Meeting of the Gulf of Alaska Groundfish Plan Team

Plan Team Report

September 18-19, 2024

GOA Groundfish Plan Team Members:

Jim Ianelli	AFSC REFM (co-chair)	Pete Hulson	AFSC ABL
Chris Lunsford	AFSC ABL (co-chair)	Sandra Lowe	AFSC REFM
Sara Cleaver	NPFMC (coordinator)	Nat Nichols	ADF&G
Abby Jahn	NMFS AKRO	Jan Rumble	ADF&G
Craig Faunce	AFSC FMA	Paul Spencer	AFSC REFM
Lisa Hillier	WDFW	Ben Williams	AFSC ABL

Introduction

The Gulf of Alaska (GOA) Groundfish Plan Team (Team) meeting was held virtually on September 18 and 19, 2024. Roughly 180 people attended the meeting. All documents and presentations were posted to the Team's electronic agenda. All presentations are also linked in the header for each agenda item in this report.

Winter acoustic survey

Mike Levine with the AFSC Midwater Assessment and Conservation Engineering (MACE) Program presented the work done during winter 2024 on the acoustic-trawl surveys. For the GOA winter acoustic survey, there were delays due to weather, mechanics, and family medical emergencies. Because of these delays, there were a couple of areas that were in the survey plan that did not get surveyed, Morzhovoi Bay and Sanak Trough (Shumigans), and Marmot Bay (Shelikof). Kenai/PWS is planned to be surveyed in February as the last time this area was covered was in 2017.

The Team was grateful for the thorough presentation and the work done to conduct the survey. There was some focused discussion related to the abundance of age 1 and 2 pollock from this survey. Specifically, the Team inquired about factors that might affect their availability in different years. This was highlighted in anticipation of Cole Monnahan's findings in this year's pollock stock assessment analysis.

Harvest projections

Chris Lunsford presented the harvest projections (HP) for the following stocks/stock complexes:

- GOA flathead sole
- GOA POP
- GOA rougheye/blackspotted rockfish (RE/BS)
- GOA rock sole
- GOA shallow-water flatfish (SWF)
- GOA rex sole
- GOA deepwater flatfish
- GOA arrowtooth flounder (ATF)

The Team agreed with the authors' OFL and ABC recommendations for these stocks as presented in the documents. The only reduction from maxABC was for RE/BS, using the same method the SSC recommended for 2024. These were presented as final assessment documents to be used for final harvest specifications in November/December.

The Team discussed this new timing for Plan Team/SSC review of harvest projections. They noted the tradeoff of streamlining review of stocks used and issues related to pulling catch data for these stocks as early as mid-August. Given that some fisheries begin in early July, assuming catch through August as the annual amount is problematic. Authors may estimate the annual catch based on recent mean proportions through the end of the year or simply assume the full ABC but this should be explicitly evaluated in the future. **The Team recommended that authors evaluate the variability and consequences in extrapolating catches from late August forward to the end of the year to see if the extrapolated catches are accurate, and compare with projection results where the current year catch is simply set at the ABC.**

A member of the public suggested adding the apportionment and catch for the current/prior year to the tables in the HPs would be helpful for comparison.

The Team recommended the harvest projection documents and slides include subarea apportionments for GOA stocks and clarify that apportionment proportions are rolled over from the last full assessment.

Rockfish spatial management

Sara Cleaver presented information from a discussion paper requested by the Council on GOA rockfish stock structure and spatial management. Her presentation focused on the stock structure status of the four stocks evaluated which was based upon analyses conducted (including growth investigations, examination of age and length composition, and genetics) and the expert opinion of the senior authors for these stock assessments. While current information provides some evidence that there is no genetic structure for the GOA shortraker, thornyhead, and other rockfish stocks, there is evidence of stock structure for the rougheye-blackspotted stock (both because this is a complex and there appears to be differentiation in trends and sizes among areas). The Team noted that in general, limited data are available for these four stocks to make conclusions about spatial stock structure. Limited data suggest a lack of genetic stock structure for some stocks, but important demographic stock differentiation may still exist.

The Team discussed that one of the biological considerations for apportionment of ABC into the GOA subareas was a precautionary measure to avoid localized depletion as a mitigation measure for uncertainty in stock structure. The Team noted that its role is in assessing biological considerations related to spatial management. Impacts related to socioeconomic aspects of fisheries due to the apportionment scheme employed in the GOA is beyond the purview of the Team. It remains unclear to the Team what is the role of assessment authors or the Team when it comes to evaluating apportionment if there is no biological basis for subarea ABC apportionment for these stocks. The Team thanked Sara, the authors, and all the other experts that contributed to the GOA rockfish stock structure and spatial management document.

Thornyhead rockfish

Kevin Siwike provided the presentation on GOA thornyhead complex model updates authored by Kevin and Katy Echave.

The authors proposed alternative models that include additional observational error and 3 process errors for the WGOA, CGOA, and EGOA (M24.1), and M24.2 with additional observational errors and a single shared process error. The authors noted that additional observation errors allow for more biologically realistic process error. The longline survey does not survey small shortspine thornyhead as well as the bottom trawl survey, because the hook size is too large for shortspine mouths. The bottom trawl survey has not regularly sampled deeper than 500 m. The Team asked if other assessments use additional observation errors. GOA shortraker rockfish adds additional observational error for the longline survey. The authors noted that without the additional observation error, this led to extreme (high) process errors. The Team agreed that it makes sense for a single shared process error for this stock, but wanted further evaluation of adding additional observation error.

The authors recommended estimating a shared single process error, a single scaling coefficient, and additional observation error for both the longline and trawl surveys (M24.2).

The Team recommended bringing forward Model M24.2 (additional observation error and single process error) for November. The Team also recommended further evaluation of adding additional observation errors, and to provide information on the mechanisms that might justify additional observation errors.

GOA pollock

Cole Monnahan provided a presentation on GOA pollock. Discussions centered around proposed changes resulting from a CIE review. **The Team accepted the proposed model change.** In particular, noting that previous presentations failed to include important metrics such as the actual sample sizes used for composition after the application of Francis weights. Cole showed the results from that practice (for the first time) and the values were quite low. Some Team members expressed concern that this resulted in unacceptably low values which effectively ignored some of the composition data. For this reason, Cole's model using the Dirichlet Multinomial was considered most appropriate since the final effective sample size was more in line with expectation (though arguably was still relatively low). **The Team requested that the report always include the actual (effective or fixed) sample size be reported.** Previously, the initial values were noted, though the extent that data were down weighted based on the "Francis method" were missing.

There was a question as to why keep a penalized random walk in model 23b since the fit to observed data is good. It was noted that the sigma is small, so the penalty is large and it is not having much of an influence, though it does keep greater flexibility for future examinations. **The Team requested that a minor model change with this penalty turned off be provided in the November version.** When considering dropping age-1 and -2 juveniles from the pre-spawner acoustic-trawl survey it was noted that the survey was not designed for this age/size of pollock. The Team noted that while last year's accepted model should still be brought forward for the November document, the extent of including a full suite of diagnostics for that model could be left to the author's discretion. The Team noted that this September document may be included as an attachment in November, and appreciates the efforts the author took to incorporate and adopt recommendations put forward by the CIE.

FY25 Acoustic Survey Planning

Lyle Britt presented on acoustic survey planning and next steps for best allocating survey resources. A proposal was put forth to discontinue the MACE GOA acoustic-trawl summer survey starting in 2025 to better leverage staff and vessel time. A biennial survey since 2013, this survey was designed as a pollock survey but has collected data on other species and has the potential to inform research on untrawlable habitat. While data from this survey has increasingly influenced model results for pollock in recent years, the duration of the survey has also necessarily been reduced due to resource challenges and the survey. Discontinuing this survey would allow AFSC to focus resources on more impactful surveys (e.g., Shelikof pre-spawning survey) and/or emergent research needs. It was noted that there would be a loss of survey information outside of the pollock assessment (e.g., from ESP/ESR and ecosystem data/indicators such as forage the fish index, euphausiids, etc.), but this type of information may be able to be gleaned from other surveys in the future.

It was noted that the sooner a decision is made on whether or not to maintain this survey the better for fortifying other surveys. Additionally, the Oscar Dyson is going in for mid-lifecycle repairs soon, and knowing the status of this survey helps with that planning. There was a question of whether the summer survey could be incorporated in the Pacific ocean perch assessment, and it was noted that the last CIE review recommended against incorporating this index of abundance and deemed it unreliable for POP. There were additional questions on how the loss of this survey would affect apportionments, though it was pointed out that apportionment was done without this survey prior to 2013. Additionally, there was a question of whether survey days from this survey loss would be dedicated to the GOA. While it is possible that some time could get allocated to other regions if there were higher priorities, it is likely that available survey days would remain in the GOA. Lyle indicated that operationally, it makes the most sense to keep the vessel in or near the GOA region to avoid additional transit costs.

It was noted that there should be vigilance that cuts to several surveys over time (e.g., no longer/rarely sample deep stations) can reduce data streams to the point that they are no longer effective for management. The Team appreciated being alerted of the change in the survey effort.

Arrowtooth flounder

Kalei Shotwell and Grant Adams presented a research track model using CEATTLE and comparing it to the single species ADMB model. The Team noted that the bridging exercise was sufficient to go forward with the TMB for future management applications.

The Team recommended that the TMB version of the single species model be used in 2025 and brought forward to the September meeting.

GOA Demersal shelf rockfish (DSR) CIE response and model

Phil Joy presented the extensive modeling work he undertook in response to the CIE review of the Bayesian surplus production model proposed for use by ADF&G in the SEO DSR. The Team appreciates the tremendous amount of effort Phil put into this CIE review response and encourages ADF&G to continue advancing this work for SEO yelloweye. A publication based on this work is planned, and intends to provide guidance on the use of surplus production models.

GOA DSR update

Jan Rumble provided an update on GOA DSR including the future of the remotely operated vehicle (ROV) survey. The southcentral ROV has previously been used to survey the Southeast region. However, there have been challenges with logistics and the ability to assess deeper habitat. In addition, the ADF&G ROV operator and technician retired with no replacement. Last year, the state put out a request for bids for a new ROV that could be operated out of Southeast and be operated at deeper depths. The ROV that won the bid was acquired and delivered and did not meet specifications and is not usable for stock assessments. Funding for the stock assessment project is limited so the state cannot pay for an ROV survey at this time. The biometrician that was working on the DSR assessment took a job with the ADF&G Sport Fish Division but Caitlin Stern, who works for ADF&G and is on the Crab Plan Team, will take over the assessment for this year. The 2024 assessment will use model 22.2; this model was accepted by the Team and SSC in 2022. For future assessments, the State hopes to revisit developing an age-structure model for comparison with the REMA approach.

The Team recommended that ADF&G get DSR and yelloweye lengths from the IPHC survey as there are limited data available from the state and the IPHC has some stations in SEO. However, the IPHC does not measure fish other than halibut unless there is a special project request.

Dusky and northern rockfish

Kristen Omori and Ben Williams provided a presentation on GOA Dusky and Northern rockfish updates.

Apportionment (GOA Dusky and Northern rockfish)
Both assessments currently use design-based survey abundance estimates to apportion ABC despite using a model-based index of abundance (VAST, delta-lognormal version) in the assessment model. The authors provided a comparison of design-based estimates versus model-based VAST estimates for apportionment. For dusky rockfish, the VAST approach provides "smoother" biomass estimates compared to the design-based approach. While the VAST approach provides less variability, it does lower the proportion of biomass in the Central GOA and increases biomass in the Western and Eastern GOA. This results in a lower proportion of ABC in the Central GOA. The last three years of dusky rockfish catches by subarea were provided and generally show that dusky catches would have been below sub area proportion of ABC if using VAST for apportionment.

The Team discussed how the design vs modeled methods accounts for temporal and spatial correlations. It was clarified that the VAST methodology has a spatial correlation but not a temporal correlation. The Team also discussed the nuances of how the West Yakutat (WYAK) and Southeast Outside (SEO) subarea ABCs apportionments are computed for dusky rockfish. Starting in 1997, the Team recommended that apportionment to the two smaller areas in the eastern Gulf be based on the upper 95% confidence limit of the weighted average of the estimates of the eastern Gulf biomass proportion that is in the WYAK area. This was done in response to closing the SEO area to trawling, and trying to balance the uncertainty in survey estimates with associated costs to the fishing industry. This method is still used for computing apportionment for the EGOA, but is not easily estimated if using VAST for apportionment. The Teams discussed some options including, 1) using VAST for the Western and Central GOA, but use the design-based ratio for the subarea apportionment to WYAK and SEO in the Eastern GOA or, 2) using a long-term average (1997 – 2024) to fix the ratio between the Eastern subareas for future apportionment. The author recommended switching to VAST for apportionment to be consistent with how survey biomass is estimated in the model. The author will conduct further evaluation and bring forward a recommendation for EGOA apportionment in November.

Ben presented a similar apportionment recommendation for northern rockfish. For northern rockfish, the Eastern GOA is not included in the apportionment model because <1% of biomass occurs in this region. Instead, conventional practice has been to allocate 1 t of the Eastern GOA northern rockfish ABC to the Other Rockfish complex for the Eastern GOA during the specifications process. For the VAST approach, the author continues to recommend dropping the Eastern GOA from the VAST apportionment calculation. Similar to dusky rockfish results, the VAST apportionment methodology for northern rockfish smooths the proportion of biomass and ABC across the two remaining areas (Western and Central GOA) compared to the design-based approach. In some years, this would have resulted in substantial differences in apportionment of ABC between the Western and Central areas. The author noted that although this is not necessarily a biological concern, it may have implications for the fishery. A member of the public noted the Kodiak catcher vessel fleet in the Central GOA typically don't target northern rockfish, and they are rarely caught as bycatch in the POP fishery as the fleet uses pelagic gear. However, the catcher processor fleet that operates in both the Western and Central GOA regions do target northern rockfish in both regions. The Team acknowledged that bycatch of northern rockfish in other fisheries is unlikely to reflect abundance trends.

The Team questioned the variable REMA estimates shown for northern rockfish and asked the author to investigate the process errors being used. The Team agreed with the recommendation and rationale for being consistent between using VAST for determining survey abundance as well as apportionment. The authors and the Team noted that the design-based biomass estimates for these two rockfish stocks are historically variable, and inconsistent. The VAST estimates affect the subarea ABC proportions, but doesn't raise any biological concerns considering the highly variable survey estimates. The Team also noted these potential changes in ABC apportionments between subareas is similar to the issues raised in the spatial management discussion for other GOA rockfish stocks. This raises general questions on best practices for apportioning among subarea management regions.

The Team recommended using the VAST approach for dusky rockfish apportionment and recommended further exploration and discussion of the Eastern GOA apportionments be brought forth at the November meeting.

The Team recommended using the VAST approach for northern rockfish apportionment. The Team requested the northern rockfish assessment author to again bring forward the comparison of assuming a single shared process error vs different process errors that can be estimated for the WGOA and CGOA for the November meeting.

Model Changes: Dusky rockfish
Kristen presented model comparisons between the currently accepted 'base' model, m22.3a, and the two updated models, m22.4a and m22.5a. Kristen recommended two dusky rockfish model changes:

1) Trawl survey biomass was fit using a lognormal error structure. This aligns with the common assumption in assessment models.
2) The years of recruitment used for computing the mean for the projection model were changed to follow the conventional year range (from year classes post 1977). This affected estimates of $B_{100\%}$, $B_{40\%}$.

The Team agreed with the author and recommended model 22.5a with both model changes described above be brought forward and compared with the base model (22.3a) for November.

Model Changes: Northern rockfish

Ben discussed the northern rockfish model and data changes. Trawl survey biomass changed to use a lognormal error structure (same as dusky rockfish) and was introduced as M22.1a. Model 22.1b used input sample sizes (ISS) that incorporated growth variability and aging error. The Team accepted these changes as improvements to the base model.

He then discussed results from porting the ADMB model to RTMB (M24). Ben reviewed some estimation issues with initial trials in RTMB but these were largely resolved. The Team supported the incorporation of priors for the selectivity parameters and noted that there are likely benefits to using priors on selectivity parameters in most stock assessment models. The Team discussed whether there were some technical issues that were causing slight differences in the bridging model. Ben noted he would work with colleagues to help with remaining issues on the bridging exercise. The Team supported the bridging to RTMB and looks forward to further evaluation of the bridging model to be presented in November.

The Team recommended moving forward with RTMB and Model M24.a (estimated *M* and selectivity priors) for northern rockfish in November. The Team recommended further evaluation of small differences in the bridging between ADMB and RTMB for November.

GOA Pacific cod

Pete Hulson presented recommended updates for the GOA Pacific cod assessment model. The updates largely included changes to the input data files and data processing. The first set of updates (model 2019.1c) recomputed the standard deviation of lognormally distributed population indices, made corrections to length composition data and their input sample sizes, lowered the plus group for the length composition data, corrected the seasons for the AFSC bottom trawl survey conditional age at length data, and turned off estimation of the forecast recruitment parameters. In total, these updates did not change the trend in biomass, but did shift the scale towards lower spawning stock biomass (SSB). The Team supported these changes as improvements to the data and model configuration. The Team also commented that the relative biomass change might be useful to show for comparing among models as the relative stock status may change less than the absolute scale.

Model 2019.1d used double age reads to re-estimate the bias in the ages read before 2007 using the AgeingError R- package developed at the Northwest Fisheries Science Center. The effect of this change was to slightly increase mean recruitment, and increase trawl survey selectivity. Model 2019.1e more fully utilizes the Alaska Fish and Game samples of length composition, and weights the fishery length composition data by monthly rather than weekly catch. These changes smoothed out the between-length variability in the length composition data while retaining the important population signals. Finally, the binning of the length composition data was explored. The current model has 1 cm size bins, with the length plus group of 116 cm. Bins sizes of 2 cm and 5 cm were evaluated. No significant changes in model estimates were observed from the changes in bin size, but using 5 cm bins reduced model run time by more than 50%

The recommended model (Model 24) combined all of these changes. The largest parameter change was in the trawl survey catchability coefficient, which increased to 1.19 (from 1.08 in the 2023 assessment), but this increase is still within the range estimated in previous assessment (i.e., the estimate in the 2017 assessment was 1.46). The Team noted that there was history in specifying the age-range of effective catchability such that the catchability was less than 1.0, and this might be worth looking into further.

The Team appreciates the effort that the authors put into these modeling and data input changes. The authors asked the Team if they needed to present each iteration of data changes to the model results in November. **The Team recommended the author only bring forward their preferred model as "2024" in November, in addition to the base model used in the previous assessment.**

There was discussion about each choice made by the authors (e.g. the choice of the linear or spline form of the aging error model, merging State collected and Federally collected length frequency data). The author recommended the linear model for the aging error, but also expressed interest in further evaluating the aging error model. **The Team recommended using Akaike Information Criterion (AIC) to inform selection of the aging error model.**

The Team also noted that weight-at-age is produced as a standard output of this model (as it is needed to fit the catch biomass), and recommended comparing the model-estimated weight-at-age to empirical data on weight-at-age.

The authors also investigated apportionment methods. They wish to not move forward with the REMA model that incorporates the longline survey until an environmental link (CFSR bottom trawl survey bottom temperature index) can be developed. The rationale for this was to reduce the CV% changes that occur among areas when the longline survey is added (it could triple the value across the timeseries). There was discussion among members about the details of the investigation and this choice regarding REMA, incorporation of the IPHC survey (not adopted), the forms of trawl and longline survey selectivity, and selectivity versus catchability as recommended by the SSC. The author recommended getting the composition data set up with input sample size first before looking further into selectivity and catchability investigations. There were no recommendations from the Team.

Proposed harvest specifications (including DMRs)

Abby Jahn presented the proposed harvest specifications for 2025/2026. **The Team recommended the OFLs and ABCs as published for 2025 in the Federal Register in March 2024.**

The 2025 harvest projections were presented at this meeting, but they will not be reflected in the proposed 2025/2026 OFL and ABC harvest specifications for consistency with prior years. The 2025 harvest projections will be reflected in the final 2025/2026 PT recommended OFLs and ABCs after the November PT meeting. **The Team also recommended the 2025 and 2026 halibut discard mortality rates (DMRs) (as presented by the Halibut DMR Working Group) to be included in the 2025/2026 proposed specifications.**

The Team acknowledged that for Demersal Shelf Rockfish (DSR), the final specifications will differ from the proposed specifications to account for the changes recommended by the Council in October 2023 (and clarified in December 2023) to move the seven species in the DSR-subgroup out of the Other Rockfish complex during the 2024 harvest specifications cycle for implementation in the 2025 fisheries. This change would result in two stock complexes for DSR being reflected in the final harvest specifications table with two separate OFLs and ABCs for W/C/WY and SEO.

Sara Cleaver communicated that the term East Yakutat District (EYAK/EY) was used 1991-1996. Currently, all waters between 137"00' W. longitude and 140"00' W. longitude are incorporated into Southeast Outside (SEO/650). **For consistency with regulations, assessment authors should use SEO instead of references to EYAK.**