

The Guidelines state that “The information submitted by various data suppliers should be comparable and compatible, to the maximum extent possible.” And “Scientific information that is used to inform decision making should include an evaluation of its uncertainty and identify gaps in the information.”

Peer review is an important element of the NS2 Guidelines and they adopt many of the Office of Management and Budget (OMB) peer review standards (OMB, 2004). These standards include balance in expertise, knowledge, and bias; lack of conflicts of interest; independence from the work being reviewed; and transparency of the peer review process. The NS2 Guidelines recognize that varying degrees of independence may be required for various reviews depending on the novelty, controversy, and complexity of the review. For example, an assessment update may be sufficiently reviewed with only regional expertise, while a review of emerging methods or controversial topics may require a more rigorous, independent peer review process. Deciding on an appropriate scope for the review is linked with how best to balance the need for a high quantity of assessments for timely management decisions with the need for rigorous peer reviews when necessary.

NMFS also has published a decision in the *Federal Register*⁵ on peer review, which recognizes the five regional peer review processes as compliant with NS2. Each Council and their respective SSCs incorporate both internal and external peer reviews of their respective stock assessments. The regional peer review processes vary, though all meet NS2 requirements. These processes have mechanisms in place for incorporating new data into assessments.

SAIP Recommendations

As previously discussed, the SAIP recognizes the high-quality data standards and peer review in place in the fisheries science and management system. It also recognizes sources for improvement, including creating more partnerships to improve data collection as well as streamlining the peer review process through the formalization of research vs. operational assessments. For research assessments (which include major changes to data sources or model configurations), the SAIP recommends that:

- “Stakeholder involvement is also encouraged so outside data, analyses, and ideas can be evaluated, and trust in potential changes is built from the beginning.
- New procedures, data sets, and configurations are made available to conduct new assessments, address issues with operational assessments, or make general improvements.
- For research assessments to be accepted into the next operational assessment there must be a long-term commitment to collect and provide the accepted data and methods.
- New procedures, data, and findings with application to particular stocks should be fully documented to support use and serve as reference in future operational assessments.”

The SAIP also recognizes that “On occasion, entities other than NMFS conduct assessments of federally managed stocks. These assessments may be well integrated into the management

⁵ <https://www.federalregister.gov/documents/2016/08/16/2016-19522/magnuson-stevens-act-provisions-national-standard-2-scientific-information-regional-peer-review>

process or outside normal procedures. Typically, external assessments are commissioned by a stakeholder either to fill a data gap that is not being addressed or to provide an alternative perspective in an ongoing assessment. External assessments can be helpful when they provide advice for stocks that cannot be assessed in a timely fashion, thereby assisting with the assessment workload, or when they contribute additional analyses for consideration in an ongoing assessment. However, external assessments can also be disruptive, especially when they are provided late in the management process or without sufficient documentation to critically evaluate the approach. In these cases, the assessment tends to compete or conflict with the federal stock assessment without being subject to an equivalent level of peer review. As the contribution of external assessments continues to increase, many Councils have developed, or are developing, protocols for including these assessments in the management process.”

Citizen Science Guidance

Other types of outreach and collaboration programs generate data for use in science, including cooperative research, indigenous and local ecological knowledge, and citizen science. The Crowdsourcing and Citizen Science Act (2017) provides authority for federal agencies to conduct citizen science projects to advance agency missions. NOAA has several citizen science programs and projects which support agency missions ranging from weather forecasting, to mapping the seafloor, to supporting living marine resource management and is working to expand citizen science at NOAA from outreach and education to a recognized, supported component of research.

The NOAA Science Advisory Board recently published a report on “Potential for Citizen Science in Support of Data Needs for Ecosystem-Based Science.” This report recognized that “data from CS programs can be integrated with information from surveys, cruises and sensors deployed by agencies and academic scientists. However, there is a need for careful program design, data review, and quality control to ensure that citizen science efforts produce valuable data that is accepted by the mainstream scientific community.”

MRIP

MRIP has been expanded recently to include regionally specialized surveys conducted by state partners. To ensure recreational catch and effort data are consistent across the nation’s fisheries and derived from methods that are scientifically robust, MRIP established a certification process for catch and effort survey methods which has been formalized recently in the NMFS Policy Directive 04-114.⁶ Certified survey and estimation methods meet a shared set of standards, undergo independent peer review, and receive approval from the MRIP Executive Steering Committee and NMFS leadership. Once certified, new surveys are eligible for MRIP funding and consideration in federal stock assessments and fisheries management. A certification review can also be requested by a sponsor for legacy surveys already in use that are either seeking recommendations for survey design improvements or are planning to implement changes.

⁶ <https://www.fisheries.noaa.gov/national/laws-and-policies/science-and-technology-policy-directives>

In addition to the current general surveys outlined above, MRIP has investigated the suitability of mandatory and voluntary or opt-in mobile applications by which anglers can self-report data for consideration in stock assessments. Findings and recommendations to date are included in NMFS' Report to Congress on electronic reporting options.⁷

Recommendations

The current fisheries scientific and management system can sufficiently address and incorporate state agency and nongovernmental data sources. Provided that these data, analyses, assessments, and surveys undergo the same rigorous scientific review as governmental products, they currently can be, and are, incorporated into fisheries management decisions. Nonetheless, NMFS recognizes that there could be greater incorporation and there is sometimes a perception that these other sources are ignored or not used. A few recommendations follow:

For State or Nongovernmental Partners:

1. To the extent practicable, acceptable assessment data should be based on: a) sampling within a plan for covering the entire stock range, b) relatively long time-series and commitment to maintain data collection for the foreseeable future, and c) peer-reviewed sampling design.
2. Partners designing scientific studies should reach out early and often to stock assessment staff. In these cases, it allows assessment staff to help shape the sampling strategy and output indicators that work best with their models. It also provides sufficient time to review the data.
3. To the extent practicable, data and analyses should be delivered in the format most appropriate for intake into assessments models or management systems, and for publishing in publicly available federal data systems.

For NMFS and Fishery Management Councils (and their SSCs)

1. Develop and document a clear process for reviewing new data prior to incorporation into an assessment, particularly a new assessment or a research/benchmark assessment. This process could be similar to the public data review workshops (such as SEDAR in the Southeast), and could include the SSCs, or other methods. While peer review of assessments includes review of the data used, having a prior review step could facilitate the incorporation of new data.
2. Consider identifying a liaison at NMFS Science Centers or Councils to assist non-governmental entities in designing studies and/or connect them with the appropriate assessment staff at the appropriate steps in the assessment process for the consideration of their data.
3. Liaisons could develop communication and outreach regarding data needs and data collection programs, and work with cooperative research staff and grant programs, as

⁷ <https://www.fisheries.noaa.gov/feature-story/noaa-fisheries-explores-electronic-reporting-supplemental-source-recreational-fishing>

well as integrate Council Research Priority Plans, and/or Science Center Science Plans.

4. Capitalize on existing grant programs, such as Saltonstall-Kennedy, as well as regional programs, such as the Marine Fisheries Initiative (MARFIN) or North Pacific Research Board as venues for communicating about research and data collection programs, as well as research and data needs.