Terms of Reference for NOAA Fisheries Science Center
Fiscal Year 2014
Stock Assessment Science Program Reviews

Purpose of the Review

Reviews of science programs at the National Marine Fisheries Service (NMFS) Science Centers (including associated laboratories) and the Office of Science and Technology (ST) are conducted annually to:

- Evaluate the quality, relevance, and performance of science and research conducted in NMFS Science Centers and associated laboratories
- Strategically position the Science Centers and ST in planning future science and research.

Scope of Review

The objective for this review is to examine and evaluate each Center's fishery stock assessment program that is conducted pursuant to the Magnuson-Stevens Act (2006) and comparable international agreements. Stock assessments are demographic analyses designed to provide particular scientific advice to living resource managers. Fishery, survey and biological data for stock assessments were reviewed in 2013. In 2014, the review focus shifts to the overall program of assessment modeling, approach, review process and communication. This is not intended to be an in-depth review of a particular stock assessment. For the review, the Panel shall consider materials provided by the Center and comment on 7 themes that define the stock assessment program:

1) Does the Center apply a suitable scientific/technical approach to fishery stock assessment modeling?
2) Is the assessment process efficient, effective and clearly described, including terms of reference for assessment reports?
3) Does the Center, in conjunction with other entities such as the Council's Scientific and Statistical Committee (SSC), have an adequate peer review process?
4) Is the Center's program organization effective at accomplishing needed assessments according to a set of assessment priorities? Include program structure, staffing, and funding; include prioritization of stocks for assessment.
5) Does the Center achieve adequate assessment accomplishments relative to mandates particularly with respect to the number of Fishery Management Plan (FMP) species assessed?
6) Does the assessment program adequately communicate their results, needs, and research?
7) Are there opportunities for improving stock assessments and the stock assessment process?

Background

Reviewers are asked to provide advice to the Center Directorate on the direction and quality of the Center's stock assessment program(s). The following background questions are provided to

stimulate thinking with respect to the themes, but these specific questions need not be explicitly answered by the review:

1) Scientific/technical approach to fishery stock assessment modeling –
   a) Is the Center using an appropriate suite of analytical methods to meet the regional fishery stock assessment objectives?
   b) Does the suite of assessment models cover considerations from data-poor to data-rich?
   c) Are assessments capable of considering possible ecosystem effects?
   d) Does the Center work on enhancing and testing these analytical methods? Are they keeping with and contributing to the state-of-the-science nationally and internationally?

2) Is the Center's process for conducting stock assessments efficient and effective?
   a) Is there an explicit terms of reference for conducting and reporting assessments?
   b) Do reports provide a complete description of the work and a concise summary?
   c) Do assessments adequately and incrementally build upon past assessments and reviews?
   d) Are there clear protocols for delivering draft assessment products to peer reviews?
   e) Is involvement of assessment scientists in preliminary data preparation and analysis sufficient to utilize their statistical expertise, but not burdensome?
   f) Are there protocols for consistently dealing with technical issues, as appropriate to the stock, for example: calibration of catchability, consideration of dome-shaped and time-varying selectivity, natural mortality, estimation of stock productivity, characterization of uncertainty, etc.?
   g) Are there protocols in the assessment process for conducting sensitivity analyses and evaluation of risk?

3) Peer review process
   a) What is the relative role of the Center and the Council's Scientific and Statistical Committee (SSC) in organizing and conducting the peer review?
   b) Are TORs for assessment reviews clear and well defined prior to the assessment? Are they focused on key issues needing review? Are they appropriately, but not excessively, broad in scope? Do they focus the review on key, answerable questions?
   c) Are major data collection programs and modeling methods reviewed separately from the final review of assessments?
   d) Are there clear protocols for considering and including input from scientists not on the agency assessment team?
   e) Does the regional peer review process achieve an appropriate balance between transparency, thoroughness, and throughput?

4) Organization and priorities –
   a) Does the Center/Region schedule stock assessments in a manner that meets national standards and regional needs?
      i) What protocols are used to prioritize need, frequency and appropriate level of stock assessments?

ii) Has the Center reasonably balanced Council, other domestic and international stock assessment needs as well as additional analytical and review demands?
iii) How well does the Center involve internal and external clients and stakeholders in priority setting and the assessment process?
iv) Are the Center's scheduling and scale (e.g., benchmark vs. updates) for individual fishery stock assessments balanced with Center resources, and regional, national and international needs?
v) What steps are the primary bottleneck in the number and timeliness of stock assessments each year: surveys, input data processing and management, assembly of assessment reports, ability to address questions from previous assessment, availability of assessment scientists, and review scheduling? Are any excessively limiting?

b) Is the Center prioritizing the appropriate initiatives and research areas to address current and anticipated stock assessment needs, including connection of stock assessments to broader ecosystem investigations?

5) Accomplishments relative to mandates
   a) How many FMP and non-FMP stocks are being assessed?
   b) Do current and planned fishery stock assessments meet regional, national, and international expectations in terms of quality, quantity and timeliness?
   c) How well does the Center attain a prioritized portfolio of baseline assessments for all managed stocks (including data-poor) and full assessments for important stocks?
   d) How well does the Center consider ecosystem and environmental factors affecting fish stocks and their assessments?

6) Communication –
   a) Are assessment data needs being communicated to survey scientists, advanced technology experts, and fisheries-dependent data sources; and have improved data resulted from these efforts?
   b) Are assessment process and results adequately communicated to fishery managers, affected public and the scientific community?

7) Opportunities –
   a) Is the Center conducting the research necessary to improve stock assessments and produce timely and assessment-relevant scientific research products?
   b) Do assessment scientists engage in research published in peer-reviewed journals?
   c) Are there areas of expertise that could be added in the future to strengthen the ability of the Center to meet its management and research objectives?
   d) Should the Center be taking greater advantage of opportunities for collaboration in conducting fishery stock assessments and related research, including shared approaches with other Centers, regional academic partners, other government agency partners, and stakeholders?

Format

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The meeting will last for 3-5 days depending on the complexity of individual Center's programs. The venue will allow public access to open session and have wireless internet access, audio visual capability (e.g. teleconferencing, overhead projector, microphone amplification), and webinar capability (e.g. Webex) to provide for access to open session of the review by the public and remotely located staff. Prior to the review, a teleconference between Center leadership and the review panel will be held to discuss and clarify the charge to reviewers, the scope of the review, focus questions provided in the scope, background documents provided, and products of the review.

A typical 4-day review would be structured with presentations that address topics related to the review theme. These presentations will draw upon background material as described in the material to be provided by the Center.

- Day 1
    - Presentations by the Center leadership
        - General information about the Center as appropriate
        - Stock assessment 101
        - Overview of Fishery Management Plans
        - Overview of assessments conducted
        - Discussion of results from 2013 Data Reviews
    - Theme 1: Science and Technical Approach
    - Theme 2: Overview of assessment process
    - Public comment (variable)
    - Panel deliberation (closed session, 1 hr)
- Day 2
    - Theme 3: Peer review process
    - Theme 4: Organization and priorities
    - Public Comment (variable)
    - Panel deliberation (closed session, 1 hr)
- Day 3
    - Theme 5: Accomplishments
    - Theme 6: Communication
    - Theme 7: Opportunities for improving stock assessments
    - Public comment (variable)
    - Preparation of the Panelists recommendations (closed session, 1 hr)
- Day 4
    - Preparation of Panelists recommendations (closed session, as needed)
    - Panel and Center Directorate discuss the results of the review (i.e., debrief, closed session)

Panelists will be provided, at minimum, a 1 hour closed working session at the end of each day. Each day, during which informational presentations are made, will also include a specific interval for public comment. Stakeholders are invited to participate as observers and to comment during the daily public comment sessions. At the close of the review, the Panel and Center Directorate will discuss the results of the review in closed session. Additional personnel (e.g. Chief Scientist, ST Director, center staff, and program review coordinator) are expected to attend the closed session and this will be communicated to the Panel prior to the start of the review.

Briefing and Background materials

All background materials will be provided to the Panel electronically through the Center (or Office of Science and Technology) website no later than 2 weeks prior to the review. All presentations will be provided to the Panel, through the website, at the beginning of the review. Briefing books may be provided at the request of the Panel Chair.

Products

Each Panelist will produce a succinct report detailing his or her observations of and recommendations for the 7 themes provided within the TOR for the Program Review. The chair may submit an individual report, but this is not a requirement. Individual reports are required for NOAA to comply with the Federal Advisory Committee Act (FACA, 1972). Draft reports will be submitted to the Center Director at the close of the review. Final versions will be submitted by the Panelists 1 week after the review concludes.

The Panel Chair will summarize the program review proceedings (e.g. what happened, salient issues, and recurring themes) in a report submitted to the Center Director at the close of the review. The report will not represent a consensus of Panelist's observations and recommendations (FACA).

At the end of the review, each review panel member will be asked to fill out a short questionnaire to provide feedback on the review process.

Review Team Resources

NOAA Fisheries will pay for the travel cost for all Panelists external to NOAA Fisheries and a set fee for the services of non-governmental Panelists. Each Center will assist review panel members in making travel arrangements.

During the review the Center will provide the review panel with wireless broadband services and space to convene closed working sessions. If requested in advance, the Center will, within reason, provide other items (e.g. desktop computers, printers/copiers) to assist the review panel with report preparation.

The review Panel will be provided 1 full day to write draft review reports at the conclusion of presentations by Center staff.

Review Panel

The scientific review panel will include 4-7 independent PhD-level or equivalent scientists with reasonable familiarity with the topic. Panels should include:

- 1 scientist from NOAA Fisheries
- 1 scientist from another NOAA line or staff office.
- 3- 5 (the majority) scientists external to NOAA.
- 1 Science Center Director (SCD, optional)

NOAA Fisheries requires the Chair is not a NOAA Fisheries employee and encourages that the Chair of the Panel be a federal scientist external to NOAA. The NOAA Fisheries Program Review Coordinator will attend and provide guidance to the Panel on complying with FACA. To ensure a majority of independent reviewers, reviewers who are members of Science and Statistical Committees will be from a different region than the center being reviewed, and recently retired and former NOAA Fisheries employees will be limited. The NOAA Fisheries Assistant Administrator or their designee shall approve the Panel selections.

Agency Response

The Center Director will send the Chair's summary report and the panel members' individual reports to the NOAA Fisheries Chief Science Advisor as soon as the reports are received. The Center Director will also prepare a brief response, including agency actions, to Chair's summary report within 10 weeks of receipt of the Chair's review report package by the NOAA Fisheries Chief Science Advisor. The response can include clarifying information and respond to controversial points within individual reports even if not mentioned in the Chair's summary.

The NMFS Chief Science Advisor will send the package on to the NMFS AA for clearance.

At end of 90 days of the close of the review, all documents (Chair's summary report, Director's response, individual reviewers' reports) will be posted on the Center and Office of Science and Technology websites. Authorship of the individual review reports will remain anonymous to the public.

Material to be Provided by the Center

The Centers will provide presentations made by staff and background materials in order to facilitate the independent review. All materials (e.g. power point presentation, word files, pdfs) will be named such that the file names indicate the main topic the material covers. Materials will be provided in an interactive agenda format (i.e. materials will be linked to the talks listed on the agenda) and will be marked as required primary references (must read) and secondary references (optional for further detailed information). The following list represents the type of materials, or equivalent, that should be made available to the Panel.

1. Identification and brief description of the clients for Center assessment products;
2. Description of the Center assessment process, including involvement of external and internal partners;
3. Table of assessments completed in the past 5 years that includes level of assessment (e.g. benchmark, tier);
4. Description of the structure and magnitude of the assessment program; including the number of assessment scientists capable of being lead during the conduct, review and delivery of assessments to clients;
5. Brief description of analytical models being used; more complete if a customized model;
6. Terms of reference for assessment documents;
7. Examples from a few assessments to illustrate how assessments implement these terms of reference;
8. Examples of stocks with shared assessment responsibility (e.g. groundfish, salmon)
9. Description of the process by which the Center/Council prioritize stocks for full (benchmark) assessment and for update assessment;
10. Description of peer review system implemented by the Center/Council;
11. Terms of reference for assessment peer review;
12. Example peer review of assessment (e.g. CIE review);
13. Timeline for a typical assessment(s);
14. Description of the methods (e.g. website) by which assessments are made available to the general public;
15. Description of bottlenecks to improved assessment throughput;
16. Description and examples of research to improve assessments;
17. Description and examples of connection between assessment and ecosystem programs;
18. Description of the workload and research opportunities of a typical assessment scientist(s);
19. TORS, reviewers comments and Center responses to FY13 program reviews

Appendix 1. Program Reviewer Report Templates

Chair's Summary[1] of Program Review of Stock Assessment Process
Science Center
Address
Dates

Review Panel Members

- Name, Affiliation, Chair
- Name, Affiliation, Reviewer (as many as needed)

Background and Overview of Meeting
General Observations and Recommendations
Panel Member's Major Observations and Recommendations

- **High-level scientific/technical approach**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Assessment process**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Peer review**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Organization and priorities**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Accomplishments relative to mandates**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Communication of assessment results and data needs**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Opportunities**
  - Observation
  - Recommendations to address issue
- **Other**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue

Conclusions

[1] Notes: This report is a summary by the chair NOT consensus. Summarized findings and recommendations should be reported as "Panel members said" NOT "Panel concluded".

Reviewer Report on Program Review of Stock Assessment Process

Science Center
Address
Dates

Background

General Observations and Recommendation

Key (Specific) Findings and Recommendations (as reviewer has comments on)

- **High-level scientific/technical approach**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Assessment process**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Peer review**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue
- **Organization and priorities**
  - Observations
    - Strengths
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  - Recommendations to address issue
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  - Recommendations to address issue
- **Communication of assessment results and data needs**
  - Observations
    - Strengths
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  - Recommendations to address issue
- **Opportunities**
  - Observation
  - Recommendations to address issue
- **Other**
  - Observations
    - Strengths
    - Challenges
  - Recommendations to address issue

Conclusions