THE GROUNDFISH MANAGEMENT TEAM REPORT ON PHASED IN APPROACHES TO CHANGING CATCH LIMITS

The Groundfish Management Team (GMT) received an overview of the situation summary from Mr. John DeVore, Pacific Fishery Management Council (Council) staff. Although the Council is considering changes to sigma that affect both groundfish and coastal pelagic species, our report focuses only on groundfish.

Part 1: Existing approaches to respond to impacts of new higher sigma values and the resulting lower annual catch limits

As discussed in the National Marine Fisheries Service (NMFS) report (Agenda Item D.5.a, NMFS Report 1, June 2019), new sigma values and the resultant lower allowable biological catch (ABC) values could be mitigated through the use of existing tools and would not require the Council to amend the fishery management plan (FMP).

Approach 1 increases the frequency of full and updated stock assessments. Recognizing constraints to budget and staffing, the GMT continues to support strategically increasing the number and frequency of stock assessments, especially for high value stocks. With the implementation of the stock assessment prioritization process and planning for two stock assessment cycles, states and Federal agencies can identify data collection needs early on for highly constraining stocks.

Additionally, requesting catch-only updates to revise assumed removals since the last assessment can produce an increase in overfishing limits (OFLs), especially for low attainment stocks. The GMT raised this idea at the Council's March 2019 meeting (Agenda Item G.3.a, Supplemental GMT Report 1, March 2019) and has since been working with Dr. Owen Hamel of the Northwest Fisheries Science Center (NWFSC) to provide updated catch estimates for selected species. This effort does not reset the clock on the staleness penalty (values of sigma increase with the passage of time since the last full assessment) but can provide some relief until the stock can be fully assessed.

The GMT was informed that NMFS Southeast Fisheries Science Center is working on a catch-only update tool that would allow users, such as the GMT, to provide new 10-year projections. This tool is expected to be shared with, and adapted for, west coast groundfish species and would provide a standardized approach for completing catch-only updates in an efficient manner, thus relieving the stock assessor burden and allowing them to complete full and updated assessments more frequently. The GMT suggests that the tool include a way to adjust the P* values for a given species to estimate the resulting OFLs, ABCs, and annual catch limits (ACLs).

Approach 2 considers alternative future catch streams for producing OFLs in the ten year projections. The GMT routinely provides these data for use in decision tables; however, the Science and Statistical Committee (SSC) uses the full ACL catch streams for setting OFLs. While these alternative catch streams have been considered when setting harvest specifications (e.g.

yelloweye rockfish for 2019-20), the GMT will continue to work with the SSC in examining the use of this approach for setting OFLs and ACLs.

Approach 3 considers raising the ACL by increasing P* for stocks that are managed below the current maximum P* of 0.45. For example, harvest specifications for sablefish and thornyheads are currently set using a P* of 0.40. The Council could increase the P* for these stocks if information on the status of these stocks leads the Council to be less precautionary.

Part 2: Case by case phase-in approach to respond to impacts of new higher sigma values and the resulting lower ACLs that does not require an FMP amendment

As described above, the Council is already considering actions and implementing the above approaches to increase ABCs and ACLs. For example, the GMT has been working with Dr. Hamel on catch-only projections and the NWFSC is performing update assessments in 2019 for both widow rockfish and petrale sole.

Approach 4 allows the Council to request the SSC consider ABCs that are higher than those set by the default harvest control rules that utilize the P*/sigma framework, on a case by case basis for groundfish stocks (e.g., for rationale for Oregon black rockfish discussed below). Although the FMP already allows for case by case phase-ins (sections 4.4.1 and 4.4.2), the implementation requirements are unclear and would benefit from SSC input. For example, it would be important to know what sort of analysis would be warranted to justify higher ABCs and how the higher ABCs would affect the probability of overfishing.

As outlined in the Supplemental Oregon Department of Fish and Wildlife (ODFW) Report (Agenda Item D.5.a, Supplemental ODFW Report 1, June 2019), an example where the Council could apply Approach 4 in the biennial specifications is for Oregon black rockfish as Approaches 1-3 would not provide relief from the time-varying sigmas. Oregon black rockfish are already managed at a P* of 0.45 with the ACL=ABC, are not being reassessed in 2019, and are a high attainment stock of which catch-only projections only result in minor increases to ABCs. The GMT will provide more input on applying Approach 4 to potential stocks, including Oregon black rockfish, in 2021-22 under Agenda Item I.6.

For any species where the Council would consider Approach 4, it would be ideal for stock assessors to complete new model runs with higher ABCs this summer. In September, the SSC would then be tasked with endorsing these new ABCs, and, if needed, the GMT would help provide any justifications. This would allow the Council and the GMT to consider ACL alternatives that adhere to the regular biennial schedule. During the biennial process, the GMT would analyze the impact under the default harvest control rule and the ACL under the phase-in option. The biological impacts would be informed by the new model runs, and economic impacts and management options would be considered by the GMT during the biennial analysis. Further consideration of Approach 4 would be best addressed under Agenda Item I.6 as it pertains to planning for the next biennium with a tool that is already available for use in the FMP. This agenda item pertains to scoping Approaches 5 and 6 to be potentially added as new tools in the FMP.

Part 3: Approaches to respond to impacts of new higher sigma values and the resulting lower annual catch limits that would require an FMP amendment

Two approaches described in the NMFS report would require FMP amendments: Approach 5, Phased-in ABC Reduction, and Approach 6, Adjust Maximum P* in the FMP. The GMT discussed whether Approaches 5 and 6 should be forwarded for consideration in September for potential use in the 2021-22 biennium. Alternately, if Approaches 1-4 (described above) currently meet the needs of the Council, Approach 5 and 6 could be considered as items on the groundfish workload prioritization list.

An FMP amendment to allow a phased-in ABC reduction and/or expand the range of P*s adds an additional framework for consideration under the biennial harvest specifications process. The GMT does not believe this would be a heavy workload. The larger impacts analysis would only be conducted if the Council chose one of these approaches as an action alternative in the biennial specifications. This approach would continue to allow the GMT to provide management measures that aim to attain, but not exceed, allocations and ACLs.

If the Council would like to scope either or both approaches, the GMT suggests the Council establish criteria to select stocks. For example, the Council may want to consider guidelines, including category, stock status, and recent attainment, such as those proposed in the Supplemental ODFW Report:

- Highly utilized (>75 percent ACL attainment)
- Facing a significant ABC reduction (>10 percent)
- Not overfished or subject to overfishing
- Not in the precautionary zone (i.e., biomass above the management target)

Under Approach 6, the Council would need to consider the maximum value for which P* could be established. As described in the NMFS report, the maximum allowable P* is 0.49, because National Standard 1 requires that ABCs have less than a 50 percent probability of overfishing (i.e., P* must be less than 0.5). A Category 1 stock with a P* of 0.49 and the ACL=ABC would only have a 1.25 percent difference between the ACL and OFL. Therefore, the Council may want to assess their risk tolerance when considering applying the maximum potential P*.

A higher P* would increase fishing opportunities for only a few high attainment stocks. Raising the P* above 0.45 would not increase ABCs significantly for high attainment Category I stocks, such as sablefish, petrale sole, and California and Washington black rockfish. As shown in Figure 1, the OFL to ABC deductions for Category I stocks are only two percentage points higher at the beginning of the 10-year projection with the new sigma. Although the deduction could increase by six percentage points by the end of the projection period due to the new staleness penalty, these are important stocks that are frequently reassessed which resets the staleness penalty.

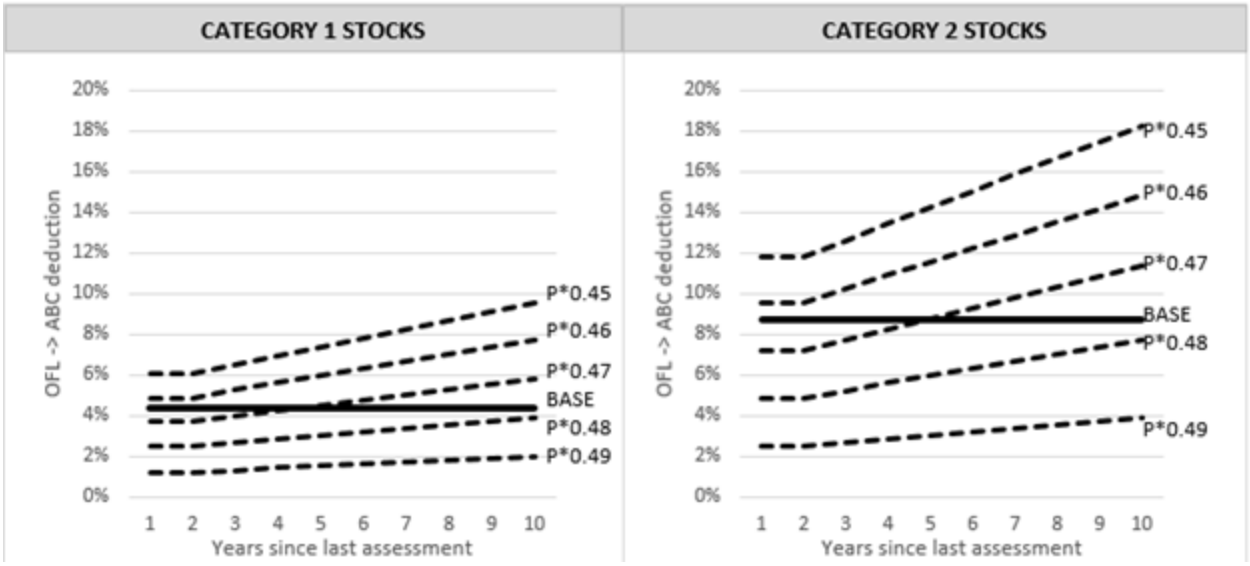

Figure 1: Comparison of OFL - ABC deductions for the baseline (P* 0.45 and old sigma) compared to higher P*s with the new sigma. Category III stocks were managed with a 16.6 percent deduction with the old sigma, which would change to 22.2 percent deduction with the new sigma.

Summary

The GMT does not have any recommendations under this agenda item on Approaches 1-4 as they are already available to the Council. While we discussed how Approach 4 could work for Oregon black rockfish or other stocks, further consideration of this would be best addressed under Agenda Item I.6 as it pertains to planning for the next biennium. This agenda item pertains to scoping Approaches 5 and 6 that are not currently available for use in the FMP.

Ultimately, the GMT believes there could be merit in adding Approaches 5 and 6 to the FMP toolbox, regardless of whether they are used during the 2021-22 biennium. However, the Council will need to decide if the workload and associated potential benefit of developing these approaches outweighs analyzing other management measures needed to fully implement the harvest specifications and potentially the other prioritized items from the groundfish workload list (Attachment 2 in Agenda Item I.2.a, GMT Report 1).

Appendix: A Primer on P* and Sigma

As background to this discussion, we provide a short refresher on how P* and sigma values interact to affect catch limits.

The SSC endorses a sigma value, which is an estimate of uncertainty present in the base model that relates levels of catch to risk of overfishing. Fisheries management identifies the OFL as the median estimate from the probability density distribution, which would result in a 50-50 chance of overfishing (Figure 2). In other U.S. fishery councils, the SSC directly sets ABC values. The Pacific Fisheries Management Council, however, is unique in that a P* value is used as a "policy knob" in combination with the sigma value to select ABCs. The P* value is the probability that overfishing would occur at a corresponding ABC (e.g., 0.38 in **Figure 2**). Even at this relatively conservative P* selection, overfishing is still a possibility and reflects the level of risk the Council

feels is acceptable to take for a given stock. Ideally, the Council would have time to set the P* value individually for each stock assessment, taking into account both the SSC-endorsed sigma value and other sources of uncertainty. For example, the Council may choose to be more risk-tolerant and select a higher P* value for stock assessments based on very conservative assumptions. Alternatively, they may choose to be more risk-averse and select a lower P* value for individual assessments with higher levels of uncertainty.

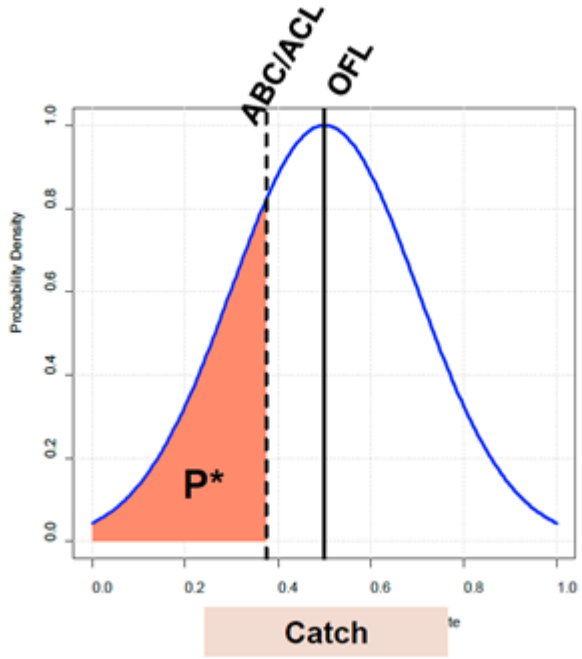

Figure 2: Hypothetical probability density distribution, or sigma, relating catch to different harvest goals with P* set to 0.38.

Recent SSC analyses to better quantify both uncertainty in the base model of stock assessments overall and uncertainty as assessments become older resulted in higher estimations of uncertainty. Subsequently, the SSC endorsed, and the Council adopted, new sigma values to reflect these better estimations of uncertainty. Changing sigma to recognize higher levels of uncertainty effectively pushes down the curve. The center remains the same, but the peak drops and the sides spread, causing the same P* value to correspond to lower ABC and ACL values. The recent adoption of higher sigma values have thus resulted in lower ABC and ACL values for all groundfish stocks. These ABC and ACL values will further decrease as stock assessments age and the staleness penalty is applied.

PFMC
06/22/19