BSAI Groundfish Plan Team Minutes
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The BSAI Groundfish Plan Team convened on Monday, November 16, 2009, at 3:30 pm. All members were in attendance.

EBS walleye pollock Jim Ianelli summarized this year' assessment. New data included:

1) This year's bottom trawl survey biomass estimate was down 25% from last year, but slightly above expectations based on last year's assessment.
2) This year's EIT survey biomass estimate was about the same as last year, but below expectations based on last year's assessment.
3) As in previous assessments, an age-length key (ALK) from this year's bottom trawl survey was constructed and used to compute the age composition from this year's bottom trawl survey.
4) In previous assessments, the ALK from the current year's bottom trawl survey was also used to compute the age composition from the current year's EIT survey. For this year's assessment, however, 100 otoliths from this year's EIT survey were incorporated into the bottom trawl survey ALK (only when applied to the EIT length composition) to give a more accurate estimate of this year's EIT age composition.
5) The relative abundance of three-year-olds in this year's EIT (2006 year class) was lower than expected from last year's assessment.
6) This was the fourth consecutive year of cold temperatures in the bottom trawl survey.
7) Fishery otoliths from the first part of 2009 were read, but the resulting age composition was not used in the final model (see "Sensitivity testing of the model and projections" below).

Jim reviewed the assessment model and projection methodology. The assessment model is identical to last year's model. As with other age-structured assessments, the EBS pollock model is based on numbers at age, but harvest specifications are based on catch measured in weight. Accurate harvest specifications therefore require an accurate projection of fishery weight at age in the next 1-2 years. For EBS pollock, the current method is to use a three-year running average. In this year's assessment, several alternatives were evaluated, including different durations for the running average and a variety of regressions using data that are typically available at the time of the assessment (e.g., average date of catch, average location of catch, etc.). Results of this evaluation indicated that, of the alternatives considered, the best predictor was a ten-year running average, which the authors recommend for use in this year's harvest specifications.

Two methods were provided for computing the probability that spawning biomass will fall below 20% of B_0 (because EBS pollock is managed under Tier 1, the relevant reference point for Steller sea lion mitigation measures is 20% of B_0 rather than $B_{20\%}$). The first, which is used in assessments of several other stocks, is to define the ratio of future spawning biomass to 20% of B_0 as a variable for which the population modeling software AD Model Builder (ADMB) provides a mean and standard deviation (or MCMC distribution). The second is a new method, which is something like a "management strategy evaluation," in that it evaluates the probability that a future assessment will result in a point estimate of spawning biomass lower than 20% of the point estimate of B_0 from the same assessment. For the time being, the second method is limited to a two-years-ahead projection.

Estimates of most quantities related to harvest specifications are lower than projected in last year's assessment, due largely to a decrease in the estimated size of the 2006 year class (down 37% from last year's estimate).

B_{MSY} = 1.863 million t, down about 3% from last year's estimate.
Spawning biomass for 2010 = 1.316 million t, down about 28% from last year's projection for 2010, but down only about 9% from last year's estimate of SB2009.
Probability of falling below 20% of B_0 in 2011 < 5% (using the second method described above).
Maximum permissible ABC for 2010 = 813,000 t, down about 34% from last year's projection for 2010, but almost identical to ABC2009.
Maximum permissible ABC for 2011 = 1.110 million t.
OFL for 2010 = 918,000 t, down about 36% from last year's projection for 2010, but down only about 6% from OFL2009.
OFL for 2011 = 1.220 million t.

Jim reviewed the following sensitivity testing of the model and projections.

1) Initial explorations of an alternative functional form for age-specific natural mortality were conducted (the traditional schedule of age-specific natural mortality rates was retained for this assessment, however).
2) Alternative model specifications explored in previous assessments were tabulated, showing that a wide range of alternatives have been considered at various times in the past.
3) The "CABE" series of analyses was conducted (as in last year's assessment), showing the effects of the most recent year's data from the catch, fishery age, bottom trawl survey, and EIT survey time series; in various combinations.
4) Preliminary fishery age data from the first part of 2009 were included in sensitivity runs of the model. These indicated a smaller probability of the stock falling below $B_{20\%}$, slightly larger recent recruitment, and a slightly larger 2010 maximum permissible ABC.
5) Two types of retrospective analysis were conducted. The first type examined the difference between estimates from previous assessments versus the current assessment. The second type re-runs the current model several times, each time omitting one year's data (starting with the most recent year and working backward through time). The results indicate that the EBS pollock assessment does not have a strong retrospective bias.
6) An alternative projection was also conducted with the 2006 year class strength set equal to the long-term average, rather than as estimated in the assessment model. The maximum permissible ABC for 2010 under this alternative run was 738,000 t.

Following Jim's presentation, the Plan Team discussed the assessment. Primary discussion topics included the assessment model, estimates and variances of year class strengths (particularly the 2006 year class), tier designation, and ABC recommendations.

Assessment model The Team noted that the assessment model is unchanged from last year, and agreed that it is appropriate for use in recommending harvest specifications. The Team also agreed with the authors' recommended change in the method for projecting fishery weight at age.

Year class strengths The following were among the points raised during discussion of the year class strengths, both in general and with respect to the 2006 year class in particular (note that this list is intended simply to reflect the nature of the discussion, and does not necessarily represent Team consensus):

1) In addition to the point estimate of the 2006 year class strength shifting downward since last year's assessment, the confidence interval now overlaps the mean (in last year's assessment, the lower end of the confidence interval was slightly above the mean).

2) The 2008 year class is estimated to be above average, but, because this estimate is based only on the 2009 survey, the confidence interval is extremely large.
3) In last year's assessment, every year class from 2001-2005 was estimated to be below average, but in this year's assessment, the 2001 year class is estimated to be almost exactly equal to the average.
4) The average of the negative recruitment deviations from 2002-2005 are much bigger than the average of the positive deviations from 2006 and 2008, which may indicate that the stock-recruitment relationship is less certain than before.
5) A recent paper by Franz Mueter shows a dome-shaped relationship between recruitment and temperature.
6) The assessment model does not estimate cohort-specific growth of the 2006 year class.
7) Because the 2006 year class is still only 3 years old, no information on possible cohort-specific maturity of this year class is available.
8) Figure 1.6 in the assessment indicates that the fishery operated in a manner that increased the selectivity of ages 3 and 4, which is not typical.
9) A member of the public stated that large numbers of young fish, perhaps from the 2006 year class, seemed to show up shortly after the survey took place.
10) Another member of the public offered the possibility that year class strength (in general) may be related to the extent of ice cover and the presence of vessels in areas of spawning concentrations during the spawning season.

Tier designation The Team discussed whether EBS pollock should be managed under Tier 1 or Tier 3 and, as listed under point #4 above, whether the stock-recruitment relationship is as reliably estimated as previously believed. During this discussion, it was noted that the EBS pollock assessment is scheduled for a CIE review in 2010. Following discussion, the Team agreed that this stock continues to qualify for management under Tier 1 (Tier 1b, specifically).

ABC recommendation The Team reviewed last year's minutes regarding ABC for this stock. The Team discussion on a recommended ABC focused on two alternatives: the maximum permissible value based on the assumption that the strengths of all year classes through 2008 are equal to the estimates from the present assessment (giving a 2010 ABC of 813,000 t), and the maximum permissible value based on the assumption that the strength of the 2006 year class is equal to the long-term average (giving a 2010 ABC of 738,000 t).

Arguments in favor of a 2010 ABC of 738,000 t (2006 year class = average) included the following:

1) The estimated strength of the 2006 year class has dropped considerably from last year's assessment, and may drop again.
2) Last year's assessment projected that the stock would recover to B_{MSY} by 2010, but this year's assessment indicates that this will not occur until 2012.
3) Recent survey biomass estimates have been low and the model projects that next year's bottom trawl survey biomass estimate will be the lowest in the time series.
4) The estimate of the 2006 year class is still fairly uncertain.
5) Even if the 2006 year class is above average, all of the other year classes currently in the fishery since the 2001 year class have all been below average (the 2008 year class has not yet recruited to the fishery).
6) There have been relatively few previous instances in which this stock has been so dependent on one year class. In other years when the stock was extremely dependent on a single year class, the dominant year class was an extremely strong one, whereas in the present case, the dominant year class is much closer to average in strength.
7) The stock-recruitment relationship is uncertain.

Arguments in favor of a 2010 ABC of 813,000 t (2006 year class = model estimate) included the following:

1) The Team agreed that the model is appropriate for making harvest specifications, and there is no reason to believe that the model's estimate of the 2006 year class is biased.
2) Reducing the ABC from 813,000 t to 738,000 t will have no discernible effect on the time the stock will take to recover to B_{MSY}.
3) The 2008 year class appears to be above average (in last year's minutes, the Team indicated that this year's recommendation for the 2010 ABC would be based in part on evidence of an additional strong year class).
4) Setting the 2006 year class equal to the long-term average value lacks statistical justification; a similar assumption could be applied to weak year classes as well.
5) While the stock is highly dependent on the 2006 year class, the extent of this dependence is not unprecedented.
6) A 2010 catch of 813,000 t would maintain the spawning exploitation rate below 20%, which has been used as a reference point in past Team recommendations.

Following discussion, the Plan Team recommended (by a one-vote margin) a 2010 ABC of 813,000 t. Given this decision, the Team recommended a 2011 ABC of 1.10 million t (equal to the maximum permissible value).

Plan Team Recommendations for Future Assessments

As a general recommendation (i.e., not specific to the EBS pollock assessment), the Plan Team recommends that a workshop be held, or a working group be formed, to develop guidance regarding how to decide when a stock qualifies for management under Tier 1. In so doing, the Plan Team recognizes that the SSC has final responsibility for making tier determinations.

Noting that a CIE review is scheduled for next summer, the Plan Team makes no new recommendations for the EBS pollock assessment. There are no outstanding recommendations for this assessment from previous years.

Bogoslof pollock Jim Ianelli reported that the standard assessment approach was applied again this year. A biennial cycle of the survey by the R/V *Oscar Dyson* was completed in March 2009. This survey resulted in the lowest estimate of biomass recorded since 1988. The next survey is scheduled for 2011. The decreased biomass estimate results in a recommendation for a decreased ABC. The Team accepted the author's recommendation for OFL and ABC under Tier 5 and noted that the ABC value follows the SSC's approach, which is less than the maximum permissible.

Aleutian Islands Pollock Steve Barbeaux presented the updated assessment, which includes recent catch data. He presented two model configurations which differ only in that model 1 excludes catches east of 174 west longitude (which may be part of the eastern Bering Sea stock). Model 2, which includes all catches for the Aleutian Islands, was adopted by the team to recommend ABC and OFL values. The model estimates that there is less than 1% chance that the population would be below $B_{20\%}$ of unfished spawning biomass.

The Plan Team recommended that an Aleutian Islands survey be conducted in 2010. The survey normally is conducted every other year. However no survey was conducted in 2008 because of lack of funds. The last survey was completed in 2006.

Directed catch has mostly been taken from small areas located outside Steller sea lion critical habitat. SSL critical habitat in the Aleutian Islands is closed to pollock fishing. Very little targeting of pollock in the AI occurred in the past decade, with targeted catch in 2009 of less than 600 t. Current catches are mostly bycatch in target fisheries for other species. Pollock catches were low and typically mixed with Pacific ocean perch. In the future the fishery may grow in size, but the TAC is limited by statute to no

more than 19,000 t. If this occurs, the Team recommends that a winter survey be conducted because the pollock distribution is different during winter. Steve Barbeaux noted that a winter survey likely is dependent on availability of industry-cooperative survey funds.

Pacific cod Grant Thompson reviewed the alternative models during the joint team meeting. The joint teams discussed the advisability of using the age composition data and the reliability of the bias correction procedure. At the opening of the BS/AI discussion, Dana Hanselman put forth that the bias correction, although not based on any external data, was effective, as shown by its success in bringing the survey modes and mean lengths at age into line. Mike Sigler agreed. Grant Thompson pointed out that in fact the model predictions matched the survey modes without the bias correction; the real benefit was a better fit to the age composition data. Dave Barnard supported model B1. Bill Clark commented that even Model B2 used the questionable bias correction to fit mean length at age along with length composition data, so it was also suspect. A majority of the team favored Model B1, while others supported Model A2, mostly due to concerns about the age data.

Kerim Aydin pointed out that the key issue that resulted in the very large number of model runs is the applicability of the age data. Tom Helser, AFSC, plans to complete a bomb radiocarbon study with IPHC within the next year to aid in resolution of the issue of whether to use the age data in the model.

The team adopted the ABC and OFL values produced by Model B1 without dissent. Two industry representatives suggested that the team adopt a rollover of the 2009 ABC in view of the projected sharp increase in biomass in 2011. Mike Sigler replied that model projections change each year as the assessment model is updated with new data. Grant Thompson clarified that the team could not adopt an ABC that is above the maximum permissible ABC produced by the accepted model.

Request to the assessment author The Team requested that the lead author analyze three alternative models for the September 2009 meeting: 1) current Model B1, 2) Model B1 with data-based estimates of aging bias from the radiocarbon study if available, and 3) Model B2 without mean length at age data and with maturity a function of length rather than age.

Request to the AFSC The team considered new operational policies to avoid the large number of models that have characterized the assessment for the last several years, which overloads the lead author and team each year. The team requests the AFSC adopt an earlier deadline than exists for public requests for specific model runs so that assessment author(s) have time to evaluate these model runs for consideration by the team at the September meeting. The team further requests the AFSC filter those proposals, along with SSC and Plan Team requests, for alternative cod models so as to schedule selection of final model runs at the September Plan Team meeting (and October SSC meeting). This would facilitate examination of likely preferred alternative model runs by the team each November (and by the SSC each December). This would better notify the public of likely outcomes for determination of ABC each cycle.

Sablefish See Joint Plan Team minutes.

Yellowfin sole Tom Wilderbuer summarized the results of the assessment. He addressed an observation that Henry Cheng made last year that the ratio of the estimated values of M (estimated outside the assessment model) and K for yellowfin sole were outside the range of usual ratios. The usual range of ratios are in the vicinity of M = 1.5K based on Jensen (1996). Tom investigated this and found that while outside this usual range of ratios, the values of M were appropriate for yellowfin sole.

The author reviewed the changes to the input data. The estimated catch for 2009 used in the assessment model now appears to be a slight overestimate, due to lower-than-expected actual catch taken late in the year. The survey biomass was down in 2009, as it was for all flatfish with the exception of Alaska plaice.

The split sex model was again applied this year. The author reviewed changes in the weights at age, noted the continued light exploitation of the stock, and the geographic distribution of catch over time. The decline in the shelf survey estimate of biomass may be related to the colder bottom temperatures. Among

various models examined, the author chose Model B, which uses 1978-2003 data for to estimate the spawner-recruit relationship, parameters for which are estimated within the model. This is the same model used in last year's assessment. The model provides estimates of OFL and ABC which are fairly close together.

Bill Clark suggested that using the complete time series of age data might improve the within-model estimate of M. Tom clarified that the whole time series of age data is used in the model. The 2003 year class is stronger than average.

Industry representatives asked whether the trawl survey might be overestimating abundance of yellowfin sole (e.g., due to herding by the survey trawl). This question arose because the fleet catch rates and size of fish have gone down in some instances in spite of the high survey estimates of abundance. Bill Clark pointed out that there was substantial research supporting the catchability (q = 1.1) of the survey trawl, along with a long time series of survey data suggesting good biomass estimates.

Request to the assessment author Although the team thinks that the abundance estimates are robust, it requested that the author determine if data (e.g., fishery CPUE) indicate decreasing fishery catch rates, how fishery catch rates compare to survey catch rates, and possible time and area influences on the rates.

Greenland turbot Jim Ianelli highlighted recent trends in Greenland turbot abundance indices, catch and quota. Quotas and catches generally remain at low levels, although trawl catch increased in 2008, apparently due largely to retention in the arrowtooth flounder fishery. The EBS shelf survey biomass was lower in 2009 than in 2008.

The 2008 and 2009 catch data were updated and added to the model, as were biomass and length composition estimates from the 2009 Eastern Bering Sea shelf survey.

The current assessment uses a new version of Stock Synthesis, and some differences between last year's assessment and this year's assessment are likely attributable to changes in the software. Considerable time was devoted to trying to "tame unruly selectivity parameters."

Difficulties in estimating selectivity parameters were attributed largely to differing sex ratios among gear types and fisheries incorporated into the sex specific model for Greenland turbot. The difficulties in estimating selectivity parameters were exacerbated by recent changes in the proportion of catch among gear types and in sex ratios among some fisheries. These difficulties were due partly to changes in the way certain fisheries were conducted as a result of implementing Amendment 80 in 2008 (e.g., percent of females in the trawl fisheries during 2006-2009 varied from 16 to 60%; see Table 5.3). For the first time in recent years more than 1,000 tons of Greenland turbot were taken in the trawl fisheries in the EBS and the Aleutian Islands in 2008 and 2009, respectively (see Table 5.3). Another example of the influence of Amendment 80 on fishing patterns, and retention of Greenland turbot is seen in the target trawl fishery for arrowtooth flounder, which has exhibited a marked increase in the catch and retention of Greenland turbot since Amendment 80 was implemented (e.g., estimated catch of Greenland turbot increased from 3 to 1,176 t between 2007 and 2008; Table 5.4). As another example of the changing nature of the fisheries the decreasing percentage of females in the longline fishery was highlighted (see Table 5.5).

The team noted that the proportion of trawl survey tows with Greenland turbot has been fairly consistent over time; however, the shelf trawl survey index of biomass has declined by 49% over the last four years. In recent years there have been some signs of younger fish entering the population, specifically the 2007-2008 year classes, with the 2008 year class (observed only once, in the 2009 EBS shelf trawl survey) currently estimated to be the largest since 1978. Catch increased slightly between 2008 and 2009.

New age data were incorporated into the model in the form of mean lengths at age. The addition of these new data, in combination with the implementation of the latest version of Stock Synthesis, resulted in increasingly lower weights at age for females, particular notable beyond age 14, compared to those used in the 2008 assessment.

The team noted year-to-year sex and size variability within an area. The sex-specific differences and sampling error made it difficult to estimate selectivity patterns and underscored the need for additional data to try to enhance the ability to estimate these parameters.

The author called attention to the large difference in model-estimated time series of age 1+ biomass between 2008 and 2009. There was substantial discussion about factors that might have contributed to this difference including the shift to SS3 (compared to SS2, used for the 2006-2008 assessments), and the addition of new data. Jim noted that the large historical removals (i.e., 1970s – 1980s) suggest large historical abundance. To reconcile this large historical catch, the model estimates high abundance. The author focused attention on the changing patterns of fishing mortality rates (sexes and gears combined) over time and unexpected sex-specific patterns of selectivity among various abundance indices.

In response to a question posed about the reason for using SS, Jim reported that SS2 and now SS3 have been used because historically the assessment has been a length-based assessment and SS lends itself well to assessments based primarily on length.

With reference to Fig. 5.8, the team members discussed with the author changes between the 2008 and current assessments in the fit of model results to the data for the shelf and slope trawl surveys and the longline survey. Comparing the fit from the 2009 model to 2008 model, the current assessment does not fit the slope trawl survey data as well, but fits the longline and shelf trawl survey indices better.

The team discussed the ABC recommendation at length. The team recounted that the 2009 ABC was set at 60% of the maximum permissible amount based on it being an off-year for a survey, stock structure issues, and data and modeling uncertainties. It was the first in a stair-step increase to the maximum permissible recommended by the Plan Team and supported by the author. Indications of better recruitment were mentioned during this discussion. The team discussed the differences in selectivity related to depth and the probable interplay between factors such as depth, sex ratio, and selectivity patterns (e.g., the 400-600 m depth range with an increased percentage of males). The team also discussed the possible, but unknown, influences of using SS3, although no contemporary comparison of model results based on the SS2 and SS3 programs was available. The model run with the updated data was conducted only with SS3, because it is the most current, and presumably best, version of the software. Because of the various uncertainties and the inability to differentiate influences of factors such as the changing sex-specific selectivities and the SS3 model itself, the team discussed the merits of using the ABC results of the model vs. using results from last year's model and rolling over the ABC from 2009 or the 2010 ABC projection from last year's model. Using a Tier 5 designation was also suggested for discussion. If the new model is accepted, the team observed that it would be inappropriate to use the 2009 ABC, since it is above the maximum permissible value for the 2010 ABC from the new model. The difficulties of identifying the sources of the differences between the 2008 and 2009 model results (new data and/or the use of the SS3 software), prompted a discussion about the merits and potential difficulties of introducing a revised modeling approach between the September and November Plan Team meetings. The team decided to accept the current model, noting the concerns identified above, and recommended the resultant maximum permissible ABC; it abandoned the stair-step approach that was adopted last year.

The team also discussed future ways to evaluate the performance and results from SS3, including comparing the results from SS2 using the same data in both models. The team could then evaluate possible reasons for changes in the results in the next assessment if the author used both versions of SS.

Jim Ianelli mentioned a master's student who was working on some early life history aspects of Greenland turbot, which could also improve model results when incorporated.

Arrowtooth flounder Tom Wilderbuer presented the assessment. With fixed female M=0.2, the run with male M=0.35 provides a reasonable fit to all the data components and is consistent with observations of differences in sex ratios observed from trawl surveys. The maximum shelf survey selectivity for males occurs at 0.93 for age-8 fish. The base model includes Aleutian Islands data again this year.

The estimated age 1+ biomass for 2009 from the 2008 assessment was 1,137,000 t, compared with an estimated age 1+ biomass of 1,120,000 t for 2010 from this year's assessment. The recommended ABCs for 2009 and 2010 (156,000 t) are the same in both assessments. There was no public comment. The Plan Team agreed with the authors' recommended ABC.

Northern rock sole

The rock sole stock is expected to remain relatively stable through 2011. The survey biomass is 75% of the 2008 value; however, good recruitment in 2001 through 2004 should increase the stock biomass at the beginning of the next decade. Because of new model maturity-at-length calculations, the ABC is going down.

The authors examined length-at-age for 8 yr old fish because there are three growth stanzas: 1982-91 (fastest growth), 1992-2003 (slowest growth), and 2004-08 (fast growth). Only northern rock sole and Pacific halibut have these distinct time-varying growth stanzas. Bill Clark noted that for Pacific halibut a year-by-year analysis was conducted on an immense data base to account the growth stanzas. For northern rock sole, male and female sizes diverge at maturity, ~age 6; then females grow more and attain larger sizes. Therefore, instead of keeping constant weight-at-age, the authors incorporated a 3-yr running average of length-at-age to capture time-varying differences in growth.

The model also was changed to include a new length-based relationship for maturity (Stark model) as it was shown to be more accurate than the relationship used in the past. The anatomical scans used in the past underestimate maturity at age. This change in the maturity ogive has an effect on productivity estimates. Since the maturity curve moved to the right, F_{msy} was lower, meaning that northern rock sole cannot be fished as hard.

Northern rock sole is a nicely behaved fishery. Currently, under amendment 80 the fish are mostly retained. It is mainly a high-value roe fishery occurring January through March. Though in some years there is a targeted rock sole fishery after the roe fishery (as per John Gauvin's comments), after that time it is usually bycatch from the yellowfin sole fishery.

The authors examined Model F and again showed that there is no relationship between water temperature and catchability (Q). This is done every year and has never been shown to have an effect. The bottom trawl survey represents where the fish really are, and therefore it is a good estimate of fish abundance. The authors and the Plan Team chose model A, which models abundance and life history relationship of each sex separately. There were good year classes in the 1990s. Female spawning biomass is going down now, but is expected to go up again in coming years.

This stock is classified as Tier 1. The Tier 1 status results in very close ABC and OFL values. This fishery would be hard to manage if it were fishing at capacity.

Flathead sole Buck Stockhausen presented the results of the 2009 stock assessment. The current model was updated with the 2008 fishery catch data and the most current 2009 fishery catch data. Recent trends indicate a decrease in catch this year with a retention rate of 90%. Catches of prohibited species are also decreasing. Recent fishery patterns were similar to 2008. There was increased presence of Bering flounder due to better recognition of the species by onboard observers in 2009 relative to previous years. Overlap of Bering flounder catch with flathead sole catch occurred west of the Pribilof Islands and south of St. Matthew Island. The size distributions of the catches of male and female flathead sole in 2009 have remained unchanged for the last several years. Model predictions indicate a strong 2001 year class.

The survey estimated biomass indicates a 21% decrease from the 2008 survey. This follows the same temporal trend for most of the Bering Sea flatfish. Survey size frequencies were very similar to the fishery size frequencies. Mike Sigler noted that the colors used in the size frequency charts made it hard to compare male and female fish. Buck noted that there is an indication of a strong 2001 year class and a decreased 2002 year class followed by a stronger 2003 year class.

The assessment model is the same as last year. This is a Tier 3 stock. Environmental effects on recruitment will be addressed in future models. This year's assessment looked at 3 models involving differing temperature dependent catchability (TDQ): 1) a base model including the same year TDQ, 2) a model with no TDQ, and 3) a model including TDQ lagged by 1 year. Based on AIC the lagged TDQ model had the best fit. There is no biological mechanism to explain this result. This result is discussed in Appendix B in the assessment chapter. Buck's speculated that last year's temperatures may affect where the fish end up in the fall. The three versions of the model showed near identical results for total and spawning biomasses. Based on fits to the survey data the non-lagged TDQ model was selected for the assessment.

Results from the model indicate a decline in total biomass over the last few years and possible good recruitment from the 2001 and 2003 year classes. The control rule plot does not indicate problems. The results from this year's model assessments are nearly identical to results from the last few years. Buck briefly talked about correlation between recruitment and the ocean current direction and an indication of good recruitments for 2001-2003 and 2006, so-so recruitment in 2004, and poor recruitment in 2005. Based on model projections this stock is not overfished and is well above B_{msy} as far out as 2022. The ABC and OFL for 2010 are 69,200t and 81,800t, and for 2011 are 68,100t and 72,500t, respectively.

The Team agreed to keep the base model and to accept the ABC and OFL values from that model. John Gauvin reiterated comments that the survey and assessment were overestimating the numbers of flatfish including flathead sole, based on the observations of vessels in the fisheries and their difficulty finding large flatfish and declining CPUEs. The Team recommended that the author compare survey and fishery catch rates. Allen Haynie suggested focusing on spatial and temporal shifts in fishery catch rates.

Alaska plaice This is only assessment that did not have split-sex model in past years. The SSC and the Plan Team requested development of a split-sex model. September was the first time a split-sex model was presented. The authors recommended, and the Plan Team concurred, with using this approach. The analysis was included in this year's assessment. The total biomass numbers are very different now because of the split-sex model and because good year classes are coming in. However, the ABCs are about the same because of the differences in survey selectivity between the combined sex used last year and the split-sex model used this year.

There was a slight increase in survey biomass in 2009. The model does not estimate M, but it may be feasible. Good data exist, including survey age composition.

Other flatfish complex Tom Wilderbuer presented the updated other flatfish assessment. The biomass of other flatfish is primarily starry flounder, longhead dab, rex sole. Lacking Aleutian Islands trawl surveys, the other flatfish biomass was extrapolated by regression for this region.

From 1982 to 2009, there has been a reverse in trends of species caught. Originally it was composed mostly of longhead dab, but now it is mostly starry flounder. A few butter sole are captured in the rock sole fishery, but the EBS is the northern extent of their range, which basically is only as far north as the GOA. In the past the SSC had been concerned about catches of butter sole, but the Plan Team determined that it is not a concern at this time. The discussion of butter sole prompted a discussion about which specific species to retain in the Other Flatfish category. For example, there is little to no information and few Dover sole in BSAI. However, the basic work for the FMP and EFH has been done; therefore the Plan Team recommended that all species be retained in the assemblage. Species that are now at the northern extent of their ranges may be an issue in the future if their distribution changes.

Recommendation:

The Plan Team recommended that the time interval of survey biomass estimates used for calculating the Tier 5 recommendation be examined. Currently the most recent 3 surveys are used.

Blackspotted/Rougheye Rockfishes Paul Spencer presented this off-year update assessment. Catch was much less than ABC. The projection model was updated with a complete catch for 2008 and estimates for 2009 and 2010. The Team accepted the authors' recommendation for ABC and OFL for 2010 and 2011. The Plan Team encouraged the authors to apply the new stock structure template to the blackspotted/rougheye rokfish complex.

Shortraker rockfish Paul Spencer presented the off-year update assessments for all rockfishes. Shortraker rockfish is in Tier 5 and uses a surplus production model. This model was not updated for 2010 because there was no new survey information. Catch was much less than ABC. The Team accepted the authors' recommendation for ABC and OFL.

Pacific Ocean perch Catch was about 80% of ABC. The projection model was updated with complete catch for 2008 and estimates for 2009 and 2010. The Team accepted the authors' recommendation for ABC and OFL for 2010 and 2011. The Team continues to recommend examining modeling fishery-selectivity as constant within blocks of time that might correspond to significant changes (i.e., switch from foreign fishery to domestic fishery, changes in depth distribution, etc.).

Northern rockfish Catch was much less than ABC. The projection model was updated with complete catch for 2008 and estimates for 2009 and 2010. The Team accepted the authors' recommendation for ABC and OFL for 2010 and 2011. The Plan Team encouraged the authors to apply the new stock structure template to the northern complex.

Other rockfish The other rockfish complex is in Tier 5. Because there was no new survey information, the estimates were the same as last year, except that dark rockfish have been removed from the complex and is now managed by the State of Alaska. Catch was much less than ABC. The estimates for 2010 were slightly smaller because of the removal of dark rockfish. The Team accepted the authors' recommendation for ABC and OFL.

Atka mackerel Sandra Lowe presented an update of the Atka mackerel stock assessment. There were no changes in the assessment methodology. The most recent bottom trawl survey of the Aleutian Islands was conducted in 2006. Consequently, all new data added since 2006 has been catch and fishery age data.

Atka mackerel abundance is decreasing from a peak supported by a series of strong year classes (1999-2002), but remains above $B_{40\%}$. In this year's assessment, addition of the 2008 fishery data changed our perception of the magnitude of two recent year-classes. The 2004 year-class decreased relative to last year's assessment, while the 2006 year-class more than doubled. This is not surprising considering that the last survey was in 2006. Atka mackerel mature faster than they are selected by the fishery, and in this year's assessment, the fishery selectivity curve indicated a further move to older more mature fish (evidence of the strength of the early 2000s year-classes). This resulted in an increase (6%) in the recommended fishing mortality rate. However, this year's assessment indicates that Atka mackerel are somewhat less abundant than estimated last year, though still above target levels ($B_{2010} = B_{47\%}$). This resulted in an ABC recommendation that is down 12% from last year. The probability that the stock will be below $B_{20\%}$ is near zero. Atka mackerel is not overfished nor has it been subject to overfishing.

The 2009 Steller sea lion pup survey indicated that pup production in the western and most of the central Aleutian Islands (all of 543 and most of 542 west of 178°W) continues to decline. In the eastern area between 170-178°W (all of 541 and a small part of 542), pup production in 2009 was slightly higher than that in 2005. The Atka mackerel fishery is prohibited from fishing inside sea lion critical habitat east of 178°W, while up to 60% of the 542 and 543 TACs can be taken within critical habitat west of 178°W.

The Team recommends that a bottom trawl survey of the Aleutian Islands region be conducted in 2010.

Sharks Jon Heifetz reported the assessment update. This presentation was prepared by Cindy Tribuzio who participated in the meeting by phone. There was a new biomass estimate from the trawl survey but the survey estimate is not used to estimate abundance. Catch data was revised to correct an error in the

Catch Accounting System, but the effect of revised estimates in the BS/AI region was minor. The authors had calculated Tier 6 ABC and OFL for two reference time periods, 1997-2007 and 1997-2008. The team adopted the reference points for 1997-2007, as recommended by the SSC.

Jon showed the results of two methods of estimating shark bycatch in the halibut fishery using IPHC setline survey data. One method uses all the data to estimate shark catch per hook. The other attempts to select a subset that better resembles commercial sets by using only sets that produced a halibut CPUE that ranks in the top third of all sets. This second method conforms to IPHC methods for estimating commercial discards of sublegal halibut. The two approaches result in large differences in estimates.

Skates Olav Ormseth presented the skate assessment using the same assessment methodology used in 2008. The Team accepted the model and the authors' recommendation for Tier 3 management for Alaska skates and Tier 5 management for "other skates." The Alaska skate model output for 2009 is very similar to 2008. The total skate biomass estimate from the trawl surveys has been declining since the mid-2000's. Pacific cod longline and flatfish trawl fisheries have the largest incidental catches. Skate catch has increased in the pollock fishery, as the fleet targets older populations of pollock which are found closer to the bottom. Area 521 (outer shelf) continues to have the highest skate catches. The author also discussed possible explanations for the model underestimating length at age for older skates. For 2010 the author plans to revise the Alaska skate model using Stock Synthesis 3 as it has more flexibility in modeling growth.

Octopus Liz Conners summarized the octopus chapter. She reported that species identification by observers continues to improve. The 2009 shelf survey octopus biomass was 81% comprised of *E. dofleini*. The 2009 catch is low as a result of the low effort in the pot catcher-vessel Pacific cod B season fishery. The Team concurred with last year's approach for setting OFL and ABC using a Tier 6 average. The Team also recommended that the author use 1997-2008, the same years used for the shark assessment for the catch history time interval to set OFL and ABC. The author presents a Tier 5 alternative, but does not recommend its use until a more realistic estimate of biomass and natural mortality are available. In 2008, the joint Plan Teams endorsed the use of gear-specific discard mortality rates in catch accounting for octopus. The Team continues to encourage studies and/or data collection to document octopus mortality rates. These could be included in the proposed analysis for moving octopus either into its own specification category or into the forage fish category.

Surveys The Team strongly supported the completion of the AI trawl survey in 2010, and noted that a number of assessments rely on the survey for biomass estimates for stocks that concentrate in that area (e.g., Atka mackerel, rockfishes).

Essential Fish Habitat Stock assessment authors reviewed current FMP text relating to EFH for each species or species complex and reported new habitat information available since the 2005 EFH EIS. The Plan Teams were requested to assist the Council in two ways. First, the Plan Team was asked to indicate whether the author's review is complete, and consider author recommendations on including new information since the 2005 EFH analysis. Second, the Teams were asked to assist the Council with its evaluation of whether the new information warrants Council action to initiate an FMP amendment(s).

The Teams reviewed brief summaries of author recommendations on potential HAPC or EFH conservation recommendations and summaries of proposed revisions to FMP text. The Team concurred with author recommendations for nearly all species/complexes. The team did not concur with the author's recommendation to remove the EFH description for dover sole from the other flatfish assemblage (as noted above). The team discussed Paul Spencer's recommendation to delete the EFH text in the BSAI Groundfish FMP on yelloweye rockfish in more detail. He reported that this species is at the end of its range in the BSAI and are seldom encountered in the fisheries or surveys; further, there was little EFH information included in the EFH text to delete. Jane DiCosimo responded that if the EFH text was removed because the species does not occur in the BSAI, then the species should be removed from the species list in the other rockfish assemblage for the same reason. Bill Clark suggested that a decision

should be made first whether the species should be included in the assemblage, and then the EFH text issue should follow that rationale. After the meeting, Paul provided additional information supporting his recommendation to delete the EFH text, but the team did not readdress this issue.

The Team confirmed that the EFH text review was completed and would require FMP amendments and recommended that Council action for nearly all species/complexes as a low priority, except for EFH text amendments for sablefish, Atka mackerel, and skates (additional detail is provided in the attached table). The Team did not provide additional recommendations to the Council on potential candidate sites for HAPC, recommendations for EFH conservation or enhancement.

Species/ complex as identified in BSAI SAFE report	Species/ complex for which EFH is defined in BSAI FMP	Plan Team review			
		Is review complete?	Recom-mendations for Council action		Other recommendations
			FMP amendment?	Priority?	
pollock	pollock	Y	Y	L	
pacific cod	pacific cod	Y	Y	L	
sablefish	sablefish	Y	Y	M*	I Information added to the EFH description for early juveniles; general information sections; minor updates to the timing of the spawning season; recent fishery information; updated literature sections; ongoing studies identified; research priorities for sablefish identified; HAPC recommendation: small, unobtrusive research closures in areas of extensive and intensive bottom trawling to see whether EFH is being adversely affected; EFH conservation recommendation: more research on the recovery rates of sensitive habitat features and their role in the survival and growth of the early juvenile life stage of sablefish and other species that inhabit those areas.
yellowfin sole	yellowfin sole	Y	Y	L	
greenland turbot	greenland turbot	Y	Y	L	
arrowtooth flounder	arrowtooth flounder	Y	Y	L	
Northern rock sole	rock sole[1]	Y	Y	L	
flathead sole	flathead sole	Y	Y	L	
Alaska plaice	alaska plaice	Y	Y	L	
other flatfish	Rex sole	Y	Y	L	
	dover sole	Y	Y	L	
Pacific ocean perch	Pacific ocean perch	Y	Y	L	
northern rockfish	northern rockfish	Y	Y	L	

[1] EFH is defined generally for rock sole, not specifically for northern rock sole, and the life history section of the FMP text is written for southern rock sole.

Species/ complex as identified in BSAI SAFE report	Species/ complex for which EFH is defined in BSAI FMP	Plan Team review			
		Is review complete?	Recom-mendations for Council action		Other recommendations
			FMP amendment?	Priority?	
shortraker rockfish	shortraker/ rougheye rockfish	Y	Y	L	
blackspotted/ rougheye rockfish		Y	Y	L	
other rockfish	yelloweye rockfish	Y	Y	L	
	dusky rockfish	Y	Y	L	
	thornyhead rockfish	Y	Y	L	
atka mackerel	atka mackerel	Y	Y	M*	New information available on: distribution of eggs (nesting sites); habitat, biological, and prey associations for various life history stages; prey information; fishery information; literature references added (substantial); minor change to evaluation of fishing effects text to indicate that stock no longer at peak spawning biomass, although biomass is still relatively high; several research priorities; No indication of substantial changes in fishing activity since the EFH EIS that would affect Atka mackerel EFH
squid	squid	Y	Y	L	
other species	octopus	Y	Y	L	
	sharks	Y	Y	L	
	sculpins	Y	Y	L	
	skates	Y	Y	M*	added info on skate nursery areas and suggested upgrading EFH info level for "eggs" from 0 to 1; updated fishery information; updated contact information; text regarding potential impact of bottom gear on skate nursery habitat; updated relevant literature; research priorities for BSAI skates identified potential for HAPC designation for skate nursery areas, which may affect fishery management
forage fish	forage fish complex	Y	Y	L	

* medium ranking – more information that low ranking EFH amendments, but would **not** warrant a separate, higher ranking amendment package

Compilation of recommendations to authors

- **AFSC stock assessment authors** should conduct a workshop to develop guidance regarding how to decide when a stock qualifies for management under Tier 1.

- The **Pacific cod** assessment should analyze three alternative models for the September 2010 meeting: 1) current Model B1, 2) Model B1 with data-based estimates of aging bias from the radiocarbon study if available, and 3) Model B2 without mean length at age data and with maturity a function of length rather than age.
- The **yellowfin sole** assessment should determine if data (e.g., fishery CPUE) indicate decreasing fishery catch rates, how fishery catch rates compare to survey catch rates, and possible time and area influences on the rates.
- The **flathead sole** assessment should compare survey and fishery catch rates; another suggestion was to focus on spatial and temporal shifts in fishery catch rates.
- The **other flatfish** chapter should examine the time interval of survey biomass estimates used for calculating the Tier 5 recommendations.
- The authors of the **blackspotted/rougheye rockfish** complex should apply the new stock structure template.
- The authors of the **Pacific ocean perch** assessment should model fishery-selectivity as constant within blocks of time that might correspond to significant changes (i.e., switch from foreign fishery to domestic fishery, changes in depth distribution, etc.).
- The authors of the **northern rockfish** complex should apply the new stock structure template.

Next meeting The Team identified several issues, along with others yet to be identified, for the BSAI Plan Team agenda in September 2010:

1) review of spatial management approaches for some rockfish species;

2) issues related to proposed ACL FMP amendments to manage sharks, sculpins, octopuses, grenadiers, and GOA squids;

3) report of workshop on Tier 1 management (could be scheduled during joint team meeting)

4) report of economic subgroup (could be scheduled during joint team meeting)

5) revise summary assignments for November 2010.

Items to be scheduled for a joint discussion with the GOA Plan Team are listed in the November 2009 Joint Team minutes.

Attendance

Agency: Steve Whitney, Obren Davis, Jim Ianelli, Steve Barbeaux, Karla Bush, Craig Faunce, Dana Seagars, Lisa Rotterman, Scott Miller, Steve Davis, Bill Wilson, Neal Williamson, Kalei Shotwell, Stephanie Zador, Patrick Russler, Dan Nichols, Peter Munro, Bob Lauth, Taina Honkalehto, Phil Rigby, Chris Lunsford, Anne Hollowed, Pat Livingston, Ken Goldman, Jennifer Stahl, Karla Bush, Diana Evans, Jack Turnock, Lou Rugolo, Tom Wilderbuer, Teresa A'Mar, Kaja Brix, Beth Matta, Buck Stockhausen, many others. Via Webex :Doug Demaster, Melanie Brown, Cindy Tribuzio, Cara Rogveller, Dave Clausen, Chris Oliver.

Public: Frank Kelty, Jim Hamilton, Dick Curran, Tory O'Connell, Leonard Herzog, Kenny Down, Julie Bonney, Gerry Merrigan, Jan Jacobs, Donna Parker, Dave Wood, Tom Gemmell, Brad Warren, Paul Peyton, Lori Swanson, John Gruver, John Gauvin, Ed Richardson, Paul MacGregor, Anne Vanderhoeven, Jon Warrenchuk, Karl Haflinger, Tim Tuttle, Gary Stauffer, Jim McManus, Ed Melvin, Brent Paine, Glenn Reed, Brad Warren, Tim Thomas, Dave Fraser, Neil Rodriguez, Larson Hunter, Mike Szymanski, Dave Benson, many others

The Team adjourned by 4 pm on Thursday, November 19, 2009.