

TOPIC 1. Peer Review and Principal Investigator (PI) Communications: Before, During, and After Completion of RSA projects.

The Issue and Past RSA Experience

There has been much discussion over time about the scientific validity of the research conducted under the RSA Program. Peer review - of proposals and of research results - while not without its problems, is the accepted method for establishing scientific validity. The historical RSA program widely solicited proposals in a competitive process, with each proposal initially reviewed by an internal NOAA subject matter expert, an external subject matter expert, and an industry subject matter expert. These were subject to further technical, administrative and legal analyses and review by NOAA and the Council, before a final selection of grantees was made by NOAA. Progress reports and a final completion report were required of each grant recipient (or Principal Investigator, PI). The final report was certified and approved by NOAA science staff after review and necessary revisions. This was similar in many ways to a peer review of the RSA projects, although unlike most peer-reviews, the PIs of RSA projects were, at least in some cases, unaware that a review was taking place. Contrary to popular belief about projects failing scientific peer review standards in the historic RSA program, all but two of the 44 projects have final reports that were accepted following some level of review by NOAA Fisheries.

However, a revised RSA program presents an opportunity to rethink how proposals are evaluated, how changes to funded proposals are considered, and how project results are reviewed to ensure that they meet the standard of "best scientific information available" (BSIA).

Pros and Cons of Options the Council Should Consider

The selection process for proposals is likely to function best when it is transparent (to PIs), gives appropriate weight to scientific merit and Council programmatic priorities, and engages the broader scientific community in a rigorous peer-review process.

- 1) What is the structure of the proposal selection process?
 - a. Is there a pre-proposal stage? Pre-proposals allow PIs to suggest one or more potential proposal ideas in a shorter format and to receive feedback on whether they are likely to be competitive for funding under the RSA program. Sea Grant (SG) and some National Science Foundation (NSF) programs are among the larger granting organizations that utilize pre-proposals. For the RSA program managers, they can reduce the review burden by limiting the number of full proposals that must be fully evaluated by reviewers to only those ideas that are a good fit for the RSA program. For PIs, pre-proposals are a means to float an idea without committing to writing a full proposal for an idea that might have little chance of success. However, pre-proposals add another step to the selection process, potentially extending an already lengthy process.
 - b. How is reviewing structured? Are pre-proposals (if any) reviewed internally, perhaps just to confirm fit to RSA priorities, or externally to evaluate potential scientific merit (may be difficult from the short pre-proposal format)? Are there separate written and panel review stages? Both SG and NSF have this structure where 2-3 external written reviews are solicited for each proposal and then a panel is convened to discuss the

proposals (and their reviews) and potentially rank them. Discussion of proposals at a panel provides a measure of consistency and helps reduce the influence of outliers (unusually positive or negative reviews) in the selection process.

- c. What are the review criteria and are these criteria well-matched to reviewer expertise? RSA proposals should be evaluated against at least two broad criteria: their scientific merit and their value to stock assessment, management, or other Council priorities. External scientific review (e.g., by academic fisheries scientists, oceanographers, economists, etc.) can help engage the broader scientific community and extends the base of expertise beyond that available within the community of Council staff and NOAA scientists. However, external reviewers may not be in a position to evaluate this second category. Instead, FMAT and Council Species Committees or NEFSC stock assessment leads may be better positioned to evaluate relevance of proposed research with respect to priorities.
 - i. Past performance in grant management and completion, including but not limited to past RSA grants, is used in numerous other granting agencies such as NOAA Sea Grant as a valuable review criterion.
- 2) How are requests by PIs for changes to proposed research evaluated?
- a. It's not uncommon for field research projects (and, to a lesser extent, lab research) to encounter unanticipated challenges that require changes to the study design. However, some changes may end up invalidating the original design or at least complicating the statistical analysis. Who is empowered to approve or disapprove changes requested by PIs? What criteria should they use when making these decisions? To what extent should they rely on additional outside evaluation of such requests (external review may add rigor but can also slow decision-making)?
 - b. Some RFPs include an explicit requirement that the proposal identify *anticipated* challenges and how they will be addressed. If implemented in the RSA program, such a requirement could allow for faster decision-making for such challenges since they are already described in the funded proposal. That is, no additional approval may be necessary if the proposal already specifies changes that will be made to protocols in the event of certain challenges arising.
- 3) How are project outputs (e.g., final and perhaps interim reports) assessed for their scientific validity and use to guide management?
- a. Leave it to the journal peer-review process? This is typical for SG and NSF and is generally considered the "gold standard," but often quite slow (2-3 years between completion of field/lab work and publication in a journal is not uncommon; <1 yr is rare) and the rigor of the process is beyond the Council's control and generally hard to determine since reviews and reviewer names are rarely published.
 - b. Ask the SSC or a subgroup of SSC members to review results? SSC members represent a scientifically well-qualified group that has a great deal of experience with scientific peer-review and is well aware of Council science needs. SSC review would ensure that at least some SSC members were aware of all RSA results, likely increasing uptake of these results in SSC decision-making.

- c. Is there an iterative process of peer-review and response by the PI? Is this in-person or written or some combination? Such a process could help hone the quality of the research outputs and provides a mechanism to resolve simple misunderstandings. However, it is potentially time-consuming and would need to be communicated to PIs in advance since it's not a standard part of most granting programs. Nevertheless, this could be a key component of a scientific process in which the end-result is expected to be utilized in a management context.
- 4) What is the role of the SSC in reviewing (pre)proposals and RSA project reports?
- a. The SSC members represent a community of scientists already engaged with the Council and (collectively) experienced in all aspects of grant writing, grant reviewing, and scientific peer-review. The SSC is also familiar with research priorities for Council-managed species as the SSC helps develop these research priorities.
 - b. Many SSC members will also be PIs or Co-PIs on RSA proposals and colleagues from their home institutions will submit proposals. This represents a conflict of interest (COI) that will need to be managed. While this presents no insurmountable obstacle to SSC involvement in RSA review, it may limit the number of SSC members without COIs available to participate.