WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REPORT ON THE ADOPTION OF FINAL STOCK ASSESSMENTS

The Washington Department of Fish and Wildlife (WDFW) appreciates the collaborative effort led by the Northwest and Southwest Fisheries Science Centers and those who participated in the assessments and Stock Assessment Review (STAR) Panel reviews. Stock assessments require coordinated data collection, analysis, and review. Our appreciation extends to the many people involved in fishery-dependent and fishery-independent data collection on the West Coast. As seen again this cycle, the samples collected by biologists in the ports and aboard surveys that are read by our age reading experts are key to determining the status of rockfish stocks. With few advances for conducting fishery-independent surveys in untrawlable habitats, their work will likely become even more important to ensure the sustainability of our groundfish fisheries.

Yelloweye Rockfish Assessment and Rebuilding Analysis

WDFW submitted this report for the advanced briefing book to encourage discussion by the Scientific and Statistical Committee (SSC) on the upcoming rebuilding analysis for yelloweye rockfish, which will be reviewed at the Mop-Up Panel later in September. This new assessment marks a substantial change in the perceived status, abundance, and rate of rebuilding for this stock. Anticipating that the assessment will be endorsed for approval, we encourage SSC discussion and welcome recommendations on how best to:

1. Build a full range of rebuilding harvest strategies into the rebuilding analyses,
2. Incorporate management uncertainty related to future catches into the projections, and
3. Incorporate a plausible range of "steepness" values into the rebuilding projections to more fully reflect uncertainty.

These first two items are related to management measure proposals that we plan on introducing under Agenda Item E.9, Initial Harvest Specifications and Management Measure Actions for 2019-2020. In brief, we are recommending that the Council continue to advance ways of increasing stability and flexibility for fishing communities during the remaining rebuilding period. The core challenge stems from the need to distribute the Annual Catch Limit (ACL) among sectors at levels that have a low probability of being fully used in a year.

We anticipate that the first item will be considered as a matter of course under the Terms of Reference for the Groundfish Rebuilding Analysis for 2017-18. The assessment changes appear substantial enough to warrant a close evaluation of the default harvest rate. It may be that the

default harvest policy and T_{TARGET} could be at the edges of the range, or even beyond the range, of what would be reasonably considered based on this assessment alone. The decision table forecasts that the default harvest rate would lead to rebuilding in 2026 or 2027. The previous rebuilding analysis estimated a zero percent probability that the stock would rebuild by these years under the default rebuilding harvest rate. The rebuilding plan's current T_{TARGET} is 2074.

The second item is one that the Groundfish Management Team (GMT) has raised over the past few cycles and relates to the assumption used in the rebuilding analysis about the attainment of the annual catch limit (ACL) each year during rebuilding. However, this assumption is not reflective of actual catch or the purposeful intent of the management measures to account for management uncertainty with yelloweye. These measures have kept the probability of reaching the ACL low but do not eliminate the possibility of overages. Over 2009-2015, estimates of total mortality for yelloweye have averaged 58.5 percent of the ACL with a range of 50.0 percent to 68.2 percent. We understand that the SSC has supported evaluation of such catch scenarios in past discussions with the GMT. And as recommended by the GMT, the 2017 assessment's decision table includes a catch stream based on this pattern continuing into the future. This new rebuilding analysis will be the first opportunity to evaluate catch uncertainty within the full range of rebuilding projections.

We believe that the rebuilding analysis could evaluate management uncertainty while keeping the number of scenarios manageable. One possibility for structuring the scenarios might involve spacing constant SPR harvest rate strategies in increments that that facilitates the evaluation of management uncertainty (e.g., regularly spaced by percentages of their corresponding ACLs). As we understand past SSC advice, the average catch is what determines the rebuilding analysis outputs. Therefore, complicated catch scenarios that simulate the occasional overage would not alter rebuilding estimates.

Lastly, we are requesting advice from the SSC on ways of evaluating sensitivity of the rebuilding projects to the fixed steepness value used in the assessment. We do not believe the Council has been fully advised on the implications of using a fixed value for this important parameter. While the assessment for yelloweye uses natural mortality as its axis of uncertainty in the decision table, we understand that the steepness estimate will strongly influence rebuilding forecasts. The previous two yelloweye rebuilding analyses used a two-axis decision table of which steepness was one of the axes. We are requesting that the SSC consider how a similar approach could be used in the upcoming rebuilding analysis to explore sensitivity over a plausible range of steepness values. It is our understanding that such an approach would provide a broader range of uncertainty in rebuilding timeframes without changing point estimates (e.g., T_{TARGET} with 50 percent probability) substantially. Again, we believe it important for the Council and public to be informed of the uncertainty created by the steepness assumption.