**Performance Work Statement (PWS)**

**National Oceanic and Atmospheric Administration (NOAA)**

**National Marine Fisheries Service (NMFS)**

**Center for Independent Experts (CIE) Program**

**External Independent Peer Review**

*Catch Estimation Methods in Sparsely Sampled Mixed Stock Fisheries Review Supplement*

**Background**

The National Marine Fisheries Service (NMFS) is mandated by the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, and Marine Mammal Protection Act to conserve, protect, and manage our nation’s marine living resources based upon the best scientific information available (BSIA). NMFS science products, including scientific advice, are often controversial and may require timely scientific peer reviews that are strictly independent of all outside influences. A formal external process for independent expert reviews of the agency's scientific products and programs ensures their credibility. Therefore, external scientific peer reviews have been and continue to be essential to strengthening scientific quality assurance for fishery conservation and management actions.

Scientific peer review is defined as the organized review process where one or more qualified experts review scientific information to ensure quality and credibility. These expert(s) must conduct their peer review impartially, objectively, and without conflicts of interest. Each reviewer must also be independent from the development of the science, without influence from any position that the agency or constituent groups may have. Furthermore, the Office of Management and Budget (OMB), authorized by the Information Quality Act, requires all federal agencies to conduct peer reviews of highly influential and controversial science before dissemination, and that peer reviewers must be deemed qualified based on the OMB Peer Review Bulletin standards[[1]](#footnote-0). Further information on the Center for Independent Experts (CIE) program may be obtained from [www.ciereviews.org](http://www.ciereviews.com).

**Scope**

During 28-29 March 2018 in Santa Cruz, CA the National Marine Fisheries Service and the Pacific Fishery Management Council convened a methodology review panel to review and evaluate a new methodology under development by the Southwest Fisheries Science Center (SWFSC) for partitioning landings reported as aggregated categories of fish into species-level estimates of landed catch. Dr. Noel Cadigan served as an external reviewer on the methodology review panel, which specified several short-term requests to the SWFSC Catch Estimation team. The one-day webinar will follow-up on these short-term requests to the SWFSC team, which are included below in the “Terms of Reference for the supplemental peer review”.

**Requirements**

NMFS requires Dr. Noel Cadigan to prepare for and participate in a one-day webinar aimed at addressing the short-term requests prepared during the March 2018 Catch Estimation Methodology Review Panel. Dr. Cadigan’s specific participation is crucial to this webinar for the following reasons: he has the requisite expertise and he is familiar with the methodology under development by the SWFSC Catch Estimation team (having served on the March 2018 Methodology Review Panel). Bringing in a new reviewer at this time would entail considerable extra time and effort to familiarize him/her with the SWFSC’s new methodology. The CIE reviewer shall be an active and engaged participant throughout the webinar discussions and able to voice concerns, suggestions, and improvements while respectfully interacting with the Review Panel (which will have the same members as the March 2018 review) and the NWFSC team.

**Tasks for reviewers**

This CIE reviewer shall complete the following tasks in accordance with the SOW and Schedule of Milestones and Deliverables herein:

List task(s)/assignment(s) that will be expected of Dr. Cadigan.

1. Conduct necessary pre-review preparations, including the review of background material and reports provided by the NMFS Project Contact in advance of the peer review.
2. Participate during the methodology review webinar scheduled for [XX/XX/2018] and conduct an independent peer review in accordance with the ToRs (Annex 2).
3. Contribute to and participate in the finalization of a report of the methodology review that will be prepared by the Panel Chair.
4. No later than XX/XX/2018, the CIE reviewer shall submit an independent peer review report addressed to the “Center for Independent Experts,” and sent to Mr. Manoj Shivlani, CIE Lead Coordinator, via email to shivlanim@bellsouth.net, and to Dr. David Die, CIE Regional Coordinator, via email to ddie@rsmas.miami.edu. Each CIE report shall be written using the format and content requirements specified in Annex 1, and address each ToR in Annex 2.

**Place of Performance**

The CIE reviewer is participating in a webinar, therefore no travel is required.

**Period of Performance**

The period of performance shall be from the time of award through July - August 2018. [We would like to aim for a day during the week of 30 July]. The reviewer’s duties shall not exceed four (4) days to complete all required tasks.

**Schedule of Milestones and Deliverables:** The contractor shall complete the tasks and deliverables in accordance with the following schedule.

|  |  |
| --- | --- |
| Within two weeks of award | Contractor confirms reviewer participation |
| Within three weeks of award | Contractor provides background documents to the reviewer |
| July - August 2018? | Reviewer participates in the webinar |
| Within two weeks after webinar | Contractor receives draft report |
| Within two weeks of receiving draft report | Contractor submits final report to the Government |

**Applicable Performance Standards**

The acceptance of the contract deliverables shall be based on three performance standards:

(1) The reports shall be completed in accordance with the required formatting and content; (2) The reports shall address each ToR as specified; (3) The reports shall be delivered as specified in the schedule of milestones and deliverables.

**Travel**

Since this is a desk review travel is neither required nor authorized for this contract.

# **Restricted or Limited Use of Data**

The contractors may be required to sign and adhere to a non-disclosure agreement.

**Annex 1: Peer Review Report Requirements**

1. The report must be prefaced with an Executive Summary providing a concise summary of the findings and recommendations, and specify whether or not the science reviewed is the best scientific information available.
2. The main body of the reviewer report shall consist of a Background, Description of the Individual Reviewer’s Role in the Review Activities, Summary of Findings for each ToR in which the weaknesses and strengths are described, and Conclusions and Recommendations in accordance with the ToRs.
3. The reviewer’s report shall include the following appendices:
   1. Appendix 1: Bibliography of the background materials provided for review
   2. Appendix 2: A copy of the CIE Performance Work Statement

**Annex 2: Terms of Reference for the supplemental peer review**

*Catch Estimation Methods in Sparsely Sampled Mixed Stock Fisheries Review Supplement*

The following tasks were identified as Short-term requests to the SWFSC Catch Estimation team during the March 2018 Catch Estimation Methodology Review. Members of the team will present their responses to these requests at a one-day webinar during July-August 2018. Dr. Cadigan is requested to comment on the extent to which the team provides satisfactory responses to these items and suggest how the team could further advance their proposed methodology.

**Request #1**. As a diagnostic template, for each sampled stratum compare the posterior predictive distributions at the 68th, 95th, and 99th percentiles with the current observed species proportions (create fully stratified versions of tables 2 and 3 in the Grunloh et al. methods documentation). With each row, include sample sizes and associated landing weights with a graphical display to highlight problems and outliers (circle size proportional to landing weights).

*Rationale: The Team provided broad-scale summary metrics (e.g., MSE and DIC) for evaluating the goodness-of-fit of the different model forms and structures. Fine-scale diagnostics are needed to help identify aspects of the data that are not adequately addressed by the different models. The diagnostic template will provide a mechanism for fine-scale exploration of goodness-of-fit.*

**Request #2**. The diagnostic template should be developed for each of the sensitivity runs (vary across a range of plausible time models and priors and limit to the top 2-3 market categories).

*Rationale: Application of the diagnostics across a wide range of models will form a test of how well the diagnostics illustrate whether the models capture important structural features that are thought to be embedded in the data.*

**Request #3**. Explore an alternative time block: an extension of 1983 and 1984 to the first time block.

*Rationale: The panel expressed concerns about how the model would perform when applied to shorter time periods, as will occur when the model is used with data more recent than 1990. Results from the above recommendation could be compared to the results from the current two time blocks (1978-1982; 1983-1990) to explore how fits to data from the late period degrade when the model for the late period is based on fewer years of data. Also, comparisons of the two forms of blocking serve as a sensitivity evaluation of the selection of the block boundary, which was chosen on a fairly arbitrary basis.*

**Request #4**. Explore various two-way interactions (beyond the current explorations; e.g., Species : Port and Species : Gear).

*Rationale: The Team did not have time to search across the multitude of possible interaction terms that they could have included in the model. From various anecdotal comments made during the review it seemed likely that the model would benefit from the inclusion of other interaction terms. Explorations with the diagnostic template may suggest potentially beneficial terms.*

**Request #5**. Redo the modeling of the early time block without southern CA ports. Explore spatially and temporally (i.e., alternative time blocks).

*Rationale: The available dataset does not have any sample data in the early time block from the southern CA ports. It was unclear how this lack of data influenced the model results. The requested analysis will clarify the situation.*

**Request #6**. Compare alternative ComX outputs and the current time series of estimated catches.

*Rationale: It would be informative to see the landings estimates corresponding to the additional models developed in response to the above requests. The landings estimates can be generated for a small set of illustrative species and do not need to be comprehensive.*

**Request #7**. Provide a summary table of species’ sample sizes in each market category by time block.

*Rationale: The requested information will assist in understanding where there are gaps in the available data that the model is filling in by means of its pooling structure.*

**Request #8**. Provide self-test documentation (simulated data) for example models.

*Rationale: Results from this analysis will provide a demonstration of model performance under best-case scenarios, where the data being analyzed exactly conform to the assumptions of the statistical model. The analysis will serve to verify (or refute) that the model performs as expected.*

**Tentative Webinar Agenda?**

1. <http://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf> [↑](#footnote-ref-0)