COASTAL PELAGIC SPECIES MANAGEMENT TEAM REPORT ON
STOCK ASSESSMENT REVIEW PANEL TERMS OF REFERENCE FOR 2009

The Coastal Pelagic Species Management Team (CPSMT) reviewed an October 2008 preliminary draft Terms of Reference (TOR, Agenda Item G.1.b, Attachment 1) intended for advisory body review. This draft included changes proposed by the Scientific and Statistical Committee (SSC) and the CPSMT supports these proposed changes.

In addition, the CPSMT recommends a few changes stemming from its consideration of the 2009 Pacific sardine stock assessment update and review. These recommendations, outlined below, provide additional, yet limited flexibility, for stock assessment updates and reviews especially to accommodate unexpected situations. In several sections concerning assessment updates and reviews, the TOR specifies that such unexpected or unresolved situations should be addressed in a full assessment and review, in the following year. "In practice, there will always be valid reasons for altering a model, as defined in this broad context, although, in the interests of stability, such changes should be resisted as much as possible. Instead, significant alterations should be addressed in the next subsequent full assessment and review." The unexpected situation for the 2009 Pacific sardine update is a determination that the strict assessment update is not acceptable for Council decision-making, but there are disparate views on what may be acceptable until a full assessment and review is completed. The Scientific and Statistical Committee's, Coastal Pelagic Species Subcommittee (Subcommittee), the Stock Assessment Team (STAT) and CPSMT each considered the available science and yet recommended a different model run for Council decision-making.

As an example to illustrate the issue and the merits of the CPSMT's proposed changes, the 2009 stock assessment update and review process is briefly summarized. The CPSMT jointly met with the Subcommittee while the Subcommittee conducted the 2009 sardine stock assessment update review. The STAT presented an assessment update model run, deemed strictly consistent with the TOR. The STAT noted that the updated model results were extremely sensitive to the addition of new data, specifically Pacific Northwest (PNW) length composition samples.   The 2007 Stock Assessment Review (STAR) Panel for the sardine assessment recommended weighting length frequency data for all future models and they approved a data weighting method for California data, but did not review a data weighting method for PNW data. Considering the STAR Panel's recommendation, the STAT proposed another model run weighting PNW data and stated this update "perhaps deviates from the TOR for assessment updates, but the STAT considers it a reasonable short-term compromise to a problem that can only be addressed properly under a full STAR…"

The Subcommittee reviewed the STAT updates and concluded that the strict update results were not sufficiently consistent with previous data and were not acceptable for Council decision-making. The Subcommittee also determined that the STAT's proposed alternative did not strictly conform to the TOR and was not acceptable for Council decision-making. Specifically, the TOR requires similarity (not identity) in the procedure for weighting of the various data components for an assessment to qualify as an update, (Agenda Item G.1.b, Attachment 1, Qualification, page

13). The Subcommittee took an alternate approach to the problem with new PNW length frequency data. The TOR (Agenda Item G.1.b, Attachment 1, Review Format, page 14) states that "Review of stock assessment updates is not expected to require analytical requests or model runs during the meeting, although large or unexpected changes in model results may necessitate some model exploration." Consistent with this section of the TOR, the Subcommittee evaluated several model runs that included various types of new data (e.g., survey, length frequency, catch, etc.) and concluded that a model run that included only new catch data (projection) was the only result acceptable for Council decision-making.

Based on the quandary described above, the CPSMT recommends the following changes to the TOR:

1. Under Qualification (Agenda Item G.1.b, Attachment 1, page 13): Insert the following: If the STAT considers that the strict assessment update results are likely not sufficiently consistent to be acceptable for Council decision-making, the STAT should use methods recommended by the STAR for the most recently approved full assessment. If used, the STAT will explain its rationale and provide the results of the relevant sensitivity analyses in the STAT assessment update report for the review panel.

2. Data weighting: Data reweighting methods are a simple but potentially important area for improvement that could be addressed through a more protracted update review. The 2007 STAR Panel recommended weighting fisheries size composition data according to some appropriate sampling unit (e.g. by load, week, month, or port), and adopted a change for weighting the California composition data, where port area and month were the sampling strata. The STAR Panel agreed this should be the practice for all future assessments; however, this method was not reviewed for Ensenada and PNW data during the week of the 2007 STAR Panel meeting. So while this method was recommended for all future assessments, the STAT was not able to apply the method to Ensenada and PNW data in the updated assessment. Reweighting the composition data should affect not only the compositions themselves, but should apply to the relative effective sample sizes for those compositions. In other words, the reweighting should serve to normalize the effective sample sizes and smooth erratic effects of under - or over-sampling from season to season.

3. Model tuning: SS2 models can (and should) be fine-tuned by adjusting the variance around composition and survey data series through iterative reweighting, and this practice is allowed for updates. Iterative reweighting effectively balances the influence of whole time series of data relative to one another (as opposed to individual observations). So while this practice is appropriate for better fitting of whole time series, it is not allowed for a single ill-fitting observation (the case for the latest sardine assessment update, where we had a very large input effective sample size but a relatively low model estimate indicating poor fit). This seems inconsistent, but could be addressed using appropriate data weighting per above.

4. Steepness and Sigma-R: Variance adjustment for model tuning is allowed for updates (per the above), but retuning the input Sigma-R (recruitment variance) to match the

model root mean square error (RMSE) is not allowed. In some update years, the model RMSE might change (as was the case this year) but the STAT is not allowed to retune accordingly. Model fit could be improved through retuning Sigma-R. . If not allowed, it might be more appropriate to fix stock-recruit steepness (h) during update years because this population parameter would not be expected to vary greatly from year to year. This could potentially provide stability to updated assessments.

The CPSMT also believes that scheduling a full day for an update review, rather than a few hours, would be beneficial when the STAT assessment update report indicates unusual problems. In that time the CPSMT believes that the assessment update review panel, in full attendance, could adequately review the additional sensitivity analyses allowed under the recommended changes to the TOR. The CPSMT supports clear distinctions between stock assessments and stock assessment updates and their review processes and believes its recommendations adequately maintain these distinctions.