# SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON YELLOWEYE STOCK ASSESSMENT

Following completion of an updated stock assessment and Stock Assessment Review (STAR) Panel review of yelloweye rockfish in 2005, the Council in November requested that the stock assessment team (STAT) further develop the analysis to include new data sources, and in particular, fishery-independent catch rate data from the International Pacific Halibut Commission (IPHC) survey. The STAT completed a new stock assessment (F.3.a., Supplemental Attachment 1), which was reviewed at a STAR Panel held from 13-15 February (F.3.a., Supplemental Attachment 2). Subsequently, using results from the new assessment the STAT conducted an updated rebuilding analysis, contained in (F.3.a., Supplemental Attachment 3).

The new assessment model treats the West Coast population of yelloweye rockfish in two different ways: as a single coastwide stock (consistent with the 2002 and 2005 assessments) and as separate and distinct sub-populations for the States of California, Oregon and Washington. Other significant changes that were incorporated into the new model included: (1) inclusion of an abundance trend calculated from the IPHC survey, (2) a detailed re-examination and evaluation of all recreational CPUE statistics available from each State, (3) a thorough summary of historical catch data that extended the model back to as early as 1923, (4) a change from dome-shaped selectivity curves to simpler asymptotic ones, and (5) a reduction in natural mortality rate from 0.045 to 0.036 $yr^{-1}$. Collectively, the new assessment model that includes all of these alterations, indicates that the spawning biomass of the coastwide yelloweye stock is currently 17.7% of the unfished level.

The SSC considered the attempt to build separate State-specific sub-population models for yelloweye rockfish to be an ambitious undertaking, given the sparseness of the available data. While considerable progress was made in that direction, including the development of plausible models for California and Oregon, the SSC was concerned with the Washington sub-population model, which had difficulty converging and required additional constraints. Moreover, there was an apparent discrepancy in the implied coastwide distribution of the species based on modeling results at the sub-population level and long-term distributional data from the triennial shelf trawl survey. As a consequence of these concerns, the SSC favors using the coastwide yelloweye rockfish model for setting the optimum yield (OY) of the stock, which is consistent with current practice. Nonetheless, given the apparent vulnerability of this species to localized depletion the SSC encourages future development of area-specific models and notes that results from the California and Oregon models may be of use to the Council in characterizing regional patterns of depletion. The continued development of *in situ* submersible surveys and focused sampling in yelloweye habitat during the IPHC survey should be of considerable value in improving the Washington sub-population model. However, the SSC wishes to strongly reiterate, as it did following the 2005 assessement, that without the development of new trend indices, especially for the States of California and Oregon, any future

attempt to assess the yelloweye rockfish stock will be fruitless.

Concern was also expressed that the change from dome-shaped to asymptotic selectivity curves was not fully evaluated during the STAR Panel and a request was made that the SSC explore this issue (letter from P. Anderson to D. McIsaac dated February 28, 2006). With respect to this matter the SSC notes that models using dome-shaped selectivity were problematic due to frequent lack of convergence, resulting in difficulties in interpreting model results. Furthermore, the information presented in Tables 26a and 26b compare and contrast results from fitting the model to both types of selectivity curves. From the information presented in those tables, albeit from pre-STAR versions of the models, it is apparent that only modest gains in fit are obtained with the increase in parameters required by the dome-shaped (double logistic) model, which generally are statistically insignificant. Based on this consideration the SSC supports the STAT's use of asymptotic selectivity curves in the yelloweye model.

Results presented in the latest rebuilding analysis that are derived from the coastwide model indicate that rebuilding of yelloweye rockfish is lagging behind the current Council adopted schedule, i.e., the probability of rebuilding by the current $T_{target}$ (2058) = 0.005. Given the numerous changes that have been incorporated into the yelloweye model, including a substantial alteration in the natural mortality rate, the SSC considers it appropriate to re-estimate $T_{max}$, $T_{target}$, and a suite of harvest rates that would rebuild the stock over a range of probability values. If the Council elects to maintain a probability of rebuilding before the new, re-estimated $T_{max}$ (2096) equal to 0.80, which is the current policy, the calculated OY in 2007 from the coastwide model is 12.6 mt. The SSC notes, however, that this approach to establishing fishery yields during rebuilding has been deemed inappropriate by the 9$^{th}$ Circuit Court of Appeals.

The 2006 re-assessment and review of yelloweye rockfish was completed in a very short time by the STAT and STAR Panel and both are to be commended for completing the task in the available time. Nonetheless, from an evaluation perspective the SSC does not view this kind of rapid response analysis in a favorable light. The accelerated turn-around that was required between completion of the STAR Panel report, conducting rebuilding analyses, finalizing the assessment document, and distribution of all these material to meeting participants led to both inadequate and inaccurate reporting in the assessment document and multiple versions of the rebuilding analysis, which clearly hampered the SSC's review.

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