



United States Department of the Interior

NATIONAL PARK SERVICE

Natural Resource Stewardship and Science
Inventory and Monitoring Division
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To: Inventory and Monitoring Division Regional and Network Program Managers

From: Kirsten Gallo, Chief, Inventory and Monitoring Division

Re: Reviewing and Revising Approved Vital Signs Monitoring Protocols

Reviewing and updating vital signs monitoring protocols is a component of IMD's commitment to excellence in its long-term monitoring efforts and programmatic quality management. [NPS-75](#) states that as field methods are tested and experience implementing protocols leads to new insights, protocols will be reviewed and revised. Over the last year and half, a workgroup of network program managers, regional program managers and network scientists identified several types of reviews to meet these requirements and developed [guidance for implementing operational and scientific reviews of IMD protocols](#).

This memo directs network program managers and protocol leads to use the procedures described in Mitchell et al. (2018) to ensure that:

- Operational reviews are conducted at the end of each field season or annually for protocols where data are collected on a continuing basis.
- Scientific reviews are conducted when a network desires or is directed to consider substantive revisions to a protocol (defined below)
- Multi-protocol reviews are scientific reviews conducted when a network desires or is directed to consider changes to the network's vital signs monitoring plan.

Broadly, operational and scientific reviews are defined as follows, with the purpose, triggers, and required outcomes of each summarized in Table 1:

Operational Reviews are regular (annual) meetings to discuss matters related to protocol implementation and effectiveness. This type of review often results in minor revisions to protocols, such as clarifications of field methods. These revisions are not just to document deviations in the previous year, but include lessons learned and tweaks that should be made going forward. Operational reviews may also result in a recommendation for a scientific review.

Scientific Reviews are conducted to ensure that a written protocol or group of protocols clearly meets the stated objectives and reflects the highest scientific standards for monitoring, given resource and other limitations (i.e., "best available sound science"). A scientific review is designed to review or propose substantive changes to a protocol or group of protocols (e.g., changes to sample design or methodological approach). Scientific reviews may be targeted to address one or more specific issues within a protocol, comprehensive evaluations of entire protocols, or big-picture network evaluations of

some or all protocols and activities, including overall constraints on the program and whether the network is monitoring the most appropriate vital signs in the most effective way possible.

Table 1. Types of reviews covered by this guidance and basic characteristics of each.

Type of Review	Purpose	Triggers	Timing	Outcomes	Managed By	Approved By
Operational	Review protocol implementation and effectiveness	Completion of a field season.	Annual; required time ranges from a few hours to a few days	Documented suggestions for improving protocol. Documented decisions about suggestions. Documented deviations from protocol. Updated protocol documents (primarily SOPs). Plan for addressing safety concerns.	Protocol lead	Network Program Manager
Scientific: Targeted Protocol	Discuss one or a few SOPs or limited design changes	Findings from operational review, multi-protocol review, or data analyses. Concerns from network staff or RPM. Availability of new approach or tool. Budget concerns.	As needed; required time ranges from a few days to several weeks	Synopsis of rationale for the review. Validation of current approach or approval to modify protocol. Documentation of the effects of changes on data and plan for updating data management and analysis. Revised protocol documents.	Network Program Manager or protocol lead	Regional Program Manager
Scientific: Full Protocol	Conduct in-depth review of protocol	Findings from operational review, multi-protocol review, or data analyses. Concerns from network staff or RPM. Availability of new approach or tool. Budget concerns.	As needed; required time ranges from a few days to several weeks	Synopsis of rationale for the review. Validation of current approach or approval to modify protocol. Documentation of the effects of changes on data and plan for updating data management and analysis. Revised protocol documents.	Network Program Manager or protocol lead	Regional Program Manager
Scientific: Multi-Protocol	Big-picture review of network Vital Signs and integration between them	Network staff or RPM believe a review is warranted.	As needed; required time ranges from one to several weeks	Synopsis of rationale for the review. Validation of current approach or approval to modify Vital Signs or other aspects of network operations.	Network Program Manager	Regional Program Manager and IMD Chief

Conducting and Documenting Reviews

The protocol review guidance provides detailed guidance on review procedures to provide networks with a formal and approved approach and a clearly defined path to follow. Guidance for each type of review is based on a “panel” format, which may not be the preferred approach in all cases. Networks may choose to implement other approaches for operational and scientific reviews of vital signs monitoring protocols, provided they are developed in collaboration with and approved by the regional program manager, and the reviews produce the required outcomes described in the guidance (and as summarized in Table 1).

Outcomes of reviews (reports, findings, or other written documentation) must be retained and managed as program records. Electronic versions of documents must be stored in Data Store and linked to the protocol in the [IMD Protocol Tracking application](#)¹.

Peer Review

All revisions to protocols must receive an appropriate level of peer review before publication. See the 2015 [Peer Review Guidelines](#) and [Program Manager's Q&A Brief](#) regarding peer review for more information. The process for scientific reviews described in Mitchell et al. (2018) will meet the requirements for peer review in most situations.

¹ Functionality for recording reviews and associated documentation in the IMD Protocol Tracking application is expected to be available in Summer 2018.

Definitions

Clarification: A change to a protocol that adds details or resolves a potential inconsistency. Most commonly used when a field situation arises that was not anticipated when drafting a standard operating procedure (SOP). Clarifications may also be needed when statements in different parts of a protocol conflict. Clarifications do not require review beyond the network (but should be relayed to other networks known to be implementing the protocol).

Deviation: A situation where data were collected in a manner substantially different from the methods documented within the SOPs that were current at the time of data collection. Examples of deviations include the crew not following established procedures, such as incorrectly evaluating tree canopy class or habitat characteristics, or not following quality control procedures. Examples that would not be considered deviations include the individual collecting the data (if all crew members are trained) as well as minor variations in quality assurance procedures, such as a data recorder not repeating all values back to the data collector. Note that deviations must be flagged and tracked during the network quality assurance (QA) process, and the project principal investigator must decide on an appropriate action (e.g., change the designated data quality, mark the data as unusable, correct the data, or modify procedures to reduce the chance of a future deviation). Documentation of deviations is needed for completeness so future data users know of issues and how they were corrected.

Major or substantive change: A proposed alteration to a protocol that has the potential to affect the data or data analyses, such that data collected after the change cannot easily be rectified with earlier data. Examples of substantive changes include changed monitoring objectives, changed data collection methods (e.g., quadrat to line-intercept), changes to what is measured (e.g., percent cover rather than cover classes), and most changes to the sampling design such as changing panels or adding and dropping sites (except for index site designs). Changing labs can be a substantive change if it changes Minimum Detection Limits (MDLs) and procedures. Changed QA processes and equipment changes to equipment that has different (better or worse) QA standards would also be substantive. Examples of changes that are not substantive would be removing sites from a program that does not have a statistical design, changes in GPS equipment (unless the GPS accuracy is important to the protocol), clarifications of SOP procedures, database changes, increased QA checks, equipment changes that meet existing quality standards (e.g., a different brand of DBH [diameter at breast height] tape, and a new sonde model or manufacturer if sensor specifications remain the same).

References:

Mitchell, B., A. Chung-MacCoubrey, J. Comiskey, L. Garrett, M. MacCluskie, B. Moore, T. Philippi, G. Sanders and J.P. Schmit. 2018. Inventory and Monitoring Division protocol review guidance. Natural Resource Report [NPS/NRSS/IMD/NRR—2018/1644](https://www.nps.gov/nr/rdm/nrpd/nrpd-2018/1644). National Park Service, Fort Collins, Colorado.