

Guidance for Protocol Reviews: Full Science Reviews

Overview

This document is intended to provide guidance on how to conduct Full Science Reviews, as called for in Core Expectations for Vital Signs Monitoring:

- #2 “Use Peer-reviewed Study Designs to Guide Collection of Monitoring Data” and
- #3 “Ensure Scientific Excellence and Integrity.”

Described herein are the Purpose, Triggers, Process and Roles, Outcomes, and Required Questions that must be answered for a Full Science Review to be properly conducted.

Purpose

Strategic science reviews of monitoring protocols are necessary to ensure and maintain integrity, efficiency, delivery, and application of science produced by the Inventory and Monitoring Division (IMD).

Triggers

Potential triggers for conducting a Full Science Review include:

- Completion of the first published trend report for a protocol.
- Executing the current design of the protocol has become unrealistic or problematic.
- Protocol objectives have become outdated or require revision.
- Technological advances require significant changes to the existing protocol design.
- Relevance of protocol in providing accurate information on resource being monitored is in question.

Timing and prioritization of each review is at the discretion of the Regional Program Manager (RPM).

Process

It is the responsibility of the network, RPM, and Central Support Office staff (if appropriate) to develop the scope of each review and develop a plan for how required and optional review questions (Appendices A and B) will be addressed. If any question is outside of the scope of the review, not relevant to the protocol, or has been addressed by a prior review action, it can be waived during this process. This is subject to the approval of the RPM, who is responsible for reviewing and approving the scope and plan for each review. If a plan is carried out that addresses each question below to the satisfaction of the RPM and final outcomes have been completed, then the review will be considered complete.

Roles and Responsibilities

Network Program Manager (NPM)/Protocol Lead

- Develops the scope and objectives of the review.

- Designs a plan for how questions will be answered, or a clear justification for waiving them if they have been addressed by previous actions or are out of scope.
- Formulates a response summarizing actions to be taken based on the RPM Review Summary document.

Regional Program Manager

- Serves as the peer-review manager.
- Coordinates with the NPM to produce and approve the scope and plan for a review and coordinate reviewer input.
- Compiles reviewer responses and writes a report summarizing the review and in particular, the reviewer responses.
- Approves network response and course of action for any revisions to the protocol.

Central Support Office Staff (optional)

- Provides support and coordination to the network in scope development, planning, and completing review products.

Reviewers

Peer Reviewers

(Recommend 3–4 technical experts outside the network, with at least one reviewer external to IMD)

- Address **Scientific Integrity** and **Protocol Efficiency** questions (see Appendix A).

Park and Resource Management Staff

- Address **Integration and Science Delivery** questions (see Appendix A).

Outcomes

Outcomes of a Full Science Review include a summary report and network response (for examples, see Appendix C). There are also records management and communication requirements.

Full Science Review Report

This report includes:

1. A section describing the nature of the review, including summaries of:
 - a. what was reviewed and
 - b. what the review process entailed.
2. A section describing the qualifications of each reviewer, including
 - a. name,
 - b. credentials,
 - c. institutions, and
 - d. what they were asked to review.
3. A list of the questions posed to:
 - a. Peer Reviewers

- b. Park and Resource Management Staff reviewers
- 4. A summary of reviewer comments and recommendations for each question asked.
- 5. An appendix containing the unedited reviewer comments.

The final report must be:

- 1. peer-reviewed and
- 2. published to IRMA (see Records Management, below).

Network Response

The Network Response includes:

- 1. Response to peer-reviewer comments. For each comment that suggests changes, the network needs to respond with an explanation and accompanying rationale for how the network intends to address the comment.
- 2. Summary of:
 - a. What changes to the protocol are to be made (or not) and
 - b. How these changes address the concerns and recommendations of peer and park staff reviewers.

The network response must be approved by the Regional Program Manager.

Records Management

- 1. The Full Science Review Report and Network Response must both be published to DataStore, with the Reference Access Level set to “Internal.”
- 2. These documents should also be retained by the network as a part of their general records management practices.

Communications

After both documents have been published to DataStore, the NPM and RPM will notify the IMD Leadership Team that the review has been completed. The notification should include:

- 1. Identification of the protocol reviewed.
- 2. A summary of what the Review Process entailed.
- 3. Key findings from the Full Science Review Report.
- 4. A summary of the implementation of the findings based on the Network Response.
- 5. Lessons learned during the review process to help improve/inform future reviews.

Appendix A. Required Review Questions

Required Questions to be Answered by Peer Reviewers

Scientific Integrity

- 1. Are the protocol objectives relevant and being met? Do the objectives need to be modified to improve the value of the program?

2. Are the sampling and analytical methods being used valid, given the objectives? Are they the best available?
3. Have climate projections and considerations been incorporated into the analyses?
4. Do analyses demonstrate the protocol or study design is capable of detecting the desired level of change?
5. Are the interpretations of the data reasonable?
6. Are there documented and appropriate QA/QC procedures?
7. Are products or reports adequately peer reviewed and completed in an appropriate and optimal manner?

Protocol Efficiency

1. Given eroding budgets, are there efficiencies to be gained by changing methods, reducing sampling, alternative equipment, etc., while maintaining scientific rigor?
2. Would changing any of the methods or reducing protocol breadth make it no longer scientifically rigorous? What are the protocol components required to produce significant results?
3. What, if anything, needs to be added to the protocol? Are there essential pieces missing?
4. Can the protocol be sustained with current staffing levels? Is the workload reasonable for the staffing level allocated?

Required Questions to Be Answered by Park and Resource Management Staff

Integration and Science Delivery

1. Is the information being generated by the protocol (data and interpretations) useful and actionable by parks?
2. Are parks using the information effectively to manage resources, and how so? Are there examples like resource management decisions or park planning exercises?
3. If the information being produced is not currently being used, is there a likely future scenario where the information may be used?
4. Is the information being communicated to park staff (e.g., superintendents, resource staff, interpretive staff) in a timely, understandable, and useful format?
5. What could increase the effective use of monitoring information for parks?
6. Which components are most relevant to park management?

Appendix B. Additional Suggested Questions and Themes to Be Considered in the Review

Opportunities for Collaboration

1. Are there opportunities to collaborate on any aspect of the work including data collection, analysis, reporting, sharing, and data management, etc., and with whom?

Opportunities to Expand the Scope of the Work (Geographically, Agency/Landowners)

1. Are there geographic opportunities (e.g., adjacent landowners) to expand the reach and impact of this work?
2. Are there functional administrative opportunities to partner with other agencies and private landowners to expand the reach and impact of this work?

Opportunities to Standardize across Networks

1. What do you see as the scientific and cost benefits, versus the drawbacks, to merging approaches across networks, and how might we achieve that without losing the monitoring information that has already been collected? Should standardization be attempted, and if so, with which networks?

Technological/Analytical Improvements

1. Are there technological improvements possible for data workflow from collection through analysis?
2. What hurdles are of concern in adopting these particular changes?

Protocol-Specific Questions That Protocol Leads Need Help Addressing

[These vary by protocol and issues being raised]

Appendix C. Example Final Outcomes from Previous Full Science Reviews

A collection of examples of Science Review final outcome products can be found in the following DataStore assemblage:

2014–2024. [IMD Network Example Science Reviews](#). National Park Service, Assemblage (Code: 2303699).

Bozek, M., and T. Hubbard. 2022. Greater Yellowstone Network amphibian monitoring protocol science review: A summary of reviewers' responses. Natural Resource Report NPS/GRYN/NRR—2022/2389. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/nrr-2293614>.

George, D. 2022. 2021 Science Review for the Mediterranean Coast Network Landbird Monitoring Protocol: Summary of Process and Findings. Mediterranean Coast Inventory and Monitoring Network, National Park Service, Thousand Oaks, CA.