

Terms of Reference
National Marine Fisheries Service Office of Science & Technology
2016 Ecosystem Science Program Review

Purpose of the Review

The National Marine Fisheries Service (NMFS) mission includes the stewardship of living marine resources through science-based conservation and management, and the protection and restoration of healthy ecosystems. To ensure NMFS achieves this mission, it is appropriate to conduct periodic reviews of the ecosystem-related (including habitat, oceanographic, climate and ecological) science programs.

Reviews of science programs at the NMFS regional Science Centers (including associated laboratories) and, when appropriate, the Office of Science & Technology (ST), are conducted annually to:

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

Objective

The objective for this review is to evaluate the current scientific programs of ST that are directed to provide information relative to the management, protection and restoration of resilient and productive ecosystems. Here we define ecosystem-related science programs as those elucidating ecological, oceanographic, climate and habitat related processes as they are related to living marine resource (LMR) species. In addition, these reviews will assess the extent to which current science programs are focused on the priority information needs required to complete the NMFS mission. Ecosystem-related science programs addressed in these reviews may include science programs that support ecosystem-based management of fisheries and protected resources; conservation and restoration of habitats; dynamics of ecosystem and LMR productivity; ecosystem-level responses to pressures; understanding the effects of pressures on food webs and the effects of food webs on LMRs; oceanographic effects on LMRs; and understanding of climate-related forcing and impacts on the LMRs.

It is recognized that there are other habitat and climate-related programs within NMFS and NOAA, but the focus of this review exercise will be for reviewers to provide advice on the direction and quality of the science programs that are conducted specifically in ST.

Overarching Questions for Reviewers

ST will present information relevant to its portfolio of national ecosystem programs (i.e. Integrated Ecosystem Assessments (IEA), Fisheries and the Environment (FATE), Climate, Habitat, Plankton database). The reviewers will use this information (and any ensuing

discussion) to provide advice on the direction of the research programs and management needs nationally. In doing this, the reviewers should consider these overarching questions:

1. Does ST have clear goals and objectives for its ecosystem-related science programs? Are ST ecosystem programs appropriate to advance ecosystem science and management for NMFS? (appropriate topics, program structures, mechanisms and prioritization procedures)
2. Are ST ecosystem-related science programs appropriately integrated with other relevant programs? Is ST adequately collaborating with NMFS Science Centers and other relevant offices and programs across NOAA?
3. Do ST's ecosystem-related science programs provide information to address the priority needs of the Science Centers, NOAA managers, Fishery Management Councils and Commissions, and other partners for ecosystem-related information?
4. Is the suite of ST ecosystem-related science programs appropriate to address the priority needs of the Science Centers, NOAA managers, Fishery Management Councils and Commissions, and other partners for ecosystem-related information over the next 5-10 years?
5. Does ST appropriately communicate status and accomplishments of national ecosystem-based science programs to NMFS partners, stakeholders, the public, and NOAA and NMFS leadership?

In all cases, the reviewers should provide recommendations for areas that need improvement.

Format

The ST review will be conducted after the six Science Center reviews, and the duration of the meeting will be approximately four days. The venue will allow public access to open sessions and have wireless internet access, audio visual capability (e.g., overhead projector, microphone amplification). ST will endeavor to provide access to open sessions of the review for the public and remotely located staff who are unable to attend in person. Prior to the review, a teleconference between ST 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.

The review will be structured with presentations that address topics related to each ST ecosystem-related activity. These presentations will draw upon background material that will be provided, as described in the next section. A draft agenda for the review is as follows:

- Day 1
 - Welcome, introductions, charge to review panel
 - Overview of ST by ST leadership
 - Overview of ST's ecosystem science portfolio
 - ST's Ecosystem science activities
 - Public comment (variable)
 - Panel deliberation (closed session, 1+ hr)
- Day 2
 - ST's Ecosystem science activities
 - Public comment (variable)
 - Panel deliberation (closed session, 1+ hr)
- Day 3
 - ST's Ecosystem science activities
 - National Perspective for ST's ecosystem science
 - Future directions
 - Public comment (variable)
 - Preparation of the panelists' recommendations (closed session, 1+ hr)
- Day 4
 - Preparation of panelists' recommendations (closed session, as needed)
 - Panel and ST leadership 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.

Stakeholders will be invited to participate as observers and to comment during the daily public comment sessions. Stakeholders providing comment during the review public comment sessions may also submit written public comments to the point of contact listed on ST's program review website. These comments will be provided to the review panel. Public comments are for the reviewers' edification and will not necessarily be specifically responded to by the agency or the review panel.

At the close of the review, the panel and ST leadership will discuss the results of the review in closed session. Additional personnel (e.g. Chief Scientist, Senior Ecosystem Advisor, ST 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 prepared by ST will be provided to the panel electronically through the ST 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 themes provided within the TOR for the program review. (See

Appendix 1 for template.) The chair may submit an individual report, but this is not a requirement. Individual reports are required for NMFS to comply with the Federal Advisory Committee Act (FACA, 1972). Draft reports will be submitted to the ST 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 ST Director at the close of the review. The report will not represent a consensus of panelists' observations and recommendations (FACA).

Review Team Resources

NMFS will pay for the travel cost and per diem for all review panelists external to NMFS and a set fee for the services of non-governmental panelists. ST will assist review panel members in making travel arrangements.

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

The review panel will, if needed, be provided 1 full day to write draft review reports at the conclusion of presentations by ST staff.

Review Panel

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

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

NMFS requires the chair not be a NMFS employee and encourages that the chair of the panel be a federal scientist external to NOAA. The NMFS program review coordinator will attend and provide guidance to the panel on complying with FACA. To ensure a majority of independent reviewers, use of recently retired and former NMFS employees will be limited. The NMFS Assistant Administrator or their designee shall approve the Panel selections.

Agency Response

The ST Director will send the chair's summary report and the panel members' individual reports to the NMFS Chief Science Advisor when the reports are received. The ST Director will also prepare a brief response, including agency actions, to the chair's summary report within 10 weeks of receipt of the chair's review report package by the NMFS 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 to the NMFS Assistant Administrator for clearance.

At end of 90 days after the review, all documents (chair's summary report, director's response, individual reviewers' reports) will be posted on the ST website. Authorship of the individual review reports will remain anonymous to the public.

Material to be Provided

ST 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).

Appendix 1. Program Reviewer Report Templates

**Chair's Summary¹ of Program Review of Ecosystem Science
NMFS Office of Science & Technology**

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 Recurrent Observations and Recommendations

- **Goals and objectives**
 - Observations
 - Recommendations to address issue
- **Integration with relevant programs**
 - Observations
 - Recommendations to address issue
- **Address priority needs**
 - Observations
 - Recommendations to address issue
- **Communication of status and accomplishments**
 - Observations
 - Recommendations to address issue
- **Other**
 - Observations
 - 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 Ecosystem Science

NMFS Office of Science & Technology

Address

Dates

Background

General Observations and Recommendation

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

- **Goals and objectives**
 - Observations
 - Recommendations to address issue
- **Integration with relevant programs**
 - Observations
 - Recommendations to address issue
- **Address priority needs**
 - Observations
 - Recommendations to address issue
- **Communication of status and accomplishments**
 - Observations
 - Recommendations to address issue
- **Other**
 - Observations
 - Recommendations to address issue

Conclusions

NOT IN TOR FOR REVIEWERS BUT DIRECTION TO THE CENTERS and ST:
(This section has not been modified for ST)

Defining ecosystem science at each Center

Ecosystem science can be a broad term that will need to be defined by Center leadership very early on in the planning for these reviews. There are multiple considerations when establishing the remit for the ecosystem review. It is recognized that this topic is broad in scope and could be daunting, so some level of selection is warranted. That selection needs to be cognizant of at least four dimensions. First, is the flow of information. The way to the TORs and following layout are mostly structured goes from strategic plan/goals, to data collection, to analyses/models, to use in management, to communication and review. The second is the thematic elements. Currently we have climate, habitat, ecology, and oceanography highlighted. Climate and cumulative, ecosystem-level elements are highlighted directly and it would be wise to include some form of those, but obviously each Center will want to emphasize those programs and efforts that are most germane for their region. The third dimension is taxonomic scope. Certainly we have our fisheries and PR emphases, but which ones to showcase at the review in this ecosystem context are again obviously regionally specific. The final element is one of scale. The time scale of hindcasts and forecasts are as need be, but spatial scale needs to be given consideration. Again, this is structured to be at the pseudo-LME and FMC ecosystem scale, but other scales ought to be considered as is appropriate.

The salient point is to not cover in detail each and every facet of ecosystem-related assessments, science, research, and consideration that a Center executes. Rather, it will be to touch on the main aspects of these programs and highlight those examples, cognizant of the dimensions just noted, that are most germane for each region. These challenges will have to be very clearly laid out for the Review Panels.

Specific information to be provided by each Center to the review committee:

Provide an overview of information needs for ecosystem-related science and research at the Center. Then identify the two to three important and typical research programs run by the Center and explain why they are a) important and b) typical. Identify the types of research that are atypical for the Center.

Centers should provide reviewers material that:

1. Describes the programmatic structure and composition of overall ecosystem efforts at the Center; note strengths, challenges, solutions, and areas for growth
2. Describes the ecological, habitat, and oceanographic science—data collection, databases, data analyses, modeling, and syntheses—at the Center
3. Describes the climate science—data collection, databases, data analyses, modeling, and syntheses—at the Center

4. Describes the cumulative and integrated ecosystem science—data collection, databases, data analyses, modeling, and syntheses—at the Center
5. Describes the ecosystem-related management advice needed in the region/s the Center supports
6. Describes how well this information is included in trust species management-supporting advice at the LME level
7. Describes how well systematic, ecosystem-level integrative analyses are being used.
8. Describes the partnerships used by the Center in its ecosystem science enterprise and where there is significant leveraging of outside resources.

List of generic information to be provided by each Center to the review committee:

During the review, the Center should address the following questions as related to the thematic areas under review:

- What does the Center do? What does the RO do? To what extent does the RO inform Center science priorities? What is the nature of the relationship with ST and OHC, OPR, SF?
- How does the Center work to assure common objectives are being effectively and efficiently addressed across multiple NMFS and NOAA organizations?
- What's the societal significance of the Center's research?
- What are the linkages to NOAA Strategic and Research Plans, NMFS Strategic Plan for Fisheries Research, NMFS AGM and the Center's science plan?
- What are the key scientific questions being addressed?
- How are they linked to regulatory or management needs?
- What are the key 5-Year Strategic Plan milestones and what is the Center's progress in achieving them?
- Who are the Center's customers and partners and how does the Center work with them?
- What are the products of the Center's research?
- What is the Center's approach for increasing the use of ecosystem information into the Center's informational products, starting with species assessments and other existing products used to inform management decisions?
- What innovative or transformational research is being conducted?
- What science and applications will be transitioned to operations?
- What are the future directions of the Center?
- How does the Center set priorities? What are the core research priorities of the Center?
- What research activities have been dropped in recent years due to budget limitations or as a result of prioritization efforts?