

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON  
MINIMUM STOCK SIZE THRESHOLD REPORT FOR COASTAL PELAGIC SPECIES

The Scientific and Statistical Committee (SSC) received a presentation by Dr. Kevin Hill (SWFSC) and reviewed the report “Review and Re-evaluation of Minimum Stock Size Thresholds for Finfish in the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP) for the U.S. West Coast” (Agenda Item E.1.a, Supplemental NMFS Report). This report was not received by the SSC until September 6<sup>th</sup>, after the two-week deadline set in COP4, which hindered a thorough review. The report presents options, but not recommendations, regarding alternative methods and values for Minimum Stock Size Thresholds (MSST) for CPS. The SSC concluded that basing MSST on spawning biomass rather than age 1+ biomass is more appropriate for estimating MSST for the two actively managed CPS stocks. The SSC also concluded that some of the means of estimating MSST described in the report hold promise, but would require additional analysis, documentation and review.

The SSC discussion focused on a review of six discussion points provided by Dr. Hill, and this report is structured around SSC findings regarding these questions. The comments and recommendations of the SSC should be used to guide any additional analysis to develop alternatives for future review.

*1) Are fixed v. frame-worked MSSTs more appropriate for coastal pelagic species?*

Currently defined MSSTs in the CPS FMP are fixed quantities, however other FMPs often set MSSTs on frame-worked metrics (e.g., the SSB producing 25 percent of the unfished spawning output) that are updated based on the most recent stock assessment. Due to the dynamic nature of coastal pelagic populations and assessments, a framework approach would be more appropriate for coastal pelagic species. This would assure that management decisions were made based on current knowledge, rather than outdated historical estimates.

*2) Should MSST be based on Spawning Stock Biomass (SSB) or age 1-plus Biomass?*

Dr. Hill pointed out that these two metrics were relatively similar for sardine, but diverged more substantially for Pacific mackerel. The SSC concluded that MSSTs based on SSB are more consistent with National Standard guidance when such estimates are available, because they directly relate to reproductive potential.

*3) Should MSST be based on  $SSB_{MSY}$  or a proxy (depletion)?*

The SSC agreed that when the spawner-recruit relationship is not well estimated, maximum sustainable yield (MSY) is also difficult to estimate, and therefore it is difficult to derive an MSST based on the estimated MSY value. Additional information is needed before the SSC can make a recommendation.

4) *In the case of depletion-based MSSTs: are equilibrium  $SSB_0$  or  $SSB_{0current}$  estimates more appropriate?*

The SSC does not have a definitive answer to this question. The SSC agreed that  $SSB_{0current}$  (the “dynamic  $B_0$ ” estimate that is developed by forward projection of stock assessment model parameters in the absence of fishing) has considerable potential, but would require some additional analysis and ideally a simulation study to better evaluate the performance of this approach. For example, it was noted that the “dynamic  $B_0$ ” estimate developed in the SWFSC Report was based on forward projection of observed recruitment values. An alternative means of defining a dynamic  $B_0$  would incorporate the effect of spawning stock size on total recruitment. This could be done by using the base model's estimated recruitment deviations rather than absolute recruitment estimates, thus incorporating the effect of larger stock size on total recruitment in the unfished population. This approach would reduce the potential for MSST based on dynamic  $B_0$  to simply track stock declines at low abundance levels. The SSC also suggests exploring the potential to combine a dynamic  $B_0$  approach to determining MSST with a minimum threshold value for MSST.

5) *In the case of depletion-based MSSTs, what is the most appropriate depletion level?*

The SWFSC Report used depletion level of 20 percent of the unfished (either static or dynamic) spawning stock biomass, which is a commonly used standard.

6) *If  $SSB_{0current}$  is used, what is the best time window to defining “current”?*

The SWFSC Report explored two options for Pacific sardine and Pacific mackerel, based on the mean estimated unfished spawning biomass levels over the past one or two generation times. The SSC noted that other similar analyses have defined periods with a variety of base periods or used the current (terminal year) estimate of unfished SSB, and this approach is also worth exploring in defining “current.”

Although Dr. Hill suggested that in the absence of additional data, potential MSSTs could not be developed for the northern subpopulation of Northern anchovy, the SSC noted that the 2010 overfishing limit determination for this stock used two prior biomass estimates. The SSC also expressed concern about basing reference points based on highly dated information.

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