DRAFT REPORT
of the
SCIENTIFIC AND STATISTICAL COMMITTEE
to the
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
December 8-10, 2008

The SSC met during December 8-19, 2008 at the Hilton Hotel, Anchorage, Alaska. Members present were:

Pat Livingston, Chair *NOAA Fisheries—AFSC*	Keith Criddle, Vice Chair *University of Alaska Fairbanks*	Troy Buell *Oregon Department of Fish and Wildlife*
Bill Clark *International Pacific Halibut Commission*	Robert Clark *Alaska Department of Fish and Game*	Sue Hills *University of Alaska Fairbanks*
Anne Hollowed *NOAA Fisheries—AFSC*	George Hunt *University of Washington*	Kathy Kuletz *US Fish and Wildlife Service*
Seth Macinko *University of Rhode Island*	Franz Mueter *University of Alaska Fairbanks*	Lew Queirolo *NMFS—Alaska Region*
Terry Quinn II *University of Alaska Fairbanks*	Farron Wallace *Washington Dept of Fish and Wildlife*	Doug Woodby *Alaska Department of Fish and Game*

Members absent were:

Gordon Kruse
University of Alaska Fairbanks

C-3 Groundfish Management

The SSC review of the stock status and 2009/10 ABC and OFL recommendations for BSAI and GOA groundfish stocks results in the determination that no stock is being subjected to overfishing and that no Tier 1-3 stock is overfished or approaching an overfished condition.

General Comments and Recommendations to Assessment Authors

The BSAI Plan Team recommended that all authors of stocks managed in Tiers 1 through 3 should estimate the probability of the spawning stock biomass falling below $B_{20\%}$. The recommended time frame for this projection was 3-5 years. The SSC agrees with this recommendation and encourages authors to provide estimates of the probability of falling below biologically relevant thresholds such as $B_{20\%}$.

One notable characteristic about the SAFEs (BSAI and GOA groundfish, ecosystem, and economics) this year is a substantial improvement in quality throughout. Year after year, the analyses are becoming more sophisticated and far-reaching. The authors and Plan Teams should be commended for their commitment to improving these documents. Concerning the groundfish SAFEs, great efforts have been made to make the documents more useful and standardized, so that essential information can be easily found. As more and more of the groundfish assessments become model-based, the authors are able to undertake more sophisticated analyses and evaluate more complicated hypotheses. For the lower-Tier stocks, the authors have substantially enhanced their contributions by including alternative approaches for setting catch limits, discussed research needs, and explained ecosystem considerations. Finally, the SSC is very pleased with the authors' responsiveness to comments by the SSC, CIE, Plan Teams, and others.

Sablefish

The SSC agrees with the Plan Team recommendations for Tier 3b ABC and OFL for 2009/10 for BSAI and GOA sablefish based on the use of Model 3 using recruitments from 1977-2003 and the 5-year exponential weighting of the survey and fishery abundance indices for the apportionments as seen in the table below. Specific SSC comments on the assessments follow the table.

SSC recommended ABC and OFL for Sablefish (tons)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
Bering Sea	**3,210**	**2,720**	**2,977**	**2,520**
Aleutian Islands	**2,600**	**2,200**	**2,411**	**2,038**
Gulf of Alaska	**13,190**	**11,160**	**12,231**	**10,337**
Western	**-**	**1,640**	**-**	**1,523**
Central	**-**	**4,990**	**-**	**4,625**
W. Yakutat	**-**	**1,784***	**-**	**1,645***
E. Yakutat/SE	**-**	**2,746***	**-**	**2,544***
Total	**19,000**	**16,080**	**17,619**	**14,895**

* Adjusted for 95:5 hook-and-line: trawl split in EGOA.

The following new information was added to the assessment this year: relative abundance and length data from the 2008 longline survey, relative abundance and length data from the 2007 longline and trawl fisheries, and age data from the 2007 longline survey and longline fishery. Since 2003, the IFQ fishery has been timed to coincide with the halibut IFQ fishery with an eight month season that starts on March 1.

The authors responded to two SSC concerns.

1. The trend in fishery CPUE from the IFQ fishery is stable while the other biomass indices show a decline (see figure on page 319). The SSC requested that the authors conduct a sensitivity analysis with and without the recent fishery CPUE data. The authors performed these model runs and found that inclusion of the IFQ fishery CPUE has very little effect on model results (Figure 3.33). Removal of the IFQ CPUE data actually raised biomass slightly, counterintuitive to what a hyperstable index should cause during a declining population phase. The authors concluded that since there are several abundance indices in the model, it likely does not provide much additional influence on abundance trends. **The SSC agrees that at the current time the IFQ CPUE data does not significantly influence the 2009 stock assessment results. However, over time as this index continues to deviate from the trend of other data sources, inclusion of this data may become more influential. The SSC asks the author to continue to examine the influence of the IFQ CPUE index on model results and consider the implications of removing it from the assessment.**

2. The SSC noted that retrospective analyses revealed an apparent bias in the Model. The authors updated the retrospective analysis and they concluded that the model appears to over estimate biomass (See Figure 3.25, Pg 403). The authors speculate that possible causes include unexplained mortality or an actual change in catchability over time. **Assuming that natural mortality is increasing over time is not consistent with the observation that the condition of sablefish appears to be improving with increasing length and weight at age.** The authors plan to explore this further in the upcoming CIE review in Spring of 2009. **The SSC encourages continued research on the potential factors contributing to the retrospective bias.**

The authors included a report on a study to test for sablefish cannibalism pots in the Fishery section and the results from a gear experiment in Appendix 3C. This study shows cannibalism in pots is not a major concern. The SSC appreciates this new information.

This year the authors continued to use the sex-specific model in 2007 that was approved by the SSC last year. The authors explored ways to reduce the number of selectivity parameters. Three models were considered:

Model 1: This is the accepted split-sex model configuration from last year (Hanselman et al. 2007). It is the same general modeling framework that has been used with some modifications since Sigler (1999). All selectivities are estimated by sex. Recruitment is expected to be equal for the two sexes at the age of recruitment, but then their subsequent numbers at age will differ as different fishing mortality and selectivity is applied to each sex.

Model 2: In Model 2, the functions used to estimate selectivity for the trawl fishery and survey are simplified by applying the two parameter gamma function instead of the three parameter exponential logistic. This reduces the model complexity by six parameters without compromising much in terms of overall fit to the data. In addition, the survey ages were fit separately for the Japanese and domestic longline surveys, resulting in a better overall fit to the age data (a reduction of 20 from the objective function total).

Model 3: This is the same as Model 2 except the authors remove some of the poorly-estimated parameters by linking some of the shape parameters (delta) of the selectivities estimated with the logistic function. We assume that while some fixed gear may catch fish with a higher age at 50% selection, the selectivity curves for these gears likely have a similar shape. This further removed some poorly estimated parameters and reduces correlation (Figures 3.10 and 3.11), sacrificing only a small compromise in numeric fit to the data.

<u>New SSC suggestions for stock assessment authors</u>
The SSC encourages the authors to conduct a retrospective analysis of the predicted biomass distribution resulting from the weighting scheme relative to observed biomass distributions. If time permits, the SSC encourages the author to examine the predicted regional biomass distribution derived from knowledge of age specific sablefish migration. The SSC also encourages the author to continue to explore the impact of sperm whale depredation.

C-3 (a) BSAI SAFE and Harvest Specifications for 2009/10

Grant Thompson (AFSC) presented the BSAI plan team report and recommendations for BSAI groundfish with support from Jim Ianelli (AFSC) for EBS pollock. Jane DiCosimo and John McCracken (NPFMC) provided an overview of the timelines with respect to implementation of the BS/AI Pacific cod split. The following table (Table 1) summarizes the SSC recommendations for ABC and OFL for 2009/10 for BSAI groundfish. Specific SSC comments on the assessments follow the table.

Table 1. SSC recommendations for BSAI Groundfish OFLs and ABCs for the 2009-2010 fisheries (t). (Text in bold indicates where SSC recommendations differ from the plan team recommendations.)

		2009		2010	
Stock/Assemblage	**Area**	**SSC OFL**	**SSC ABC**	**SSC OFL**	**SSC ABC**
Pollock	EBS	977,000	815,000	1,430,000	1,230,000
	AI	32,600	**26,900**	36,800	**30,400**
	Bogoslof	58,400	7,970	58,400	7,970
Pacific cod	BSAI	212,000	**182,000**	235,000	**199,000**
Sablefish	BS	3,210	2,720	2,980	2,520
	AI	2,600	2,200	2,410	2,040
Atka mackerel	Total	99,400	83,800	84,400	71,100
	EAI/BS		27,000		22,900
	CAI		33,500		28,500
	WAI		23,300		19,700
Yellowfin sole	BSAI	224,000	210,000	210,000	198,000
Northern rock sole	BSAI	301,000	296,000	314,000	310,000
Greenland turbot	Total	14,800	7,380	14,400	7,130
	BS		5,090		4,920
	AI		2,290		2,210
Arrowtooth flounder	BSAI	190,000	156,000	196,000	161,000
Flathead sole	BSAI	83,800	71,400	81,800	69,800
Other flatfish	BSAI	23,100	17,400	23,100	17,400
Alaska plaice	BSAI	298,000	232,000	354,000	275,000
Pacific Ocean perch	BSAI	22,300	18,800	22,100	18,600
	BS		3,820		3,780
	EAI		4,200		4,160
	CAI		4,260		4,210
	WAI		6,520		6,450
Northern rockfish	BSAI	8,540	7,160	8,580	7,190
Shortraker	BSAI	516	387	516	387
Blackspotted/Rougheye	BSAI	660	539	640	552
Other rockfish	BSAI	1,380	1,040	1,380	1,040
	BS		485		485
	AI		555		555
Squid	BSAI	2,620	1,970	2,620	1,970
Other species	BSAI	80,800	63,700	80,700	63,700
Total	BSAI	2,636,726	2,204,366	3,159,826	2,674,799

2008 catches through November 8 from AKR Catch Accounting including CDQ.
Notes: Other rockfish excludes dark rockfish, pending Secretarial approval of BSAI Amendment 77
Bold text identifies where the SSC differed from PT recommendations: Pcod ABCmax in 2009 and 2010

Eastern Bering Sea Pollock

Public testimony was received from Brent Paine (United Catcher Boats), George Pletnikov (Greenpeace), Chris Krenz (Oceana), and Ed Richardson (Pollock Conservation Cooperative). Paine and Richardson felt that the stock assessment was credible and recommended setting ABC at 815 thousand t, agreeing with the author and Plan Team. Pletnikov and Krenz felt that the Plan Team ABC was too high and recommended an ABC of 458,000 for a better balance between fishing and ecosystem goals. This value comes from a Tier 3b calculation which could be used if B_{msy} could not be determined sufficiently well.

This assessment is a straightforward update of last year's assessment with the addition of new data, including 2008 catch data and survey biomass from both the summer bottom trawl (BT) and hydroacoustic (EIT) data. This is notable in that both surveys have been done an unprecedented three years in a row and will be done again in 2009 and 2010. Because both surveys play a major role in reducing uncertainty in stock assessment results, better management advice will result.

Survey biomass in 2008 dropped by about 30% in the bottom trawl survey and about 47% in the EIT survey, which is a consequence of 4 years of very low recruitment in years 2002 – 2005. This decline was anticipated from model projections made last year, so this is not an indication of model error. Above-average values for age 1 survey biomass in 2007 and age 2 survey biomass in 2008 indicate that the 2006 year-class is most likely above average. From the BASIS study, the numbers of age-0 pollock in 2006 and 2007 were low due to cool temperatures and lower water column stratification. But in 2006, energy density of pollock was high, indicating that pollock likely found enough large plankton prey during summer and so had sufficient reserves to survive the winter. This may explain why the 2006 year-class will be above average.

Updated model results show that pollock biomass has dropped to about 75% of the B_{msy} level. Consequently**, ABC and OFL fishing mortality values are reduced to about 75% of the normal** harmonic mean and arithmetic mean fishing mortalities at MSY **to provide additional conservation and automatic rebuilding** under Tier 1b of the Council's harvest control rules. The stock assessment author kindly responded to the SSC's request that the probability that the stock is below B20% (the level that would prevent a directed fishery) be determined. For 2008, it is about 15%, so there is a very low chance that the stock is this low. **With a strong 2006 year-class, biomass will probably increase in 2009 and be back near B_{msy} in 2010.**

As in past years, the SSC recommends that this stock be considered in Tier 1b because there is sufficient information to determine B_{msy} and the probability density function for F_{msy}. The SSC agrees with the authors and Plan Team that the maximum permissible 2009 ABC is 815 thousand t under Tier 1b. Last year, the Team and SSC believed that further downward adjustment was necessary for conservation concerns. **This year the Team and SSC believe that additional adjustment is not necessary, because the stock assessment is supported by substantial survey information, the 2006 year-class appears strong in two different surveys, the exploitation rate on spawning pollock has been reduced, and that uncertainty has been sufficiently addressed in both the assessment and the harvest control rule. Thus the SSC recommends a 2009 ABC of 815,000 t**, **and the corresponding 2009 OFL of 977,000 t using the Tier 1b formulae.** Using the standard projection methodology, the 2010 ABC is 1,230,000 t, and the 2010 OFL is 1,430,000 t. It is important to realize that the 2010 values are provisional and will be affected strongly by next year's data collection and analysis.

Aleutian Islands Walleye Pollock

Public testimony was provided by Dave Fraser (Adak Fisheries) who urged the SSC to highlight the importance of the trawl surveys in the Aleutian Islands.

The AI pollock assessment was changed considerably from last year in response to a peer review by the Center of Independent Experts (CIE). A number of structural changes to the model were suggested by the CIE reviewers and the SSC endorses these changes. However, one of the most influential changes relative to last year's assessment is the inclusion of catches from the area between 170-174˚W, as recommended by the CIE reviewers. In the past, the analysts, the Plan Team, and the SSC had recommended excluding these catches from the model because of large uncertainties about spatial stock structure of pollock in the region. These uncertainties arose from pronounced differences in length compositions between areas east and west of 174˚W and are detailed in the AI pollock chapter of the 2004 BSAI SAFE. There was additional evidence that catches in the eastern area may consist of walleye pollock from the Bogoslof or EBS area. Much of the catch in earlier years was taken during winter very close to the eastern edge of the region (near 170˚W). These catches appeared continuous with catches further to the east, presumably targeting spawning aggregations of walleye pollock whose offspring would contribute to the Eastern

Bering Sea pollock population. The use of a model excluding catches from 170-174˚W was therefore endorsed by the SSC in December 2006, in spite of the unresolved stock structure, because the model was felt to make the best use of available data, to provide a better estimate of biomass than the survey data alone, and to provide reasonable estimates of natural mortality.

In the current assessment, the inclusion of catches from 170-174˚W had a dramatic effect on the estimated biomass trajectories and on the perception of the current status of the stock. With the catches from this area included, biomass estimates for the 1980s were substantially larger and showed a much steeper decline to current levels. As a consequence, the stock is estimated to be near $B_{30\%}$ at present, after reaching a low near $B_{21\%}$ in 1999. In contrast, if catches from 170-174˚W are excluded, the stock is estimated to be above $B_{40\%}$ at present. As noted by the authors, a model restricted to the western Aleutians may be more representative of a population centered in the western Aleutians and will be less influenced by the potential influx of pollock from other areas.

The SSC had previously placed this stock in Tier 3a but with the new stock assessment model results, it now belongs in Tier 3b. The SSC concurs with the author's recommendation to set the ABC to the maximum permissible under Tier 3b, which is slightly below last year's ABC and differs from the Plan Team recommendation to use a more conservative Tier 5 calculation. The SSC could not come up with any strong rationale for reducing the ABC below the maximum permissible, because the population appears stable. The projections result in a maximum permissible ABC of 26,900 t and an OFL of 32,600 t in 2009 and an ABC of 30,400 t and an OFL of 36,800 t in 2010.

Agreeing with public testimony, the SSC is concerned that the 2008 Aleutian Islands survey could not be conducted, because the uncertainty in assessment increases substantially when recent survey information is unavailable. This means that it is imperative that the 2010 Aleutian Islands survey be conducted. If it will not occur, the SSC may have to reduce future ABCs downward to account for the greater uncertainty.

SSC recommendation to stock assessment authors

Because the CIE review represents the most recent and most thorough review of this assessment to date, the SSC accepts the CIE recommendation to include catches from the area 170-174˚W for this year's assessment. However, we request that both alternatives be carried forward for comparison in next year's assessment and that a thorough rationale be developed for the geographic area that best represents the Aleutian Island pollock stock that is the subject of current or future fisheries. We also note that catches in the area between 170 and 174˚W should be accounted for in the eastern Bering Sea or Bogoslof assessment if they are excluded from the Aleutian Island assessment in the future.

Bogoslof Walleye Pollock

This is a straightforward update of last year’s assessment. Estimated biomass has been stable and low for several years. There is no new survey information, so recommended values are the same as last year.

The SSC recommends that this stock be placed in Tier 5. **The recommended ABC comes from a formula similar to a Tier 3 calculation, substituting a reference biomass level of 2 million t for $B_{40\%}$, and is below the maximum permissible. The recommended ABC is 7,970 t and OFL is 58,400 t for both 2009 and 2010.**

Pacific cod

Mark Maunder and Kenny Down (Freezer Longliner Coalition) provided public testimony on the advantages and disadvantages of various models, the Tier 3b harvest policy and verification of mean lengths-at-age. Dave Fraser, representing himself, testified on the timing of a management split of cod between the BS/AI and GOA regions

The SSC concurs with the Plan Team's choice of Model B1 We do not see a need to adjust the Model B1 estimates downward as the team did, so we recommend an ABC of 182,000 t for 2009 and 199,000 t for 2010. The SSC recommends 2009 and 2010 OFL's of 212,000 t and 235,000 t, respectively. The SSC recommends further work aimed at reducing the wide range of variation among credible alternative models.

Background

From 1994 through 2005 this assessment was conducted with trawl survey catchability (Q) and natural mortality (M) fixed. It was quite stable but there were some concerns about the estimates of trawl survey selectivity and total abundance. In the 2006 assessment, at the request of the SSC among others, the author relaxed the parameterization of selectivities and attempted to estimate Q or M or both internally. These changes resulted in weak convergence and widely varying abundance estimates. At the December 2006 meeting the SSC called for a workshop on the cod assessment, which was held in April 2007. A variety of alternative model configurations were investigated during the year and discussed at the April workshop and the September Plan Team meeting, leading to a consensus that one or more of the selectivities had to be forced to be asymptotic to achieve satisfactory convergence.

At the October 2007 meeting there were still a number of unresolved issues, including whether or not to estimate M internally, whether or not to include the suspect survey age data in the fits, and how to handle survey catchability and commercial selectivities. At that meeting the SSC stated its preference for models including the survey age data and with M fixed at a value predicted by life history theory. At the December 2007 meeting the SSC "in principle" endorsed a model along those lines (Model 1) in which a number of the commercial selectivities were forced to be asymptotic. Rather than adopting the Model 1 ABC, the SSC recommended rolling over the 2007 ABC of 176,000 t to 2008 because of a small flaw in the average recruitment calculation. However, the estimated Model 1 ABC would have been close to 176,000 t.

During 2008 the analysts conducted further investigations and presented results at the September Plan Team meeting. At the October 2008 meeting, the SSC adopted as a reference model the author's latest exploratory model (Model 5) but requested that a constraint on the descending right limb of selectivity schedules be removed. This is Model A1 in the present (December 2008) GOA SAFE. It has time-varying commercial selectivity but only January-May commercial trawl selectivity is forced to be asymptotic. The author's preferred Model B1 is the same as A1 with respect to temporal variation in commercial selectivity but several of the commercial selectivities are forced to be asymptotic, as in last year's Model 1. It produces an ABC estimate of 182,000 t, similar to last year's Model 1 and much lower than the 336,000 t produced by Model A1. A number of other model fits are reported, which show a wide range of ABC values.

Appraisal of alternative models

The author reported that Model A1 converged weakly and produced some implausibly peaked selectivity estimates, so he proceeded to develop Model B1 in which more of the commercial selectivities are forced to be asymptotic. He chose those fisheries by applying what he calls the "asymptotic algorithm" to the long-term length compositions of the major fisheries. This procedure is not supported by the scientific literature or by any mathematical demonstration of its correctness. While forcing asymptotic selectivity may be ad hoc, in this case it is necessary to prevent the implausible selectivities in some of the fisheries that were estimated by Model A1. The SSC does not object to the set of asymptotic selectivities adopted for Model B1 even though we do not accept the procedure used to choose them.

While accepting Model B1 as the preferred model, we do not completely discount the much higher estimates produced by Model A1. The chief difference between the two is the much higher estimates of historical abundance (B_{100}) in Model A1; the estimates of present depletion are similar (43% of B_{100} in Model A1, 35% in Model B1). Because of the more relaxed parameterization of commercial selectivities in Model A1, it does a better job of fitting the commercial catch compositions and therefore probably a better job of estimating historical abundance.

For setting ABC and OFL we continue to favor models with fixed M that include the survey age data (although fits of the same models with and without the age data produce similar estimates this year). But we do not dismiss all of the other models. They are reasonable formulations, and most of them produce higher estimates than Model B1. What they show is that there is still a wide range of abundance estimates among different reasonable models and much uncertainty in the current model.

The Plan Team may have the impression from our December 2007 minutes that we were opposed to increasing ABC when survey biomass was decreasing and stock recovery depended on the still unproven 2006 year-class. The SSC did not intend to state such a policy. Our preference is to base our recommendations on a chosen model and the standard harvest policy unless there is a compelling reason to deviate, and we do not see one here.

SSC Recommendations to stock assessment authors

We suggest further work along the following lines to attempt to reduce the wide range of variation among alternative models:

(i) Perform analytical work to resolve the discrepancy between reader-based and model-estimated mean length at age. In particular, does the discrepancy result from calculating the reader-based mean length at age from length-stratified otolith samples rather than from keyed-out joint age-length distributions?
(ii) Age cod otoliths from the fishery. Commercial age data going back ten or fifteen years should help estimate the historical abundance.
(iii) Consider a return to models with survey Q fixed, or restrained by an influential prior. This would be a retreat for the cod assessment but we still rely on this device in other assessments (including GOA cod), and in the present circumstances a temporary retreat may be in order.
(iv) Conduct mark-recapture experiments to make direct estimates of fishery selectivity and length at known age.
(v) Consider the strengths and weaknesses of model averaging as an alternative to model selection and provide a rationale for or against use of this method in future assessments.

Flatfish

The SSC commends the authors of the flatfish assessments for their responsiveness to previous SSC comments and appreciates the efforts devoted to exploring alternative model configurations in this year's assessments.

All flatfish stocks, with the exception of Greenland Turbot, continue to be at high levels of abundance with stable or increasing abundance trends. Age-structured models are currently used to assess all flatfish stocks except the “other flatfish” category. In most cases, the models appear to provide a reasonable fit to the data and yellowfin sole and rock sole currently qualify for Tier 1 management. Other species are placed in Tier 3 except the "other flatfish" complex.

The most notable changes in this year's assessments include the move to split-sex models for yellowfin sole and rock sole, with relatively minor effects on estimated biomass trajectories. Flatfish assessments were reviewed in 2007 by the Center of Independent Experts and many recommendations from these reviews have been incorporated into the assessments.

SSC recommendations to flatfish stock assessment authors

As a next step, the SSC encourages the further development of the MSE analyses that are under development for several flatfish stocks and looks forward to seeing results from these analyses.

Yellowfin Sole

The assessment is an update of the 2007 assessment with the addition of recent catch and survey data and the inclusion of a split-sex component. **The SSC concurs with the Plan Team’s Tier 1 recommendations, which result in an ABC of 210,000 t and an OFL of 224,000 t in 2009 and an ABC of 198,000 t and an OFL of 210,000 t in 2010 (Table 1).**

SSC recommendations to stock assessment authors

We re-iterate last year's recommendations to continue work on the MSE analysis and to evaluate the assumption of time-invariant selectivities.

Greenland Turbot

The assessment was a straightforward update of the 2007 assessment with recent catch and survey data, which results in a slight decrease in estimated female spawning biomass for 2009. Greenland Turbot were previously determined to qualify for Tier 3 assessment, but continuing uncertainty about stock trends and differences between model and survey estimates prompted the Plan Team to use a more conservative stair-step approach for increasing ABC to the maximum permissible. **The SSC concurs with these recommendations, which result in an ABC of 7,380 t and OFL of 14,900 t for 2009 and an ABC of 7,130 t and OFL of 14,400 t for 2010. The SSC also supports the author’s recommendations for regional ABC apportionments of 31% for the Aleutian Islands and 69% for the Eastern Bering Sea.**

SSC recommendations to stock assessment authors

The SSC also re-iterates two comments to the assessment authors from the December 2007 minutes:

- The SSC notes several lack-of-fit issues such as the poor fit to size data, and residual patterns in survey abundances. We encourage the authors to explore differences in availability to the surveys over time, for example, by examining the spatial distribution of different size classes to the extent data are available.
- The SSC requests that the author evaluate the importance of the slope survey data to the current model.

The latter request is particularly relevant given budgetary constraints that could affect the slope survey in 2010.

Arrowtooth Flounder

The assessment is a straightforward update of the 2007 assessment with updated input data. Like last year, the assessment includes Aleutian Islands survey data, which contributes an estimated 18% of the total stock biomass. The long-term trend of increasing biomass continued this year and is expected to continue into the future due to strong recruitment in the early 2000s. **The stock is currently managed under Tier 3 and the SSC concurs with the authors' and Plan Team's recommendations under Tier 3a, which result in an ABC of 156,000 t and an OFL of 190,000 t in 2009 and an ABC of 161,000 t and an OFL of 196,000 t in 2010 (Table 1).**

Northern Rock Sole

The assessment is an update of the 2007 assessment with the addition of new data and a split-sex component, as requested by the SSC. In 2006, the SSC determined that this stock qualifies for management under Tier 1 based on MSY and F_{MSY} values calculated from a spawner-recruit relationship. **The SSC concurs with the author's and Plan Team's recommendations under Tier 1a, which result in an ABC of 296,000 t and an OFL of 301,000 t in 2009 and an ABC of 310,000 t and an OFL of 314,000 t in 2010 (Table 1).**

SSC recommendations to stock assessment authors

The SSC also re-iterates one of its comments from the December 2007 minutes:

- Because of the very small buffer between ABC and OFL, reflecting very little uncertainty in the estimates of F_{MSY} from a single model, the SSC emphasizes the continuing need for considering several alternative models in future assessments and in MSE analyses.

The authors noted that they will explore time-varying selectivity in next year's assessment to more accurately reflect the level of uncertainty in F_{MSY}. The SSC looks forward to results from these analyses.

Flathead Sole

The new assessment was a straightforward update of the 2007 assessment with updated input data from the 2008 survey and fishery. A new feature explored in this year's assessment is the use of a one-year lag in the estimated effect of bottom temperatures on survey catchability. While the lag appeared to improve

model fits, the SSC concurs with the author that it is premature to include a lagged effect, in particular in the absence of a solid biological rationale. **This stock qualifies for management under Tier 3 and the SSC concurs with the authors' and Plan Team's recommendations under Tier 3a, which result in an ABC of 71,400 t and an OFL of 83,800 t in 2009 and an ABC of 69,800 t and an OFL of 81,800 t in 2010 (Table 1)**

Alaska Plaice

This year's assessment is a straightforward update of last year's assessment with updated input data. The stock shows an increasing trend, which is expected to continue due a series of above-average year classes in the early 2000s. **The stock qualifies for management under Tier 3. The SSC concurs with the authors' and Plan Team's recommendations under Tier 3a, which result in an ABC of 232,000t and an OFL of 298,000t in 2009 and an ABC of 275,000t and an OFL of 354,000t in 2010 (Table 1).**

SSC recommendations to stock assessment authors

The SSC re-iterates its previous comments to the assessment authors encouraging the development of a split-sex model.

Other Flatfish

Survey biomass estimates are the principal data sources for assessing this complex, which consists of 15 species and is dominated by starry flounder in the EBS and by rex sole in the AI. While the dominant species differ between the BS and AI, the complex is managed with a single TAC. This complex qualifies for management under Tier 5 and uses survey biomass estimates with best available data for natural mortality (rex sole = 0.17, Dover sole = 0.085, remaining species estimated at 0.20). **The SSC concurs with the authors' and Plan Team's recommendations under Tier 5 which result in an ABC of 17,400t and an OFL of 23,100t in 2009 and 2010 (Table 1).**

Rockfish

Pacific Ocean Perch (POP)

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 regional apportionment of ABC as seen in the table below.

SSC recommended 2009 and 2010 ABC and OFL for POP (tons)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
EBS		**3,820**		**3,780**
Eastern AI		**4,200**		**4,160**
Central AI		**4,260**		**4,210**
Western AI		**6,520**		**6,450**
Total	**22,300**	**18,800**	**22,100**	**18,600**

In 2009 the following information was added to the assessment: revised 2008 catch estimates, 2006 AI survey age composition, 2007, 2008 AI fishery age compositions and updated historical AI survey data. There were no changes in modeling structure.

The SSC appreciates the authors' efforts in performing analyses in response to SSC requests concerning natural mortality. Authors report that model estimates of $M > 0.09$ are not consistent with model – independent estimates of M that range from approximately 0.04-0.09 and that the current constraining prior on M (M=0.06) indicates the utility of using a prior distribution to constrain this parameter.

SSC recommendations to stock assessment authors

The SSC recommends the stock assessment authors explore trade-offs in model fit between data components for values of M between 0.04-0.09.

Northern Rockfish

The SSC supports the continued application of Tier 3a harvest control rule for this stock and agrees with the Plan Team's recommendations for area-wide OFL's and ABC's in 2009 and 2010 as seen in the table below.

SSC recommended 2009 and 2010 ABC and OFL for shortraker rockfish (tons)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
BSAI	8,540	7,160	8,580	7,190

In 2009 the following information was added to the assessment: catch time series through 2008, 2006 AI survey age compositions, 2006 and 2007 fishery length compositions and updated historical AI survey data based on estimates derived from AFSC/RACE Division. In order to stabilize model performance the coefficient of variation was reduced from 0.25 to 0.1 for the prior distribution on natural mortality.

Shortraker

The SSC agrees with the Plan Team recommendation to retain area-wide Tier 5 calculations of ABC and OFL for shortraker rockfish, and concurs with the ABC and OFL levels for 2009 and 2010 proposed by the Plan Team as seen in the table below.

SSC recommended 2009 and 2010 ABC and OFL for shortraker rockfish (tons)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
BSAI	516	387	516	387

Shortraker rockfish has been removed from the rougheye and blackspotted rockfish complex this year. This assessment continues to apply a surplus production to BSAI shortraker rockfish. New information added to the assessment includes: catch estimates from 2007 and 2008 and updated AI survey biomass estimates. There was no AI survey in 2008.

Blackspotted and rougheye rockfish complex

The SSC agrees with the Plan Team recommendation use Tier 3b calculations for the AI portion of the stock and Tier 5 calculations for the BS portion, and to sum these values to produce area-wide the ABC and OFL levels as seen in the table below. .

SSC recommended 2009 and 2010 ABC and OFL for blackspotted and rougheye (tons)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
BSAI	**660**	**539**	**640**	**552**

This complex formerly know as the "rougheye rockfish" complex now consists of only two species that include rougheye rockfish (*Sebastes aleutianus*) and the newly described blackspotted rockfish (*Sebastes melanostictus*). Field identification of blackspotted rockfish is very difficult and identification criteria are being developed by State and Federal biologists to aid separation of these two species in the catch. A new BSAI age-structured model was presented to the SSC in October, at which time the SSC requested that both the BSAI model and an AI only model be brought forward in December for consideration. New information added to the assessment includes: revised 2007 and 2008 catch estimates, historical Aleutian Island survey data update based on the estimates provided by the AFSC/RACE Division and age and length composition data from the BSAI fishery and AI trawl survey.

Due to differences in growth rates between the AI and BS areas for this stock complex, and a lack of age data for the BS portion of the stock, the plan team and authors recommend the new age-structured model and Tier 3 determinations be applied to only the AI portion of the complex, and Tier 5 methods be applied to the BS portion. The area wide OFL and ABC are then the sums of OFL and ABC obtained for each area.

The author's report a substantial increase in biomass between the 2007 and 2008 assessments which is due to a selectivity curve in the AI model that implies that fish are not caught by the survey until they are relatively old.

SSC recommendations to stock assessment authors
The SSC encourages the author to consider the implications of adopting area-specific ABCs.

Other Rockfish Complex

The SSC supports the Tier 5 designation and application of separate values of M based on shortspine thornyheads and dusky rockfish, and agrees with the Plan Team recommendation for an area-wide OFL for the group for 2009 and 2010, and for the recommended apportionments of the ABC to the AI and EBS for both 2009 and 2010 as seen in the table below.

SSC recommended 2009 and 2010 ABC and OFL for Other Rockfish (tons, excluding dark rockfish)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
EBS		**485**		**485**
AI		**555**		**555**
Total	**1,380**	**1,040**	**1,380**	**1,040**

The 2008 stock assessment removes dark rockfish from the other rockfish complex per Amendment 77 to the BSAI FMP. This complex is comprised primarily of shortspined thornyheads and dusky rockfish and separate estimates of natural mortality for shortspined thornyheads (M=0.03) and the remaining species (M=0.09, based on dusky rockfish) were used in Tier 5 calculations. New information added to the assessment includes: revised 2007 and 2008 catch estimates, 2008 Eastern Bering Sea Slope survey and size composition data and size composition data for Shortspine Thornyheads from the 2005- 2007 EBS fishery.

Atka Mackerel

The assessment completed in 2008 for Atka mackerel in the Aleutian Islands incorporated a number of changes in model structure and input data, motivated in part by a review of the previous assessment conducted by three external reviewers for the Center for Independent Experts (CIE) in June, 2008. Substantive changes in model structure include:

1) fishery selectivity was set constant for each of 4 historical periods (associated with fishery management eras), in contrast to the previous model that had annually varying selectivity;
2) the age structure was terminated with a lower age+ bin (11+ instead of 15+);
3) age determination error was incorporated with a misclassification matrix.

Recognizing that the revised model has fewer parameters with negligible loss of fit, the SSC supports the use of the new model (Model 8).

In addition to updated fishery data (catch, age composition, and weight-at-age data), changes to input data include:

1) biomass estimates from the 1986 U.S. – Japan cooperative survey were excluded because the survey in that year was unusual in being successful in trawling in shallow (<100m) waters, and the survey estimate had a high coefficient of variation;
2) southern Bering Sea survey biomass estimates were included, so as to be consistent with use of southern Bering Sea fishery catch data; and
3) fishery catch-at-age and weight-at-age data are now stratified across the three management areas because Atka mackerel are noticeably larger at age in the east than in the west. Also, sample sizes for fishery catch-at-age data are now estimated.

Regrettably, the 2008 Aleutian Islands trawl survey was cancelled, such that the most recent survey data are from 2006. Using these data within the revised model (Model 8), the projected female spawning biomass in 2009 is 132,000 t, which is about 20% larger than the projection in 2008, and well above $B_{40\%}$ (97,800 t), placing the stock in Tier 3a. Female spawning biomass is projected to decline by 2010 to 108,000 t, but still above $B_{40\%}$ such that the stock is projected to remain in Tier 3a in that year.

The large increase in projected biomass for 2009 is apparently due to a large increase in the estimated size of the 2004 year class resulting from the inclusion of recent fishery catch-at-age data. New survey data would have help to confirm the strength of this year class. The SSC shares the Plan Team's concern that the current projection was made without benefit of a new survey. Noting that the recent projections tend to be conservative relative to survey estimates (Figure 15.20) **the SSC cautiously agrees with the Tier 3a designations for the BSAI Atka mackerel stock in both 2009 and 2010. The SSC supports the recommendations of the Plan Team and stock assessment authors for ABC and OFL levels in 2009**

and 2010 as well as the area apportionment of ABCs to the three AI management areas (541, 542, and 543) as given in the table below.

SSC recommended 2009 and 2010 ABC and OFL for Atka mackerel (tons)

Year		EAI/EBS	CAI	WAI	Total
2009	ABC	27,000	33,500	23,300	83,800
2010	ABC	22,900	28,500	19,700	71,100
2009	OFL				99,400
2010	OFL				84,400

The 2008 CIE reviews provided numerous highly constructive recommendations for improvements to the model and the use of data. The SSC commends the stock assessment authors for addressing several of those already and we support continued improvements to the assessments in response to those recommendations.

SSC Comments to the Atka mackerel stock assessment authors:

Given that the revised model resulted in a change in Tier status for 2009 (from Tier 3b in the 2007 assessment to 3a), the SSC recommends that the probability of being below $B_{20\%}$ be calculated for this change and be reported in the next assessment.

Squid

The SSC agrees with the recommendations of the Plan Team and the authors for using Tier 6 for establishing 2009-2010 ABCs and OFLs, recognizing that reliable biomass estimates do not exist, but that catch data on the squid complex are reliable. The SSC supports setting the 2009 and 2010 OFL = 2,620 t, which is the average catch over the period 1978-1995, and the ABC = 1,970 t, which is 75% of that value.

SSC Comments to the BSAI squid stock assessment authors:

The SSC commends the SAFE authors for their thoughtful consideration of alternative management methods. The SSC requests that the sections on Alternative Approaches, Data Gaps, and Ecosystem Effects include impacts of removals on seabirds as well as seabird predation on squid, including the endangered short-tailed albatross. For example, albatross distribution in the Bering Sea matches that shown for squid, supporting the author's arguments for examining overlap between squid and predators. The SSC looks forward to seeing results of discussions at the September, 2009 plan team meetings regarding the selection of base years for Tier 6 management, including management of squid.

Other Species

Aggregate OFL and ABC levels are set for the BSAI Other Species management category, which include sculpins, skates, octopus, and sharks. **The SSC agrees with the Plan Team to set the aggregate ABC and OFL for this category to 66,700 t and 80,800 t, respectively for 2009 and 63,700 t and 80,700 t, respectively for 2010**. SSC comments on the individual assessments of the group members are as follows.

Sharks

The SAFE authors updated the assessment with the inclusion of the following new data: catch weight, biomass estimates from the 2008 bottom trawl and slope surveys, and incorporated new life history and population demographic data. The authors and the Plan Teams considered the data criteria required for Tier 5 and Tier 6 and concluded that BSAI sharks should be managed as Tier 6. The author recommended and the Plan Team agreed that the base period for estimating average catch for the Tier 6 estimate should be 1997-2007 rather than the previously adopted base period of 1997-2005. The SSC accepts the updated base period as the scientifically best alternative to the standard Tier 6 base period of 1978-1995, but recommends the terminal year be fixed at 2007 to avoid a shifting baseline. Average catch from 1997-2007 is estimated to be 596 t for all shark species, resulting in the authors recommended Tier 6 OFL of 596 t and ABC (=0.75*OFL) of 447 t. **The SSC accepts the Plan Team recommendation for management in Tier 6, with OFL = 596 t and ABC = 447 t for both 2009 and 2010.**

Skates

The stock assessment for BSAI skates has undergone a series of improvements in the past two years. An age-structured model was first presented to the SSC in October 2007 for estimating biomass of the most abundant skate species caught incidentally in the BSAI fisheries (the Alaska Skate). This model was revised in October, 2008 and November, 2008. The assessment authors have been very responsive to SSC comments for changes and improvements to the models as they seek to move BSAI skates from Tier 5 to Tier 3 control rules. Four concerns were raised this past October: (1) lack of fit to size-at-age data, (2) rationale for the level at which recruitment variation was fixed, (3) documentation for egg case development time, and (4) selectivity parameter bounds. Each of these concerns were addressed in the current assessment.

The lack of fit to survey size-at-age data remains an issue of concern. However, the presentation of information in the SAFE provides a sufficiently convincing argument for accepting the current model as an adequate representation, and sufficient to provide for Tier 3 management. Specifically, the lack of fit shown in Figures 24 and 26 indicate that the length of skates older than 13 years is underestimated by the model. There are at least two plausible explanations for this lack of fit (see page 1240 of the SAFE report). The first is that the present model framework (Stock Synthesis 2 and 3) does not allow growth to be modeled realistically for skates. A second is that larger skates (larger at age) are preferentially selected, and thus may be over-represented in the sample of larger skates. In either case, the errors, if real, are in a precautionary direction, resulting in a reduced estimate of biomass because the number of large skates is underestimated. More important, the application of the model takes into account the late maturation of Alaska Skates, and this feature does not factor into Tier 5 estimates of allowable catch.

Based on the foregoing, the SSC agrees with the stock assessment authors to apply Tier 3a control rules to estimate reference points for Alaska Skates in the BSAI, with M = 0.13, and with the estimate of spawning biomass far exceeding $B_{40\%}$ in both 2009 and 2010. The author and the Plan Team recommended that the skate portion of the Other Species complex ABC and OFL for 2009 and 2010 should be calculated as the sum of the Tier 3 estimates of Alaska skate and the Tier 5 estimates for Other Skates. The SSC agrees with this procedure and the OFL is 30,077 t for Alaska Skates in 2009 and 30,009 t in 2010, and the ABC is 25,854 t in 2009 and 25,796 t in 2010. Applying the Tier 5 calculations for the Other Skates in the complex results in an OFL of 8,221 t and ABC = 6,165 t in both 2009 and 2010. In total, the contribution of skates to the other species category is as

follows (values are rounded): OFL = 38,300 t and 38,200 t in 2009 and 2010, respectively, and ABC = 32,000 t in both 2009 and 2010. The SSC approves these estimates.

SSC Comments to the BSAI skate stock assessment authors:

The SSC asks to see a revised model with more realistic representation of growth, as was attempted this year but thwarted by software limitations.

Sculpins

The stock assessment authors have incorporated newly acquired life history information for BSAI sculpins to provide revised and new estimates of M for 6 species as well as an estimate of M for the remaining species for which individual M estimates are not available. **The SSC agrees with the Plant Team and authors' recommendation to use the conservative estimates of M in a Tier 5 approach to estimate OFL and ABC based on the most recent 6 year survey series for the EBS shelf, EBS slope, and the Aleutian Islands. The resulting OFL and ABC levels, as rounded by the Plan Team, are 41,600 t and 31,000 t for both 2009 and 2010.**

SSC Comments to the BSAI sculpin stock assessment authors:

The SSC looks forward to seeing results of the proposed review of methods for estimating M for sculpin species, scheduled for the September 2009 plan team meeting, and encourage the authors to develop a set of most credible M estimates for use in the assessments.

Octopus

The SSC supports the Plan Team recommendation for using Tier 6 criteria for octopus, accepting the determination that the biomass estimate for octopus is not reliable. The SSC acknowledges that the 1997-2007 average catch, used to estimate Tier 6 reference points may be an underestimate of the potential sustainable catch but it is the best available at this time. **The resulting OFL and ABC levels are 311 t and 233 t for both 2009 and 2010.**

C-3 (b) GOA SAFE and Harvest Specifications for 2009/10

Diana Stram (NPFMC) and Jim Ianelli (NMFS-AFSC) presented the GOA plan team report and recommendations for GOA groundfish with assistance from Grant Thompson (AFSC) for Pacific cod. The following table (Table 2) summarizes the SSC recommendations for ABC and OFL for 2009/10 for GOA groundfish. Specific SSC comments on the assessments follow the table.

Table 2. SSC recommendations for GOA groundfish OFLs and ABCs for the 2009-2010 fisheries (t). (Text in bold indicates where SSC recommendations differ from the plan team recommendations.)

		2009		2010	
Stock/Assemblage	Area	OFL	ABC	OFL	ABC
Pollock	W(61)		15,249		24,199
	C(62)		14,098		22,374
	C(63)		11,058		17,548
	WYAK		1,215		1,929
	Subtotal	58,590	41,620	90,920	66,050
	EYAK/SEO	11,040	8,280	11,040	8,280
	Total	69,630	49,900	101,960	74,330
Pacific cod	W		21,567		31,005
	C		31,521		45,315
	E		2,212		3,180
	Total	66,600	55,300	126,000	79,500
Sablefish	W		1,640		1,523
	C		4,990		4,625
	WYAK		1,784		1,645
	SEO		2,746		2,544
	Total	13,190	11,160	12,321	10,337
Deep water flatfish	W		706		747
	C		6,927		7,405
	WYAK		997		1,066
	EYAK/SEO		538		575
	Total	11,578	9,168	12,367	9,793
Shallow water flatfish	W		26,360		26,360
	C		29,873		29,873
	WYAK		3,333		3,333
	EYAK/SEO		1,423		1,423
	Total	74,364	60,989	74,364	60,989
Rex sole	W		1,007		988
	C		6,630		6,506
	WYAK		513		503
	EYAK/SEO		846		830
	Total	11,756	8,996	11,535	8,827
Arrowtooth flounder	W		30,148		29,843
	C		164,251		162,591
	WYAK		14,908		14,757
	EYAK/SEO		12,205		12,082
	Total	261,022	221,512	258,397	219,273
Flathead sole	W		13,010		13,342
	C		29,273		30,021
	WYAK		3,531		3,622
	EYAK/SEO		650		667
	Total	57,911	46,464	59,349	47,652
Pacific ocean perch	W	4,409	3,713	4,405	3,710
	C	9,790	8,246	9,782	8,239
	WYAK		1,108		1,107
	EYAK/SEO		2,044		2,042
	E (subtotal)	3,741	3,152	3,738	3,143
	Total	17,940	15,111	17,925	15,098
Northern rockfish	W		2,054		1,965
	C		2,308		2,208
	E		0		0
	Total	5,204	4,362	4,979	4,173
Rougheye	W		125		126
	C		833		842
	E		326		329
	Total	1,545	1,284	1,562	1,297
Shortraker	W		120		120

Stock/Assemblage	Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
	C		315		315
	E		463		463
	Total	1,197	898	1,197	898
Other slope rockfish	W		357		357
	C		569		569
	WYAK		604		604
	EYAK/SEO		2,767		2,767
	Total	5,624	4,297	5,624	4,297
Pelagic shelf rockfish	W		819		765
(Alternative 2:	C		3,404		3,179
excluding dark rockfish)	WYAK		234		219
	EYAK/SEO		324		302
	Total	5,803	4,781	5,420	4,465
Demersal shelf rockfish	SEO	580	362	580	362
Thornyhead rockfish	W		267		267
	C		860		860
	E		783		783
	Total	2,540	1,910	2,540	1,910
Atka mackerel	Total	6,200	4,700	6,200	4,700
Big skate	W		632		632
	C		2,065		2,065
	E		633		633
	Total	4,439	3,330	4,439	3,330
Longnose skate	W		78		78
	C		2,041		2,041
	E		768		768
	Total	3,849	2,887	3,849	2,887
Other skates	Total	2,806	2,104	2,806	2,104
Other species	Total	8,720	6,540	8,720	6,540

Walleye Pollock

This assessment is a straightforward update of last year's assessment with new fisheries and survey data from 2007 and 2008. Most importantly, new biomass and age composition data from the EIT survey in Shelikof Strait and in several smaller areas along the slope and along the Alaska Peninsula were included in the assessment. The 2008 survey was conducted with the *R/V Oscar Dyson* for the first time and differences between the *R/V Oscar Dyson* and *R/V Miller Freeman* estimates were accounted for within the model. As in previous assessments, catchability for the NMFS bottom trawl survey was fixed at 1 for added precaution. Age 3+ biomass for 2009 is estimated to be 639,000 t with a 12% probability of being below $B_{20\%}$. Like EBS walleye pollock, the 2006 year class is estimated to be strong and biomass is expected to increase in the next few years.

As in past years, the SSC recommends that this stock be considered in Tier 3b and agrees with the constant buffer approach recommended by the authors and Plan Team, which reduces ABC from the maximum permissible. Based on this approach, projected ABC and OFL levels by area are summarized below (after subtracting 1,650t pollock GHL in Prince William Sound). For area EYAK/SEO, the calculations are done using Tier 5 methodology using natural mortality and survey biomass from the last available bottom trawl survey in 2007.

SSC recommendations for 2009 and 2010 GOA walleye pollock ABC and OFL (t)

	2009		2010	
Area	**OFL**	**ABC**	**OFL**	**ABC**
W (61)		15,249		24,199
C (62)		14,098		22,374
C (63)		11,058		17,548
WYAK		1,215		1,929
Subtotal	58,590	41,620	90,920	66,050
EYAK/SEO	11,040	8,280	11,040	8,280
Total	69,630	49,900	101,960	74,330

Pacific cod

Two models were considered: Model A, which was the reference model requested by the SSC at the October meeting, and Model B, the author's further development of that model. In both models the January-May trawl fishery selectivity was forced to be asymptotic but all other selectivities were freely estimated. In both models the post-1993 trawl survey catchability of 60-80 cm fish (Q x selectivity) was constrained to equal 0.92. In Model A, survey catchability in earlier years was estimated freely; in Model B, a single Q was estimated. In Model B, the temporal variation in commercial selectivity was somewhat different, and the age and size composition data were downweighted.

Neither Model fit the data well, Model A estimates a survey catchability of 3.6 in the early years and Model B underestimates trawl survey biomass in all years. The author reports that the age and size composition data are at odds with the relative abundance data. The model fits are so troubled that this stock is a candidate for Tier 5 but because of the constraint on survey catchability, Model B is really an enhanced Tier 5 calculation. The SSC thus agrees with the Plan Team to use this model for specification.

The Plan Team's 2-year stairstep to scale down the large projected increase in ABC for 2010 is appropriate in view of the model uncertainty and uncertainty in estimates of the strength of the 2006 year-class. The SSC concurs with the Team's Tier 3b ABCs based on Model B of 55,300 t and 79,500 t in 2009 and 2010, respectively. The OFL recommendation for 2009 is 66,600 t and 126,000 t in 2010.

Flatfish

All of these stocks have been moved to a biennial cycle in which an assessment is done in survey years and a mechanical projection (accounting for commercial catches, growth, natural mortality etc.) is done in off years. 2008 is an off year. **The SSC concurs with the authors' and Plan Team's recommended 2009/2010 ABC's and OFL's (in tons) in the table below. The SSC also supports the Tier designations and apportionments that are reflected in Table 2.**

SSC recommendations for GOA flatfish ABC and OFL for 2009 and 2010 (t)

Stock	Tier	2009 OFL	2009 ABC	2010 OFL	2010 ABC
Deep water flatfish	6	11,343	8,903	11,578	9,168
Shallow water flatfish	4,5	74,364	60,989	74,364	60,989
Rex sole	5	11,756	8,996	11,535	8,827
Arrowtooth flounder	3a	261,022	221,512	258,397	219,273
Flathead sole	3a	57,911	46,464	59,349	47,652

Rockfish

The SSC strongly supports the need for GOA trawl surveys, particularly for rockfish. In addition, the continuation of the deeper water portion of this survey is important in order to cover the primary depth ranges of the managed rockfish species.

Pacific Ocean Perch (POP)

Gulf of Alaska Pacific Ocean Perch 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 2009 and 2010 using updated catch 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 recommendation for OFL = 17,940 t in 2009 and 17,925 t in 2010, with ABC = 15,111 t in 2009 and 15,098 t in 2010. The SSC agrees with the area apportionments of ABC and OFL for both years to the western, central and eastern areas, as well as the eastern GOA split of the ABCs to the West Yakutat and Southeast Outside areas as given in the table below (amounts are metric tons).

SSC recommendations for GOA POP ABC and OFL for 2009 and 2010 (t)

Year		Western	Central	Eastern	WYAK	SEO	Total
2009	ABC	3,713	8,246	--	1,108	2,044	15,111
2010	ABC	3,710	8,239	--	1,107	2,042	15,098
2009	OFL	4,409	9,790	3,741	--		17,940
2010	OFL	4,405	9,782	3,738	--		17,925

Northern Rockfish

Northern rockfish in the Gulf of Alaska are on a biennial survey schedule with surveys conducted in odd-numbered years. Lacking new survey information in 2008, no new assessment was conducted. Updated catch information for 2007 and best available catch estimates for 2008 were used to project population levels for 2009 and 2010.

The SSC agrees with the Plan Team and the assessment authors that the stock status allows for Tier 3a management, given that the female spawning biomass is estimated to be well in excess of $B_{40\%}$. The SSC agrees with the recommendation for OFL = 5,204 t in 2009 and 4,979 t in 2010, with ABC = 4,362 t in 2009 and 4,173 t in 2010. The SSC agrees with the geographic apportionment of the ABC for 2009 as 2,054 t to the Western Gulf and 2,308 t to the Central Gulf, and for 2010 as 1,965 t to the Western Gulf and 2,208 t to the Central Gulf. The small allocation to the Eastern Gulf is to be combined with the ABC for other slope rockfish.

Rougheye and blackspotted rockfish

This year's Tier 3a ABC and OFL are based on the 2007 model with updated catch estimates. **The SSC approves the Plan Team proposed ABCs and OFLs for 2009 and 2010 and the proposed area apportionments for the ABCs.**

SSC recommended 2009 and 2010 ABC and OFL for rougheye and blackspotted rockfish (tons)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
Western		**125**		**126**
Central		**833**		**842**
Eastern		**326**		**329**
Total	**1,545**	**1,284**	**1,562**	**1,297**

The SAFE chapter authors report on results from experiments conducted on the longline survey near Yakutat that suggested a high proportion of misidentification for blackspotted rockfish. When compared to the genetic samples, at sea scientists only correctly identified blackspotted rockfish 47% of the time. Results from the expert scientist identification on photos of the same samples were improved but only to 63% accuracy. However, identification of rougheye rockfish was nearly 100% accurate in both cases. Upon reevaluation of photos, there were several other features that may be important for correctly identifying blackspotted rockfish (J. Orr, personal communication). The authors propose that a new at sea field identification pamphlet be prepared and tested with genetic samples to determine whether rapid and accurate identification of the two species can occur.

SSC recommendations to stock assessment authors

The SSC endorses this above approach and encourages preparation of the field identification pamphlet. Identification of rockfish to species is a high research priority.

Shortraker and other slope rockfish

This year's ABC and OFL recommendations are based on the 2007 assessment with updated catch estimates for 2007-2008. The SSC recommends that shortraker rockfish be managed as a Tier 5 species. The SSC recommends that other slope rockfish be managed as a complex where biological reference points are established using the sum of the species specific reference points. For most of the members of the other slope complex, reference points are estimated using Tier 5 methods. However, reference points for sharpchin rockfish are based on Tier 4 methods. **The SSC approves the proposed Tier designations and the associated 2009/10 ABCs and OFLs and area apportionments proposed by the SAFE chapter authors and the Plan Team in the tables below.**

SSC recommended 2009 and 2010 ABC and OFL for shortraker rockfish (tons)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
Western		**120**		**120**
Central		**315**		**315**
Eastern		**463**		**463**
Total	**1,197**	**898**	**1,197**	**898**

SSC recommended 2009 and 2010 ABC and OFL for other slope rockfish (tons)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
Western		357		357
Central		569		569
WYAK		604		604
EYAK/SEO		2,767		2,767
Total	5,624	4,297	5,624	4,297

Pelagic Shelf Rockfish (PSR)

This assessment was updated with revised catch estimates for 2007 and 2008. Jane DiCosimo (NPFMC) informed the SSC that Amendments 77/73, which remove dark rockfish from both the GOA and BSAI FMPs will be approved in time for the final specifications for 2009 groundfish to be published excluding dark rockfish.

This complex includes widow, yellowtail and dusky rockfish. As in previous assessments, widow and yellowtail rockfish are managed as Tier 5 species. Dusky rockfish are managed as a Tier 3 species. An age structured model is used to assess dusky rockfish. The projection model was updated with 2007 and 2008 catch estimates and re-run to produce 2009 and 2010 estimates of ABC and OFL. **The SSC agrees with the Tier designations and recommended 2009 and 2010 ABC and OFL recommendations and area apportionments of the author and the Plan Team.**

SSC recommended ABC and OFL for GOA Pelagic shelf rockfish (tons, excluding dark rockfish)

Area	2009 OFL	2009 ABC	2010 OFL	2010 ABC
W		819		765
C		3,404		3,179
WYAK		234		219
EYAK/SEO		324		302
Total	5,803	4,781	5,420	4,465

The Plan Team report indicates that species identification problems persist in the catch accounting for PSR. The State and Federal biologists plan to share techniques for identifying dark, dusky, northern, black and blue rockfish to reduce misidentifications.

SSC recommendations to stock assessment authors

The SSC supports the technique-sharing activity described above and encourages the stock assessment authors to examine the implications of uncertainty in catch estimation on the dusky rockfish assessment.

Demersal Shelf Rockfish (DSR)

Demersal Shelf Rockfish biomass is estimated from a habitat-based stock assessment focused on yelloweye rockfish densities derived from visual line transects conducted from submersibles. Funding for surveys has been intermittent in recent years, with no survey work conducted in 2008. New information for the biomass projections are average weights for 2008, reported by area from directed commercial landings and from incidental catch in the halibut fishery. The net effect of the new weight data is an overall 5% reduction in estimated biomass for 2009 and 2010.

As in previous assessments, the SSC agrees with authors and Plan Team to apply precautionary measures in establishing allowable harvests, including: 1) using the 90% lower confidence bound, and 2) using a harvest rate lower than maximum under Tier 4 by applying F=M=0.02 to survey biomass. The SSC agrees with the resulting OFL = 580 t and ABC = 362 t for both 2009 and 2010.

The SSC wishes to thank the stock assessment authors for the additional information provided in this year's SAFE regarding the estimates of mortality in the recreational fisheries. The SSC recognizes that additional effort was required to obtain the improved estimates, including recreational fish weights, the apportionment of recreational harvests between inside and outside waters, and recreational fishery release rates.

The SSC is encouraged to hear that a new survey is planned in the Northern Southeast Outside area in 2009, and expresses its concern that adequate resources be devoted to assessing the stock on an ongoing basis so as to maintain a consistent stream of revised densities in future years.

SSC recommendations to stock assessment authors
The SSC looks forward to seeing confidence intervals for recreational removals, which the authors expect to provide next year.

Thornyhead Rockfish

The SSC supports the rollover of last year's Tier 5 calculations for thornyheads in the Gulf of Alaska, using the most recent trawl survey biomass estimate from 2007 as well as longline survey data from 2006 and 2007. The SSC agrees with the Plan Team's recommendation for the Gulf-wide OFL = 2,540 t and ABC = 1,910 t for both 2009 and 2010 and the area apportionments of the ABC for both years as 267 t, 860 t, and 783 t to the Western, Central, and Eastern Gulf areas, respectively.

SSC recommendations to stock assessment authors

The SSC again wishes to encourage the development of an age structured assessment for shortspine thornyheads, subject to staff time and data availability.

Atka mackerel

Stock assessment for Atka mackerel in the Gulf of Alaska is on a biennial assessment schedule that coincides with the survey schedule. Lacking a trawl survey in 2008, a new assessment was not conducted this year. Atka mackerel in the GOA have been managed as a Tier 6 stock since 1996 because the biomass estimates have been judged to be unreliable for purposes of estimating allowable catches. The species is difficult to assess due to its patchy distribution and its preference for rocky bottom substrates that are not well represented in the NMFS bottom trawl survey.

The SSC concurs with the Plant Team and stock assessment authors for continued management of GOA Atka mackerel in Tier 6, as well as their recommendations for ABC = 4,700 t and OFL = 6,200 t for both 2009 and 2010.

SSC recommendations to stock assessment authors
The SSC recommends that stock assessment authors explore connections of this stock with the Bering Sea and also whether this stock should be moved to Tier 5 in the future.

Skates

Lacking survey data for 2008, the ABC and OFL recommendations are rollovers from last year. **The SSC agrees with the Plan Team's recommended 2009 and 2010 OFL = 4,439 t and ABC = 3,300 t for Big Skate and OFL = 3,849 t and ABC = 2,887 t for Longnose Skate based on Tier 5 calculations. The SSC also agrees with the recommended OFL = 2806 t and ABC = 2,104 t for Other Skates in this complex. The SSC agrees with the distinct area apportionment of individual ABCs for Big Skates to the Western, Central, and Eastern Gulf of Alaska equal to 632 t, 2,065 t, and 633 t for both years. For Longnose Skates the ABC apportionments for the W, C and E GOA are 78 t, 2,041 t, and 768 t, respectively. The SSC accepts the rationale that a single OFL provides adequate precaution given the bycatch-only status of the current catches.**

Other Species

Beginning this year, aggregate OFL and ABC levels are set for the GOA Other Species management category, which include sculpins, squid, octopus, and sharks. Previously, a total cap (4000 t in 2007) on TAC was set to meet incidental catch needs for target fisheries. This change requires that individual assessments need to be developed for each member of the Other Species category to contribute to a group total OFL and ABC. **The SSC agrees with the Plan Team to set the aggregate ABC and OFL for this category to 6,540 t and 8,720 t, respectively for both 2009 and 2010**. SSC comments on the individual assessments of the group members follow.

Sculpins

The SSC agrees with the Plan Team that the biomass estimate for sculpins in the Gulf of Alaska is reliable and that the use of Tier 5 calculations of OFL and ABC are appropriate. We accept the use of a single conservative estimate of M = 0.19 for the group as a whole, and agree with the Plan Team recommendations for OFL = 5,895 t and ABC = 4,394 t in both 2009 and 2010.

Squid

The assessment authors provide 6 alternative approaches for setting OFL and ABC levels for GOA squid, including 4 based on Tier 5 biomass methods and 2 Tier 6 catch history methods. **The SSC agrees with the Plan Team's conclusion that squid biomass estimates in the Gulf are not reliable, and that squid should be managed under Tier 6. The SSC also agrees with the Plan Team that the catch history for squid provides unreasonably low estimates, especially in light of ecosystem modeling results that suggest that fishery induced mortality of squid in the Gulf are insignificant relative to predation mortality. While it is difficult to devise a rigorous method for estimating an OFL and an ABC, the SSC accepts the Plan Team recommendation to set the OFL at the previous maximum catch**

between 1990-2007 (1,527 t) and to set the ABC at 75% of that value (1,145 t) for both 2009 and 2010.

SSC Comments to the GOA squid stock assessment authors:

The SSC requests that the sections on Ecosystem effects include information on seabirds, particularly albatrosses, as predators of squid. The SSC would also like to see in future assessments a map of catch density of squid.

Octopus

The SSC agrees with the Plan Team recommendation to apply Tier 6 criteria for GOA octopus, where OFL is the maximum historic catch between 1998-2007, equal to 298 t for both 2009 and 2010, with the ABC set to 75% of OFL, resulting in an ABC of 224 t for both 2009 and 2010.

Sharks

The SAFE authors updated catch weight, biomass estimates from the 2007 bottom trawl survey, and new life history and population demographic data. The authors and the Plan Teams considered the data criteria required for Tier 5 and Tier 6 and concluded that the GOA shark complex should be managed as Tier 6. The author recommended and the Plan Team agreed that the base period for estimating average catch for the Tier 6 estimate should be 1997-2007 rather than the previously adopted base period of 1997-2005. **The SSC accepts the plan team recommendation for management under Tier 6, with OFL = 1,036 t and ABC = 777 t for both 2009 and 2010.**

SSC recommendations to stock assessment authors

The SSC accepts the updated base period as the scientifically best alternative to the standard Tier 6 base period of 1978-1995, but recommends to stock assessment authors that the terminal year be fixed at 2007 to avoid a shifting baseline**.**

The SSC notes that reasonable estimates of biomass and natural mortality exist for spiny dogfish, but due to unique life history characteristics of this species including low fecundity and extremely late age at maturity, Tier 5 management may not be appropriate. The SSC also notes that while reliable estimates of relative population numbers (RPNs) exist for sleeper sharks, reliable estimates of natural mortality do not exist due to the difficulty in ageing this species. The SSC encourages the development of length or age based models for spiny dogfish in the near future that account for these life history characteristics.

Forage Fish

The SSC received an updated stock assessment report on Gulf of Alaska forage fishes in an appendix that includes new information for each taxonomic group as well as expanded coverage of eulachon and expanded data from the small mesh trawl survey.

SSC recommendations to stock assessment authors
The SSC requests that future forage fish assessments include a discussion of seabirds as important predators of forage fish.

Grenadiers in the GOA and BSAI

The SSC thanks the authors of the grenadier stock assessment for the thorough update and for inclusion of new information, including age and maturity information. The update is important preparation for potential inclusion of grenadiers in the groundfish FMP, contingent on Council action. The information suggests that this species might have sufficient information to qualify for Tier 5 management with region-specific ABCs.

Appendix C: Ecosystem Considerations for 2009

Kerim Aydin (AFSC) provided an overview of the Ecosystem Considerations appendix to the SAFE and some additional work on ways to present time series of important ecosystem indicators and stock indices. There was no public testimony on this.

As usual, the ecosystem chapter presents interesting "big picture" analyses. The SSC commends Dr. Aydin on his presentation and the continually developing ecosystem assessment. The communication tools presented by Dr. Aydin appear to hold promise as a concise way of packaging large amounts of complex information. The SSC suggested that he continue work on selection and standardization of these tools and that he consider, for aggregated information, the most appropriate groups to aggregate if the purpose is to distinguish bottom-up effects of environmental change from the effects of fishing. A potentially useful index of fisheries effects on the ecosystem is the bycatch of seabirds. Projections for various indices need to be better explained and should consider taking survey CVs into account.

As more information is added to the Ecosystem Considerations Chapter, good summaries are increasingly important; the SSC found the summary bullets in the Executive Summary helpful. It would be valuable for each of the authors supplying a section to give a one or two sentence summary of the importance of the information presented, and how it can be used to inform management decisions. The great value of this Ecosystem Considerations Chapter is to provide all with a summary of the newest and most important findings and trends as a heads-up for developing management responses and research priorities. The most important of these items could be brought to the reader's attention in the Executive Summary.

Two items of information stood out as particularly important for informing management and research efforts:

1) The apparent recovery of meso-zooplankton biomass with the return of ice-associated, early blooms suggests that the prey resources for juvenile (and adult) pollock may support a rebuilding population. That said, we lack an explanation as to why zooplankton increased in all domains, including those in which *Neocalanus* spp. predominate, as they not known to be affected by ice cover or the ice-associated bloom. Likewise, euphausiids (krill) appear to have recovered over the middle shelf, given the important results of the BASIS program. Again, we lack information on the mechanisms whereby climate variability may influence the availability of this important prey type either in spring or in summer. **There is a need for**

research on the mechanisms that control the abundance of large zooplankton in all domains, including the abundance of euphausiids over the shelf and shelf edge.

2) The findings of the BASIS program that age-0 pollock were more numerous in the warm years of 2002-2005, but were in poorer condition and, in the absence of euphausiids and large copepods, were subject to greater predation by larger pollock and juvenile salmon is an important addition to our understanding of controls on early life survival of pollock in the eastern Bering Sea and may eventually help improve estimates of year class strength at early stages.

The new information on zooplankton and age-0 pollock points to the great value of the BASIS program. **The SSC recognizes the importance of full coverage of the BASIS grid and the importance of the time series now being developed.**

In the reporting of data on zooplankton abundance, it is important to provide information on the methods used and the timing of sampling, particularly when comparing long-term data collected under different programs. Likewise, when looking at the size composition, condition and diets of fish, it would be helpful to present these by domain and latitude, and if appropriate, by season (date) of capture.

In the reporting of condition factor, the size and birthdate of age-0 fish should be considered. Fish may use energy primarily for growth at certain ages and for storage at other ages. Since there is considerable variability in the dates when pollock spawn within a given year as well as between years, in making interannual comparisons of fish condition, age-0 birthdate and the date of sampling should be considered.

The SSC encourages continued research underlying recent declines in surplus production for a number of species

The SSC appreciates the clear timeline of when various sections were updated (pages xiv-xvi) and the listing of the four sections new to 2008 version of this chapter (page xiv). It was also most helpful to have a clear list of responses to the previous comments by the SSC, and plans for future responses where work was still in progress (xvii-xix). In contrast to the many excellent contributions presented in the Chapter, a number of sections were represented solely by reference to website presentations. This is appropriate when no new information is available since the last report. However, when dealing with issues of considerable potential management impact, it is important to obtain annual updates. In this regard, the lack of sections on pinnipeds was particularly unfortunate. Two species, Steller sea lion and northern fur seal, have been identified as is endangered or depleted, and the ice seals are being considered for listing. There are concerns in the case of the first two species that competition with fisheries may be a problem. Under these circumstances it seems particularly important for the best possible evaluation of the status of these pinnipeds and their ecological needs be included annually in the Ecosystem Considerations Chapter. We also noted the lack of updated information on salmon, which was likely requested and available, but not transmitted to staff for the development of this report.

The recent trends of fishing effects on the ecosystem show that no significant adverse impacts of fishing on the ecosystem relating to predator/prey interactions, energy flow/removal, or diversity were noted either in observed trends or ecosystem level modeling results.

<u>Specific Comments</u>

Executive Summary of Recent Trends: There were no bullets addressing trends in seabirds, marine mammals, or bycatch of seabirds/mammals. These were addressed under the Ecosystem Assessment, but could also be noted in the Executive Summary.

Table 1: Why not use piscivorous birds and mammals as indicators of forage fish?

Page 6, and 168: Pollock are in many ways a low trophic level fish. As the major fishery, their exploitation masks any shifts in trophic level of secondary species in the overall catch. It would be helpful to calculate this index with and without pollock. It would also be of interest to see this index with and without arrowtooth flounder.

Page 9: When referring to zooplankton please be specific- copepods, euphausiids, etc. Identify the important species or groups, as sampling methods for one group may be entirely inadequate for another.

Page 10 and elsewhere: There is no Alaska EEZ. Please refer to the US EEZ off of Alaska as an alternative.

Page 11: Is it possible that the reduction in HAPC biota bycatch is the result of prior disturbance?

Page 14: If arrowtooth flounder were not in the mix, would the CSS be declining? And, against what baseline is the CCS measured? Are the fish as big as they were at the very start of Bering Sea fisheries?

Page 16: It is unclear that Minke whales should be included here. Were they ever the target of whaling?

Page 17: The idea of large scale experiments has been raised many times and judged to be unfeasible. It might be better not to resurrect this issue again.

Page 34: The SSC found the brief explanation of the importance of this finding helpful. It could be a model for similar brief statement of significance at the ends of other contributions.

Page 38, 39 and Fig. 7, 8: What is the skill of this model? Has a formal analysis been conducted? At least, put in the observed year class strength so that we can qualitatively judge the efficacy of this model.

Page 67: Upwelling is more likely through Bering Canyon, rather than through Unimak Pass.

Page 75: Isn't figure 45 the actual survey stations for 2008 BASIS, not the 'Proposed' stations?

Page 79: Are there other sources of information that might support the high numbers of herring projected to have been present in the 1980s? Landings? Local knowledge?

Page 90: Rather than just rejecting the hypothesis, use AIC approaches to investigate the relative importance of various factors such as predation, temperature, condition, etc.

Page 98: Can you determine whether the recent changes are more likely due to temperature or predation pressure?

Page 119: The section on seabird bycatch could be reduced, as some of the tables and figures are repetitive and this level of detail is not needed for this report. It will be more effective in this document if it focuses on highlights. For example, why was there such an increase in the magnitude of bycatch in 2006? Was there a change in the fishery, or perhaps there is evidence that the birds may have changed their distribution of behaviors?

Page 140: Why are the points joined in Figure 90?

C-3 Appendix D: Economic Status of the Groundfish Fisheries in 2007

The SSC did not receive a staff presentation on the draft Economic Status of the Groundfish Fisheries in 2007 (Economic SAFE). There was no public testimony on this agenda item.

The SSC is pleased with the continued improvement of the Economic Appendix to the BSAI and GOA groundfish SAFE. With relatively minor exceptions, this draft Economic SAFE reflects the now accustomed high level of quality characteristic of recent annual submissions. The SSC offers the authors some editorial recommendations, but over all, commends the authors for their consistent adherence to careful preparation and well reasoned interpretation of catch, price, value, and market data.

Data represented in this Appendix underpin the analyses of economic and socioeconomic impacts of proposed actions, reported in EA/RIR/IRFA documents. The market analyses are a valuable additional component of the Economic Appendix and could serve as a basis for anticipating the likely economic consequences of alternative values for ABC and OFL generated by the stock assessment models considered by the Plan Teams. A next step in the ongoing evolution of the Economic Appendix would be to identify bioeconomic reference points akin to those recently developed for Australian tropical prawn fisheries (Andre Punt).

The Economic SAFE would benefit from a few specific refinements.

1. **On the general matter of economic data collection, the SSC wishes to reiterate its strongly held belief that data collection programs** and, in particular, programmatic economic cost data acquisition (e.g., observer provider economic data), **are only fully adequate to support required analyses when those data are acquired frequently, comprehensively, and consistently.** In that regard, Table 51 does not provide a convincing rationale for applying a fixed average observer cost per day across gear types and operation modes. The absence of timely observer cost data severely constrains accurate characterization of the actual cost of observer programs.

2. The SSC reiterates the importance of correctly distinguishing between fisheries occurring in Federal waters off Alaska (or those under Federal authority within State-waters) and fisheries occurring in Alaska State waters, which are under State management jurisdiction (i.e., 0-3nm seaward of the baseline). References to the "Alaska EEZ," "Alaska groundfish fisheries," "Alaskan catch of…e.g., sablefish, pollock, cod, etc.," should be avoided when making references to Federal EEZ fisheries, resources, or management programs occurring in the eastern Bering Sea and North Pacific, adjacent to Alaska. As the SSC previously noted, "Casual and careless use of terms may result in undesirable and avoidable misunderstandings." The SSC, again, requests that the authors utilize the correct nomenclature when preparing documents for the Council and Secretary of Commerce. This advice is not restricted to the Economic Appendix, as similar misuse of nomenclature was identified in other sections of the SAFE Report.

3. The SSC suggests that the summary of ESSRP research activities could be narrowed, to focus on those projects that are pertinent to the economic status of groundfish fisheries off Alaska. The Ecosystem SAFE initially included a similar compendium of research projects; recent versions of the Ecosystem SAFE integrate the major findings into the body of the discussion of various aspects of ecosystem impacts and considerations. A similar evolution in the Economics SAFE is desirable and could be accomplished by expanding the introduction to more fully describe findings and implications of research results and analyses of trends in the reported tables. To the extent that some of the

research results describe data series that will be maintained through time, new tables should be created to represent those ongoing data series.

4. The tables in the Economic SAFE should be standardized, to the fullest extent practicable, employing common units of weight (e.g., kg and mt, rather than lbs).

5. The Economic Appendix could benefit from the inclusion of a table of cost proxies, such as, fuel prices and shipping costs. These time series would help put the gross revenue data into context; serving a function similar to that served by the reported time series reported in Tables 52-60. As the EDR cost data become available, additional tables should be added to report costs by region, target, vessel class, etc.

6. The SSC has previously commented on the lack of cold-storage inventories for fisheries products. The Economic SAFE could benefit from inclusion of a table of time series estimates of U.S. west coast and Alaska groundfish inventories.

7. While the Economic Appendix rightly focuses on groundfish, Table 16 provides a valuable service of putting groundfish catches into context of the suite of fisheries off Alaska. Some fishermen, many processors, and most fishery dependent communities participate in more than just the groundfish fisheries. It would be helpful to add a companion table that reports the quantity of catches that yielded the exvessel revenues reported in Table 16. It would also be useful to break-out the catch and value information by region, as it is done for production in Table 30.

8. Page 1 (paragraph 3, beginning at line 9) describes IFQ, AFA, etc., programs as “market-based”. It would be more accurate to describe these programs as “based on assigned catch shares”.

Analyses to explore in the near future:

1. Consider developing a short summary of the Economic Appendix that discusses the implications of current economic status in terms of the upcoming fishery. The Ecosystem Appendix provides a similar “so what” contribution that suggests fisheries where ecosystem concerns may be relevant to the setting of ABC and OFL.

2. The SSC recommends that pertinent economic findings, interpretations, and implications be briefly summarized at the conclusion of each individual Groundfish SAFE section, as is currently done for aspects of the ecosystem appendix. This context-specific economic and socioeconomic information should cite the appropriate tables and text in the economic SAFE for additional detail and elaboration. In this way, the important biological, ecological, and economic aspects of stewarding the living marine resources of the North Pacific, Bering Sea, and (soon) Arctic Ocean, on behalf of all uses and users, can be more effectively integrated.

C-4 (d) Crab EDR Report

Brian Garber-Yonts (AFSC) provided a status update on progress in the refinement of the crab EDR data, development of metadata descriptions, and anticipated revisions to the EDR survey. Mark Fina (NPFMC), and Arni Thompson and Steve Minor (PNCIAC) provided additional clarifications. There was no public testimony.

The SSC sincerely appreciates the efforts of, and collaborative support provided by the crab sector, especially those members contributing their time and expertise through PNCIAC. The SSC also thanks

AFSC and NPFMC staff for their efforts. In that respect, the SSC is pleased to learn that several EDR data series are now ready to be uploaded to the AKFIN database. The development of criteria for assessing data quality is a particularly notable accomplishment.

The presentation highlighted two issues of particular concern: (1) "the auditors have reported, and metadata show, numerous instances of unsupported EDR values"; and, (2) several important data series are judged to be unreliable (Category C). The problem of misreported data may be due, in part, to differences in accounting systems, confusion about what data are being requested, or a lack of care in completing the EDR survey. It is anticipated that the problem of unsupported EDR values can be remedied with a combination of a "compliance guide" for distribution to those industry representatives mandated to complete the economic data forms and through outreach efforts by PNCIAC. Assisting industry to accurately interpret the information being solicited can only enhance the value of the data received, relieve the reporting burden on industry, and increase the usefulness and cost effectiveness of the data acquisition process.

While quality of many of the most important data series are judged to be Category A (judged reliable) or Category B (judged usable, given documented limitations), several critical data series are judged unreliable over past, present, and ongoing time periods. The SSC is particularly concerned about the unreliability of information on: (1) quota share transactions, (2) fuel expenditures, and (3) pot costs and losses. While the SSC recognizes that developing reliable records of these time series poses substantial challenges, those challenges must be overcome. If the only reliable way to obtain information on quota share transactions (transfers, sales, leases) is to mandate reporting of the terms of trade for each transaction, then the regulations should be amended as needed. Information on fuel costs may be available in data used to calculate crew shares and may be augmented by data from fuel suppliers; care and flexibility will be needed to reconcile calendar year reporting and cost and revenues determined on a fishing-year basis. While it may be appropriate to "temporarily" discontinue requests for some Category C data series, it is not an appropriate long-term option, especially for data on (1) quota share transactions, (2) fuel expenditures, or (3) pot costs and losses. More effective mechanisms for acquiring these data are imperative.

The crab EDR program will serve as a template for a comprehensive EDR program, and while ongoing improvements in the crab EDR will help inform the design of the remaining elements of the fishery EDR program, **the SSC strongly recommends against delay in the development and implementation of the comprehensive EDR program.**

D-3 Arctic FMP

Bill Wilson (NPFMC), and Melanie Brown (NMFS-AKR) presented the revised draft Fishery Management Plan for the Fish Resources in the Arctic and the accompanying EA/RIR/IRFA. Lauren Smoker (NOAA GC) Grant Thompson (NMFS-AFSC) were also present to answer questions. Public testimony was provided by Chris Krenz (Oceana), Bubba Cook (WWF), and Ukallaysaaq To Okleasik (NW Arctic Borough).

The SSC compliments the preparers for responding to many of the SSC comments from the October 2008 meeting so quickly and for the many detailed additions at an extremely busy time of year. The SSC's question on the legal validity of the Option 2 approach has been addressed by NMFS and NOAA GC in their suggested language for a new Option 3, contained in their letter of November 26, 2008. On December 4, 2008 the SSC was sent (via email) the revised FMP with the Option 3 language included. Several sections of that revision were still incomplete at that time. The SSC received the partially updated EA/RIR/IRFA at this meeting. The SSC did not have time to completely review the material and plans to comment more fully on the finished documents at the February meeting. T**he SSC recommends that the**

document be released for public review, after completing the changes recommended by the SSC previously and at this meeting.

The SSC notes that the proposed handling of the Kotzebue Sound red king crab fishery in Alternatives 3 and 4 is inconsistent with the FMP's objectives for protection of the sensitive marine environment and prevention of unregulated fishing, and the careful listing of requirements for opening a new commercial fishery. In addition the selection of the 1000 lbs. cap is arbitrary and without a scientific basis. Although strictly speaking it is not a new fishery, very few data exist on the fishery or stock size and these are of poor quality and insufficient to establish the level of past fishery catches. On the other hand, other crab fisheries outside the Arctic have been similarly deferred to State management (e.g., hair crabs) and do not require all of the data listed in the Arctic FMP for new fisheries. The SSC notes that a subsistence harvest of that magnitude would be allowed and would still allow for cash exchange at some level.

Although it appears that Option 3 is preferred by the authors, if Options 1 and 2 are to remain in the document as viable choices, all the appropriate analysis and calculations need to be included for each for a fully informed decision. The SSC understands that the material will be updated with the newly estimated biomass data (Ormseth et al.) from 2008 surveys conducted in the Arctic by Libby Logerwell (NOAA). The SSC recommends that the new biomass data for the Beaufort Sea be used in place of the older (1990) data, and that the Options 1 and 3 MSY numbers be revised accordingly. The Ormseth et al. report supports the designation of arctic cod, snow crab, and saffron cod as potentially exploitable biomass.

We recommend that the comparative approach used for Option 2 systemwide MSY calculations (e.g., Table 4-8, page 120) be deleted. It is not clear that the MSY calculation needs to be included since no fisheries are authorized; the SSC recommends that the authors consider deleting the whole section starting on page 117. The biomass information we have for calculating MSY in Options 1 and 3 provides a minimum estimate and is the best information available at present. The FMP should be amended as new information becomes available.

<u>Other SSC comments on the FMP (December 2008 version)</u>
The Changing Arctic section (about page 66) contains information on areas beyond the arctic and adjacent areas. Staff explained that the material was included to "give an ecosystem flavor" and to bolster evidence for climate change. In the interest of keeping the document concise, the SSC suggests deleting material south of the Bering Sea.

The EFH maps are digitized from old maps, some of which are incorrect (e.g., snow crab distribution). Some explanation should be given for the discrepancy of the maps with the data presented in the text.

There seems to be some confusion of groundfish Tiers and crab Tiers in the document. In particular for option 3 the relationship between algorithms used to identify FMP species and the crab and groundfish Tier system should be explained. Crab Tier 5 Uses catch history to determine reference points, however since there are no commercial fisheries Tier 5 should not be considered.

EA/RIR/IRFA (November 2008 version)
P38 – repeated creative misspellings of deferred.
Section 3.1 (P 45) – left out ADFG, MMS, OCSEAP, NSB, USGS Alaska center, USFWS Marine Mammals Management.

Section 3.2 section on oil and gas. No reference to effects of seismic exploration from ships or on ice.

P 136 fishery interactions of seabirds is confusing and de-emphasizes the documented effects of gill nets on some of the seabirds listed. The marine mammal section might be a useful model, by separating state run gill net fisheries from federal groundfish fisheries interactions. Specific comments related to this issue throughout the document will be provided to the authors.

Comments on the proposed National Standard 2 Guidelines

On September 18, 2008, NMFS published in the Federal Register (73 FR 54132) an advanced notice of proposed rulemaking, which seeks public comment on proposed rulemaking to revise National Standard 2 (NS2) guidelines regarding the use of best scientific information available. Revisions to the NS2 guidelines may be appropriate at this time given the recently revised Magnuson Stevens Act and the recommendations from the National Research Council's 2004 report: *Improving the Use of the "Best Scientific Information Available" Standard in Fisheries Management.* Comments are due by December 17, 2008.

The Council requested that the SSC provide comments to them with respect to this advanced notice of proposed rulemaking. The SSC formed a workgroup in November to work on revisions to draft comments provided by Dave Witherell. The workgroup presented the revised draft comments below to the SSC at the December Council meeting. No changes were suggested at the December meeting.]To facilitate comments on the topics mention in the advanced notice, they are reframed as questions, as listed below.

1. How should the NS2 guidelines, specifically within the discussion of SAFE reports, be revised to include the scientific recommendations that are to be provided by the SSCs per Magnuson Stevens Act requirements?

The existing guidelines sufficiently describe the required contents of SAFE reports, and this section should NOT require that the SAFE incorporate SSC recommendations for acceptable biological catch (ABC).

There is no need for SSC deliberations and recommendations to be included in the SAFE reports. In the North Pacific, the SAFE reports are prepared by the Plan Teams. These SAFE reports form the scientific basis for the SSC determination of overfishing levels (OFL) and ABC. The SAFE reports are carefully scrutinized and reviewed by the SSC, which serves as a second and final level of scientific peer review in our process. Due to the timing of the surveys and completion of stock assessments, the SAFEs may be prepared less than 2 weeks prior to the SSC and Council setting the annual catch specifications for the following year. The SAFE reports are generally very large (1,000+ pages), and are not revised once they are issued by the Plan Teams, and do not get reissued with the SSC recommendations. The SSC recommendations on OFL and ABC are included in their meeting minutes and report to the Council, and become part of the official public record. There are generally only a couple of days between the SSC reviewing the SAFEs/setting the OFLs and ABCs, and the Council determining TACs.

Bottom line: Requiring a revision to the SAFE reports to include the SSC final recommendations is a waste of time and money, and may completely disrupt the process of setting annual catch limits. A more sensible alternative would be to stipulate that each SSC prepare a report of its deliberations and recommendations and that the report be published at the Council's website.

2. Should NS2 guidelines provide additional guidance as to what constitutes the "best scientific information available, and if so, how? To what extent should the guidelines incorporate the National Research Council's recommendations on this issue?

The NRC report concludes that a statutory definition of what constitutes "best scientific information available" for fisheries management is inadvisable because it could impede the incorporation of new types of scientific information and would be difficult to amend if circumstances warranted change.

The NRC recommends that establishing procedural guidelines is the preferred alternative for creating accountability and enhancing the credibility of scientific information used in fisheries management. The NRC suggests that the guidelines address relevance, inclusiveness, objectivity, transparency, and timeliness, the peer review process, and the treatment of uncertainty. The NRC notes, however, that guidelines should remain sufficiently flexible to accommodate the strong regional differences in fisheries and the amount of scientific information available.

Bottom line: Flexibility is needed; overly specific and detailed procedural guidelines may only open the door to legal challenges not on substance, but instead based on minor procedural technicalities.

3. Should the NS2 guidelines be revised to provide specific language regarding the peer review process, and if so, what minimum criteria should be included? Should the guidelines clarify the role of the SSCs in the peer review process?

The NRC recommends a peer review process with four key elements:

- The review should be conducted by experts who were not involved in the preparation of the documents or the analysis contained in them;
- The reviewers should not have conflict of interest that would constrain their ability to provide honest, objective advice;
- All reliable information and supporting materials should be made available for review; and
- A peer review should not be used to delay implementation of measures when a fishery has been determined to be overfished.

The NPFMC's SSC has provided peer review for virtually all scientific information and analyses used in decision making by the Council. The SSC reviews all technical analyses including NEPA assessments (EAs and EISs) and scientific analyses required by other applicable laws (e.g., Regulatory Impact Reviews and Regulatory Flexibility Analyses). Generally, all of these are packaged together and reviewed by the SSC in their entirety for a particular action to ensure that the best available scientific information is provided for public comment and final decision-making. In reviewing any analysis, the SSC focuses on appropriateness of the input data, methodology applied, and conclusions drawn. The SSC provides comments and recommendations to the analyst to improve the analysis. The SSC also makes a recommendation to the Council as to its adequacy; i.e., whether or not the analysis is ready to be released for public review. If an analysis is deemed deficient and major revisions are required, the SSC will recommend that the analysis not be released, with the expectation that a revised analysis would be reviewed by the SSC for adequacy at a subsequent meeting. In the rare instance where an SSC member may have assisted with preparation of an analysis, or has a perceived conflict of interest (such as having supervised a person who assisted in analysis preparation), the SSC member has excused himself/herself from deliberations on SSC recommendations.

The Scientific Advisory Panel from the Managing Our Nations Fisheries II conference concluded that the SSCs should be used as the primary peer review body. From the panel's report (page 110 of the proceedings): "To address the concern that analytical documents receive adequate peer review in a standardized fashion, the panel recommended that each Council's SSC provide peer review of all fundamental analyses and make the determination that best available scientific information is provided prior to Council decision making."

Bottom line: The SSCs should function as the primary peer review process for best available scientific information used for decision making by the Councils. Additional independent peer reviews (such as CIE reviews) could be used in limited instances to address controversial scientific issues, but should not be required as part of the process. Each Council should have the flexibility to develop a peer review process that best utilizes available scientific personnel and advisors.

4. The rule also seeks comments from the public on other issues or clarifications to the NS2 guidelines that might be warranted at this time. Are there additional revisions needed?

Yes, there are a number of other revisions needed to clarify the guidelines.

- First, the acronym SAFE is not defined in this section, so "(Stock Assessment and Fishery Evaluation)" should be inserted after the first reference to the SAFE.
- The existing guidelines state that the SAFE report provides information to the Councils for determining annual harvest levels from each stock. With the MSA revisions, the guidelines should be clarified that it provides information to the Councils *and their Scientific and Statistical Committees* for determining annual *catch limits* for each stock or stock complex.
- The guidelines (3)(ii) state that each SAFE report should contain information by which the Council may determine any management measures necessary to provide for rebuilding an overfished stock or stock complex (if any) to a level consistent with producing the MSY in such fishery. This section should be deleted, because it would direct scientists who prepare the SAFEs to anticipate all potential alternatives (size limits, closures, harvest rates, etc.) that a Council may consider to rebuild a stock. This statement is not needed because the status determination criteria found in the SAFE report are used to determine if overfishing is occurring and if a stock is overfished or approaching overfished condition. In the latter case, the Council would then have to develop a specific rebuilding plan, separate from the SAFE process.

National SSC Meeting Report

A meeting of SSC leadership from each of the regional fishery management councils was held November 12-14, 2008 in Honolulu. The purpose of the meeting was to share information on (1) SSC operating procedures and (2) the role of SSCs in the peer review process and setting catch limits. Keith Criddle, Pat Livingston, and Terry Quinn attended and presented information on NPFMC SSC practices. The SSC greatly appreciates the assistance of Dave Witherell in preparing the NPFMC presentations and reports for the meeting. There was incredible diversity in SSC practices but it appears that SSCs around the country are now re-forming and working towards more regular meetings and being an integral part of the Council scientific review process. There was consensus that another national SSC meeting should be convened before 2010, with a potential focus on technical aspects of establishing appropriate annual catch limits. A full report from the meeting is being prepared and will be available soon.

It is important that NMFS, ADF&G and NPFMC begin working in the coming year on refining the ACL definitions in each of the FMPs. There are tentative plans for an initial workshop on scallop, crab, groundfish ACLs to be held May 18-19, 2009 in Seattle. Key SSC member involvement in this and subsequent workshops is important.

Miscellaneous

The SSC gratefully acknowledges Bill Clark's many years of commendable service on the SSC and wishes him a long and enjoyable retirement (on the groundfish plan teams, no less). We look forward to hearing a performance of Bach's Goldberg Variations by him the next time we meet.