

estimate them is likely to improve with time. The latest available values will be published in the Stock Assessment and Fishery Evaluation report, which for the pelagics fisheries is the Council's Annual Report on Pelagic Fisheries in the Western Pacific. To give an idea of the range of values that is likely to be used in the assessments, the supplemental FMP amendments refer to previous estimates that have been made.

Comment 13: Several commenters stated that the supplemental amendments should include additional information on stock status; methods of assessment, including a discussion of the methodologies to be used in estimating biomass for the crustacean stocks; potential sources of error, bias, and uncertainty; and the potential consequences of such information (or lack thereof) on management of fisheries at low stock levels.

Response: The supplemental FMP amendments do not provide detailed information regarding available information on stock status; methods of assessment (including assessment of biomass for crustacean stocks); potential sources of error, bias, and uncertainty; and the potential consequences of such information on management of fisheries at low stock levels. The supplemental amendments focus on establishing a control rule framework within which stock assessments would be performed rather than describing the operational aspects of stock assessment. By prescribing assessment methods and information sources in only general terms, the supplemental amendments implicitly allow flexibility in those methods and information sources. As stated in the supplemental FMP amendments, the best available information will be used in the stock assessments. The sources of error, bias, and uncertainty associated with a given assessment will be identified and evaluated to the extent necessary at the time of the assessment, as will their implications in terms of the overfishing thresholds and other reference points and the possible need for management action, as prescribed by the control rules.

Comment 14: Several commenters questioned the use of catch-per-unit-effort (CPUE) as a proxy in the status determination criteria. One commenter stated that the various sources of bias related to CPUE make its use as a measure of fishing mortality rate and stock biomass unacceptable, and that before any fisheries on these stocks are initiated or expanded, NMFS should develop reliable methods for assessing stock status and fishing mortality rate. One commenter stated that the

supplemental amendments for the bottomfish and pelagics FMPs should include a full discussion of the use of CPUE as a proxy for status determination criteria, including how it will be estimated, how CPUE or fishing effort will be used to estimate an unfished biomass, optimum yield (OY) or MSY level, how the use of CPUE will avoid the pitfalls or make the adjustments presented in the Technical Guidance, and consideration of alternative proxies.

Response: NMFS agrees that using CPUE as an indicator of stock biomass is associated with some uncertainty and biases. However, the same is true with all stock assessment methods; there is no practical way to directly measure stock biomass. As indicated in the supplemental FMP amendments, the CPUE estimates will be standardized for all identifiable biases, as will the fishing effort estimates that will be used as proxies for fishing mortality.

Comment 15: One commenter stated that because the supplemental amendments for bottomfish and seamount groundfish and for pelagics do not specify an OY and the supplemental amendment for crustaceans does not specify a biomass at the OY level, the supplemental amendments are inconsistent with the requirements of the Magnuson-Stevens Act and the National Standard Guidelines.

Response: OY has already been specified in each of the FMPs (bottomfish/seamount groundfish, precious corals, crustaceans, and pelagics). The supplemental FMP amendments for the bottomfish and pelagics fisheries do not modify the existing specifications; that is, they do not specify target controls rules that would be associated with those OY specifications. The Council has determined that it would be preferable to continue to manage the fisheries using the existing qualitative OY specifications rather than specifying new OY control rules and associated reference points (e.g., that would be expressed in terms of target harvest levels, target fishing mortality, or target biomass). One reason cited is the lack of information available to quantitatively determine OY and its associated fishing mortality rate with any useful degree of precision. Because of that lack of information, specification of a target control rule could unnecessarily constrain the FMPs' existing definitions of OY. The Council has determined that it would be preferable not to specify an OY control rule at this time rather than to specify one that is likely to be poorly related to actual OY. Although NMFS

finds that the specification of OY control rules can, in some cases, be useful in satisfying the objectives associated with National Standard 1, especially for fisheries in which the relevant social, economic, and ecological factors can be readily identified and measured, they are not necessary and are not always appropriate. NMFS finds that the existing specifications of OY in the bottomfish and pelagics FMPs satisfy the requirements of the Magnuson-Stevens Act.

Comment 16: One commenter stated that the supplemental amendment for the crustaceans FMP provides no information on how biomass (B) will be computed, so it is not possible to analyze the interplay of the coefficient r , which is a fishing mortality rate that would yield a 10-percent risk of the Spawning Potential Ratio (SPR) reaching as low as 20 percent, in the target control rule. There is also insufficient information to analyze the precautionary nature of the target control rule. With no information provided on the MFMT, it is impossible to tell how the target control rule operates. There is no information explaining or justifying the appropriateness of a 20 percent SPR level to serve as a threshold for recruitment overfishing, a level that was established in 1990, in light of the new 1996 requirements of the Magnuson-Stevens Act and its accompanying guidance.

Response: In this case, the target control rule is directly associated with Optimum Yield, the target yield under the Magnuson-Stevens Act. The OY target reference points are a function of M , B , and B at MSY and are precautionary in the sense that they are MSY reference points (i.e., F_{msy}), scaled to account for social and economic factors, as well as biological, environmental, and model parameter uncertainty. The coefficient r , as specified in the control rule (see; Supplemental FMP Amendments on Overfishing Provisions on Page 56, Section 4.3, Fig. 6), is equivalent to $F_{risk-averse}/F_{msy}$. $F_{risk-averse}$ is defined as the fishing mortality that results in a 10-percent chance of the SPR falling below 20 percent, based on a risk-averse stock assessment model. Because of the risk-averse nature of the assessment model, $F_{risk-averse}$ is assumed equivalent to the optimum fishing mortality, F_{OY} , and less than F_{msy} . The current assessment model assumes higher than estimated levels of process and measurement error, as well as conservative estimates of demographic parameters, which when considered together, represent a