**DSR notes**

**by Jan Rumble and Nat Nichols**

The author gave an overview of the changes to assemblages and the associated tiers: DSR in Central GOA (CG)/Western GOA (WG)/West Yakutat (WY) is Tier 6; DSR except yelloweye rockfish (YE) in Southeast Outside is Tier 6 and YE in SEO is Tier 5, assessed using a two-index multi-area random effects model (REMA). There were some updates to the input data including updated ADFG ROV survey data for NSEO and EYKT and updated IPHC survey data for 2023 and 2023; because of staffing, equipment and funding, no ROV surveys are currently planned for future years.

A major change in the assessment is that it now includes DSR species in WG/CG/WY , which were previously assessed as part of the GOA Other Rockfish stock complex; all of these species are managed as Tier 6. The biggest methodological change was the YE natural mortality value, changed from 0.02 to 0.044. In addition, the authors standardized the IPHC longline survey CPUE index and changed the CPUE units from numbers per hook to kg per hook. The CPUE index is used as a secondary index of abundance in the REMA model and is spatially stratified. The OFL and ABC for SEO are calculated by adding together the Tier 5-based quantities for SEO YE and the Tier 6-based quantities for the other SEO DSR species in the complex.

The author noted that if the current OFL and ABC for CG/WG/WY DSR had been in place in 2022 and 2023, the CG/WG/WY DSR catches would have exceeded the ABC. Industry commented that pre-2020 catches should be examined because these would have been lower and not exceeded ABCs.

There was a question about the division of stock assessment responsibilities between the State of Alaska (SOA) and NOAA/NMFS. Caitlin Stern from SOA is the lead assessment author and Kristen Omori from NOAA/NMFS contributed sections on the CG/WG/WY DSR stock complex to this joint assessment.

**Plan Team:** There was discussion on IPHC CPUE standardization. Suggestions from **PT** members included treating the data as compositional data and using information about total catch of other species as well as examining target versus non target versus empty hooks. Also, one team member recommended using the mode instead of the median from the standard GAM package. Also discussed, because of the loss of the ROV data, IPHC longline CPUE will be more heavily relied on, and because of this, this survey should be examined more closely. IPHC is dropping some of their survey stations in the future which may have an effect on estimates. Looking at the stations that are dropped and the composition of the catch is important along station distribution. There has been a large reduction of stations in the SE part of the IPHC survey; this will negatively impact the assessment.

**Authors:** Following the CIE reviewer recommendations, the authors changed the value of natural mortality from 0.02 to 0.044. The author recommended reducing the SEO yelloweye ABC with by 20% due to concerns about more rapid changes in the estimated biomass than have ever been seen previously and the lack of ADFG ROV survey data for 2024 as well as in the future.

The overall level of risk for the CG/WG/WY DSR was level 1 with no recommendation by the authors for an ABC reduction. The authors rated SEO DSR Level 2 overall due to lack of survey data, rapid changes in stock abundance, and increased bycatch harvest in the longline halibut fishery (the only allowed harvest of YE). Because of this Level 2 overall risk level, the author recommended a 20% reduction in the YE ABC.

**Plan Team**: The PT discussed the authors’ Level 2 rating for Fishery Performance Considerations and advised that a Level 2 rating could be justified by, e.g., a decrease in CPUE in the directed fishery, but that increased incidental catch does not merit a Level 2 rating in this category.

There was lengthy discussion over the large change in the value of natural mortality used for YE. There is still an increase in ABC even with the old natural mortality value due to the increase in estimated biomass.

**The Plan Team recommended continuing to use M = 0.02 and not M = 0.044, which was recommended by the author based on the CIE review.** The Plan Team noted that, because SEO YE rockfish is managed as a Tier 5 stock, with F\_OFL = M and F\_ABC = 0.75 \* F\_OFL, a change in the value of M has a large impact on reference points and must have strong justification. The historically used value, M = 0.02, is based on a catch-curve analysis of YE rockfish age data grouped into 2 year intervals (to avoid zero counts) between the ages of 36 and 96 (Green et al. 2015) and there is currently no reason to doubt the validity of this analysis. Jim Thorson noted that his recent paper presents a phylogenetically informed method for estimating M based on longevity and/or growth data that could be applied to this stock (Thorson 2024). The PT concluded that more exploration of alternative methods for calculating M for SEO YE rockfish is required before a shift away from M = 0.02 can be justified. The Plan Team also noted that an ABC increase using a stair-step approach has been recommended and implemented for other assessments; this could be an option for adjusting the ABC/OFL for SEO YE.

**Other Plan Team Discussion:** There were comments from PT members that using a spatiotemporal model for IPHC CPUE index standardization may be preferable to using the GAM approach which was recommended by the CIE review. Migrating from REMA to surplus production model may be straight forward. Phil Joy (SOA) is still working on the surplus production model and hopes to have it ready in the future. It may be necessary to manage SEO YE as Tier 6 in the future due to the expected lack of the ADFG ROV survey and limited IPHC CPUE survey data.

