

THE USE OF HARVEST GUIDELINES FOR ASSESSED STOCKS MANAGED IN A STOCK COMPLEX

The Pacific Fishery Management Council (Council) requested a white paper explaining the use of harvest guidelines (HGs) to manage west coast groundfish stocks in a stock complex at their September meeting. The context for this request was consideration of management measures, such as specification of HGs, for managing rougheye rockfish and other stocks in a complex in lieu of specifying stock-specific harvest specifications. This white paper was prepared by Council staff in response to this request.

The Council has made it a priority to increase the number of assessments for groundfish stocks managed under the Pacific Coast Groundfish Fishery Management Plan (FMP). Most unassessed stocks managed under the FMP are managed in stock complexes or aggregations of stocks managed under shared harvest specifications and management measures. In some cases, the Council has decided to remove a newly assessed stock from a stock complex and manage that stock under stock-specific harvest specifications and management measures. However, this has not been universally done for every newly assessed stock. There have been cases when a newly assessed stock managed in a complex, for which trawl individual fishing quotas (IFQs) are specified, are not removed from the complex because of the difficulty in estimating catch history at the permit level for allocating IFQ quota share (e.g., splitnose rockfish managed in the Minor Slope Rockfish complex north of 40°10' N lat.). There have been other cases where the Council elected to continue to manage a newly assessed stock in a complex to avoid changing a formal, long-term allocation that would require an FMP amendment (e.g., blackgill rockfish managed in the Minor Slope Rockfish complex south of 40°10' N lat.). In such cases, where a newly assessed stock remains in the stock complex and there are conservation concerns, other strategies, such as specification of an HG and accompanying management measures, are considered.

The use of an HG to manage a stock in a complex needs to be considered on a stock-by-stock basis. As the Scientific and Statistical Committee noted in their April 2012 statement on 2013-2014 biennial specifications and management measures ([Agenda Item I.3.b, Supplemental SSC Report, April 2012](#)), “no two stocks are exactly alike, and in establishing stock complexes there will always be tradeoffs between management practicality and concerns about individual species”. First, a conservation concern for the stock is the usual driver for considering an HG and other management measure to manage a stock in a complex. It would not likely be prudent to continue to manage a stock in a complex if a newly assessed stock is declared overfished. While rebuilding of an entire stock complex is allowed in the National Standard 1 guidelines, rebuilding plans around the country are usually stock-specific and, in the history of west coast groundfish management, there has never been a rebuilding plan specified for a stock complex nor a rebuilding plan specified for a stock that remained in a stock complex. The Council has never considered managing a rebuilding plan for a stock in a complex since rebuilding plans typically contemplate strategic measures to significantly reduce the harvest rate on an overfished stock without being unnecessarily punitive to the fishery. Implementing rebuilding measures at the complex level would not likely achieve that objective since the other stocks in the complex

would be similarly affected by rebuilding measures. Further, the FMP allows a suspension of a formal allocation for an overfished stock once it is so declared and through the course of implementing a rebuilding plan.

The second consideration for managing a component stock in a complex with an HG is how effective management measures would be to maintain total catches within a specified HG. For instance, it may not be effective to manage a trawl-dominant stock of concern in a complex with an HG since IFQs cannot be allocated at this level. IFQs are only allocated at the management unit level where annual catch limits (ACLs) or annual catch targets (ACTs) are specified (i.e., the individual stock level for those stocks managed outside of complexes or at the stock complex level). However, managing a stock within a complex using an HG may very well be effective for stocks that are not trawl-dominant since stock-specific management measures such as cumulative landing limits can be specified that can influence the amount of targeting done on the stock in non-trawl fisheries.

There are two cases where the Council and NMFS has specified an HG for stocks managed in complexes – blue rockfish in waters off California and blackgill rockfish south of 40°10' N lat. Both of these stocks were assessed and both assessments indicated a conservation concern for these stocks that were not as dire as an overfished status (both stocks were estimated to be in the precautionary zone). Both of these stocks are also not trawl dominant. Blue rockfish are caught primarily in nearshore commercial and recreational fisheries and are rarely caught in trawl fisheries. Blackgill rockfish south of 40°10' N lat. are caught in the trawl fishery and in the limited entry fixed gear (LEFG) fishery, with the bulk of the historic harvest in the LEFG fishery south of Pt. Conception at 34°27' N lat.

Blue rockfish was assessed for the portion of the stock occurring north of 34°27' N lat. to the California-Oregon border at 42° N lat. (Key, MacCall et al. 2008). The assessment indicated the stock was at 29.7% depletion at the start of 2007 and hence in the precautionary zone. The Council elected to continue to manage blue rockfish in the minor nearshore rockfish complexes north and south of 40°10' N lat. To address the blue rockfish conservation concern, the Council has elected to establish an HG for California fisheries every year since 2009. This HG is calculated from the 2007 assessment by first using the year-specific OFL projected in the assessment. The ABC is derived using an overfishing probability (P^*) of 0.45 for category 2 stocks, which is then adjusted using the 40-10 default ACL harvest control rule, as specified in the FMP for species in the precautionary zone. The HG contribution for the unassessed portion of the stock south of Pt. Conception is calculated by first estimating an OFL using the depletion-corrected average catch (DCAC) methodology and then applying an ABC adjustment (using a P^* of 0.45 for a category 3 stock). The HG contribution for the unassessed area is set equal to the ABC under the assumption that this portion of the stock is above the biomass target (B_{MSY}). The blue rockfish HG contributions for the assessed and unassessed areas are then summed to determine the HG. Annual management measures for California nearshore fisheries have been designed to stay within the HG. This management strategy has worked well as evidenced by the fact that estimated annual total catches of blue rockfish in California fisheries have been within the specified HGs.

The 2011 assessment of blackgill rockfish south of 40°10' N lat. indicated the stock was at a 30% depletion at the start of 2011 and hence in the precautionary zone (Field and Pearson 2011). Blackgill rockfish is part of the minor slope rockfish complex south of 40°10' N. latitude and

subject to an Amendment 21 allocation (63 percent to trawl and 37 percent to non-trawl). To improve inseason tracking of blackgill rockfish south of 40°10' N lat. and to address the conservation concern, the Council recommended HGs for 2013 and 2014 of 106 mt and 110 mt, respectively. These HGs were derived using the OFLs projected from the 2011 assessment and then applying an ABC buffer derived using an overfishing probability (P*) of 0.45 for category 2 stocks, which is then adjusted using the 40-10 default ACL harvest control rule, as specified in the FMP for species in the precautionary zone. Since an HG is implemented, processors must sort and report blackgill south 40°10' N lat. prior to the first weighing after offload. Further, the Council provided guidance that the commercial non-trawl apportionment of blackgill should be 60 percent to the LEFG sector and 40 percent to the open access (OA) fixed gear sector. This apportionment reflects the historical distribution of catch between the limited entry and open access fixed gear sectors from 2005-2010. The Council then adopted significantly lower cumulative landing limits of blackgill rockfish for the LEFG and OA sectors designed to reduce targeting, especially for those fisheries south of 34°27' N lat. where the bulk of the blackgill rockfish catch has historically occurred. Landings to date this year through September have been 8 mt, compared to 84 mt at the same point in time last year. Coupled with anecdotal reports from fishermen who had been targeting blackgill prior to this year that fishermen are not fishing the blackgill grounds south of 34°27' N lat., it is anticipated that total catches this year will be within the specified HG. This indicates that significant targeting of blackgill rockfish is not occurring and this management strategy appears to be working well.

It is likely a similar management strategy would work well with managing rougheye rockfish since this is a slope rockfish that is not trawl-dominant and a significant catch has historically occurred in the LEFG non-trawl fishery. However, unlike blackgill rockfish south of 40°10' N lat., rougheye rockfish do not have the same conservation concerns as blackgill. The 2013 rougheye assessment indicates the stock is healthy with an estimated depletion of 47% at the start of 2013 (Hicks, Wetzel et al. 2013). Further, the stock is projected to remain healthy in the next ten years even under the less likely low state of nature assuming a lower natural mortality rate (and therefore lower relative productivity) than the most likely base case model. However, if the Council wants to address the risk of future catches exceeding the component OFL, an HG strategy coupled with lower cumulative landing limits for non-trawl fisheries should reduce catches associated with slope rockfish targeting in the LEFG and OA sectors. Since the Council has elected to continue to manage rougheye rockfish in the minor slope rockfish complexes north and south of 40°10' N lat. and since IFQs are allocated at the slope rockfish complex levels, strategies such as requesting trawl fishermen to avoid rougheye or area closures where rougheye most often occur may be the best strategies to consider for reducing trawl catches of rougheye rockfish.

Literature Cited

*Field, J. C. and D. Pearson (2011). Status of the blackgill rockfish, *Sebastes melanostomus*, in the Conception and Monterey INPFC areas for 2011. Santa Cruz (CA), Groundfish Analysis Team Fisheries Ecology Division, Southwest Fisheries Science Center.*

*Hicks, A. C., C. Wetzel, et al. (2013). "The status of rougheye rockfish (*Sebastes aleutianus*) and blackspotted rockfish (*S. melanostictus*) as a complex along the U.S. West Coast in 2013."*

Key, M., A. D. MacCall, et al. (2008). "The 2007 Assessment of Blue Rockfish (Sebastes mystinus) in California." Status of the Pacific Coast groundfish fishery through 2007, Stock assessment and fishery evaluation.

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