harvest control rules. In addition, values from the most recent year should be provided annually by the assessment authors to the plan team. The plan teams are requested to provide a figure summarizing all stocks in the introduction section of the SAFE documents. This figure would show the most recent year’s status for all stocks possible by plotting realized F relative to F_{OFL} versus biomass relative to target biomass. One point for each stock from the most recent year plotted relative to the harvest control rules would provide a snapshot of relative stock management performance for the group (see figure below as a potential example). One option could be to plot the last two years values as a line with an arrow head to show the change in each stock’s performance from the prior year.



D-1(b) GOA SAFE and Harvest Specifications for 2007/08

Diana Stram (NPFMC) and Jim Ianelli (AFSC staff) presented the GOA plan team report and recommendations for GOA groundfish. The following table summarizes the SSC recommendations for ABC and OFL for 2007/08 for GOA groundfish. Specific SSC comments on the assessments follow the table.

Table 1. SSC recommendations for GOA groundfish OFL and ABC for the 2007-2008 fisheries (mt). The SSC concurs with the plan team's recommendations for all GOA groundfish stocks.

Stock/Assemblage	Area	2007		2008	
		OFL	ABC	OFL	ABC
Pollock	W (61)		25,012		30,308
	C (62)		20,890		25,313
	C (63)		14,850		17,995
	WYAK		1,398		1,694
	Subtotal	87,220	62,150	105,490	75,310
	EYAK/SEO	8,209	6,157	8,209	6,157
Total	95,429	68,307	113,699	81,467	
Pacific Cod	W		26,855		27,846
	C		37,873		39,270
	E		4,131		4,284
	Total	97,600	68,859	86,000	71,400
Sablefish	W		2,470		2,458
	C		6,190		6,159
	WYAK		2,280		2,269
	SEO		3,370		3,353
	Total	16,906	14,310	15,803	14,238
Deep-water flatfish	W		420		430
	C		4,163		4,296
	WYAK		2,677		2,763
	EYAK/SEO		1,447		1,494
	Total	10,431	8,707	11,412	8,983
Rex sole	W		1,147		1,122
	C		5,446		5,327
	WYAK		1,037		1,014
	EYAK/SEO		1,470		1,437
	Total	11,900	9,100	11,600	8,900
Shallow-water flatfish	W		24,720		24,720
	C		24,258		24,258
	WYAK		628		628
	EYAK/SEO		1,844		1,844
	Total	62,418	51,450	62,418	51,450
Flathead sole	W		10,908		11,464
	C		26,054		27,382
	WYAK		2,091		2,198
	EYAK/SEO		57		60
	Total	48,658	39,110	51,146	41,104
	W		20,852		21,164

Arrowtooth flounder	C		139,582		141,673
	WYAK		16,507		16,754
	EYAK/SEO		7,067		7,172
	Total	214,828	184,008	218,020	186,763
Other slope	W		577		577
	C		386		386
	WYAK		319		319
	EYAK/SEO		2872		2872
	Total	5,394	4,154	5,394	4,154
Northern rockfish	W		1,439		1,383
	C		3,499		3,365
	E		0		0
	Total	5,890	4,938	5,660	4,748
Pacific ocean perch	W	4,976	4,244	5,030	4,291
	C	8,922	7,612	9,019	7,694
	WYAK		1,140		1,153
	SEO	3,260	1,640	3,296	1,659
	E(subtotal)	3,260	2,780	3,296	2,812
	Total	17,158	14,636	17,345	14,797
Shortraker	W		153		153
	C		353		353
	E		337		337
	Total	1124	843	1124	843
Rougheye	W		136		137
	C		611		614
	E		241		242
	Total	1148	988	1197	993
Pelagic shelf rockfish	W		1,466		1,752
	C		3,325		3,973
	WYAK		307		366
	EYAK/SEO		444		531
	Total	6,458	5,542	8,186	6,622
Demersal rockfish	SEO	650	410	650	410
Thornyhead rockfish	W		513		513
	C		989		989
	E		707		707
	Total	2,945	2,209	2,945	2,209
Atka mackerel	Total	6,200	4,700	6,200	4,700
	W		695		695

Big skate	C		2,250		2,250
	E		599		599
	Total	4,726	3,544	4,726	3,544
Longnose skate	W		65		65
	C		1,969		1,969
	E		861		861
	Total	3,860	2,895	3,860	2,895
Other skates	Total	2,156	1,617	2,156	1,617
Other Species	Total	NA	NA	NA	NA
Total		615,879	490,327	629,541	511,837

Walleye Pollock

The SSC received a staff presentation from Jim Ianelli (AFSC, PT co-chair). In public testimony, Steve Drage and Jay Stinson, Kodiak fishermen, who expressed concern about lower quotas in the central Gulf and the lack of a comprehensive winter survey. Julie Bonney (AGDB) also stressed the need for a comprehensive survey of area 630 in the winter.

This assessment is a straightforward update of last year's assessment with additional fishery and survey data. The authors responded extensively and convincingly to SSC concerns from December 2005 regarding evaluating FOCI predictions, alternative selectivity models, and further analysis of maturity data.

The authors used a single model configured as last year with catchability fixed at 1 for added precaution. As has been the case for several years, recruitment is sporadic for this stock, with no strong events since 2000, although 2004 may be above average. The recruitment estimate for this year-class (at age 2 in 2006, Fig. 1.20) is highly uncertain, so that projected future biomass is uncertain as well. The stock is projected to decline until 2008 and then increase. This stock qualifies for management under Tier 3b, and since 2001 ABC has been set using a constant buffer adjustment, which reduces maximum permissible ABC by a constant amount. Following the authors and the Plan Team, the SSC recommends a 2007 ABC of 62,150 mt and a 2007 OFL of 87,220 mt (after a reduction for PWS GHF of 1650 mt). The projected 2008 ABC and OFL using approved projection methodology are given in the summary table. Area apportionments follow standard methodology. The SSC shares with the public the desire for better information about spatial abundance by areas and supports development of a comprehensive winter survey.

For the East Yakutat/SE Outside district, the SSC follows the authors and Plan Team in recommending a Tier 5 calculation based on natural mortality and the 2005 bottom trawl survey biomass. This results in the 2007 ABC and OFL of 6,157 mt and 8,209 mt, respectively.

SSC comments to the assessment authors and Plan Team:

- There is an interesting retrospective pattern, in which the female spawning biomass in the last year is generally smaller than in the previous year (see Figure 1.21: it appears to have occurred in 8 of 11 retrospectives). Is there anything in the assessment that might cause this?

Pacific Cod

The assessment for Pacific cod in the GOA was presented by Jim Ianelli, AFSC. Public testimony specific to Pacific cod was received from Julie Bonney (Alaska Groundfish Databank) who agreed with the plan team recommendation on rolling over the 2006 ABC and expressed hope that the Pacific cod assessment receives priority treatment in next year's assessment cycle.

The assessment is a straightforward update from last year, using the same basic model structure (which was a substantial update of previously used models). As in last year's preferred model, catchability and natural mortality were fixed at 1.0 and 0.37, respectively. The model incorporated new input data, including updated catch data, size composition data, and age composition data. In addition, length-at-age and weight-at-age relationships were re-estimated based on all available data from the bottom trawl survey.

A new maturity schedule was used for the first time last year and resulted in a large increase in the estimated biomass (and ABC), but biomass is projected to continue its recent declining trend. Last year, the SSC employed a stair-step procedure to set the 2006 ABC. This year's assessment resulted in a maximum permissible ABC for 2007 of 81,000 t under Tier 3a, similar to the maximum permissible ABC from last year, but 18% higher than the 2006 ABC selected by the SSC.

For 2007, the author recommended, and the Plan Team concurred, setting ABC below the maximum permissible value under the model for the following reasons:

- Maximum ABC would result in a large increase, while spawning biomass is likely to continue decreasing because of several poor year classes (2001-2004)
- Any increase in ABC would be very temporary
- Alternative models were not explored this year and should be evaluated further to resolve remaining uncertainties

The SSC agrees with the Plan Team's precautionary approach. Although the SSC reviewed and accepted the new assessment model introduced last year, concerns about both the model structure and the new maturity schedule have not yet been addressed. **The SSC therefore agrees with the plan team and assessment authors to roll over the ABC from last year, resulting in a 2007 ABC of 68,900 t.** We also concur with the area apportionments as recommended by the author, which are based on the three most recent trawl surveys (39% western GOA, 55% central GOA, and 6% eastern GOA).

The authors noted that they were unable to address all of last year's SSC requests. The SSC re-iterates its recommendations from December 2005, in particular:

- We encourage the authors to try to estimate Q while keeping M constant, similar to the BSAI Pacific cod stock assessment.
- The SSC encourages the authors to explore the use of longer time series of CPUE in the GOA using ADF&G and IPHC trawl survey data.
- We endorse the Plan Team's recommendations to continue work on size-at-maturity. To reiterate, although we concur that sufficient justification was provided for adopting the new maturity schedule, there is some concern over the timing and extent of the samples that were used for histological examination. The SSC looks forward to results from new studies on Pacific cod maturity initiated by AFSC.

Please note also SSC comments under the BSAI Pacific cod section on conducting a workshop to address remaining issues with the Pacific cod assessment.

Sablefish

Jim Ianelli (AFSC) and Diana Stram (NPFMC) presented an overview of the changes to the BSAIGOA sablefish assessment and the Plan Team recommendations for ABC and OFL. The present assessment considered six models. Model 1 is the base model used last year; Model 2 treats sexes separately, introduces flexible selectivity options and uses females to calculate spawning biomass; Model 3 adds trawl survey data, Model 4 adds updated weight-at age and length-at age data to Model 2, Model 5 adds the sex ratio from the longline survey; and Model 6 extends Model 5 by allowing selectivities to be dome-shaped.

The SSC appreciates the excellent work of the assessment authors and their efforts to address the SSC's concerns. The SSC encourages the authors to expedite efforts to incorporate the available growth and maturity information into the model. The results of Model 4 suggest that incorporation of the available growth information would result in a lower estimate of abundance. Likewise, the authors state that new maturity schedules suggest that the age at 50% maturity would occur at an older age. Incorporation of this schedule could result in a recommendation for a reduction in fishing mortality. The SSC consulted the authors regarding this issue and they informed the SSC that research on this issue is on-going and will be included in next year's assessment.

The SSC also noted that after 1980, the time trend in spawning biomass estimated from Model 3 appears to be shifted forward by approximately 1 year. The SSC consulted the lead author regarding this issue and he believes that the shift is due to differences in the mortality rate and selectivity for males and females resulting from the split – sex model configuration or a change in recruitment resulting from the inclusion of trawl survey lengths.

The SSC endorses the use of a split by sex model configuration, the use of female spawning biomass, flexible selectivity, and the use of trawl survey data. All of these changes provide a more realistic representation of the sablefish fishery and the sablefish population. **The SSC agrees with the author and the Plan Team in recommending the use of Model 3.**

The SSC makes the following recommendations to the authors:

- In addition to the hypotheses listed on page 366 (BSAI SAFE) to explain reductions in growth, consider adding fishing effects on size at age.
- Incorporate new information on sablefish growth and maturity schedules when the analysis of these data is complete.
- Include a second type of retrospective analysis where data are serially withheld from the preferred model.

Flatfish

The flatfish group is partitioned for management purposes into deep-water flatfish, shallow-water flatfish, rex sole, arrowtooth flounder, and flathead sole. Species in the deep-water flatfish complex are Dover sole, Greenland turbot, and deep-sea sole. Species in the shallow-water complex are northern and southern rock sole, yellowfin sole, butter sole, starry flounder, English sole, Alaska plaice and sand sole.

Age-structured assessment models are available for Dover sole, rex sole, arrowtooth flounder, and flathead sole and they are managed under Tier 3. Northern and southern rock sole are managed under Tier 4, Greenland turbot and deep-sea sole are in Tier 6. The remaining species are managed under Tier 5 with biomass estimates generated from the bottom trawl survey.

The GOA bottom trawl survey is the principal source of information for evaluating stock status of the GOA flatfish stocks and is conducted in alternate years. Because the trawl survey was not conducted in

2006, there are no new survey biomass estimates for 2007 assessments, and the only new information available is the updated 2005 catch and an estimate of 2006 catch. Therefore, the recommended OFLs and ABCs are the same for 2007 and 2008 as they were for 2006, with the exception of minor changes in Dover sole, rex sole, and flathead sole, and arrowtooth flounder generated by running the single-species projection model with updated harvest.

The SSC concurs with the plan team for all flatfish OFL and ABC recommendations and apportionments for the flatfishes as listed in the GOA Table.

SSC comments to flatfish assessment authors:

- The SSC notes two typographical errors in the assessment tables. The 2007 OFL in Table 4a.5 (bottom) should read 10,817 and catch for 2006 in Table 5.5 (top) should read 3,280.
- Because assessments were not conducted in 2006, the SSC reminds stock assessors to review SSC December 2005 minutes for assessment comments when conducting new assessments in 2007.

The SSC notes that NOAA is planning a CIE flatfish assessment methodology review in 2006 and looks forward to incorporating their advice in future flatfish assessments. Several flatfish assessments incorporate a relationship between bottom temperature and survey q. In some assessments, the relationship is exponential but it is linear or treated differently in other models. The SSC requests that this relationship, or lack of relationship be evaluated for all flatfish species. This evaluation may assist in determining whether the effect is due to changes in activity or changes in distribution. The form of the relationship and how it is incorporated into the model should be justified.

Rockfish

Pacific Ocean Perch (POP)

Gulf POP are on a biennial survey schedule, with no survey data collected this year. Given this, the assessment authors did not perform a new assessment; but projected biomass for 2007 and 2008 using updated harvest information.

The SSC supports the determination of the Plan Team and the assessment authors that the stock falls into Tier 3a with the current female spawning biomass level greater than $B_{40\%}$. The SSC agrees with the geographic apportionment and recommendation for ABC and OFL for 2007 and 2008.

Northern Rockfish

The assessment authors adopted an age-structured model for northern rockfish that is now the standard model for rockfish. Changes from prior years include removal of the stock-recruitment relationship and use of a revised selectivity function. Nine versions of the model were evaluated for fit to the survey biomass index. The SSC supports model revisions and appreciates the extensive development and analysis of model alternatives by the assessment authors. New data available this year included catch and age composition data and revised estimates of growth parameters.

The SSC notes that there is a tradeoff in fits to different data. The SSC encourages efforts to explore the implications regarding the emphasis on survey biomass estimates for northern rockfish. Changing the relative emphasis of data sources has notable implications on assessment results. For example, the SSC notes that the estimate of 2006 spawning biomass doubles from the base case when survey biomass is downweighted (see comparison of Models 1 and 4).

The SSC accepts the Plan Team's recommendation to continue under Tier 3a this year, with female spawning biomass approximately 33% higher than $B_{40\%}$. However, the SSC notes that with the application of the new model, there have been large changes in $B_{40\%}$ and in estimates of biomass, perhaps more than would be expected for a long-lived species and given the nearly flat biomass trajectory in Figure 9.11. That figure also shows large fluctuations in survey biomass estimates. These fluctuations in model estimates and survey estimates, coupled with potential biases due to the problem of untrawlable grounds, suggest that an evaluation of the appropriate tier level may be in order for the future.

The SSC supports the Plan Team's determination of ABC and OFL for 2007 and 2008, as well as the geographic apportionments.

Rougeye Rockfish

A full assessment was not done this year because there were no new survey data. Instead, the rougeye rockfish assessment includes a new projection for 2007 and 2008 based on new and updated harvest data.

In response to SSC requests made last year, the assessment authors provided two appendices. Appendix 10A provides preliminary results of a sensitivity analysis to examine a range of error assumptions for the trawl and longline survey abundance indices to explore how weightings might affect model fit. Appendix 10B reviewed the recent research on separating the two genotypes of rougeye rockfish, including their geographic separation and the potential for distinct population assessments and catch accounting. The SSC greatly appreciates these reports, including the suggestions for further research on separating the two genotypes. The SSC looks forward to further analysis of the relative weighting between the two surveys, including tests of sensitivity to relative errors in the length and age compositions from each survey type.

The SSC agrees with the Plan Team to use the Tier 3a maximum permissible ABC derived from the author's new projections for 2007 and 2008, as well as the apportionments to the three areas of the Gulf for the two years. The SSC also supports the gulfwide OFL projections for 2007 and 2008 presented in the GOA summary table.

Shortraker and Other Slope Rockfish

Lacking new survey data, the 2007 biomass estimates of shortraker rockfish and "Other Slope" rockfish managed under Tier 5, as well as sharpchin rockfish, managed under Tier 4, are a rollover from 2006. **The SSC concurs with Plan Team recommendations for annual gulf-wide ABC and OFL for 2007 and 2008 and the SSC supports area apportionments of ABC for the two years.**

The SSC appreciates the responses by the assessment author to the three comments made last year regarding depth segregation of juvenile and adult shortrakers, use of longline survey data, and centers of abundance for silvergray and other slope rockfish.

Pelagic Shelf Rockfish

Biomass estimates for dark, widow, and yellowtail rockfish (all in Tier 5) were rolled over for 2007 because there are no new survey data. A new projection was made for dusky rockfish (Tier 3a) based on updated catch data for 2005 and the most current estimate of catch for 2006.

The SSC concurs with the Plan Team recommendations for annual gulf-wide ABC and OFL for 2007 and 2008, as well as the area apportionments of ABC for those two years.

Demersal Shelf Rockfish (DSR)

Public testimony was received from Dan Falvey (ALFA) requesting greater transparency in the methods and data for estimating the mortality of demersal shelf rockfish in the eastern Gulf of Alaska recreational fisheries.

Stock assessment estimates for demersal shelf rockfish from last year were rolled over for the 2006 assessment because there are no new survey data. The SSC agrees with the Plan Team's recommendations for continuing with a Tier 4 basis for ABC and OFL for 2007 and 2008.

The SSC compliments the stock assessment authors for their clear and complete responses to the requests for information made by the SSC last year with regard to enumerating DSR mortalities in the commercial halibut fishery and the non-commercial fisheries, and concerning full retention provisions in both state and federal waters. The SSC was pleased to see an analysis of DSR bycatch by depth in the commercial halibut fishery. The SSC also appreciates the description of methods used to estimate catch and discards in the recreational fisheries by ADF&G's Sport Fish Division.

Specific Comments to the Assessment Authors:

- With regard to the recreational fishery, the SSC recommends expanding the document to include detailed sampling information and methods from the creel surveys, charter logbooks, and the statewide harvest surveys, as well confidence bounds, used to derive total mortality estimates.
- The SSC is very concerned that budget limitations have curtailed continuation of the DSR surveys, and looks to the Plan Team and assessment authors for recommendations on how to continue assessments without the primary source of biomass information.

Thornyhead Rockfish

The SSC supports the rollover of last year's tier 5 calculation using the average of the two most recent survey biomass estimates from 2003 and 2005, and therefore supports the Plan Team's recommendation for the gulf-wide ABC and OFL levels for 2007 and 2008, as well as the area apportionments of the ABC for 2007 and 2008.

Atka Mackerel

There is no new information for Atka mackerel as they are on a biennial stock assessment schedule to coincide with new survey data. This is a Tier 6 species, therefore ABC and OFL is a simple roll over of last year's Plan Team recommendations for 2007 and 2008. **The SSC agrees with the recommendations and there are no area apportionments.**

Skates

Stock assessment estimates for skates were rolled over from the 2005 assessment because there are no new survey data. **The SSC supports the Plan Team's recommendation for area-wide ABCs and OFLs for 2007 and 2008, identical to the 2006 levels, and the Plan Team's recommended apportionment of ABCs to the western, central, and eastern Gulf of Alaska for those years.** The SSC accepts the Plan Team's reasoning for not apportioning the OFL across the three areas of the Gulf, based on the perspective that the bycatch nature of the current catch provides adequate resource protection.

The SSC reiterates its concerns about developing a directed fishery for skates before an adequate data collection program is developed as we described in detail in our December 2003 minutes and expanded on in our December 2005 minutes.

Other Species

The SSC accepts the reasoning of the Plan Team to recommend that the Council set a TAC equal to 4000 t, as this amount would allow for incidental catches. In anticipation of a future plan amendment to separate these other species, the Plan Team prepared advisory ABC and OFL recommendations. The SSC concurred with the GOA Plan Team's recommendations for proxy OFLs and ABCs for sharks, squids, sculpins, octopus, and grenadier for analysis of an FMP amendment to set specifications at the group level.

Grenadiers

One stock assessment was provided for grenadiers for both the GOA and BSAI. Grenadiers are non-specified in the two FMPs, such that there are no management measures or official catch statistics. **On an advisory basis only, the SSC supports the author's and Plan Team's recommendation for a potential future application of Tier 5 calculations for this species group.** The SSC concurs with the assessment authors to investigate estimating a proxy natural mortality rate based on Pacific grenadier.

D-1(c) BSAI SAFE and Harvest Specifications for 2007/08

Mike Sigler (AFSC, PT co-chair) presented the BSAI plan team report and recommendations for BSAI groundfish with support from Jim Ianelli and Paul Spencer (AFSC). The following table summarizes the SSC recommendations for ABC and OFL for 2007/08 for BSAI groundfish. Specific SSC comments on the assessments follow the table.

Table 2. SSC Recommendations for BSAI Groundfish OFL and ABC for the 2007-2008 Fisheries (mt). (Text in bold indicates where SSC recommendations differ from the plan team recommendations.)					
Species	Area	2007		2008	
		OFL	ABC	OFL	ABC
Pollock	EBS	1,641,000	1,394,000	1,431,000	1,318,000
	Aleutian Islands	54,500	44,500	50,300	41,000
	Bogoslof District	48,000	5,220	48,000	5,220
Pacific cod	BSAI	207,000	176,000	154,000	131,000
Sablefish	BS	3,520	2,980	3,290	2,970
	AI	3,320	2,810	3,100	2,800
Yellowfin sole	BSAI	240,000	225,000	261,000	245,000
Greenland turbot	Total	15,600	2,440	16,000	2,490
	BS		1,680		1,720
	AI		760		770
Arrowtooth flounder	BSAI	193,000	158,000	208,000	171,000

Northern rock sole	BSAI	200,000	198,000	271,000	268,000
Flathead sole	BSAI	95,300	79,200	92,800	77,200
Alaska plaice	BSAI	241,000	190,000	252,000	199,000
Other flatfish	BSAI	28,500	21,400	28,500	21,400
Pacific ocean perch	BSAI	26,100	21,900	25,600	21,600
	BS		4,160		4,080
	AI total		17,740		17,520
	WAI		7,720		7,620
	CAI		5,050		5,000
	EAI		4,970		4,900
Northern rockfish	BSAI	9,750	8,190	9,700	8,150
Shortraker	BSAI	564	424	564	424
Rougheye	BSAI	269	202	269	202
Other rockfish	BSAI	1,330	999	1,330	999
	BS		414		414
	AI		585		585
Atka mackerel	Total	86,900	74,000	64,200	54,900
	WAI		20,600		15,300
	CAI		29,600		22,000
	EAI/BS		23,800		17,600
Squid	BSAI	2,620	1,970	2,620	1,970
Other species	BSAI	91,340	64,235	91,340	68,505
Sharks					
Skates					
Sculpins					
Octopus					
Total	BSAI	3,189,613	2,671,470	3,014,613	2,641,830

Walleye Pollock

The SSC received staff presentations from Mike Sigler (AFSC, PT co-chair) and Jim Ianelli (AFSC). Public testimony was received from Wally Pereyra (Arctic Storm), who testified that the Plan Team recommendation for ES pollock might be overly conservative and recommended that F40% might be a better basis for ABC. Ed Richardson (Pollock Conservation Cooperative) similarly argued that the stock assessment already has several conservative features built into it and recommended using the maximum permissible ABC under Tier 1.

Eastern Bering Sea (EBS)

This assessment is a straightforward update of last year's assessment and incorporates new catch and survey data. Of the three alternative models considered, the SSC concurs with the Plan Team and stock

assessment authors that Model 2 should be used for 2007, which adds bottom trawl survey data from two northwest strata. It is otherwise identical to last year's model.

The EBS stock remains above the MSY level, having declined from a peak in 2003 at a rate of about 19% per year. The decline is expected to continue until 2008, after which biomass will increase if the 2005 year-class remains above average. A series of 4 below-average recruitments has contributed to the decline. The expected drop below B_{msy} will trigger automatic reductions in fishing mortality under Tier 1b, implying that ABC and OFL values will likely be lower than the most recent ones. Furthermore, the series of low recruitments will result in an age-structure that is dominated by only a few year-classes, which could increase fluctuations in the population.

Other issues raised in the stock assessment suggest a need for further caution. There has been a northward shift of with some portion of the population into Russian waters. Russian catches have been high, raising concern that this stock is experiencing higher total fishing mortality than estimated in the assessment. There has been a large decline in zooplankton, which is important in providing forage for juvenile pollock. And there has been increasing predation by arrowtooth flounder on juvenile pollock, which could contribute to further declines in adult pollock biomass.

Consequently, the SSC agrees with the Plan Team that a reduction in ABC from the maximum permissible is justified. In the past, the SSC has sometimes used F40% when such a reduction is indicated, because it provides a more conservative buffer. The authors and Plan Team reflected their concerns by finding a catch level that would keep spawning exploitation rate capped at the maximum of recent values (21%). The SSC did not find justification for this additional constraint on ABC, because spawning exploitation rate will vary due to changes in age composition. The SSC would like to see additional evaluation of this constraint before it is used for setting ABC.

Therefore, SSC recommends that 2007 ABC be set using the F40% approach, which results in an ABC of 1.394 mmt, lower than the maximum permissible value of 1.512 mmt (using the harmonic mean of F_{msy}). The 2007 OFL value from the standard Tier 1 formula is 1,641 mt. The projected 2007 ABC and OFL using the approved Tier 1 projection algorithm are given in the table.

The SSC expresses its appreciation to the Council for its recent letter to NMFS requesting restoration of funds for groundfish surveys. The SSC notes that without that funding, northwestern stations will not be surveyed next year, which will create additional uncertainty in the assessment. If the funding does not come through, then perhaps a cooperative industry/agency survey could be investigated as an alternative.

Aleutian Islands (AI)

The stock assessment authors continue to make progress on developing an age-structured model for AI pollock. The authors consider the Near, Rat, and Andreanof Islands (NRA) portion of the AI to the west of 174°W with the option of including survey information from the region between 174° and 170°W to the east. As noted in our reports, the SSC deferred adoption of the model under the expectation that better information on stock structure would be available. The SSC has learned that such information will not be available for a few years and also requires that funding be obtained to complete data analysis. Therefore, the SSC recommends that the age-structured model be adopted as it makes the best use of the available information, including age composition, surveys, and fishery removals. Furthermore, adoption of the model allows natural mortality to be estimated from data, resulting in $M = 0.235$. This lower estimate is consistent with other information suggesting that predation of pollock in the Aleutians is less than in the EBS. **Therefore, the SSC differs from the Plan Team recommendation to use Tier 5 and instead recommends that the stock be placed in Tier 3. With the maximum permissible approach, the 2007 ABC and OFL are 44,500 mt and 54,500 mt, respectively. The SSC notes that this large increase in**

ABC is due solely to a change in assessment technology (from survey to model-based) rather than due to a change in the population.

The SSC is pleased that an experimental fishing permit was obtained by AFSC and Adak Fisheries to learn more about the stock structure and abundance of AI pollock. See our comments about this under D-2(b).

Bogoslof

The stock assessment authors continue to refine an age-structured model for Bogoslof pollock. This year the authors explored the effect of Donut Hole catches in the 1980s on the stock assessment results. They assumed that 75% of the Donut Hole catches came from the Bogoslof stock, which is in accord with past practices of international pollock workshops (which used a range from 60 to 80%). The authors and Plan Team have remaining concerns about this assumption and also about the degree of interchange between Bogoslof fish and central BS fish. The SSC encourages further work in this regard by exploring the sensitivity of the assessment to this percentage. **Consequently, the SSC agrees with the Plan Team to postpone acceptance of the model until this research is done. Using last year's approach of management under Tier 5 and the usual biomass target of 2,000,000 mt, the SSC proposes 2007 ABC and OFL of 5,220 mt and 48,000 mt, respectively, in agreement with the authors and Plan Team.** The SSC notes that there is an encouraging sign of younger fish in the length frequency of pollock from the 2006 EIT survey (Figure 1b.2), which will be interesting to track in the future.

Notes to the authors and Plan Team:

The SSC thanks the authors for their responsiveness to SSC comments from December 2005. The following issues came up during SSC deliberations this year:

1. Juvenile weight-at-age: The SSC appreciates the effort to examine juvenile weight-at-age in the BASIS surveys and looks forward to seeing the results. In addition, the SSC would like to know if weight of age 1 fish in previous surveys could yield information of value to address ecosystem concerns.
2. Non-pollock backscatter: The SSC found this information intriguing and would like further evaluation of the composition of the backscatter. Could it be age – 0 pollock to any degree? Is there the possibility of using higher-frequency acoustics to measure zooplankton biomass?
3. Russian catches: The SSC appreciates the efforts to formally include Russian catches in the pollock model and to contact Russian scientists for information. The SSC encourages ongoing efforts to examine age composition, recognizing that standardization of ageing is still an issue.
4. Weight-length relationships: The SSC encourages the authors to see if weight-length relationships change from year to year in parallel with plankton abundance or other components of the ecosystem.
5. Arrowtooth flounder predation: The SSC encourages the authors to explore the sensitivity of the stock assessment model to this predation. This could be done in a variety of ways: (1) using time-varying M or (2) making M a function of arrowtooth flounder abundance or consumption of pollock by examining Jurado-Molina's multi-species VPA model.

Pacific Cod

The SSC greatly appreciates the authors' responsiveness to previous requests and the extra effort in completing the current assessment under difficult circumstances involving a concurrent independent review of the assessment.

Public comment specific to the Pacific cod assessment was received from Thorn Smith (North Pacific Longline Association). He recalled the events surrounding this year's Pacific cod assessment and the industry-sponsored review of the assessment, expressed his regrets regarding the inappropriate behavior of one industry representative during the process, and his appreciation of Dr. Grant Thompson's work. Mr. Smith expressed concern over the discrepancy between model results, which indicate a decreasing trend in biomass in recent years, and the observations of fishermen who continue to experience very high catch rates. With regard to the 2007 ABC, he suggested that because of concerns over this year's model results, rolling over last year's ABC may be an appropriate strategy.

The model used in the Pacific cod assessment underwent major revisions last year with the move from SS1 to SS2 and incorporation of a revised maturity schedule. The SSC at that time recommended keeping both natural mortality M and catchability Q fixed in the model because of difficulties in estimating both parameters simultaneously and to explore different model configurations in the next assessment. This year the author responded to SSC requests by exploring a range of alternative models. All of the 8 models that were explored estimated Q , while leaving natural mortality M fixed at its traditional value of 0.37. The models differed in the form of the selectivity function, in whether longline survey data were included or not, and in the weight placed on prior distributions for all parameters (to evaluate how influential the specified priors are on the model fit).

To select a preferred model, the author used the following criteria: (1) the model should describe a plausible selectivity schedule for the post-1981 shelf trawl survey. (2) the model should not depend on data that require further validation before they can be considered ready for use in the stock assessment (e.g., longline data), (3) the model should converge well (e.g., not be too dependent on initial parameter estimates), and (4) the model should not depend too strongly on the prior distributions.

The Plan Team agreed with these criteria and with the author's choice of model B1, the only model that satisfied all of the criteria. The model uses a double normal instead of a double logistic function to describe selectivity with fewer parameters and does not include the longline survey data (which did not improve the fit appreciably and is highly uncertain with extreme interannual variability). **With regard to the longline data, the SSC suggests excluding them from future assessments.**

Following the Plan Team meeting, a potential problem with the model fit was pointed out by an external reviewer and the author provided revised model B1 output on very short notice. The revised model provided a slightly improved fit overall. The largest differences between the revised and original model B1 results were in the fits to trawl survey age composition (worse fit in the revised model) and trawl survey size-at-age data (improved fit). While the differences in model fit are relatively minor, the model resulted in substantially higher estimates of biomass and the implied maximum ABC.

The SSC is concerned that the revised model results did not receive any review by the Plan Team and that the apparent volatility of the model requires further investigation. The large difference in estimated biomass and the pattern of differences in likelihood components between the two model fits suggests that the model may be unstable or that two very different solutions provide very similar overall fits. Potential problems with the model configuration should be fully evaluated. All of the models examined by the author this year, including the revised model, suggest a series of poor recruitments from at least 2000 to 2004, and a decreasing trend in biomass that is projected to continue as these year classes enter the fishery. Therefore, the pattern of decreasing biomass in recent years and into the future appears to be a robust result.

Because of the recent and projected trends in biomass, the apparent volatility of model B1, and concerns over changing the assessment after completing the Plan Team review, the SSC recommends the following precautionary approach. We endorse the Plan Team recommendation of using the maximum ABC based on the original model, which results in an ABC of 176,000 t for

2007 (under Tier 3b) and a 2007 OFL of 207,000 t. Although this ABC is substantially higher than a 2007 ABC that would result from using the model that was approved last year (Model 0: 133,000 t), it is well below the 2006 ABC (196,000), consistent with a decreasing trend in biomass.

To resolve uncertainties within the assessment model, the SSC recommends that the AFSC conduct a workshop with the authors. In particular, the workshop should explore the following issues with regard to both the GOA and BSAI assessments:

- Estimation of growth inside the model versus the use of externally estimated length-at-age and weight-at-length parameters (with variances)
- Model convergence sensitivity to different weights assigned to the log priors and data components
- Model fit to contrasting models that fix Q and estimate M and alternatively fix M and estimate Q .
- To fully explore the parameter space (and model fit), a suite of models incorporating fixed values for M and Q for a matrix of plausible values could also be explored.
- Consider a simpler logistic form for the survey selectivity and estimability of descending parameters for survey and fishery selectivity.

Flatfish

The SSC notes that significantly changing TAC due to the increases in ABC noted below for yellowfin and Northern Rock Sole would have implications for bycatch in other fisheries.

SSC comments to flatfish assessment authors:

- Several flatfish assessments incorporate a relationship between bottom temperature and survey q . In some assessments, the relationship is exponential but it is linear or treated differently in other models. The SSC requests that this relationship, or lack of relationship be evaluated for all flatfish species. This evaluation may assist in determining whether the effect is due to changes in activity or changes in distribution. The form of the relationship and how it is incorporated into the model should be justified.
- The SSC notes that NOAA is planning a CIE flatfish assessment methodology review in 2006 and looks forward to assessment authors incorporating their advice in future flatfish assessments.

Yellowfin Sole

The assessment is a straightforward update to the 2005 assessment. A series of different models were considered, examining different estimation methods for catchability and natural mortality. The preferred model (Model 2) fixes M at 0.12 and models catchability as a function of survey average bottom water temperature. The average value of q is around 1.16. The plus group was increased to 20+, up from 17+ used in previous assessments. The survey estimate of biomass is down 25% from last year, possibly as a result of low temperatures encountered by the survey. The model estimate of biomass is up 300,000 t over last year's assessment and abundance appears to be high and level.

Last year, the SSC had two requests to the assessment authors. The first concerned providing justification for not including gender-based differences in growth. The authors responded by stating that while the assessment model is not a split sex model, the differences in weight at age are factored in when computing biomass. The second request was that this stock be considered for Tier 1 management given that stock and recruitment estimates are available for 50 years. The SSC commends the assessment authors for their work in addressing this request.

The authors noted that very different productivity estimates resulted from fitting a stock recruitment (SR) curve to different portions of the data. A fit to the full set of data indicated that the stock was most productive at a low biomass while a fit to the more recent period indicated the stock should be maintained at a higher level with a lower F_{MSY} rate. A Management Strategy Evaluation (MSE) was conducted to test the robustness of a Tier 1 harvest strategy based on the full set of stock-recruit data when the population in fact alternates between decadal productivity regimes. The results indicated that the harvest strategy was robust in that it consistently underestimated stock and recruitment thus resulting in a conservative F_{MSY} . Nevertheless, both the author and the Plan Team recommended keeping yellowfin sole in Tier 3a. A reason cited for this was that the productivity that fueled recovery from a low stock level has only been observed once. It was also noted the MSE result is not generalizable and that an opposite result could occur given different parameter sets. The author also considered how uncertainty in selectivity, catchability and natural mortality affected the pdf of F_{MSY} . Across the ranges of uncertainty considered, the harmonic mean of F_{MSY} differed by less than 10% from the geometric mean, reflecting little variation in parameter estimates.

The SSC had a protracted discussion on the merits of moving this species to Tier 1 management. The same productivity concerns apply for Tier 3 management as the appropriate stock-recruit data used to establish F_{MSY} and B_{MSY} is the period 1978-2000 (i.e., post 1977 regime shift). A Ricker fit to the data from this time frame appears very reasonable and therefore F_{MSY} is well estimated for the stock. The stock is at a very high and stable level and capable of sustaining higher harvests than have been taken in the past decade. Given the very conservative management measures it seems unlikely that the stock will decline anytime soon to levels seen in the 1960s. As such, it is not possible to evaluate whether the strong response in recruitment at low biomass levels seen in the early 1970s would reoccur. Moving the stock to Tier 1 would also incorporate formal corrections for uncertainty in the stock recruitment relationship in establishing a buffer between OFL and ABC.

The SSC finds that this stock qualifies for management under Tier 1 as there exists reliable point estimates of biomass and B_{MSY} and a reliable pdf of F_{MSY} . The Plan Team's recommendations for OFL and ABC differ from the SSC's, because they were based on management under Tier 3a.

The effect of moving from Tier 3 to Tier 1 with its more reliable information is to increase ABC by about 100 thousand tons. This illustrates a key feature of the NPFMC's tiered harvest strategy: better information allows for higher catches with no increase in risk.

SSC comments to assessment authors:

- The SSC would like to see continued exploration of MSE analysis for Tier 1 management. One example would be to attempt to actually identify when changes in productivity occur and modify management accordingly.
- The SSC notes that a more appropriate contrast between productivity regimes would be between the pre- and post-1978 datasets rather than between the full dataset and the post 1978 dataset.
- While the assessment takes account of differences in weight at age between sexes when computing biomass, the SSC recommends that the assessment author consider moving to a fully split-sex model. Such a model would allow differing dynamics beyond the age of maturation to be captured more fully.

Greenland Turbot

The 2006 assessment included the following new data: 2003 - 2006 catch biomass, 2006 fishery length compositions, the 2006 EBS shelf survey biomass and length composition estimates (splitting all data by sex), new length-at-age data, 2006 AI survey data for apportionments, and an updated aggregated longline survey data index for the EBS and AI regions.

The assessment incorporates a number of changes, including an upgrade to Stock Synthesis 2, added new growth data and a new, lower natural mortality estimate (0.112) based on a paper now in press. This assessment assumes most of the biomass is indexed by the EBS slope trawl survey, which was cancelled in 2006, leading the authors to suggest caution in setting the ABC. Overall biomass is stable and recent recruitment estimates are increasing. However, Greenland turbot is the only known BSAI flatfish species that remains at low levels relative to the 1970s and the TAC is usually approached.

This stock qualifies for management under Tier 3b with a max ABC= 12,680mt. The SSC agrees with the assessment authors and Plan Team that the ABC should be set at a value lower than the maximum permissible due to the lack of recovery and the absence of 2006 slope survey information.

The SSC concurs with the Plan Team's recommended OFLs and ABCs. The ABC is computed using a 5-year average F_{ABC} ($F = 0.09$) with a recommended ABC= 2,440mt. The SSC also supports the author's recommendations for regional ABC apportionments of 31% AI and 69% EBS.

SSC comments to the assessment authors:

- The legend for Figure 5.16 is incorrect.

Arrowtooth Flounder

The new assessment updated the 2004 assessment to include the 2005 EBS shelf trawl survey estimates of biomass and length composition, revised 2004 catch biomass, and added preliminary 2005 catch data. For the first time since 1999, the EBS shelf survey estimate of biomass decreased slightly to 670,131 mt, but it is still the second highest value in the series. The assessment included a temperature effect on shelf survey catchability by modifying survey biomass inside the model to increase biomass in cold environments, as observed in 2006. The model assumes a higher natural mortality for males (0.33/yr) compared to females (0.2/yr) to account for the preponderance of females in the surveys and fishery. The SSC suggests showing sex-specific survey age compositions to help support different rates.

This stock qualifies for management under Tier 3a and the SSC concurs with the authors' and Plan Team's recommended OFLs (based on $F_{35\%}$) and ABCs (based on $F_{40\%}$).

SSC comments to the assessment authors:

- Given the large and growing importance of arrowtooth flounder and likely impacts of this stock on other Council-managed species and the ecosystem in general, an expanded ecosystem section is warranted in future assessments. The SSC looks forward to the expanded discussion promised by the assessment authored. The SSC also supports continued research into predator-prey dynamics involving arrowtooth flounder.
- Along those lines, the SSC encourages further development of this model, as arrowtooth flounder are becoming more important, and there are several lack of fit issues that could be improved. For example, the model consistently underfits shelf survey biomass in the mid-1990s, and poorly fits the slope survey throughout the range. In addition, the model fit to survey length compositions fits poorly for males in the shelf and the slope surveys, and also fits the fishery poorly for 1988 males.
- It would be useful to maintain and expand ancillary data in the assessment to monitor relative trends in Kamchatka flounder biomass.
- The SSC also requests that the authors include a figure showing the stock-recruitment curve, and to explore a Tier 1 analysis.
- It may be fruitful to explore the dynamics and ecology of arrowtooth flounder in the GOA to form expectations for how future arrowtooth dynamics may develop in the BSAI (e.g., temperature limitations, food preferences).

Northern Rock Sole

The assessment this year is a straightforward update of last year's assessment. The EBS shelf survey biomass estimate is up slightly over the 2005 estimate. Both M and q are estimated in the model; the best fit occurred at values of $M=0.156$ and $q=1.52$. No temperature effect was found on q . The model estimates total biomass at 1.67 million t, an increase of 12% over last year. The stock is lightly fished and appears to be in good condition.

Last year, the SSC recommended a consideration of Tier 1 analysis for this stock. In response, the assessment authors considered different fits to stock-recruit time series. One fit was made to the full set of data (1978-2000) and a second fit was made to a subset (1978-1989) which ostensibly represented a more productive period. The parameter estimates for the productive period led to unreliable and unrealistic estimates of F_{MSY} and B_{MSY} . Using the full set of stock-recruit data yielded a F_{MSY} rate much higher than a Tier 3 approach. A sensitivity analysis was conducted to determine how uncertainty in several model parameters (selectivity, catchability and M) affected the harmonic mean of F_{MSY} . In all cases, the reduction in the estimate of MSY over the geometric mean was quite small, indicating that F_{MSY} is well estimated.

The discussion about Tier 1 management for yellowfin sole is germane for northern rock sole. The two stocks bear a number of similarities. Both are at a high, stable level, have been relatively lightly exploited recently, post 1978 data show a strong Ricker-type stock-recruit relationship, and F_{MSY} estimates are credible. The Plan Team and the assessment author did not recommend Tier 1 management. The primary reasons cited were the unstable nature of stock-recruit fits among different time frames and research that showed recruitment of rock sole may be controlled by cross shelf transport and not bear a strong relationship to stock size. The SSC feels that the model and data support Tier 1 management and that the F_{MSY} and B_{MSY} estimates are conservative and precautionary for the stock.

The SSC finds that this stock qualifies for management under Tier 1 as there exists reliable point estimates of biomass and B_{MSY} and a reliable pdf of F_{MSY} . The Plan Team's recommendations for OFL and ABC differ from the SSC's, because they were based on management under Tier 3a.

SSC comments to assessment authors:

- While the assessment takes account of differences in weight at age between sexes when computing biomass, the SSC recommends that the assessment author consider moving to a fully split-sex model. Such a model would allow differing dynamics beyond the age of maturation to be captured more fully
- Numbers at age from the trawl survey (table 7.8) do not track well in subsequent years. This discrepancy should be investigated.
- The SSC requests that the assessment author continue to report on how well recruitment tracks cross shelf transport.
- A very small buffer exists between ABC and OFL, reflecting very little uncertainty among several parameters and a strong stock recruitment fit. The SSC suggests further investigation into whether uncertainty is underestimated.

Flathead Sole

The new assessment updated the 2005 assessment to include the 2005 catch and 2006 estimated catch, 2006 fishery length compositions (including recalculating 1990-2005 length compositions, 2004 and 2005 fishery age compositions (including recalculating earlier years, estimated 2006 survey biomass from the EBS and AI bottom trawl surveys, 2006 survey length compositions 2005 age compositions and bottom temperature from the 2006 EBS trawl survey.

The authors responded to an SSC request for information about fishery interactions with the Bering flounder survey distribution and noted that the fishery does not overlap with the Bering flounder distribution. The authors also noted an increase in Bering flounder biomass in 2006, alleviating previous concerns about the biomass trend. The SSC appreciates the responses to issues raised in our 2005 review, and suggests maintaining survey data on Bering flounder in the assessment while additional field data on relative productivity is analyzed. The EBS shelf survey biomass increased 4% to 645,405 mt, 79% of the peak value estimated for 1997. The assessment again included a temperature effect on survey catchability, but included alternative models with a constant q , and no stock recruitment relationship.

The SSC agrees with the author and Plan Team that the “no stock-recruitment, temperature- dependent- q model is appropriate and an improvement over previous efforts. This new assessment generates a 2005 biomass that is 35% higher than last year’s model.

This stock qualifies for management under Tier 3a and the SSC concurs with the authors' and Plan Team's recommended OFLs (based on $F_{35\%}$) and ABCs (based on $F_{40\%}$).

Alaska Plaice

This year’s assessment is a straightforward update of last year’s assessment. The EBS shelf survey biomass estimate is up 26% over 2005 and is at the highest level over the past 10 years. Natural mortality and catchability are both fixed in this model, at 0.15 and 1.0 respectively. No temperature effect was found on q . The model estimates total biomass at 1.34 million t, an increase of 28% over last year. Part of this increase is attributable to a change in fishery selectivity, which the SSC recognizes. The stock is lightly fished and variability in the stock mainly results from recruitment. The author considered Tier 1 management for the stock but found that both Ricker and Beverton Holt fits to the stock recruitment data yielded unreasonable and unreliable values for B_{MSY} and F_{MSY} . As no reliable pdf exists for F_{MSY} , this stock does not qualify for Tier 1 management.

The stock qualifies for management under Tier 3a. The SSC concurs with the author’s and Plan Team recommendations for OFL (based on $F_{35\%}$) and ABC (based on $F_{40\%}$).

SSC comments to assessment authors:

- While the assessment takes account of differences in weight at age between sexes when computing biomass, the SSC recommends that the assessment author consider moving to a fully split-sex model. Such a model would allow differing dynamics beyond the age of maturation to be captured more fully

Other Flatfish

Survey biomass estimates are the principal data sources for assessing this complex, which consists of 15 species, including Dover sole, rex sole, longhead dab, Sakhalin sole, starry flounder and butter sole in the EBS and Dover sole, rex sole, starry flounder, butter sole, and English sole in the AI.

Starry flounder dominates the survey catch in the EBS, while rex sole is the major species in the AI. The dominant species differ between the BS and AI, but the complex is managed with a single TAC. The SSC suggests monitoring the relative composition of the harvest versus the survey in each area.

The new assessment included updated 2006 catch data, and the 2006 EBS and AI trawl survey biomass estimates. The estimated 2006 biomass for the EBS and AI trawl surveys combined was 149,292, the highest in the series.

This complex qualifies for management under Tier 5. The assumed rates of natural mortality have been updated to reflect the best available data (rex sole = 0.17, Dover sole = 0.085, remaining species estimated at 0.20). **The SSC concurs with the authors' and Plan Team's recommended OFLs (based on $F = M$) and ABCs (based on $F = 0.75 M$).**

SSC comments to the assessment authors:

- The SSC encourages explorations of bottom temperature relationships with catchability for the other species in the other flatfish complex. It would be useful to be able to identify indicator species that are particularly sensitive to changes in environmental conditions, and also in scaling biomass estimates appropriately for different species in the complex.
- The SSC notes the catch estimates in the BSAI plan team introduction on page 20 mislabels the catch and ABC columns for 2005 and 2006, creating a corresponding error in the text. The TAC was exceeded by 31% in 2004 and 56% in 2005. The TAC was not exceeded in 2006.
- Although biomass estimates for the dominant species are increasing, the harvest of the remaining species category listed in Table 10.2 was the lowest in the series for 2005 and 2006. The SSC requests that the “remaining species” category in Table 10.2 be speciated to track relative changes in catch, and that all “other flatfish” species in the survey data be listed individually in Table 10.5.

Rockfish

Pacific Ocean Perch (POP)

Public testimony was received from Jon Warrenchuk (Oceana) regarding the Pacific Ocean Perch assessment. Mr. Warrenchuk urged a cautious approach when considering the large increase in the Plan Team's recommendation for the ABC, noting that there are conservation concerns with bycatch for Shortraker and Rougheye rockfish in the POP trawl fishery, given that these two species declined precipitously in estimated survey abundance in the AI in 2006.

The assessment for 2006 includes several changes in methodology, as well as the addition of recent harvest and survey data. Changes in methodology include a model estimate for M , resulting in an upward revision from 0.05 to 0.06. The SSC notes that although this estimate is larger than the previously assumed value it compares well to other estimates and is equivalent to that estimated in the GOA POP assessment. Based on recommendations from the Center of Independent Experts, the initial age composition was assumed to be in equilibrium with an unfished population, instead of reflecting variation in recruitment strength for each cohort, as previously assumed. In response to an SSC request from 2005, the stock assessment authors explored the use of an alternative model with time-varying fishery selectivity, finding that this feature provided more reasonable estimates of age-specific fishing mortality rates, in contrast to fixed selectivity. The SSC appreciates the authors' efforts in performing that analysis.

Based on the new assessment, the estimate for biomass is now larger than $B_{40\%}$, and therefore the SSC agrees with the Plan Team and the SAFE authors that the BSAI POP are appropriately placed in tier 3a.

SSC recommendations to the stock assessment authors:

- Evaluate the causative factors for the increases in the depth of fishing in 2004 and 2005 as shown in Table 11.4, based on a concern that deeper fishing indicates an increase in effort to capture relatively constant quantities of fish, which suggests potential stock depletion that is not indicated by the model. We also request a larger version of Figure 11.16.

- Explore model sensitivity to natural mortality estimates in relation to the degree of change allowed for time varying selectivity.
- Explore alternative priors for natural mortality and evaluate model sensitivity to these changes.
- Evaluate/compare external estimates of natural mortality to model estimates.

SSC comments to the Council:

The SSC notes that increasing the POP ABC by nearly one-half may have negative consequences on stocks of shortraker and rougheye rockfish, which are taken as bycatch in the POP trawl fishery and have recently undergone large declines in biomass of 36% and 61%, respectively, in the recent survey estimates.

Northern Rockfish

The 2006 assessment includes updated survey, catch, and age data, and use of a conservative, constrained estimate of fishery selectivity.

The SSC supports the continued application of Tier 3a harvest control rules for this stock and agrees with the Plan Team’s recommendations for area-wide OFL and ABC.

SSC comments to the stock assessment authors:

- Consider splitting the survey data to account for differences between the 1980-1986 cooperative surveys and the 1991-2006 U.S. domestic surveys.

Shortraker and Rougheye Rockfish

The 2006 assessment is an update of the surplus production model-based assessment presented in 2005. **The SSC agrees with the Plan Team recommendation to retain area-wide Tier 5 calculations of ABC and OFL for the two species of rockfishes, and concurs with the ABC and OFL levels proposed by the Plan Team.**

Other Rockfish

The 2006 stock assessment for this group, comprised primarily of short spined thornyheads (SSTs) and dusky rockfish, was updated with new and revised catch data and length frequency data, as well as new survey data for the AI. New for this year was a separate natural mortality estimate of 0.03 for SST and 0.09 for dusky and other rockfish species. **The SSC supports the application of separate values of M, and agrees with the Plan Team recommendation for an area-wide OFL for the group for 2007 and for 2008, and for the recommended apportionments of the ABC to the AI and EBS for both years.**

Atka Mackerel

The current assessment is a straightforward update of last year’s assessment. New data inputs included 2006 catch, 2005 fishery age composition, year-specific fishery and survey weight-at-age values, updated population weight-at-age values, survey biomass estimates and survey length composition from the 2006 Aleutian Islands survey. Recruitment since 2001 has been below average and projected spawning biomass for 2007 is 130,000 t (down 17% from last year’s estimate for 2006), placing Atka mackerel in Tier 3a. **The SSC agrees with the Plan Team and Authors recommended ABC and OFL for 2007 and 2008.**

The Plan Team discussed the ramifications of reduced Atka mackerel biomass on Steller sea lions. The SSC notes that Atka mackerel are the major prey of SSLs in the central and western Aleutian Islands

therefore their population status, distribution, and projected trends are of particular interest. SSLs continue to decline sharply in the western Aleutians while numbers in the central Aleutians may have stabilized after several years (2000-2004) of increase. Given the projected decline in Atka mackerel, low recruitment, and shifting distribution away from the western Aleutians, a conservative management approach to harvest within critical habitat appears justified. This is particularly warranted in the western Aleutians.

BSAI Squid and Other Species

Squid

The SSC agrees with the authors' and team's recommendations for management to continue under Tier 6, acknowledging that reliable biomass estimates do not exist, but that catch data are reliable. The SSC supports OFL set equal to average catch over the period 1978-1995, and ABC set equal to 75% of this value. **The SSC supports the Plan Team's recommended ABCs and OFLs for both 2007 and 2008.**

Other Species

Sculpins, skates, sharks, and octopuses comprise the "other species" group. As in prior years, the SSC supports the Plan Team and SAFE authors' recommendation for group level specifications; however, as before, group level specifications would not be compliant with the current FMP. Recognizing this, the SSC provides a single ABC and a single OFL obtained as the sum of individual ABC calculations by species group for the combined other species complex.

The SSC agrees with the Plan Team that reliable biomass estimates exist for skates and sculpins and that these be managed under Tier 5, and accepts the area-wide ABC and OFL determinations by the Plan Team for both 2007 and 2008. The SSC appreciates the additional information provided in the skate assessment, particularly the Alaska-specific information on recent research on life history. The SSC also acknowledges the assessment authors' advice for splitting out the ABC and OFL levels for the Alaska skate and for other skates combined, and that this advice should be considered if and when an FMP amendment would allow for this. Likewise, the SSC acknowledges the considerations presented in the sculpin SAFE that recommend a regional split between the Eastern Bering Sea and the Aleutian Islands, and note that this is currently not possible under the existing FMP.

The SSC does not agree with the Plan Team's recommended placement of octopus and sharks in Tier 5. The SSC understands the intent of the Plan Team to provide a conservative *minimum* estimate of biomass, but does not find any new information suggesting that biomass estimates are more *reliable* than they were last year for sharks and octopuses in the BSAI. For this reason, the SSC recommends the same method used last year of calculating the other species specifications as sums of tier 5 calculations for skates and sculpins, and tier 6 calculations for sharks and octopuses. The SSC notes that the assessment authors concluded that reliable estimates of M and biomass do not exist for sharks (p. 1083), and that the authors for the octopus assessment identified serious drawbacks in octopus biomass estimates (pages 1140-1141).

For sharks in last year's assessment, the SAFE authors recommended a base period of 1997 to 2005 for incidental catches. The SSC accepted this as the scientifically best alternative to the 1978 to 1995 period typically specified for Tier 6 determinations and advised that the final year should be fixed at 2005, so that we do not create a continuously shifting baseline for a standard period of 1978-2005. The average incidental catch of sharks for this period given last year was 552 mt. This year that average is estimated as 617 mt (p. 1095) due to updated catch data for 2003-2005. This results in the authors' recommendation for a Tier 6 based OFL of 617 mt and an ABC ($=0.75*OFL$) of 463 mt. **The SSC accepts this estimate by the authors and not the Plan Team's Tier 5 estimate. The SSC notes that the loss of the Bering**

Sea slope survey may have serious consequences for the estimation of biomass for sleeper sharks, and this may forestall the eventual consideration of a Tier 5 approach for sharks in the BSAI.

For octopuses, the author’s recommended base period for incidental catch records is 1997-2005, which is a shift from the 1992-2005 period accepted by the SSC last year. The assessment authors’ recommended using the maximum incidental catch from their proposed period as the ABC so as not to unnecessarily constrain fisheries that take octopus as bycatch. The SSC appreciates this approach as novel and creative; however, because the ABC and OFL is set for the group as a whole, and not just octopus, and because the octopus portion is quite small in relation to the group ABC and OFL, the SSC did not see a need to deviate from the method used last year. This is not to say that the proposed alternative is not a viable method should an amendment be made allowing the species groups to be separated out for specifications. **Using last year’s method, the average incidental catch for the 1997-2005 period is 323 mt, which is the SSC’s OFL. The corresponding ABC is 242 mt.**

In 1998 the SSC recommended Tier 5 procedures for specification of other species ABC involving multiplication of the natural mortality rate by estimated biomass. At the time, this shift in methodology would have indicated nearly a 4-fold increase in maximum allowable ABC. The SSC was uncomfortable with such a large increment and implemented a 10-year stair-step process to gradually change the ABC. We are currently in the 9th year of this stair-step process, and 2008 will be the 10th year.

The stair-step procedure computes the proportion of the difference between the 1997 other species ABC (25,800) and the current estimate of the maximum ABC (68,505) and then adds that amount to the 1997 ABC. **Thus, the SSC recommends setting the other species 2007 ABC as 64,235 t (25,800 + (9/10)*(68,505-25,800)). The SSC recommends the 2007 OFL to be the sum of the Tier 5 and 6 estimated OFL values or 91,340 t. The corresponding ABC value (using the 10/10 stair-step) for 2008 is 68,505 t. The OFL for 2008 remains the same as in 2007.**

The table below summarizes the ABC and OFL determinations for other species.

<u>Species</u>	<u>Biomass</u>	<u>M</u>	2007 & 2008			
			<u>OFL</u>	<u>Max ABC</u>	<u>Recommended 2007 ABC</u>	<u>Recommended 2008 ABC</u>
Sculpins	217,000	0.19	41,200	30,900		
Skates	492,000	0.1	49,200	36,900		
Sharks			617	463		
<u>Octopuses</u>			<u>323</u>	<u>242</u>		
Total			91,340	68,505	64,235	68,505

The SSC requests the following of the stock assessment authors:

- The choice of base years for incidental catches of octopus was shortened to 1997-2005 in the 2006 assessment, and the assessment authors should provide justification for this change in subsequent assessments.
- For squid, it would be useful to see an analysis of the spatial distribution of catches for consideration in devising alternative tier 6 approaches.

D-1 Other Issues

External Review Policy

The SSC held a discussion about the conduct of external reviews of Alaska groundfish stock assessments. This discussion was prompted by events involving an independent review of the Bering Sea cod assessment conducted in fall 2006. The timing of this review and the extraordinary demands for information posed undue difficulties for the lead assessment author to conduct the routine annual assessment, including planned revisions previously requested by the Plan Team and SSC.

Pat Livingston and Anne Hollowed presented a draft white paper prepared by AFSC staff titled, "A Guide to External Reviews of Alaska Groundfish Assessments." The paper outlines a procedure by which external reviewers would notify NMFS and NPFMC no later than April of their intent to conduct a review, prohibits the conduct of such reviews during the intensive July – December assessment period, and describes the responsibilities of external reviewers and assessment authors.

The SSC endorses this approach in principle, but requests AFSC staff to provide the document to groundfish, crab and scallop plan teams for their review. The SSC also requests AFSC to make the draft report available to industry for their input, as well. Once plan team and industry input has been received, the SSC recommends scheduling review of this policy document at a subsequent NPFMC meeting for potential adoption by the Council. If approved, the policy could be posted on the NPFMC website.

GOA/BSAI SAFE Appendix C: Ecosystem Considerations

Public comment specific to the Ecosystem Considerations chapter was provided by Jon Warrenchuck (Oceana).

Kerim Aydin (AFSC) provided an overview of the ecosystem assessment portion of the ecosystem considerations appendix. The assessment provides new summaries of estimated or inferred trends in major predators and important forage species and estimated mortality of commercial and non-commercial species that can be attributed to predation and to fishing. The SSC commends Dr. Aydin on an excellent presentation and the greatly expanded ecosystem assessment. The SSC is particularly encouraged by the increasing number of stock assessments that incorporate ecosystem information into the stock assessments, at least in a qualitative sense. The presentation and assessment also highlighted the accumulating evidence from predator diet data, zooplankton surveys, and the 2006 EIT pollock survey (reduced sign of non-pollock biota) that there has been a decrease in zooplankton and forage fishes in the eastern Bering Sea. However, to date there are no documented effects of a potentially declining prey base on commercially important fish species. Clearly, these trends should be explored in more detail. Specifically, it would be useful to include condition indices (weight-at-length) in the ecosystem considerations chapter, which should be readily available for most exploited species and would provide an indication of poor prey availability.

The SSC notes that the assessment is quite extensive (66 pages). In future iterations, a separate abstract or summary of the ecosystem assessment would be useful and/or the assessment itself could be streamlined to highlight changes from previous years (more extensive discussions could be included by reference).

Jennifer Boldt (AFSC) presented an excellent overview of updated ecosystem indicators for the Gulf of Alaska, Bering Sea, and Aleutian Islands ecosystems. The SSC commends Dr. Boldt for being very responsive to SSC comments and particularly appreciates the concise summary of major trends. Major environmental trends this year included the reversion to relatively cold conditions in the Bering Sea during the winter of 2005/2006, which resulted in an extensive cold pool in the summer of 2006. However, this cold trend was regional in nature and a continued warming trend with reduced ice extent has been documented through much of the Arctic. Temperature conditions in the Gulf of Alaska were the

warmest on record in 2005 (information for 2006 was not available). A major conclusion from the analysis of various trends is that no apparent adverse effects of fishing on the ecosystem have been documented to date. However, concerns about high bycatches of salmon in the Bering Sea pollock fishery remain, and these are being addressed by the Council.

The SSC was also pleased to see the inclusion of several new indices such as the new zooplankton index for the Gulf of Alaska and socioeconomic indicators. While the list of indices is extensive and provides a fairly complete picture of recent trends in major ecosystem components, we encourage the authors to add a single table summarizing recent changes in the biomass and year-class strength for all assessed fish populations, as well as a brief overview of status or trend indicators for other marine mammal populations, in particular whales and ice-associated seals.

GOA/BSAI SAFE Appendix D: Economic Status of the Groundfish Fisheries in 2005

The SSC did not receive a staff presentation on the Appendix D: Economic Status of the Groundfish Fisheries off Alaska, 2005. The SSC notes that this document provides a useful summary of the limited economic data collected regarding Alaska Region fisheries. The SSC also notes that, in addition to the information tables, the document includes a brief summary of recent and ongoing research conducted by AFSC social scientists. Inclusion of this information is responsive to SSC requests; the SSC commends the authors of Appendix D for progress that has begun to be made to address these recommendations and encourages the authors to continue to strive to increase the rigor and scope of Appendix D. **The SSC would welcome an opportunity to receive staff presentations on recent and ongoing research related to Appendix D, perhaps in conjunction with the scheduled February 2007 meeting in Portland.**

D-1(d) Adak EFP

Bill Wilson (NPFMC) and Steve Barbeaux (AFSC) presented information on an exempted fishing permit to the Aleut Enterprise Corporation to allow trawling for pollock in certain areas of Steller sea lion critical habitat of the Aleutian Islands. Clarification of the State-water pollock fishery status for 2007 was provided that indicated that the state GHL for pollock would be reduced by the amount of pollock authorized to be taken by the federal EFP. A report was provided of the results of the last year's EFP in this region. The EFP for 2007 has an experimental design that covers a broader region for assessing local pollock density. In 2008, there is potential to add SSL scat collection, flyovers, and physical oceanography. The intent of this EFP is to collect information to eventually design a real-time way of assessing local pollock biomass to set harvest rates appropriate to that biomass. **The SSC recommends approval of this EFP and suggests that future year's experimental design consider how to test the hypothesis of effects of fishing on localized depletion through the use of a smaller area and multiple hydroacoustic passes through the area.**

D-2(b) Salmon Bycatch EFP

Diana Stram (NPFMC) introduced the history of this issue and amendment packages. Karl Haflinger (SeaState) and John Gruver (AFA Catcher Vessel Intercooperative) presented results from the EFP that operated during August-November 2006. Public testimony was given by Becca Robbins Gisclair (Yukon River Drainage Fisheries Association). Previous SSC comments were reiterated on the difficulties in setting the base rates for salmon bycatch and the need for more explicit goals for the salmon bycatch program and objective criteria to measure goal achievement. In February 2007, the Council will be pursuing negotiated interim caps, as suggested by the SSC, until sufficient scientific information is available that would allow the setting of biologically-based caps. In April 2007, the SSC will conduct an updated salmon bycatch workshop. The results from the 2006 salmon bycatch EFP appear to demonstrate that salmon bycatch rates in the area of traditionally high bycatch were held to rates observed in other areas. The 2007 EFP will obtain more information from the winter fishing season to demonstrate whether

the participating vessels can meet the contractual details of the draft salmon bycatch intercooperative agreement (ICA) under a Voluntary Rolling Hot Spot System. **The SSC recommends approval of the salmon bycatch EFP.**

D-3 Bering Sea Habitat Conservation

The SSC received several presentations regarding Bering Sea habitat conservation. Cathy Coon (NPFMC) presented a report on alternative configurations for an open area/closed area approach for trawling in the eastern Bering Sea. Craig Rose (AFSC) presented a report on modifying trawl sweeps to reduce damage to living structure in soft bottom areas. Dr. Rose also presented a report of a written summary by Bob McConnaughey of “Scientific Information related to Bering Sea Canyons and Skate Nursery Areas,” which had been requested by the Council. The SSC appreciates these efforts. John Olson (NMFS AKR) presented maps and tables on the distribution of trawl catch and effort (pelagic and bottom) in relation to the six known skate nurseries and the three major canyons. Matt Eagleton (NMFS) presented a report on the HAPC process relative to the Bering Sea options. Ms. Coon presented the last report for this topic on alternatives and options for the open area approach.

Public testimony was provided by John Gauvin (Groundfish Forum), George Pletnikof (Greenpeace), Whit Sheard (Pacific Environment), Bubba Cook (World Wildlife Fund), Jon Warrenchuk (Oceana), Greg Balogh (USFWS), Ed Richardson (Pollock Conservation Cooperative), Donna Parker (Arctic Storm), and Paul McGregor (At Sea Processors Association).

The SSC greatly appreciates the efforts by Dr. Rose to evaluate alternative designs for trawl sweeps that may reduce habitat impacts from bottom trawls. The SSC encourages further work on this, including examination of long-term effects by returning to the experimental sites one or more years later, use of video to record the interaction of the sweeps on living structures such as sea whips and to compare effects on sessile invertebrates between net and sweep footprints of the trawl. The SSC would also like to see this work expanded to include trawl effects on crab injury and mortality.

The SSC offers the following comments and suggestions for future EA documents that add to previous SSC recommendations:

1. The SSC agrees with NMFS recommendation to remove the EFP and research options that may better be handled through current processes. The SSC recommends that the Council request NMFS to develop and implement a research design on the effects of trawling in previously untrawled areas.
2. The EA should clarify that the definition of “high” “medium” and “low” effort is not the same as that used in the development of Appendix B of the EFH EIS. The EA should justify why the new partitions were selected (50 hauls per yr, 15 hauls per year, and 3 hauls per year).
3. The utility of the open area approach depends on the stability of the fish and fisheries over time. To check on the stability of the spatial distribution of the resource and fishing, the SSC encourages analysts to compare the distribution of fish from trawl surveys and distributions of fishing effort in different time periods.
4. Some consideration of the potential for a fixed open area in combination with shifts in fish distribution to increase the spatial temporal concentration of the catch should be included in the analysis. This is a central criterion for evaluation of ecosystem impacts (see page 11-1 in TAC setting EIS and page 27 in ecosystem considerations chapter)
5. The SSC repeats its request for a detailed map of the slope region that clearly demarcates the western boundary of the closed area. For example, see the scale used in D-3 Supplemental pelagic trawl effort 1990-2005.
6. The legends on the maps are illegible and should be modified.

The SSC urges further research on skate nursery areas to evaluate the spatial extent and uniqueness of these apparently critical habitat areas and on the importance of canyons. If the Council intends to proceed with developing BS HAPC, the SSC recommends development of a timeline that ensures a window of opportunity for public comments and suggestions. In addition, the SSC encourages the Council to develop a process for identifying the scope of future requests for proposals.