

**Gulf of Alaska Plan Team Meeting**  
**November 19-21, 2003**  
**Minutes**

The GOA groundfish Plan Team meeting convened on November 19, 2003 at 9am. The team members present were: Jim Ianelli(co-chair), Diana Stram(co-chair), Sandra Lowe, Bill Bechtol, Jeff Fujioka, Jon Heifetz, Tory O'Connell, Tom Pearson, Beth Sinclair, Farron Wallace, Sarah Gaichas, Kathy Kuletz, and Bob Foy. Bill Clark and Mike Ruccio were absent. NMFS staff, stock assessment authors and several members of the public also attended.

Flatfish:

Jack Turnock presented all of the flatfish stock assessments.

Arrowtooth flounder:

Arrowtooth increased in abundance in 2003, as indicated by the survey biomass increase and related model estimates of biomass. Catches have remained similar to the previous years. Differential natural mortality between males and females based on age composition data indicates that the female lifespan may be considerably longer than males and also leads to a sex ratio of ~ 70% which is consistent amongst areas in BSAI. Arrowtooth is a predator on pollock. The model is appearing to overestimate the largest females in the survey, while the male model fit to data is better. However, some overestimate is seen in the fit to age data in some years which may be growth related. Otoliths from 1999, 2001, 2003 may shed light on potential growth changes and will be analyzed. Work next year will attempt to achieve better model estimates of growth in order to get a better fit to the data on larger fish. Since predation is predominantly from larger sized animals, a better model fit to data would be useful for information on the predation of pollock by arrowtooth. The Western GOA TAC was reached in 2003.

The Plan Team recommended including a table of TACs and ABCs in the assessment to better evaluate yearly changes. The Plan Team discussed the potential ecosystem concerns related to the observed increased arrowtooth biomass and the potential for predation on pollock. The Plan Team discussed the possibility of raising the TAC in W GOA to accommodate the fishery. There has been increased interest in the fishery by industry but the fishery is limited by the halibut bycatch. Preliminary catchability experiments (on herding and escapement under the net) indicate a catchability of 1.3, therefore the biomass would be approximately 1/3 less than as modeled. It was noted however, that this would not change the trend as all modeled values have been corrected for this. Concerns were expressed by Plan Team members regarding the growth in females. Suggestions were made to the stock assessment author to further analyze the age group bins utilized, and model configuration. It was noted that additional data could help to shed light on the questions regarding the age structure in the population over time. Overall concerns were expressed by the Plan Team regarding why the recruitment of arrowtooth continues to increase. E.g., not only from the perspective of predation on pollock but what this might be indicating about how ecosystem conditions have changed. The Plan Team would encourage mechanisms to allow for more directed fishing on arrowtooth without impacting the related halibut fishery, e.g., to allow for experimental fishing permits or special increased PSC for halibut.

The Plan Team accepts the author's recommended ABC of 194,930 mt and OFL of 228,130 mt.

Flathead Sole:

2003 biomass from survey estimate increased to 258,609 mt. Recent catches have been stable around 2000 mt. The model fit to fishery and length at age data is fairly good. Retained catch has averaged 80-90% of catches. The Plan Team discussed the separation of flathead sole from the "other flatfish" and that this is necessary given that the fishery targets flathead sole separately from rock sole though rock sole is often the more desirable target. Flathead sole distribution tends to overlap between the "shallow" and "deep" water flat Area apportionments are calculated based on the fraction of the most recent survey biomass in each

management area. The fraction in the eastern gulf was calculated by assuming biomass was proportional to the percentage observed in the 2003 survey.

#### Flatfish complex:

Shallow-water flatfish, deep-water flatfish and rex sole:

Biomass estimates increased for all flatfish species except yellowfin sole. Sensitivity of survey depths on rex sole and dover sole estimates were discussed. For 2001, the survey biomass estimates were adjusted for the eastern GOA by an average fraction in the eastern GOA for the 1993-1999 surveys. Northern and southern rock sole are in tier 4 while everything else is in tier 5 for ABC calculations. For Greenland turbot and deep-sea sole, the average catch was utilized due to incomplete survey estimates. Shallow water flatfish catch for 2003 is down from 2002, rex sole is up slightly from the previous year, while the deep water complex (primarily Dover sole) catches increased from previous year. Change in the natural mortality estimate for deep water flatfish (in addition to an increase in Dover sole biomass) led to an increased ABC of 6,070 mt. Shallow water flatfish ABC also increased due to an increase in the survey biomass. The recommended ABC for Shallow water flatfish is 52,070 mt. Rex sole ABC recommended as 12,650 mt. The Plan Team accepted the author's recommended ABCs for flatfish.

#### Dover Sole:

A preliminary Dover Sole assessment was presented. This assessment was presented initially at the September Plan Team meeting and is currently an appendix to the flatfish assessment in this year's SAFE report. Next year the assessment will be a separate chapter to the SAFE report and the model will be used to recommend an ABC and OFL for 2005. Since September, the assessment has been updated including the incorporation of the 2003 survey data, which showed a biomass increase from the previous survey. The model was updated to correct for differences between survey biomass in shallow water versus deep water (for years where surveys were not conducted in deeper water); natural mortality was changed to 0.085 (from 0.1), and survey catchability was changed to reflect the different depth strata. Some changes which may be addressed in next year's model could include accounting for the observed older fish in deeper water (~ greater than 20 years) and the potentially higher concentration of males than females in deeper water. The model fit to survey biomass is good for the previously declining trend but does not fit well to the current observed biomass increase. Catch has generally declined since 1999 but has increased from a low in 2002.

If the model were utilized to recommend a 2004 ABC, the assessment would incorporate age-length data and fishery selectivity to obtain an ABC for 2004 of 6,630 mt with an OFL of 8,231 mt. In contrast, as currently calculated using Tier 5 criteria of  $F=0.75M$ , the 2004 ABC is 5,880 mt with an OFL of 7,760 mt. Therefore with the new assessment model, ABCs and OFLs are slightly higher than with the Tier 5 criteria due to the higher F rate (full selection F). The Plan Team accepted the author's recommendation for ABC and OFL.

#### Thornyhead Rockfish:

Sarah Gaichas presented the stock assessment on thornyhead rockfish. There were no changes to the model from last year but some modeling adjustments were made based upon suggestions from the previous year. Model estimated M has been problematic in the past given the high values estimated. In last year's assessment the base model fit the data best but resulted in a high M.

The model configurations evaluated in the assessment varied the prior distribution on M compared to the base model (0.05 in base model). Based upon these results, thornyheads appear to have considerable higher natural mortality in the GOA than previously assumed or expected. Alternatively, the model specification or structure is flawed. The author also presented the tier 5 ABC calculation of 1,940 mt. This compares with the base model estimated ABC of 2,945 mt. Historic catches have been much lower than this and the fishery has been on bycatch-only status since the beginning of the year (since thornyheads are broadly

distributed, they are difficult to target). Given concerns regarding the calculation of natural mortality, the author expressed the alternative of utilizing the Tier 5 ABC estimate of 1,940 mt. Use of this Tier 5 calculation for the ABC would indicate that the available data is unreliable to justify the use of an age-structured model for thornyheads. Age composition data has been problematic for thornyheads and current observer sampling protocols do not focus on thornyheads. Survey biomass data is being primarily used in the assessment. If the Tier 5 ABC is used, the area apportionments as detailed in the assessment would remain constant in calculating the ABC for tier 5 calculation of 1,940 mt.

The author recommended using either the ABC from base model of 2,945 mt or the use of a Tier 5 ABC calculation (which is similar to ABCs in years past). The author was more comfortable with the Tier 5 calculation rather than deriving an ABC estimate from a poorly fitting model. The fundamental issue is that the questionable age data are insufficient to justify the use of an age-structured model. The Plan Team commends the work done by the assessment authors in evaluating the thornyhead stock using an age-structured model. However, the team agrees with the author in that the data are clearly limiting the viability of these modeling results and more reliable data are necessary in order to improve confidence in the model results. The Plan Team shares the author's discomfort level in the age-length data available for use in the model due to the fact that thornyheads have not been a priority in observer sampling.

The Plan Team recommends the use of the Tier 5 calculation using the 1999 and 2003 survey biomass estimate (these are the only surveys covering the whole range of the stock) corresponding to an M of 0.03. This results in an ABC of 1,940 mt which is similar to the ABC from 2003. The OFL is similarly calculated as 2,586 mt. Apportionments would follow the same percentages as listed in the assessment as W(21%), C(52%), E(27%). If additional age data became available in the future to validate the model the author would reassess the stock using the age-structured model. The Team discussed the discards in the fishery and the related MRBs which may be constraining the fishery and recommends additional information be included in the following assessment regarding the nature of the discards.

The author will continue to maintain the age-structured model for reference if age-data becomes available.

#### Atka Mackerel:

Sandra Lowe presented the stock assessment for Atka Mackerel. The introductory section to the report now contains an extensive new section on spawning information for this stock. This information has not been previously summarized and substantially adds to the stock assessment information. The largest difference in this year's assessment is the increase in catch from 2003 to 565 mt as of November, 1, 2003. Catches were predominantly in the length range corresponding to the 4 year old age class seen in the 2003 survey data. Speculation is that these are from a single 1999 year class possibly arriving from the Aleutian Islands region. Current estimates of biomass are still unreliable and thus insufficient to support any change from the previous ABC of 600 mt, calculated under tier 6 for this stock. GOA Atka mackerel remains as bycatch-only status for this fishery. The OFL is calculated as 6,200 mt. The author's recommendation is that this ABC amount still allows an amount sufficient to meet the bycatch needs of other fisheries as well as some retention as seen in the 2003 fishery.

In public comments, asked what amount and confidence in data would be necessary to allow for some limited targeting on the population. The author responded that some indication in the age data of an additional age-class would allow for greater confidence that this stock was present in the GOA rather than a carry-over from the distribution in the AI.

The Plan Team approves the author's recommendation of ABC and OFL.

## Forage Fish

Mark Nelson presented the updated Forage Fish assessment. This assessment appears Appendix A to the GOA SAFE Report. A preliminary assessment was presented to the Plan Team at their September meeting. Updated information in this assessment includes survey data from the 2003 GOA survey. Increases in capelin and eulachon were seen in 2003 in comparison to calculated biomass estimates from previous years. Catch data for 2002 were updated in the assessment. Smelt catch in 2001 was higher than on average for previous years, but results from 2002 indicate that this was anomalous and catches have retreated to close to the averages from previous years. Exploitation rates for 1999 and 2001 were calculated for capelin and eulachon using biomass estimates from the groundfish surveys. Exploitation rates were found to be less than 1% or less.

The Plan Team commends the work done by the author on this preliminary assessment and the utility of this chapter in the SAFE Report. The Plan Team recommends the use of more integrated data available from other NMFS small mesh surveys. Consistency in locations and sampling was noted to be problematic with some of these surveys, however useful data is obtained by these surveys in various locations regardless. Plan Team recommendations also included exploring the possibility of adding a small mesh panel to already planned GOA surveys and any additional improvements as possible to improve the collection and accuracy of these data on forage fish species.

The Forage Fish chapter while initially focused on smelts will attempt in future years to focus attention on additional species (e.g., sand lance and others). The GOA EIT summer survey may be useful in obtaining additional information on capelin and other gulf-wide species. Myctophids were also noted as important species for seabirds and marine mammals thus including additional information as it becomes available on these species would be beneficial.

## GOA Pollock:

Martin Dorn presented the stock assessment for GOA pollock. The author began with analyses he performed in order to clarify pertinent questions regarding the status and productivity of the GOA pollock stock (Appendix C to stock assessment).

*Stock-recruit analysis:* This analysis was performed in response to Council concerns raised following the Goodman et al. (2002) report regarding the appropriateness of the current harvest strategy. The stock-recruit analysis evaluated whether or not the current harvest strategy was sufficiently precautionary. Results indicated that the current harvest strategy was precautionary and therefore an appropriate proxy. Using estimates of  $B_{40}$  as a target (even though it will tend to drift somewhat) was also appropriately precautionary. Based on this analysis, the harvest policy appears to be a reasonable approach.

*Estimate of unfished stock dynamics:* The author re-ran analyses to compare historical stock sizes with and without fishing. Original estimates of recruitment were adjusted in the “unfished” run for the effect of density-dependent mortality (imposed by a stock-recruitment assumption). The effect of the stock-recruitment curve (relative to assuming that recruitment was exactly the same level as in the original model) was relatively minor. Estimates of stock depletion indicate that environmental conditions may have a large impact on recruitment. The effect of fishing caused the stock size to be about 40 - 46% of what would be expected had no fishing occurred. Environmental conditions appear to have been a major cause of the low level of stock abundance (since the stock size is still about 35% of the peak level even without fishing).

*Model with changing juvenile mortality:* In order to better evaluate the impact of juvenile mortality on stock status, an examination was made of changing juvenile mortality rates within the model while keeping adult mortality fixed. In this way ecosystem changes could be modeled in a simplified manner (e.g., changes in juvenile predator abundance impacting mortality). The Team discussed the difficulty in estimating predation on juvenile pollock and juvenile mortality by age. The management implications of changes to juvenile

mortality were discussed. In particular, if a long-term average mortality estimate is utilized then changes in juvenile mortality could impact harvest strategies. Increases in juvenile mortality would suggest a resulting downward shift in the harvest rate while decreased juvenile mortality would suggest that an increase in harvest policy could be considered. The Plan Team discussed implication on the relative changes in predator diets on an inter-annual basis including that marine mammals can have long-term stability in their diets while other predators may experience sudden switches in diet which occur in distinct blocks of time. The team discussed examining whether this could be tied to variable year-class strength in prey.

Stock assessment results indicated a strong prevalence of younger fish in 2002 with very few older fish (strongly different from all previous years catch-at-age results). The EIT survey results showed total biomass increased slightly over 2002, with Shelikof biomass increasing slightly and Shumagin decreasing. The Sanak area was surveyed, and could account for proportion of biomass not seen in Shumagins. Public commentary confirmed a wider distribution of the fishing area and that Sanak area (not the actual surveyed region but nearby) has become a specifically targeted fishery area, where harvesting there began following the SSL regulations. The model however, is still tuned to Shelikof as an index of spawning biomass. Shelikof results still show a decline in total spawning biomass, and a large decline in the numbers of larger fish (fish from 1999 year class present as well as some 2000 year class).

Bottom trawl biomass estimates increased from the 2001 survey, with a low CV on the survey estimate. ADF&G survey decreased approximately 30% from 2002 estimates. Age composition data showed prevalence of 1999 and 2000 year classes in many areas. The model tracks the abundance decline fairly well. Industry personnel present volunteered their cooperation in order to obtain otolith for increased age data where this is lacking.

The author's ABC recommendation is to continue with the status quo model and retain the conservatism. The Team expressed concerns regarding the changes in juvenile mortality and questioned whether the current model is adequately accounting for that (or changes thereof due to high predator abundance levels), and the general consideration of the proximity of the stock to  $B_{20}$ . The Team agreed with the author that it was preferable to be on the conservative side and allow the buffer to increase rather than risk the stock declining further and potentially shutting down fishery. The author recommended continuing to use the average year class for projections. The Plan Team encourages the possible use of the juvenile mortality modeling work (presented in the chapter Appendix C) next year in the author's analysis.

The Plan Team agreed with author's recommendation for an ABC of 71,260 (including the PWS allocation of 6,520 mt) and the recommended seasonal and area apportionments following the methodology introduced and utilized last year. The Team commends the effort put forward by author to evaluate additional concerns regarding this stock status in modeling efforts. The Plan Team encourages the author to continue to explore these methods that are considerate of ecosystem effects.

Public commentary expressed concerns regarding the predation on pollock by arrowtooth flounder and the necessity of addressing this as it relates to the pollock stock as well as the restrictions placed upon the arrowtooth flounder fishery. Comments were also expressed regarding the continued dependence of the model upon the Shelikof biomass as the index of spawning biomass and that the assessment should reflect other areas such as Sanak and Pavlof Bay which may be more useful indicators of spawning stock biomass.

#### GOA Rockfish:

Dana Hanselman presented the rockfish assessments. This year the slope rockfish assessments have been split into three separate chapters for POP, northern rockfish and shorttraker/rougheye/other slope rockfish sections.

### Pacific Ocean Perch(POP):

Changes to the assessment include: Revised length at age matrix which led to a better fit to fishery size data; decreased constraint weights, and estimated natural mortality. New data was included from three new fishery ages (1998,1999, 2002). The new 2003 survey biomass was considerably lower (400,000 mt vs 800,000 mt) with a very tight CV thus providing more influence on the current model estimate of biomass. Estimating  $q$  has been problematic for the POP model; in the past it has been estimated at very high levels (~2.9). The estimate of  $q$  decreases if  $M$  is estimated high or if recruitment is highly variable. This year some stability in the estimate was apparent ( $q \sim 1.2$ ). The authors recommend using the model for the next two years and reevaluating the results after comparison with the new survey biomass in 2005. The Plan Team noted that the precision of POP estimates and observed patchiness was similar to the precision and patchiness in the Atka mackerel estimates for same survey year.

The Plan Team discussed the current apportionment of OFL for POP by management areas. Discussion reiterated that regional OFLs were implemented by the Plan Team originally in order to provide protection for this stock. This was based on life history features (localized populations, limited migration, etc.). The Plan Team concurred that continuing to specify regional OFLs for POP was warranted for this stock.

### Northern Rockfish:

There were no changes to the current model structure from last year's assessment. The new survey biomass estimate was considerable lower than the that from the 2001 survey(340,000 mt compared to the 2003 estimate of 66,000 mt). It was noted that the survey biomass estimates for northern rockfish have been highly variable from survey to survey and that this may be related to the survey design. A different survey approach may be necessary to reduce this variability. The ABC decreased slightly due to the observed biomass decline in 2003 and the model trajectory similarly projected a decline. An examination was made using the northern data with the POP model which resulted in slightly lower biomass estimates, but similar results with better fits in some components. The authors will explore these differences in next year's assessment (or the following year with the additional data from 2005 trawl survey). The authors were not proposing necessarily to use POP model for northern rockfish but that these exercises are useful to explore differences in the models.

### Shortraker/Rougheye:

The 2003 survey estimates were higher and an overall upward trend is evident for these species. Rougheye rockfish is a Tier 4 species while Shortraker rockfish is in Tier 5 for ABC calculations. However, the Tier 4 criteria is not used for Rougheye, and instead the author and the Plan Team recommend the use of  $F=M$  which is similar to a Tier 5 calculation. This results in the recommended (more conservative) SR/RE ABC = 1760 mt.

Other slope rockfish TACs have traditionally been set for bycatch only status on the order of 900 mt in order to discourage a directed fishery. Concerns were previously expressed by SSC regarding lumping SR/RE in a single ABC when the actual catch of SR is a higher percentage of the total catch than its percentage of the ABC. The Plan Team was concerned that current observer data might not be accurate enough to manage on a species-specific level.

Public comments encouraged evaluating available catch information by area and by gear type. The catch composition by gear type may help to calculate the relative percentages of biomass versus what commercial fishery is seeing.

The Plan Team recommends that additional analysis of the relative catch estimates of SR and RE by gear types be included for the following year's assessment. Concerns were raised regarding the conservation of shortraker if it is being preferentially targeted. The authors recommended an ABC which is conservative

enough to account for these concerns. Preliminary comments from industry representatives indicated that this could be an interim measure for the upcoming fishery provided additional assessment of the relative catch by gear type be included in the following year's assessment.

Some discussions on the rockfish management issues relative to points raised in the Goodman et al. Current Harvest Strategy report led to the Team's conclusion that many rockfish were already managed with extra measures of precaution. In particular, it was noted that there did not appear to be any conservation concerns for any rockfish species in the GOA (the overall trends in stock abundances were stable or increasing). It was noted that the PSEIS preliminary preferred alternative has some additional conservation recommendations included specifically for rockfish and that these might be applied in the future.

#### Other Pelagic Shelf Rockfish:

##### Dusky Rockfish

Models utilized in the assessment assume no catch prior to 1977 as there was no data on catch prior to that time period. However, it was noted that with the model showing biomass estimates close to  $B_{40}$ , there is nothing to explain this in the current model parameters without the inclusion of prior catch. After discussion of whether or not the performance of the model is sufficient to provide more informative decision-making than calculating an ABC using the Tier 4 calculation, the Plan Team recommended using the age-structured model ABC as an improvement over the Tier 4 approach. The Plan Team recommended that authors work to resolve questions regarding the historical catch and proximity of biomass to  $B_{40}$  and/or the dependence of biomass on the first survey estimate. Also, the Team encouraged the use of this modeling approach for future assessments.

The Plan Team discussed surveys results in general for dusky rockfish as well as the overall survey objectives for GOA survey and the problems with balancing multiple species in sampling protocols. Survey biomass estimates for rockfish have been a continuous problem due to the variable coverage of the survey, patchy distribution of species and problems with species identification. The Team noted that one purpose of assessment modeling is to evaluate the utility of survey data and how design improvements (e.g., lower CVs) can affect management advice.

Public comment suggested that it may be possible to encourage more use of plant-based observers to help address the problem with low observer coverage in the GOA. A pilot observer program has been designed for the rockfish fishery in the Kodiak area. If additional specific observer coverage was desired, trying to build that out of the existing pilot project might be feasible.

ABCs for yellow and widow rockfish are managed under Tier 5 and ABCs and OFLs were computed accordingly and then added to the model estimated ABCs and OFLs for dusky rockfish. The Plan Team approved the author's recommended ABCs and OFLs for the pelagic shelf rockfish complex.

#### Demersal Shelf Rockfish:

Tory O'Connell presented the assessment for Demersal Shelf Rockfish. The assessment included a new habitat map for EYAK, and discussion indicated that the coverage of DSR habitat is improving. The ABC recommendation of 450 mt was slightly increased from last year due to new survey data. While density decreased in the CSEO the overall biomass increased due to higher increases in the EYAK region. It was noted that the federal fishery is still not at full retention of DSR.

Concerns were raised by the assessment author regarding the potential for unaccounted impacts from the sportfish fishery. The reported landings from this fishery are high, and do not include additional discards. These could represent a significant source of mortality and are not included in the assessment. It is possible that if landings continue to be high in the sportfish fishery it could preclude a directed fishery. The Team also noted that a similar potential may exist due to potential unaccounted catch in the Halibut fishery.

The Plan Team accepted the authors recommended ABC and OFL for DSR.

#### Pacific cod:

Grant Thompson presented the assessment for Pacific cod. Changes to the assessment included recompiled survey biomass estimates from 1984-2001, resulting in a point estimate from 1987 which is 29% lower than was originally estimated. Last year's assessment indicated that the stock biomass was below  $B_{40}$  for the first time. However, this year's survey showed a biomass increase and the stock is estimated to be above  $B_{40}$ . The ABC recommendation for 2004 of 62,800 mt is up 19% from last year's recommendation due to an observed increase in spawning biomass, while the OFL is up 46% to 102,000 mt. The Plan Team accepted the author's recommended ABC and OFL for this stock. This ABC includes an adjustment factor to the max permissible  $F(x 0.87)$ .

Area apportionments were recommended based upon data presented in the stock assessment of the relative biomass proportions for W, C, E from 1984-2003. The Plan Team recommended using the most recent three surveys to calculate the apportionment percentages of: 36% W, 57% C and 7% E. In previous years, the area allocations were recommended based on the most recent survey year until 2001 when area allocations were then recommended based on the most recent 3 years.

In response to a Council request to evaluate the recent changes in the patterns of fishing for Pacific cod (for the BSAI but also possibly relevant for the GOA), the author included an analysis of the "blend" data from 1998-2002 in appendix 2A and answered specific questions posed by the Council. The analysis did not show any dramatic change in fishing patterns in the GOA for P.cod.

The author updated the Plan Team on the recent progress on the ageing of P cod, and hopes to have additional age data for the following year's assessment.

Plan Team recommended that the assessment include alternative modeling approaches to better account for the potential exchange between management areas in Alaska. Also, the Team requests that selectivity-at-length patterns estimated by the model be carefully evaluated for abrupt shifts between size groups.

#### Skates:

Sarah Gaichas presented the stock assessment for skates. This is the first assessment for GOA skates in response to recent conservation concerns due to a rapidly developing directed fishery in 2003. The situation was originally presented at the September Plan Team and an amendment package (amendment 63) to remove skates from the other species complex was initiated. If approved this amendment could be implemented as early as March 2004. This would allow for separate ABC, OFLs and TACs to be set for skate species and skate complexes. Under the current management system, skates are within the "other species" complex, for which OFLs and ABCs are not established. TAC for other species is established in regulation as 5% of the sum of the target species TACs. The concern is that this leads to a high complex-level TAC which could theoretically be taken entirely as skates. Two large-bodied species--big and longnose skates, are the most abundant in bycatch and in survey estimates. Currently, the retained catch tends to be large (and mostly female) big skates in the Central GOA.

Discussion of the motivation for a directed fishery noted that 2001 was the first time a market developed for skates, while 2003 showed the first true directed fishery with gear developed specifically for skates. Public commentary noted that 1998 was an exploratory year for skate catch in the fishery, and that there was some

limited targeting of skates in the 1970's when the fishery explored using skate wings as simulated scallop meat. This exploratory fishery seemed to fail for lack of a viable market.

The author noted that information on skates is scarce, however current projects have been initiated in the Bering Sea for increasing information on skates. Jon Heifetz noted that anecdotal evidence from submarine videos show piles of skate egg cases in a single location along Aleutians, which was the only place these were seen along the survey. NMFS staff discussed that they plan to try to identify skates by species in areas where they are notably congregating. Currently there is no information available about spawning seasons.

Concerns were expressed by the author that the largest skates appear to be the most vulnerable to fishing pressure, therefore the management should be designed to be responsive to this conservation concern particularly given the lack of information on these species. Skate catch was observed in discrete locations across GOA and incidental catch in some groundfish fisheries. Catch appeared to be higher in 1998 than 1997, 2000, 2001 (Table 3 in assessment) which could be due to observer coverage issues, although public commentary again suggested an exploratory fishery in 1998. Catch in 2002 was highest in the Central GOA hook and line fishery, but given that this was likely due to a single halibut vessel, it is not presumed to be an indication of excessive skate catch in that time period. Questions were raised regarding the confidence in the 1998 catch data, and concerns were raised that this was also a situation of a single halibut vessel. This raised the issue of the ability to estimate catch in the GOA given current observer coverage levels and concerns with the current extrapolation of blend data to estimate skate catch. Assignment to fishery categories may impact the extrapolation from the blend data, particularly in areas that are unobserved. Discussion focused upon statistical and sampling problems with the available data. The Plan Team recommends that additional statistical approaches be evaluated to utilize the available data. Suggestions were made to look for dedicated funding to pursue this project, possibly from sources such as the SAIP in order to concentrate effort in this area.

Critical data needs include the vessel location information and the number of boats in an area versus number actually observed. Some of this information is collected but has proven logistically difficult to obtain. The Plan Team recommends obtaining information on the status of the AKFIN project initiated to input logbook data. Public comments suggested that in situations where it is a problem with a single boat, perhaps arrangements could be made to contact the vessel to obtain information on what they were targeting and the composition of their catch. It was noted that it would be necessary to check on the potential confidentiality concerns inherent with this suggestion. Additional data problems were mentioned with respect to the available data from the Halibut Commission and the problems with IPHC areas rescaled to represent NPFMC areas for catch reporting. Suggestions were made by the public to examine gear-specific catch distributions in relation to percentage of observer coverage. Additional information needs by the assessment authors include estimates of incidental catch of groundfish in the halibut fishery, and the possibility of an observer on board commercial halibut vessels.

Currently trawl survey data is being used for species composition. Next year observer species composition data will also be available from the groundfish fisheries. However, similar data from the halibut fishery are problematic. It was also noted that next year catch reporting for groundfish will exclude the state water fisheries. The Plan Team discussed the issue of skate survival, as the assessment author is assuming 100% mortality, and it was noted that there are mechanisms ("careful release" program) for avoiding harm and gear-specific (snap and fixed gear) rates which should lead to high survival rates. However, currently the Plan Team concurs with the assessment author that a necessary level of conservatism is built into the assessment by assuming 100% mortality.

Current reporting of catch shows that high catches of skates are occurring in discrete areas, specifically near Kodiak. ADF&G fish ticket data shows a much more defined concentration for skates in the target fishery for 2003, most are from unobserved boats therefore the fish ticket data provides more information than available observer data. Hot spots (within traditional fishing grounds) for skates are also indicated in observer data. The author plans to evaluate the overlap between the biomass distribution from the trawl survey data and the hot spots observed in the fishery data in the following year's assessment. Information on skate

movement is also unknown. Information obtained from the target fishery from ADF&G observers indicated that the species composition was predominantly larger females, and that catch was stratified by size. This matches similar observations in the Bering Sea where length data indicated a spatial concentration of females.. The Plan Team discussed the issue of potential size selectivity in the survey methods. It was discussed that given schooling behavior of skates, a trawl could draw from a single-sex school of either males or females, while missing the schools the opposite sex. Concerns were also raised that the sampling methodology may bias the results as single totes were sampled at random shoreside and may reflect only a specific sex and depth related school.

The Plan Team commends the assessment authors on the work involved in this report. Many questions are raised by the preliminary assessment and should be addressed as much as possible in future assessments. Concerns were raised regarding the use of the survey as a good estimator of skate biomass, and the potential for herding effects. The author felt that generally the bottom trawl surveys are good for skates and sculpins in other species category, thus biomass is likely estimated as well as it can be at present given the existence of some untrawlable habitat. While anecdotal evidence indicates that some skates are present in all areas (trawlable habitat and untrawlable habitat) there is no indication that a greater percentage are located in untrawlable habitat. Current work is attempting to estimate this, and preliminary data indicates that the E GOA has a higher proportion of untrawlable habitat while the Central GOA contains more trawlable area and this is where the skate concentrations appear to be the highest.

The Plan Team agrees with the assessment authors on the Tier 5 designation for skates and with the evidence presented to separate skates along the species lines as indicated. The Plan Team noted that the problem with Tier 5 is that it is contingent upon the estimate of natural mortality which is problematic for skates given the lack of available information. The Plan Team suggested that the sampling error and bias in data be examined, and that seasonal differences in the fishery be examined. Particular attention should be paid to the observed segregation by gender, and to ensure that observers are monitoring this in their observations. Suggestions were made to work in conjunction with the Observer Advisory Committee in their forthcoming report in order to push for additional observer coverage in the GOA, particularly on vessels less than 60ft and halibut vessels.

The Plan Team agrees with the assessment authors on the rationale for establishing ABCs by areas, however the Team did not agree with the authors on the need for area-specific OFLs. The Team discussed the problems with exceeding area-specific OFLs and the potential for exceeding them and shutting down other fisheries. GOA-wide OFLs are preferable for the first year for inseason management until sufficient experience is gained in managing this fishery. The trade-offs between conservation concerns for these discrete localized stocks and the inherent problems of managing area-specific OFLs were discussed. The Plan Team is concerned with localized issues and would like to evaluate the possibility of recommending changes to MRAs and the use of hot spot closures to better protect these stocks in addition to the TAC-setting process.

Comments from the public were concerned with the situation but would like to see additional information on the catch by the directed fishery prior to action. The Plan Team recognized the industry concerns but feels that the situation is developing rapidly and they must be immediately responsive to the prevailing conservation concerns in the skate fishery. Industry concerns were raised that the target fishery needs to be addressed in a way that does not adversely impact the fisheries that are not currently impacting skates and are not increasing the conservation concern. It was noted that area-specific OFLs would be problematic for other fisheries.

The Plan Team discussed some additional options to the preferred option by the assessment authors. A combination of big and longnose skates for a combined ABC was discussed, with the main conservation concern here being that it could be possible to specifically target one species and obtain over 90% of the TAC from a single species thus representing a serious conservation concern for that species. Discussion concluded that a possible solution to this would be with a combined big and longnose ABC, and the Council could set the TAC less than the ABC. Furthermore, if the major conservation concern is in the Central GOA, then the Plan Team would make a management recommendation to set TAC equal to the OFL for the species of most

concern so that directed fishery can be closed prior to causing a conservation concern. The fishery would then revert to bycatch status for remainder of the year and this would effectively close only the directed fishery.

The Plan Team agreed unanimously on this recommendation. The Plan Team recommends that the skates be divided into two groups for ABCs, with big and longnose skates together in one complex, and all “other” skates in the remaining aggregated group. These ABCs should be area-specific for big and longnose skates, and GOA-wide for the remaining “other” skates. For OFLs, the Plan Team recommends that a GOA-wide OFL initially be established for all skate species combined. The Plan Team further recommends that to protect the vulnerable big skate species in the Central GOA where the directed fishery is concentrated, that the Council set the TAC in the CGOA equal to the calculated OFL (3,284 mt) for the Big skate species. The Plan Team felt that this would represent a less draconian measure than other considerations discussed while still taking into account the conservation concerns as previously raised. The Plan Team recommended that these management measures be subsequently reexamined next year. The stock assessment author still recommends the preferred alternative from the assessment (which includes area-specific ABCs and OFLs) out of conservation concerns but did feel that this measure (with the inclusion of the recommendation to set TAC = big skate OFL in the CGOA) would represent a reasonable compromise given the concerns with species composition and the concerns regarding potential impacts to other directed fisheries. Concerns were raised however that there is no way to predict where a new targeted fishery might develop outside of Central GOA and that given the lack of observer coverage there would be no means to track this should an additional directed fishery develop. The Plan Team reiterated the need to encourage all methods of increasing data collection to continue to monitor the situation, and if the situation worsens or new data shows that the currently recommended measures are inadequate, the Plan Team would be prepared to recommend incrementally more conservative measures next year.

Additional information which may be available for the assessment next year would include increased species identification in the observed fishery due to the 2004 mandate for all observers to identify all skates by species. However, the target fishery is still not observed therefore this data will be lacking. Vertebrae have been collected on skates and staff time is needed to age these. It was noted that staff time for aging is limited and suggestions were made to possibly contract out this work given its importance. The annual sablefish survey may give additional information on skate species although it was noted that the longline survey does not currently identify skates to species. Suggestions were made to allow for sampling of subsections of the fishing operation similar to how “other species” are sampled during the halibut surveys. Tagging studies are being planned for the following year which would help determine if the populations are mixing gulf-wide. Additional genetic information on skates may also be available. More data may also be available from the Halibut Commission on their halibut surveys which could help clarify some questions regarding species composition.