

Gulf of Alaska Plan Team Minutes

The meeting of the Gulf of Alaska groundfish Plan Team convened on November 15th at 9am at the Alaska Fishery Science Center, Seattle, WA.

Members of the GOA plan team in attendance included:

Jim Ianelli	AFSC REFM (GOA co-chair)
Diana Stram	NPFMC (GOA co-chair)
Sandra Lowe	AFSC REFM
Jeff Fujioka	AFSC ABL
Jon Heifetz	AFSC ABL
Robert Foy	UAF
Nick Sagalkin	ADF&G
Tory O'Connell	ADF&G
Tom Pearson	NMFS AKRO
Ken Goldman(by phone)	ADF&G
Sarah Gaichas	AFSC REFM
Bill Clark	IPHC
Theresa Tsou	WDFW

Ward Testa (NMML) was unable to attend. Approximately 15 state and agency staff and members of the public also attended. Names of attendees are included in the Joint Plan Team minutes.

The team approved the agenda with changes as noted during the Joint Plan team meeting. The agenda is attached to the Joint Plan Team meeting report.

GOA Pollock

Martin Dorn presented an overview of the pollock assessment. The assessment is an update of last year's assessment with no model configuration changes. New data included in the assessment are 2005 catch and age data from the fishery, the 2006 Shelikof EIT survey biomass and age composition estimates, and 2006 ADFG trawl survey biomass and length composition estimates. An overview of catch and incidental catch (excluding prohibited species (PSC) information was presented).

The team discussed issues surrounding PSC reporting and how they may best be included in assessments. Authors noted that PSC values are stored in a different database from standard catch statistics. The team noted that it would be useful to have catch information for targets, non-targets and prohibited species catch in a commonly accessible form for assessment authors to summarize. Jim Ianelli noted that there is a national initiative to evaluate statistical estimates of bycatch species. While the North Pacific groundfish fisheries are widely held as having a model observer program and method of fisheries management, the fact that the current catch-accounting system lacks statistical formalism results in a low "score" relative to other areas of the country. Initial reports from this project note that a "one-size fits all" approach may be inappropriate. However, it is clear that development of statistical approaches for the catch-accounting system is required.

Results from the GOA pollock model indicate that the 2004 year class appears to be above average. It was noted that the age 0s observed in 2005 that did not appear as age 1s in the 2006 Shelikof Strait EIT survey. The age 1s however were prevalent in the Shumagin area survey in 2006. Martin questioned to what extent mapping of age 0s could be done by year. Chris Wilson noted that only two years of data are available thus far. The summer EIT surveys provide additional distributional patterns that were not available in previous years. Summer bottom trawl estimates of age 1 fish do not seem to correlate as well

with recruitment as the EIT survey does. The team discussed the example of the 1995 year class which had not shown up in the EIT survey but eventually recruited to the trawl survey in later years. To what extent this could be representative of aging error is unknown but seems to be a consistent pattern unlikely to be solely attributed to aging error.

A strong 2005 year class was observed in the Shumagin area EIT survey in 2006. Because the Shumagin survey time series is short, this is not attributed as a strong year class at the population level at this point. Martin discussed the broadscale patterns of inter-annual variability in age composition by area. Some modeling work is proposed (IBM) which may help to explain these dynamics. Martin noted that the predictive capacity is somewhat limited to the early life history stages for pollock. Spawning appears to be occurring in areas outside of Shelikof Strait and the transport characteristics of these sites are being examined to help explain the structural mechanisms of these sub-populations.

All survey indices show a consistent relative decline (Shelikof EIT, ADFG, and NMFS bottom trawl). The teams discussed the relative progression of year classes and fishery catch characteristics. The potential unfished state of year class diversity was discussed. The utility of exploring the indices of population status (e.g., the Shannon-Weiner index applied to age classes) would be more useful if there were metrics to compare with (e.g., from an unfished population and/or a population fished at the target harvest rate).

The team discussed the estimates of natural mortality and the degree to which they reflect current predation levels. The author chose to use a lower estimate of natural mortality to be precautionary. The team discussed the management strategy evaluations that are underway and suggested that they include alternative control rules, e.g., to preserve age structure, and include alternative natural mortality estimates. The team was encouraged by the progress being made on the MSE and in particular, the move to include multi-species interactions. They look forward to providing feedback on this work.

The team discussed the proportion of total spawning population indexed by 2003-2006 winter EIT surveys. Martin noted that in recent years the model overpredicts the survey estimates. Julie Bonney questioned to what extent this is due to predicting just the Shelikof region, and if the fraction in Shelikof is not constant over time then it would account for the lack of fit. However if all areas surveyed are included the total biomass estimate it is very close to the aggregate amount. Martin noted that the aggregate biomass is compared in the assessment, however the overall aggregate index is not included in model fitting. Limitations to using this aggregate index include the short time period and region covered.

The fact that there is consistency between the overall assessment results and the aggregate values provides additional justification for the ABCs as recommended. The team encouraged continued research into the distribution of spawning pollock outside of the Shelikof region with the hope that someday it may be explicitly included.

The team discussed the catchability coefficient in the model. The model estimate of Q has consistently predicted 0.8 but the Q utilized in the model remains at 1. The results would be notably less conservative if a lower Q value were incorporated. The team discussed the fishery and survey selectivity estimates. The team discussed the change in fishery age composition data indicating some aberrant years where a high proportion of 9 yr olds are caught with no ten year olds and what the implications are regarding the selectivity values used. The results from the MSE work might aid in resolving this. Martin also indicated that extending data out to 15 year-olds might provide additional information. It was suggested that it might be useful to explore combining ages 9 and 10 and examining the potential interaction with the selectivity and catchability estimates, particularly as relates to the standard likelihood profile that is done for survey catchability. The bottom-trawl survey selectivity in the EBS pollock assessment peaks around the same age-range but then drops off slightly and is constant for ages 11-15. Martin indicated that the selectivity pattern when the results were extended out to age 15 was strongly dome shaped. The older fish tend to be more nearshore and thus less available to the NMFS survey. The selectivity used for reference point analysis is an average from 1992 onwards. The team noted that MSE should be used to

explore alternatives, perhaps by evaluating different ABC formulations from a different range of selectivity curves or from specific years (e.g., the most precautionary). It would also be useful to examine how much selectivity change is driven by year classes, and to examine how selectivity differs depending upon the age-structure of the population. This was considered important to include in the operational model of the MSE.

Members of the public questioned whether the temporal shift due to SSL protection measures impacted selectivity given that some of these time periods were previously unfished. They believe that they are currently fishing different segments of the population. Martin noted that spatial and temporal management has occurred since the 90s with pre and post spawning fishing seasons. He indicated that he has considered splitting fishery selectivity by pre and post spawning fishery.

The currently estimated decline in spawning biomass is projected to be short-lived. The potential for future recruitment is cautiously optimistic but concerns remain regarding the precision of these estimates and external processes affecting static assumptions (e.g., high predation rates versus assumed constant natural mortality). The estimated 2006 age composition is similar to that projected for 2006 in the 2005 assessment for all but the 2 year olds. A major change however is that the estimate of age 2 recruitment is now based on survey data (previous "estimates" were based on average levels).

Projections for spawning biomass improve once the contribution from the 2004 year class is included in the next several years. 2007 shows a substantial (>20%) drop in ABC and is consistent with previous year's predictions. Team members questioned how much of the subsequent increase in 2008 and beyond is due to observed year class strength or use of average year class strength. It was noted that the projected increase is also due to average recruitment assumption. The recent (2004) year class was included in the projections.

The team discussed the SSL measures control rule and the author's recommended control rule. Preliminary MSE results indicate that harvest control rule is effective at maintaining appropriate stock size and that the assessment model is adequate for evaluating the population trends when true stock dynamics are similar to those assumed by the assessment model. Additional analyses will focus upon the impact of other factors such as climate forcing.

Sarah Gaichas reviewed Figure 9 and figure 7 from the ecosystem SAFE and Figure 7 in ecosystem SAFE and provided the team an overview of recent work estimating the relative impact of fishing mortality and predation mortality compared with stock production. Preliminary ecosystem modeling results indicate that while fishing mortality on GOA pollock has been generally low, fishing mortality plus predation are exceeding the annual production of the population. This suggests that leaving conservatism built into the assessment (e.g., with $Q=1$) would be wise for the near-term until additional information is available to suggest otherwise.

Team members requested additional information regarding whether size-specific predation is included. Sarah noted that currently they are modeling the adult biomass only thus would not be able to ascertain specifics of consumption by age. The results show aggregated production over the whole time series as well as production estimates over a single year. The team noted that the combined mortality over time further justifies the relative conservatism necessary in the fishing mortality rates for GOA Pollock. The team discussed the stock assessment characteristic of F rates scaling in conjunction with the M used in the assessment, given that this is a measure of production. The ecosystem analysis provides an alternative measure of natural mortality due to predation, but simply inserting this much higher natural mortality estimate into the pollock stock assessment is not recommended as it would suggest a less conservative F rate within the single species assessment. Ecosystem model results are consistent with a declining stock. Questions were posed regarding total production in the GOA. It was noted that it is difficult to use this modeling approach to address lower trophic level impacts. Suggestions from the team included adding error bars to the analysis as well as extending the time series. Team members questioned how arrowtooth biomass matches with this trend. Arrowtooth account for a lot of juvenile mortality and when combined

with halibut and cod account for the majority of adult mortality. Suggestions were made to annotate results to show how mortality changes by year.

The SEO Pollock biomass assessment shows consistently different results than for the rest of the GOA in that older fish are largely absent from the survey age composition data. This population is not fished.

The team discussed the new apportionment scheme presented in the assessment (as an appendix). The 4 survey was utilized for a winter apportionment table by area using a 4 survey average. This new scheme focuses more on more recent data rather than the entire time series. The 1990 Karp survey still contributes to the present apportionment scheme. The apportionment scheme is a part of the SSL protection measures. Ken Stump noted that temporal and spatial management of the fishery was for stock protection purposes and not solely for SSL measures. The Authors and Team agreed that uncertainty in stock structure was played a role in apportioning pollock ABCs.

Julie Bonney commented that there is no survey in 630 on the east side of Kodiak and expressed concern if funding is lost and surveys are cut back. How is consistency to be maintained in methodology of apportionment? Martin noted that the acoustics group may survey these sites but the budget outlook is uncertain. Mike Guttormsen agreed and noted the intent to survey them in the future. Martin noted that he would like the apportionment to be dynamic and maintain the ability to modify it annually based upon improved survey estimates. There is the need to build some survey record for a new site prior to inclusion in the apportionment scheme.

The apportionment scheme for this year changes the winter apportionment and reflects an increase in area 610. The increase in 610 comes primarily from 620. Martin considered that this is more reflective of the current biomass distribution. The team discussed the difficulty in establishing these apportionments to reflect the recent information, noting that ideals for management purposes are not always reflected in the available information. Concerns that budget impacts might be even more apparent on survey effort in the GOA would exacerbate the situation.

ABC recommendations

The team approved the author's recommended ABCs, OFLs and apportionments are presented in the assessment for 2007 and 2008. The team feels that reflecting the most recent information in the apportionment is important.

Arrowtooth flounder

Sarah Gaichas provided an overview of arrowtooth flounder food habits investigations that have been on-going. Diets of arrowtooth in the Bering Sea appear more dependent on pollock than arrowtooth in the GOA. Bob Foy discussed indications from recent studies of their switching mechanism between dependence on capelin and pollock in diets. Food habits data are from the late 90s however indications are that this is likely similar to data in recent years. The team noted that more recent information for food habits data would be useful to compare with the late 90s information in order to better investigate to what extent arrowtooth food habits are constant over time. Team members questioned the trend in cannibalism by species given the large population increase for arrowtooth. Sarah noted that additional information is planned for incorporation in the arrowtooth assessment next year.

Buck Stockhausen presented an overview of the executive summary of the GOA arrowtooth flounder assessment. Catch information for arrowtooth since 2004 were shown. The projection model was run with updated catch information. The ABC was very similar to the previously projected ABC for 2007. Nick Sagalkin comment as to why the arrowtooth ABC in 2006 decreased despite the increase in biomass. This was noted to be due to model configuration issues. The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Plan team discussed the issue of the apparent discrepancies between the end date of catch used in the projection versus the summary of catch used in the intro sections. The team noted that the catch summaries in the intro will use a different date than the catch information utilized in the projections but the summary sections will note this difference.

Arrowtooth MRA proposed amendment:

Diana Stram provided an overview of a proposed regulatory amendment to modify the MRAs for arrowtooth flounder. Arrowtooth is the only fishery with MRAs set to 0, which was originally established with the intent to protect against the use of the species as a ballast for retaining other species. The modification of the MRAs would make arrowtooth MRAs consistent with those of other fisheries and allow for retaining bycatch of those species in a developing arrowtooth-specific fishery. The team noted that skate catch in the arrowtooth fishery is not very high, unless the fishery suddenly begins to retain more. The TAC for arrowtooth in 2007 will likely increase to meet demand. This results in slightly higher catch in the Central GOA but still remains constrained by halibut PSC limits. Julie Bonney noted that the trade-off in targeting arrowtooth would be in less rex sole and flathead sole given that halibut PSC is apportioned by complex. She noted that the fleet did more pelagic fishing with the rockfish pilot project on line thus more deepwater flats were available. The appropriate amount for the aggregated rockfish MRA is still being evaluated. Team members commented that it would be useful to examine what the average rockfish catch would be, and that 2% might represent a more intrinsic rate. The team is in favor of increased targeting arrowtooth flounder and felt that the MRA adjustment amendment is appropriate in so far as it decreases the necessity of regulatory discards.

Flathead Sole

Buck Stockhausen presented an overview of the executive summary of the flathead sole assessment. Catch distribution for the last 3 years were presented. Catch was noted to be much less than TAC. Area apportionment percentages presented were consistent with 2006. The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Rex sole

Buck Stockhausen presented an overview of the executive summary of the rex sole assessment. Catch history and catch distribution were presented. Team members questioned to what extent the distribution of catch is a function of effort or an indication of a true distributional change. Julie Bonney noted that shallow flats tend to be more shoreside thus catches are closer to shore, but catch of rex sole would be tend to indicate more of the true abundance rather than a reflection of effort. There was a higher catch for rex sole this year than in previous years, concentrated primarily around Kodiak. Area apportionments were based on the 2005 survey biomass. The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Dover sole

Buck Stockhausen presented an overview of the executive summary of the Dover sole assessment. Catch history and distribution information were presented. He noted the decreasing catch in recent years. There was a slight increase but limited change in ABCs for 2007 and 2008. The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Other flatfish

Buck Stockhausen presented an overview of the executive summary of the other flatfish assessments. Catch history and distribution information were presented. The other flatfish summary includes deepwater and shallow water complex summaries. Deepwater flatfish includes Dover sole as well as deep sea sole

and Greenland turbot. Thus, OFLs and ABCs for deep water flats include the contribution from deep sea sole and turbot (Tier 6 species) combined with Dover sole. The shallow water complex includes species in both Tiers 4 and 5.

The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Pacific Ocean Perch

Kalei Shotwell presented an overview of the executive summary of the Pacific ocean perch assessment. Model projections were updated with new catch for the age-structured assessment. There was a 21% increase in catch in 2006. The ABC increased slightly for 2007 and 2008. Julie Bonney noted that the CPUE for POP was extremely high this year. It was a 5 day season, with abnormally high CPUE for both POP and PSR. Phil Rigby questioned to what extent there would be a market for a higher ABC for POP. Julie Bonney noted that the pilot program for rockfish begins in May of 2007.

The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Rougheye Rockfish

Kalei Shotwell presented an overview of the executive summary of the rougheye rockfish assessment. Model projections were updated with new catch for the age-structured assessment. There was a 9% increase in catch from 2005 to 2006. OFLs and ABCs reflect a small change from the previous year in the model projection. Two appendices are included in the report this year. Appendix A evaluated a sensitivity analysis in the trawl and longline abundance indices. An expanded analysis of this will be included for next year's assessment.

Appendix B provides a literature review of rougheye rockfish species. A second species of rougheye rockfish has been genetically identified and the proposed name is the blackspotted rockfish. There is substantial overlap in the distribution between the two species with rougheye rockfish extending farther south along the Pacific Rim and blackspotted rockfish extending into the western Aleutian Islands. A difference in depth distribution may exist. Preliminary discussions with researchers from field experiments suggest that rapid and accurate identification of each species was difficult. Studies should be developed to assess whether the two species have significantly different life history characteristics to determine the feasibility of distinct population assessments. Methods need to be developed and tested to enable field identification so that catch accounting can occur.

The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Shortraker and other slope

Kalei Shotwell presented an overview of the executive summary of the shortraker and other slope rockfish assessment. There was a marked increase in catch of shortraker from 2005 to 2006 and a smaller increase in other slope rockfish catch over the same time period.

The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Northern rockfish

An overview of the assessment was provided by Kalei Shotwell. A full presentation of the assessment was provided by the lead assessment author in September. Nine model configurations were examined. The team agreed with the assessment author's recommendation of the model 1 configuration for maximum permissible ABC recommendations. There was a decrease in overall biomass due to model changes as noted in September. The team again recommends that the study on maturity at age which has been completed but not yet published be made available to assessment authors for use in the assessment.

The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Pelagic Shelf Rockfish

Kalei Shotwell presented an overview of the executive summary of the pelagic shelf rockfish assessment. Updated projections for dusky led to a minimal increase in the 2007 estimate for ABC but a large increase in 2008. A section was added to the executive summary regarding the progress for proceeding with removing dark rockfish from the complex (and FMP) via a plan amendment. Julie Bonney questioned why the PSR fishery was re-opened in fall. Tom Pearson noted that it was to accommodate fixed-gear fishery for targeting of PSR, primarily the jig fishery for duskies and dark rockfish. Julie noted that the re-opening for PSR resulted in the TACs for POP and northern rockfish being exceeded and caused higher discards of northern and POP by trawl gear.

The team approved of the OFLs, ABCs and apportionments as presented for 2007 and 2008.

Demersal Shelf Rockfish

Tory O'Connell reviewed the executive summary for DSR. Sections were added on full retention in response to SSC comments as well as an overview of how halibut fishery bycatch is now estimated and on recreational catch of DSR. Tory reviewed the dichotomy between state and federal rules on full retention, noting that current treatment of overages has changed.

For estimation of DSR bycatch in the commercial halibut fishery the 2005 halibut survey and fishery logbook data were stratified by depth. The old method of using only an area estimate of bycatch compared with new means of depth/area estimates led to a lower estimate of DSR bycatch. This estimate of mortality likely better captures the true mortality. Last year concerns were raised that we were possibly exceeding the OFLs with sport and recreational fisheries hence an expanded analysis of these fisheries contributions to catch was requested. There was a notable allocation by the BOF in 2006 between user groups with 84% of the TAC allocated to commercial fisheries and 16% allocated to recreational fisheries. More restrictive sport regulations have been enacted but discard mortality remains an issue of concern. Estimates of sportfishery harvests were provided by the Sport Fish Division, with the caveat that problems persist in this estimation given that creel and logbook data do not match. The team noted that there were no data tables or error statistics provided for these estimates. Catches have decreased from last year however.

No biomass survey is planned for next year due to lack of funding and the ability to update the assessment next year is dependant upon this additional information. Tory reviewed the availability of age data and the potential for creation of an age-structured model. An age-structured model has been proposed and might be appropriate but there remains a staffing issue for taking on the assessment as well as some issues related to age data for this species. If the current approach to estimating total mortality is more accurate (given the noted need to look more at variance in sportfish data), then landing estimates could potentially allow for a small directed fishery for DSR. However, the team expressed reluctance to open a fishery with no biomass estimate. The survey funding is notably limited for assessing the species and it appears unlikely that additional information will be available for next year's assessment. It was noted that charter halibut catch in area 2C was exceeded by 47% but DSR catch decreased. It appears likely that release mortality of sport caught DSR is under reported.

The team noted some issues for consideration by the SSC. What should be done with assessments such as DSR where no additional information is available? The team stressed the importance of the continuation of the survey for this species as the primary information used to assess this species comes from the surveys. In EYAK, the most recent survey was in 2003 and this is the most likely area for a directed fishery to concentrate. In other regions, the most recent surveys were 2005 in SSEO, 2003 in CSEO and 2001 for NSEO. Without the continuation of surveys for this species, the best available data to manage this species becomes more and more dated.

The team approved rolling over OFLs and ABCs for 2007 and 2008.

Thornyheads

Sandra Lowe presented an overview of the executive summary of the assessment. No new information other than catch information is available. This is a Tier 5 species. Area apportionments are based on the 2005 surveys. The team approved rolling over OFLs and ABCs for 2007 and 2008. Information was included in the research priorities to highlight the importance of the deep water survey strata to the adequate assessment of this species. The team suggested that similar language be added to all deep water species.

The team expressed extreme concern with the potential impact of survey cuts and noted that there is a risk of several assessments being dropped to Tier 6 levels in the absence of reliable biomass estimates. This information should be added to all assessments where this possibility exists to drop to Tier 6.

Atka mackerel

Sandra Lowe presented an overview of the executive summary of the assessment. Catch information was updated. Otolith information was evaluated and highlighted the presence of the 1999 year class. Biomass still remains to be primarily due to the influence of the single strong year class. The team in 2005 recommended a higher ABC with a strong lower TAC recommendation in case an EFP could be implemented for collection of additional data. The interest in an EFP waned in conjunction with the potential for a consultation on the SSL measures. Increased catch numbers might be indicative of purely incidental catch levels and not a result of deliberate topping off. Regulations prohibit directed fishing but there does not appear to be a biological concern if catch continues to increase to meet TAC levels. The team felt that 1500 tons was adequate to meet incidental catch needs in this fishery.

Skates

Sandra Lowe provided an overview of the executive summary for skates. There remains a difference of opinion between the assessment author's recommendation of area-specific OFLs and the plan team recommendation of gulfwide OFLs for big and longnose skates. Julie Bonney commented that POP is the only GOA species with area-specific OFLs. Tom Pearson noted that localized depletion issues for POP were raised prior to the stock being declared overfished. Rationale was provided in the POP rebuilding plan for area-specific OFL management. Sarah Gaichas noted that area-specific OFL recommendations for skates were included due to concerns of localized depletion for these species

Beth Matta provided an overview of the observer program special projects regarding skates. In the GOA length frequency data are requested for all skate species in Pacific cod hook and line fishery catch. This fishery represents approximately 80% of the bycatch of skates. Age composition data are requested for the three main skate species from the observer program for all boats in the GOA. These are special projects as a request for the observer program. Lengths will be taken even if skates are not predominant in the catch. The sampling level requested is 20 skates per set per week. Special project means that it is for one year only and is not comprehensively followed by all observers (and thus some spotty coverage). Data from this special project will be available for incorporation into the assessment for next year.

Todd Tenbrink provided an overview of the table of life history characteristics for big skates and longnose skates included in the executive summary. The previous assessment assumed an average maximum age of 40 years and an M of ~0.1. The data presented in the executive summary would probably lead to an M of ~0.2. Big skate estimates are still highly variable thus the impact on mortality estimates for the following assessment is as yet unknown. These data were not available for the previous assessment and will be incorporated into the following assessment next year. It is unclear at this point

who will be doing the next assessment for skates. Catch in 2006 increased for big skates and other skates from the 2005 catch estimates.

The plan team recommends rolling over the previous ABCs and OFLs using the same area methodology as previous years given limited information in the off-year of the assessment to suggest otherwise.

Other species

Jennifer Ferdinand provided the team an overview of an NPRB proposal to provide additional catch estimation of bycatch in the halibut fleet. Estimating bycatch in the halibut fleet has been an ongoing issue for estimating the incidental catch of many species (DSR, skates, etc). Each vessel will carry two observers and a video monitoring system for comparison on adequacy of results. The project will begin in the summer of 2007 and will likely be focused in southeast. The work in 2008 is dependant upon funding from NPRB. The team felt that this issue is of extreme importance and has been noted in numerous years and numerous assessments. The team decided to draft a letter of support to NPRB for funding and focus on research of this nature in order to improve estimates of bycatch in this fishery (attached). Julie Bonney commented that video monitoring will be pursued in the rockfish pilot project using one coop at the start of the pilot project in May. There are numerous practical and regulatory issues left to be resolved before this can be implemented.

The team reviewed draft assessments of other species which are to be included as appendices to the GOA SAFE report. The team had reviewed previous drafts of these assessments in September but did not carry through their review to include OFL and ABC considerations at that time. The team did deliberate on ABCs and OFLs for these species during this meeting in order to provide discussion and preliminary recommendations for the record for the forthcoming amendment analysis to break other species out in the GOA. While no specifications will be set for any of these species prior to the implementation of a plan amendment, ABCs and OFLs were recommended in order to evaluate the potential impacts of species-level specifications in the amendment analysis. This analysis is intended for initial review by the Council in 2007.

Alternatives to Tier 6 Approach:

Per SSC request in October, the team discussed alternative Tier 6 approaches for other species. Liz Conners presented an overview of possible approaches using octopus as a candidate species. The criteria for application of a modified approach are that 1-data for tier 5 or above are not available; 2- there is no recent history of commercial fishery; 3- no evidence of current problems (e.g., neutral or increasing trends in biomass index or CPUE); and 4- not listed as threatened or endangered. Thus the general premise for application of a modified approach is an assumption that the current fishing pattern is not a problem but a desire exists to prevent a new fishery without constraining existing fisheries. Management goals include the following: 1-allow continued incidental catch at current/recent levels; 2-do not unduly restrict fisheries; 3-prevent rapid increases in catch and 4-allow research/experimental fisheries for additional data collection.

Management techniques include monitoring catch including retention, keeping the non-target group on bycatch only status until sufficient data has been collected, to keep time series of biomass index if feasible, and to set ABC/OFL based on the best estimate of incidental catch.

Two options were presented for establishing OFLs and ABCs using incidental catch as an index. Under option 1, the maximum of incidental catch rate is established as the OFL, with $ABC=75\%OFL$. Under option 2, the ABC is established as the maximum incidental catch with $OFL=133\%ABC$. The two options provide a range of conservative (option 1) and less conservative (option 2) means of establishing ABCs and OFLs for Tier 6 consideration.

The team agreed on the importance of using an appropriate time frame for estimating incidental catch levels. The years for which data establish incidental catch levels should not be representative of a time

period where targeting of the species occurred, or from a time period representative of a change in industry pattern which would also substantially change the incidental catch. It is further recommended that TAC be set below ABC to limit retention and allow for an experimental fishery in order to collect additional data. Additional discussion by the team of the modified Tier 6 approach is contained in the species-specific discussions below.

Octopus

Liz Conners presented an overview of the Octopus assessment. Biomass estimates from the trawl survey are not considered to be reliable, and there are no order-specific mortality rates. Octopus has been historically retained for bait but with a limited additional market. A small developing market started in 2004. Octopus bycatch is primarily in the Pacific cod pot fishery. Incidental catch estimates are available for the period from 1997-2006. While targeting octopus is unlikely to be occurring, it is being retained in greater quantities lately

The team discussed the recommended options for ABCs and OFLs for octopus and the implications of choosing one option over another. If octopus were managed according to average catch as an OFL (using straight Tier 6 criteria) as opposed to an OFL above the maximum catch (option 2) there is a high likelihood that octopus would not only reach PSC status quickly but that there is a potential of shutting down many other fisheries. Recent biomass trends in the GOA do not indicate current conservation concerns. Liz noted that there is an observer special project underway to obtain weights of octopus. This helps to distinguish large species of octopus from smaller species. She noted that resolving to species level of smaller species is a problem. The majority of commercial catch thus far is giant octopus. Julie Bonney suggested soliciting information for the assessment analysis from the AFDF project on a directed octopus fishery (ie funding from a grant to look at viability of directed fishery). She noted that a directed fishery is probably not an economically viable option, as vessels would need to run lots of pots and current fishing practices are not sufficient to do this. Nick Sagalkin noted that in State waters fishing is allowed by Commissioners' permit using modified pots. In the Southeast directed fishing for octopus is specifically prohibited but this is not a statewide regulation. Tom Pearson further noted that any interest in octopus fishing has been more concentrated in State waters than Federal waters.

Liz presented alternative methods for establishing ABCs and OFLs for octopus based on Tier 5 approach and three mechanisms for Tier 6 approaches. M is estimated at 53% from age at reproduction tables. Nick Sagalkin questioned the possibility of unreported harvest estimates for bait fish. Theoretically everything that is caught is reported and incidental catch estimates include both retained and discarded. There may be additional unreported catch in the halibut fleet. Tom Pearson commented that catch rates may likely be higher than reported. Sarah Gaichas commented that any fishery for octopus should be managed at a different spatial scale (e.g., possibly State waters) than most Federal fisheries. Liz noted that there is limited information regarding the biomass distribution in State and Federal waters. An experimental fishery would provide additional information for this species. Tory O'Connell noted that while there is likely a large population in State waters, they are also widely distributed at different depths. They are also sometimes caught on longline gear.

The team approved of the Tier 6 estimated approaches put forward by the assessment author. The team supports the list of criteria put forward by the assessment author. The author also requested that TAC be set below ABC for these fisheries in order to allow for an EFP to collect necessary biological information. The other assessment authors for the other species assessments approved of this approach for additional species as well e.g sharks and squid. Sculpins may not be applicable as Tier 5 might be the prescribed approach for this species given reliable biomass estimates for this species. The team recommends that the maximum incidental catch be established as the ABC with a buffer built in to establish OFL above ABC. The team notes that catch of octopus should be closely monitored for patterns in increased incidental catch and to what extent this catch is utilized. The team supports the recommendation to set TAC below ABC to allow for the collection of additional biological data. As fishing patterns change, the applicable

years for evaluating trends in incidental catch would likewise be monitored. The team discussed the appropriateness of allowing the OFL/ABC to fluctuate annually and how this may not be appropriate. Concerns were expressed regarding rapid changes in incidental catch as for squid in the GOA in 2006. Tom Pearson noted that from a management perspective there is also the option available to close areas spatially rather than closing a fishery. Spatial closures even on a smaller scale (eg Shelikof) could have massive economic impacts on the fleet in the GOA given the limited areas available for fishing. The team discussed the importance of consideration to not unnecessarily constrain fisheries. Squid biomass is notably particularly fluctuating. For octopus, similar biomass estimation problems exist whereby last year's estimate is not a good prediction of next year's catch. The teams discussed the possibility of not setting quotas and instead managing effort. The team noted that the analysis should also pursue non-quota setting options. Establishment of some form of cap however is still necessary under current management practices in order to constrain effort. The team felt that it would be constructive to explore options outside of quota-setting.

The team discussed the issues with the aggregate OFLs and ABCs and proactive management of these species under the proposed amendment. Options available under the amendment analysis include both establishing species-specific OFLs and ABCs as well as aggregate other species OFLs and ABCs similar to management in the BSAI. The team encouraged the flexible application of a new Tier 6 methodology such that it would be annually reviewed. The time period over which the Tier 6 incidental catch averages are considered should be applicable to the appropriate time period where no directed fishing was occurring. This window of time could continue into the present (for recent estimates) provided no directed fishing was occurring or could be fixed in time if recent catch begins to approach a level that is not consistent with incidental catch. Liz noted that in Canada and Japan management of octopus is solely effort based. The team recommends that considerations be given to these alternative programs to evaluate to what extent these could be applicable in the GOA to enhance a quota-only setting program for management. The team still feels that additional management measures are necessary in conjunction with the Tier 6 approach such that in instances where biomass increases abruptly from one year to the next it is possible to include this in the ABC and OFL setting. Sarah suggested that the buffer between ABC and OFL could be established in a different manner (e.g. a larger buffer) for years where biomass increases would inappropriately constrain fisheries. Some form of variance calculation should be included to account for this variability in the OFL. ABC could be established as the average or maximum incidental catch with the OFL buffer variable depending on some estimate of increased or decreased biomass variability. The ecosystem model notably provides some indication of the minimal estimate of production and consumption and might provide some additional information to suggest appropriate buffer levels.

Sculpins

Rebecca Reuter presented the overview of the GOA sculpins assessment. There are 15-20 species consistently observed in the GOA survey and likely less in the actual catch. This is likely related to abundance and catchability. The larger sculpins dominate the catch over the smaller species. Over 40 species have been identified. Limited life history information is available for GOA sculpins, with the majority of the available life history information from Russian and Japanese stocks. The data for GOA species is extremely limited, and no otoliths have been collected for any GOA species. The prioritization for research information is on the main sculpin species. Nick Sagalkin offered to coordinate with the ADF&G trawl survey to collect otoliths for sculpin species. The biomass distribution of sculpins show some hot spots in the western GOA. The survey biomass estimates do not account for the depth distribution in the GOA by survey year. No depletion concerns by individual species were detected in abundance estimates. The species composition does change by depth. Data from the Bering Sea slope survey indicates the diversity of species by depth distribution and change in species composition by depth. The catch of sculpins by year appears consistent. There was an increase in the percent contribution to the composition of the other species catch in the year following skates being removed from the other species complex. Interannual variability in the overall amount of sculpin catch is likely

due to a combination of population fluctuations and catch estimation/sampling issues. Sculpin species are not specifically patchily distributed but tend to be more widespread. Most of the bycatch of larger sculpin species occurs in the flatfish trawl and p cod pot fisheries. Smaller sculpin species are most often caught in the rockfish fisheries. Stomach analyses from GOA sculpins is notably limited.

The natural mortality estimate used is the most conservative of the known sculpin species. ABC and OFL recommendations are based on a Tier 5 approach given that biomass estimates are considered reliable for these species. A three year average biomass estimate is utilized to capture recent biomass trends. The team noted that the lack of survey in the EGOA in 2003 should be appropriately accounted for in order to accurately estimate the survey biomass for sculpins. This should be consistent with the treatment of rockfish species. This should be noted in the forthcoming analysis for breaking out these species and the appropriate biomass estimate should be recalculated accordingly. The team discussed the potential for a directed sculpin fishery. While there has been some limited interest in developing markets no specific interest has been noted. The team approved of the Tier 5 approach for sculpins.

Grenadiers

The team reviewed changes made to the grenadier assessment in conjunction with comments from the Joint teams at the September meeting. The team agreed with the authors recommendation for Tier 5 values for grenadiers using the proxy natural mortality rate of $M = 0.057$. The team notes that catch is much less than ABC thus the recommended ABCs and OFLs are unlikely to constrain current fisheries.

Squid

Todd Tenbrink provided an overview of the executive summary squid assessment. Trawl survey biomass estimates are likely represent an extreme underestimate of the biomass for this species. The biomass estimate is not considered reliable thus the Tier 5 approach is considered inapplicable for this species. Squid catch in 2006 increased from 626mt in 2005 to 1526 mt in 2006. This was notably due to incidental catch increase in Shelikof in the Pollock fishery. The team discussed the Tier 5 and Tier 6 approaches for this species. The option 2 method that was suggested for octopus with the maximum incidental catch as an ABC with a larger buffer for OFL would be appropriate for squid. Sarah noted the consumption-based estimate for the ecosystem model would estimate approximately 200,000 tons for squid. Under this scenario the ABC would be set as the maximum incidental catch from 2006 with an OFL established incorporating an appropriate buffer above this. The team approved of this approach for this species.

Tom Pearson commented that squid surveys only catch a small fraction of the total catch of squid. Sarah noted that suggestions have been put forward for extremely small Q values. Tory noted that studies have been completed on estimating catchability for squid. The biomass estimates included in the executive summary are the raw survey biomass estimates. The survey biomass estimates represent minimum biomass estimates. There are better means to survey squid and acoustic measures are being pursued in the Bering Sea. A directed squid fishery would provide additional information on the distribution of this species. The predictability of squid biomass is notably problematic for encouraging any type of directed fishery and it was suggested that quota-management may not be feasible.

Overall Other species catch needs:

The team discussed the need to meet incidental catch needs in all groundfish fisheries. The team recommended 4000 tons to meet incidental catch needs in all fisheries for 2006. The team noted that an additional 500mt were added by the Council in response to public testimony in order to allow for a limited directed fishery potential for sharks. Total catch for the other species complex in 2006 as of November 4, 2006 was 3,601 mt. The team notes that we are unlikely to have an in-season estimate of bycatch in the halibut fishery. An approximate buffer to account for bycatch in the halibut fishery should be added. The largest increase in catch in the GOA was squid and incidental catch of spiny dogfish. The team recommends continuing with a recommendation of 4000mt as appropriate to meet incidental catch

needs. The team feels that this is adequately responsive to unforeseen increases in incidental catch of species such as squid and dogfish as occurred in 2006.

Sharks:

Ken Goldman presented a powerpoint presentation of demographic modeling of shark species. He noted the difficulty in establishing life history characteristics for shark species. This information was included as an appendix to the Shark assessment. If a fishery were to begin on salmon sharks it would be for ages 5 and up. No salmon sharks have been aged that are less than 5 years old. Results for the eastern North Pacific (defined as east of 180 i.e., GOA) suggest that no directed fishing should occur in this area. Sarah noted that given the range of natural mortality rates presented, and a Tier 5 approach, this would result in higher F rates than are suggested by the author for a sustainable population. Thus tier 5 should not be applied. Biomass estimates from the trawl survey have very high variance and may not be reliable enough for a Tier 5 approach. It was noted that studies in the Bering Sea also indicated that temperature also played an important role in sleeper shark distribution.

Dean Courtney presented an overview of the GOA Sharks assessment with alternative Tier 6 alternatives presented. Population trends for shark species appear to be stable or increasing. Catch in 2006 however would exceed the Tier 6 average catch approach. For next year the authors anticipate using a Tier 5 approach for spiny dogfish and re-evaluating the alternative Tier 6 criteria for the remainder of the complex. The alternative (option 1) Tier 6 approach would result in an ABC of 1793 with an OFL of 2390. Under traditional Tier 6 management historical catches would have been constrained. Under Tier 5 management catch would not be constrained but this method includes unreliable biomass and natural mortality estimates. The alternative Tier 6 OFL would provide a margin of error such that fisheries would not be constrained.

This alternative Tier 6 approach appears appropriate for long-lived species as opposed to the alternative (option 2) approach proposed for octopus which would allow for a larger buffer to reach OFL. The team discussed to what extent the maximum catch is an appropriate level of removal to avoid impacting the reproductive capacity of this species. The team felt that there was appropriate justification for additional conservatism in the ABC and OFL estimation based on life history characteristics for sharks.

Halibut bycatch estimates of sleeper sharks applying the survey bycatch rates to the fishery catch would indicate a bycatch of sleeper sharks which would exceed the calculated OFL. The team noted continual problems with the estimation of bycatch in the halibut fishery. Tory noted that for DSR they look at the survey bycatch and then apply it only to the distribution of the commercial fishery whereas the numbers for sharks were applied to the entire halibut fishery. These numbers do indicate that there could be substantial catches of sharks in the Pacific halibut fishery. Any potential directed fishery for sharks should be very small given the uncertainty in the potentially large amount of removals in the halibut fishery. The team noted that it is likely that mortality of dogfish incidentally-caught is likely to be extremely high.

The team debated to what extent the maximum catch is appropriate as an index. The team does not wish to codify a system where maximum catch is always appropriate as an index for OFL and ABCs for other species. There is some comfort conveyed by the fact that the alternative Tier 6 approach is substantially lower than the tier 5 approach and slightly higher than a traditional Tier 6 approach using just average catch. There are a lot of uncertainties which might lead to choosing the most conservative specification. The team discussed the necessity of choosing appropriate time periods which are not only representative of catch but also with an appropriate buffer time period such that the population effect of these removals has been demonstrated. This is particularly important for longer lived species.

The team notes that the increase in incidental catch in 2006 was predominantly spiny dogfish. This shows an indication of an interest in developing a fishery. Julie Bonney noted that anecdotally from fisherman, dogfish bycatch is widespread and there might be a distributional change in the species. Sarah

noted that if spiny dogfish were split out as a separate target species from other shark species this would result in a very small ABC and OFL for the remaining sharks in the complex using the modified tier 6 approach presented here.

The team recommends the alternative Tier 6 approach for OFL and ABCs at this time (for analytical purposes) but notes that they have reservations with codifying this system at this time given the rationale explained above. This approach might be modified in the future but the team agrees upon the approach currently for the analysis.

Given uncertainty and possible biases in halibut bycatch estimation there should be some consideration given in the assessment to the potential for a conservation concern on this species. This is true for all species with similar concerns regarding the estimation of bycatch in the directed halibut fishery.

Pacific cod

(see Joint Plan Team minutes for additional assessment discussion)

Grant Thompson presented the GOA Pacific cod assessment.

Updated information includes catch data for 2005 and 2006, new age data from the survey, new length data from the fishery. Length-at-age and weight-at-length parameters were re-estimated.

One model configuration was presented. This is the same model chosen by the plan team last year. The major change in the model from last year is that the length at age is estimated outside of the model. No additional alternative approaches were investigated this year.

Recruitment variability in the GOA is lower than in last year's assessment. The biomass decline projected from last year is still present but less severe. Projected spawning biomass is estimated to decline for the next couple years based on several years of below average recruitment.

Projected maximum permissible ABC: Last year a new maturity schedule resulted in a large increase in ABC in the midst of projected stock declines. The plan team recommended the ABC from the model last year with a strong TAC recommendation to establish TAC at a level that would stabilize catches. The SSC disagreed with the team and instead employed a stair-step procedure for the 2006 ABC. The maximum permissible ABC from the model in this assessment under Tier 3a is up 18% from the 2006 ABC but is then projected to decline in 2008.

The author presented a number of reasons for choosing to go below maximum ABC:

- maxABC would result in a large increase in ABC while spawning biomass is projected to decline. Last year the new maturity schedule led to a higher F40.
- SSC advised against a large increase last year.
- The increase would likely be short-lived (1 yr).
- 2006 fishery seems unlikely to take the current ABC.
- Alternative GOA model structures should be evaluated further as has been done for the EBS model.

The author recommended a 2007 ABC of 68,859 (equal to last year's SSC value). The maximum permissible value is 81,200 t which, if caught, would give a 2008 maximum permissible ABC of 68,300 t. If ABC is set at the maximum permissible level in 2007, the OFLs would be 97,600 and 82,300 in 2007 and 2008, respectively.

Tom Pearson noted that the 2006 fishery was constrained by the halibut caps and this kept the fleet from catching the full TAC. Julie Bonney noted that SSL measures are also factoring into the fleet's ability to maximize catch again this year.

The team noted that the maturity schedule last year exhibited a large impact on the assessment results. There were questions raised last year (see GOAPT minutes from 2005) regarding the geographic extent of

the study leading to the new maturity schedule. The AFSC has embarked on a three-year study of Pacific cod maturity. Results will be reported as soon as they become available.

The assessment author noted that the State jig component represents a fairly significant contribution to overall landings and this component might be evaluated further in the model with a separate selectivity.

The team agrees with the author's recommendation that essentially carries forward the SSC's ABC from last year. The team feels that additional analyses of model inputs and the relative impact of various new data on model results should be further evaluated as well as variations in model configurations as per the EBS model configurations and examinations this year.

The team feels strongly that the assessment author should be given appropriate and unimpeded time to devote to stock assessment between the time when new data become available (typically, early September) and the December Council meeting. To this end, the Team supports the recommendations made during the joint plan team meeting that external stock assessment reviews should occur prior to the survey-assessment cycle (e.g., between January and June). The team feels that external reviews can be beneficial but should be conducted in a timely manner.

The team adjourned their meeting on Friday, November 17th at 5pm.