

Minutes of the Gulf of Alaska Groundfish Plan Team

November 16-19, 2010
North Pacific Fishery Management Council
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Missing GOA PT members: Bob Foy, Ken Goldman, Steven Hare

The GOA Groundfish Plan Team convened their meeting on November 16, 2010. The agenda for this meeting is contained in the Joint Groundfish Plan Team minutes. The Team welcomes new member Kristen Green (ADF&G).

GOA Walleye Pollock

Martin Dorn presented the stock assessment for Gulf of Alaska walleye pollock. New data included 2009 total catch and catch at age from the fishery, 2010 biomass and age composition from the Shelikof Strait EIT survey, 2009 age composition from the NMFS bottom trawl survey, and 2010 biomass and length composition from the ADF&G crab/groundfish trawl survey. The Shelikof Strait EIT survey biomass was up 62% from 2009, 220,000 t were found in the new survey areas of Prince William Sound and Kenai. The ADF&G survey biomass also decreased by 15%, but was still up 60% from the three year mean. The model structure and data inputs were the same as in 2009. The recommended 2011 ABC is 88,620 t, which is a 15% increase from 2010 and is lower than the maximum permissible ABC. Biomass and yields are projected to increase in 2011.

Bycatch and incidental catch: FMP species bycatch consists of mostly (94%) pollock. Non-targets in 2009 were dominated by squid, eulachon, various shark species (e.g., Pacific sleeper sharks, spiny dogfish, salmon shark), jellyfish, and grenadiers. There is no trend in the bycatch of prohibited species for this period (but note that 2010 Chinook salmon bycatch was unusually high, see below for discussion).

The winter survey showed a broader distribution in Shelikof Strait and a possible shift more eastward. Survey biomass estimates were similar to assessment model predictions which is encouraging. There was also an increase in weight at age for mature fish (>5yrs) and this appears to increase the spawning stock biomass estimates. The reason for this increase in body weight is unknown, but could be due to density dependant growth or selective predation. The Team discussed whether Shelikof Strait is representative of other areas, and if sampling had changed over the years possibly also affecting variance.

As in the past, the NMFS bottom trawl survey catchability was examined and a comparison over the last decade was made. Estimates have varied between 0.64 and 0.85. Because of the uncertainty in the estimate and because changes in the catchability can result in large changes to the ABC, the assessment authors continued to recommend assuming a fixed catchability equal to 1.0 as a risk-averse assumption. This added conservatism was proposed because: 1) the stock is at relatively low abundance levels, 2) general uncertainty in the stock assessment including some conflicting survey trends, 3) potential increased predation on pollock, and 4) the importance of pollock in the Gulf of Alaska ecosystem. In addition, the authors decided that it was better to wait to change the model until a formal framework for considering scientific uncertainty and risk is implemented under new ABC requirements.

The Team discussed the number of parameters, the practice of penalizing parameters and how that affects the effective number of parameters in the model. In particular, the topic of “blocking” periods where selectivity parameters would be the same might be more parsimonious. The Team also discussed that natural mortality, M , is likely set lower than it is in reality.

The model generally fits well. As in previous years, the model estimates fall well below the high estimates from surveys in Shelikof Strait during the early years. Selectivity on younger fish has been higher since 2004; apparently smaller pollock are used for crab bait. Spawning biomass was estimated to be less than $B_{40\%}$ and less than $B_{35\%}$. The model predicts that a set of moderately sized year classes are recruiting. The assessment is fairly stable over time, but does have runs of highs and of lows. The assessment authors are concerned that the even though the stock has not been fished at the $F_{40\%}$ rate or higher, the stock remains below $B_{40\%}$. For Steller sea lion concerns, the probability of the stock dropping below $B_{20\%}$ will be negligible in the near term. The stock is increasing, but is estimated to be at the $B_{35\%}$ by 2012. It was noted that projections in the past 10 years or so have tended to be overly optimistic.

The assessment of pollock in southeast Alaska is the same as last year since there was no new survey in 2010.

The Team discussed the seasonal and geographic apportionment of the ABC. The seasonal apportionment amount (25%/season) is fixed to temporally distribute the effects of fishing on other pollock consumers (i.e., Steller sea lions), potentially reducing the overall intensity of any adverse effects. The catch must also be spatially distributed, but the method used to determine this distribution is determined by the assessment authors. The authors developed a method which used the biomass estimates from the most recent four survey years, which will reflect the current distribution but also smooth year to year variability. Marmot and Mozhovoi were added to the analysis this year since they have been surveyed three times now. The Team discussed that even within regions, there are multiple spawning stocks which are not fished at the same level.

The main changes that affect ABC relative to last year include increased mean-wt-at-age, changes in selectivity, and changes in relative biomass on the sloping part of the harvest rate control rule (below target stock size). It was noted that several conservative assumptions are built into assessment yet the response to uncertainty should occur at a policy level. Transition to risk-neutral assessment will require careful deliberations (e.g., using a more realistic M may impact both biomass and harvest rate estimates that could be considerably increase risk under present harvest control rules).

Discussion of salmon bycatch in GOA

Mary Furuness provided an overview of the Chinook bycatch in the GOA pollock fishery. The group discussed how observer data are used (i.e., from data collected at sea or in a plant). It was clarified that both sources are used and that if there is no delivery then extrapolation of hauls for that vessel at sea is used. Rates apply to unsampled vessels from census data.

The hierarchy of the six different rates used for the estimation was presented. It was noted that perhaps 15% of all bycatch is observed directly (the rest relies on extrapolation). Martin Loefflad noted that a large proportion of western GOA bycatch arose from unobserved vessels and this will be resolved with observer restructuring. Some 72% of the 2010 bycatch estimate occurred during October 1-18.

It was noted that this could be highlighted in GOA as an evolving hot topic and include it in Ecosystem SAFE introduction. Rationalizing the pollock fishery might be a first step towards addressing this problem but doing so requires the Council initiating that action which it has yet to do. In the past Chinook bycatch measures were considered in conjunction with the comprehensive GOA Rationalization package that is currently not moving forward in the Council process.

The Team was briefed on the upcoming Council discussion paper evaluating this issue and highlighted that for future considerations analysts should evaluate the size distribution of salmon being caught, seasonality and consistency across years and weeks, and compare these with characteristics of bycatch in the Bering Sea. It was noted that the difficulty of having 4 seasons (due to SSL measures) exacerbates the problem.

GOA Pacific cod

The Plan Team accepts model B, and the associated ABC and OFL levels with the caveats and concerns about the discrepancy between the pattern of last years numbers at age and those estimated in this assessment. The Team appreciated the authors effort in reducing the number of models for presentation.

The Team questioned why the pattern in numbers at age is so different this year compared to last year's assessment given that very little data has been added. In particular, the 2009 survey showed lots of one-year olds but they do not appear to be reflected in the model estimates. This appears to result in a declining trend in the projection model compared to a rapidly increasing trend from last year's version. It was noted that the numbers at age used in last years projection model will be different than the numbers at age for this years model. The difference may be in the demographic parameters as specified (there were some difficulties converting stock synthesis output to age-specific schedules required for the projection model) but should be explained.

For all models, the recruitment deviation in 2008 appears to go to zero (as reflected in Figure 2.2b) and that appears contrary to the 2009 survey data. The senior author noted that the selected model had survey catchability deviations set to zero in 2009 (along with the recruitment deviation). Also, size at age 1 is really different last couple of years.

The Team noted that it would be useful to have a presentation of the estimates relative to the data, particularly for the most recent survey (and sub-27 cm abundance index). The ABCs in historical perspective indicate that even with a 2012 ABC of 78,200 it would be third highest catch in history (noting that the TAC drops below the ABC due to the state fishery).

GOA sablefish

Sablefish discussion is captured during the Joint Team minutes (no further discussions were had during separate Team meetings).

Shallow water flatfish

The Team discussed how to manage northern/southern rock sole next year and whether to manage in a complex or separately. The Team recommends that authors highlight this issue for the Team regarding historical catch in proportion to individual components of ABC. The assumption is that northern and southern rock sole will be a Tier 3 assessment next year. It was recommended authors follow a similar assessment, PSR, for guidance on how to present the complex in the assessment chapter. The Team requested additional information on the complex and relative risks and benefits of retaining a Tier 5 complex with Northern/Southern rock sole (Tier 4) components versus placing the remaining Tier 5 species in a separate complex (and thus also a separate assessment chapter). The Team requested additional information on relative M values for flatfish to evaluate the potential for different productivity across flatfish stocks. The Team discussed the guidance in the ACL regulations regarding the appropriate placement of stocks into stock complexes in conjunction with this issue.

Rex sole

The rex sole assessment is an executive summary. An age-structured model is used for rex sole. The Team recommended ABC and OFL from last year's assessment based on Tier 5 calculations applied to the assessment model estimates of adult biomass, because estimates for $F_{35\%}$, $F_{40\%}$, and $B_{40\%}$ continue to be considered unreliable. The author explained there was uncertainty in how the Team calculated adult biomass last year which was the biomass that was applied to the Tier 5 calculations. The method for calculating biomass was different than what was presented in the 2010 assessment. The calculation used by the author was based on survey biomass whereas the Team used the Baranof catch equation which utilizes the adult biomass estimated by the model at the beginning of the year. The author has now updated the document for this year to be consistent with the Team calculations from last year. Catch is less than ABC and OFL. The majority of catch comes from the central Gulf. The summary table was presented with a 2011 OFL recommendation of 12,499 t and ABC of 9,565 t. These values are very similar to 2010 and 2012 recommendations. A table of prohibited species caught in the rex sole fishery was shown. The main discussion point was that in 2009 there were a lot of Chinook and non-chinook salmon taken in the fishery. The Team noted that there was also an usually high number of Tanner crab caught in 2009. There was also discussion that the golden king crab extrapolation was suspect. The author was encouraged to look into the PSC catch for the rex sole fishery.

Flathead sole

Flathead sole are a Tier 3 species and an executive summary was presented. Catches are increasing but remain below ABC and OFL levels. The summary table was presented with a 2011 OFL recommendation of 61,412 mt and ABC of 49,133 mt. The 2011 and 2012 recommendations are slightly higher than the 2010 numbers. The majority of the catch is in the central Gulf. The PSC catches were shown for the flathead fishery and the prohibited species catch is much lower in comparison to the rex sole fishery.

Arrowtooth Flounder

Arrowtooth are in Tier 3 and an executive summary was presented. Recent catches are lower than the associated ABCs and TACs. The summary table was presented with a 2011 OFL recommendation of 251,068 mt and ABC of 213,150 mt. Biomass seems to have leveled off and the OFL and ABC for 2011 are slightly lower compared to those recommended in 2010. The apportionment is based on survey biomass and the proportions by area are identical to those recommended in 2010.

Deepwater flatfish

Deepwater flatfish complex includes Greenland turbot, Dover sole, and Deepsea sole. Dover sole is managed under Tier 3, using an age-structured model. Deepsea sole and Greenland turbot are managed under Tier 6. Historical catch records from 1978-1995 was used to calculate the OFL for Tier 6 calculations for Greenland turbot and Deepsea sole. The OFL and ABC are calculated by species, and

then these values are summed for a total complex ABC and OFL. ABCs and OFLs are similar for all three species for the past three years (2009-2012). The total catch has been declining since the early 1990s (mostly Dover sole) but the catch may have increased slightly last year. ABC is apportioned by area.

Rockfish-general

The distribution of fishery effort by area under the rockfish pilot program began in 2007 were presented. There were some distributional changes in fishery effort. Fishery changes appear to be more prevalent in where northern rockfish were caught compared to other rockfish species. The survey distribution appears to be different than that seen from fishery data. The fact that mid-water doors are commonly used in the fishery may be the source of the difference. Applying the stock structure template to rockfish species was discussed and the Team encouraged rockfish authors to use the template for at least one GOA rockfish species (and also one flatfish species). The Team noted that Dusky rockfish would be a good candidate for GOA rockfish and either flathead sole or rocksole as a candidate for GOA Flatfish. The author will bring forward a proposal to the Team in September regarding revised groupings of rockfish by complex, especially in regards to separating dusky rockfish from the other pelagic shelf species. This may include a recommendation to break out shortraker from other slope species, add yellowtail and widow to the remaining “other slope” species. This would result in an “other rockfish” complex made up of minor species. Julie noted concerns about rockfish identification issues and that this may be exacerbated by modifying the composition of this species complex. Management under the new RPP regulations relative to a modified species complex could affect practical aspects of the RPP.

The Team recommended authors consult species allocation regulations under the RPP with RO staff prior to the September discussion. The Team also recommends that the rockfish authors bring back in September a vulnerability assessment to go along with the revised complex management concepts. Consideration of potential new rockfish species complexes should be accompanied by a Productivity-Susceptibility Analysis to evaluate whether individual species in management complexes share similar productivity and vulnerability to fishing pressure. There was also a recommendation that authors follow up with AFSC staff doing POP maturity studies in Kodiak prior to updated assessments next year.

The Team discussed the different catch assumptions made across assessments. Rockfish assessments employ a consistent assumption in that catch estimates through a specific date (i.e. not estimated through the end of the year) are employed in making the projections (for those stocks where a projection is appropriate). This differs from the rockfish catch assumption in the BSAI where it is assumed the fishery will catch the whole ABC thus this is the estimate used for total catch. The Team discussion centered on whether or not assessments need to be consistent in catch estimation for current and future years as rockfish assessments differ from others in how catch for a projection is estimated. For species where TAC likely to be taken then it seems appropriate to assume that TAC can be used, but for a species where this does not appear to be a valid assumption, than average catch over a time period would be a better assumption. The purpose of this was to ensure an accurate estimate of the entire year is used rather than an estimate through a certain date. How this is done will vary depending upon the author’s specific rationale and estimation procedure. The Team noted that authors should be clear in how catch is projected and what assumptions are made to make the catch estimate for the projection. The Team expressed concern that there may be some indication that rockfish populations are declining. The authors noted that despite a slight decline from last year’s model projections this was anticipated.

Northern Rockfish

Northern rockfish are in Tier 3a; this off-year summary was updated with the 2009 projection model. The 2010 catch cut off in October represented a 9% decrease from 2009 catch. The projection model predicted that spawning biomass had decreased slightly, resulting in slightly lower Northern rockfish ABCs and OFLs for 2011 and 2012 relative to last year. It was noted that dusky and Northern maturity estimates will be updated next year. A requested analysis was presented that looked at how the rockfish fishery has changed since 2007. Northern rockfish are caught east of Kodiak but the bottom trawl survey does not

catch them there. Julie Bonney noted that the fishery uses midwater doors, and fly the net, moving it up and down in the water column. The gear is best described as semi-pelagic gear. Rockfish come up off the bottom and with this gear fishers can get the net under them, so they can fish in rougher areas, unlike the bottom trawl surveys. Julie Bonney noted that the midwater doors offer an advantage for fuel consumption, and also potentially reduce any EFH impacts. The Team noted that it would be interesting to look at current bycatch compared to bycatch in the period before they switched to this new gear configuration.

The Team noted that methods for cutting off 2010 catch in early October may be inconsistent with estimating a full year's catch for 2011 in projections, especially for Northern rockfish where October and full year catch may differ by 10%. The Plan Teams suggested that total current year catch be estimated for projections to the extent possible.

Pelagic Shelf Rockfish

Yellowtail and widow rockfish are both managed under Tier 5. The Team recommended ABC and OFL for 2011 at 91 t and 121t respectively. The 2011 ABC and OFL values have not changed from 2010, but for an unknown reason these values were not transferred to the GOA status and catch specifications (please see <http://www.afsc.noaa.gov/REFM/docs/2009/GOApelshelf.pdf>). Instead, the specified values of 102 t and 136 t came from a preliminary version of the Pelagic Shelf Rockfish SAFE. These are incorrect, and 91 t for ABC and 121 t for OFL are the correct values.

Dusky rockfish are managed under Tier 3a, and the 2009 projection model was updated using the new 2010 catch. The projection model showed a decrease of 6% from last year. The author recommends a 2011 ABC of 4, 663 t. The total PSR recommended ABC for 2011 is 4,754 t. The spatial pattern of the dusky rockfish fishery has shifted some between 2007 and 2009. Next year the authors' plan to respond to the SSC comments to compare rockfish catchability between dusky and rougheye and blackspotted rockfish. The authors will try to provide information on maturity and growth curve updates for dusky rockfish.

Demersal shelf rockfish

Funding is currently unavailable for a survey this summer (2011). The availability of the Delta submersible is also uncertain. The Team notes that the submersible survey is necessary in order to complete a full assessment and expressed concern regarding the potential lack of funding for this long-loved, vulnerable species. The Team discussed the potential to drop DSR down from Tier 4 to 5 if no additional survey data were available but discussed that this is not a necessity based solely on lack of survey data. The Team requested additional information for the next assessment on the historical timing of regional management area surveys (i.e. which years were surveys conducted in each area). The Team also requests additional information on impacts of halibut sport regulations of yelloweye bycatch.

Dave Carlile provided an update on efforts to develop an age structured model for yelloweye. The Team discussed the selectivity curves and the observed dip in the curve. It was noted that this model is the generic rockfish model using yelloweye data. There are two alternative selectivity curves, both have recent predicted catch higher than observed. The model fits to fishery age compositions appear to be off on the plus-size group each year. There also appears to be a discrepancy in the 46 category each year. This may be related to some truncation error or mis-match in the model. The plan is for the model to be updated for next year and reviewed by the Team in September.

Thornyheads

Sandra gave a presentation of the thornyhead assessment executive summary. No major changes were noted. The Team approved the recommended ABCs and OFLs for 2011 and 2012.

Atka mackerel

Sandra gave a presentation on the executive summary of the Atka mackerel assessment. No major changes were noted and catch remains well below ABC levels although the Team noted that catch has increased in recent years due to increasing incidental catch levels above the TAC. The Team approved the recommended ABCs and OFLs for 2011 and 2012.

General Tier 6 discussion

The Team had extensive discussion regarding the Tier 6 criteria and the differential standards for considering a reliable biomass estimate for Tier 5 purposes. The Team notes that it seems prudent under the current Tier system to allow for different standards for non-target stocks that are not a target fishery than for target stocks where the management goal is different. The Team discussed that in cases of non-target stocks some estimate of biomass (e.g. minimum biomass estimates) could and should be employed to establish specifications for these stocks when average catch is insufficient. The Team noted that Tier 6 stocks require different considerations due to diverse life history characteristics and relative vulnerabilities.

Skates

Olav Ormseth presented an updated assessment, however no new survey data were available but the assessment includes updated catch. There was a substantial change to fishery catch data due to an error discovered in the regional database. This accounting did not affect inseason catch. The author presented a summary of the state-waters skate fishery that occurs in Prince William Sound. 2009 was the first year this fishery occurred. High catch rates resulted in harvests of big skates exceeding the GHL. In 2010, trip limits were imposed and total harvest of big skates were closer to GHL. The author and the Team commented on poor species identification in the fishery. The Team agreed with the authors ABC recommendations based on Tier 5 calculations.

Squid

Olav Ormseth presented new work on evaluating seasonal patterns of squid bycatch in fisheries. Catch of squid is highest in area 620. The catch patterns appear consistent over different years and there appears to be a possibility of a depth-related catch. The Team questioned whether there has been any evaluation of relative species mix in the GOA versus the BSAI. It was noted that in the GOA it is primarily *Berryteuthis* sp. The Team discussed the differences in the depth-stratum of the fishery and the acoustic survey. Julie noted that in 2006, the area along the shelf-break is where the larger pollock aggregated. However, the biomass no longer appears to be there and it might have been in that year only.

The Team discussed the utility of examining Tier 5 specifications given that it appears likely that biomass estimates are better for squid than other Tier 6 species. The Team requests Tier 5 calculations for next year's assessment.

GOA Sharks

For GOA sharks, discussion centered around trying to use a biomass-based approach to determine ABC and OFL. The Team discussed the distinction between a "reliable" estimate of biomass or the use of the dogfish biomass estimate as representative of a "minimum" estimate as an alternative as it's likely to be higher than what the GOA trawl survey estimates are. Using that approach as a pseudo Tier 5 approach would therefore make the best use of the available scientific information. The Team agreed with a pseudo Tier 5 approach because there is sufficient information from that trawl survey and this approach utilizes that information. The Team stated that the 90% percentile approach is hard to justify from a conservation standpoint so adopting the trawl survey estimates as minimum biomass represents an improvement over that approach. It was also pointed out that sharks as a complex could be placed on bycatch only status if the Teams recommended a higher ABC recommendation. Discussion centered around adopting a minimum biomass approach as the Team considers this to be a reliable minimum biomass estimate. Olav

mentioned that the SSC suggested that Tier 5 should be considered for dogfish. Therefore, a Tier 5 approach for dogfish and a Tier 6 for other species should be considered and all sharks should be placed on bycatch status only.

The Team agreed to go with a minimum biomass approach for spiny dogfish but questioned whether $F=M$ was appropriate and discussed using the sustainable F approach as an alternative. The 0.04 value is based on a Leslie matrix model from Cindy Tribuzio's PhD dissertation fishery rate based on a closed population. This approach assumes a closed population and utilizes life history parameters for fecundity and survival and is more like a marine mammal approach which is may be appropriate for sharks that have low fecundity, high pup survival, and likely stable recruitment. The Team agreed this would be a more precautionary approach rather than using $F=M$. Therefore, the Team recommends the OFL be based on Tier 5 calculations ($M * \text{Biomass}$ where $M = 0.097$) and the ABC based on Tier 5 calculations ($F * \text{Biomass}$ where F is 0.04 or the sustainable F rate provided in the assessment). This ABC is less than the Tier 5 maximum permissible ABC of $0.75 * M * \text{Biomass}$. For other sharks, the Team concurred with the author and recommended the Tier 6 approach of average catch. The Team does not agree with considering alternative Tier 6 options such as the percentile approaches discussed in the Joint Team meeting. However, the Team agreed that rather than averaging individual shark species the average catch should be computed as a complex (not including dogfish). All sharks will be on a bycatch only status.

Discussion occurred regarding how to calculate dogfish biomass estimates from the bottom trawl surveys. It was noted by the authors that the 2007 survey estimate and variance was relatively high. The author used a straight average of the last three surveys to compute biomass. Discussion occurred whether or not an inverse variance weighted method might be more appropriate. This was also pointed out that it can be done for octopus. After further discussion the Team agreed that using a consistent approach is desirable and comparable assessments like GOA rockfish use a straight average of the three previous survey biomasses. Therefore, the Team agreed to use this approach for spiny dogfish.

The Team encourages the authors to look closer at the IPHC survey and the NMFS longline survey as possible survey indexes for spiny dogfish and to provide more analyses regarding the reliability of biomass estimates of the bottom trawl survey. Further, the bottom trawl survey index for sleeper sharks should be analyzed and any estimates of M that can be derived should be presented. The Team also looks forward to seeing estimated shark catches from the halibut fishery in next year's document.

Octopus

Liz Conners presented an update of the octopus assessment. Octopuses were included in recent amendments that eliminate the "other species" category in 2011, and move the component groups "in the fishery." The biomass estimates for octopuses from trawl surveys are not reliable. Octopuses are commonly caught in pot and trawl fisheries, especially in the Pacific cod pot fishery. The assessment authors computed ABC and OFL values using Tier 6 average and maximum 1997-2007 catch.

The Teams discussed both modifying the catch time frame as well as using biomass-estimates from the trawl survey. The Team noted that a natural mortality estimate is necessary. This approach would diverge from standard Tier 6 and would use the available information to employ a Tier 5 calculation.

The Team recommends that octopus be retained in in Tier 6 but specifications use the available information to calculate a Tier 5-like estimate based on the last 3 surveys and employ a natural mortality estimate of 0.53. The Team further recommended that octopus be on bycatch-only status. The Team noted that this does not affect current retention. Julie Bonney noted that in the GOA octopus are currently not on bycatch status, so this would be a change in 2011 fishery. The MRAs are at 20% for all other species in aggregate but are not individually specified.

Sculpins

Olav Ormseth presented an update on gulf sculpins. While there is no new biological data, sculpins will now be managed as an independent complex due to ACL regulations. There are many sculpin species, but only 4 species make up the majority of the survey biomass. Yellow Irish lord are consistently the most abundant sculpin. Sculpin species in the gulf have varied life history characteristics and varied vulnerability scores. Most of the catch is incidental in the Pacific cod and flatfish fisheries. There is some mismatch between proportions of species composition versus survey composition.

The author recommended changing M based on recent research conducted in the BSAI. In addition, the author recommended weighting individual M rates by survey biomass to estimate a 'complex biomass'. The Team discussed some possible confusion with this approach, but agreed this calculation was reasonable. The author noted that using the BSAI M rates increases the ABCs. The Team agreed with the author's recommendations and suggested that research into sculpin life history in the Gulf should be a high priority.