

Response to Recommendations from the Committee of Visitors (COV) for the Division of Environmental Biology (DEB)

June 12-14, 2019

The Division of Environmental Biology (DEB) expresses its sincere appreciation to the members of the Committee of Visitors (COV) for their hard work in evaluating DEB operations, and for this comprehensive report. It was evident that all the members of the COV were engaged and deeply interested in the Division's programs and the welfare of the science communities served by these programs.

In general, the report of the Committee of Visitors is quite favorable with respect to the operations and management of the various programs and activities of DEB, and a number of important recommendations were given to maintain and improve quality of the merit review process.

COV Recommendations with BIO Responses

Recommendations Concerning Section I: Questions about the quality and effectiveness of the program's use of merit review process.

Recommendation 1.

Emphasize to reviewers the importance of evaluative, as opposed to descriptive, language when composing reviews so that reviewer feedback is most helpful in the assessment of proposals.

BIO Response:

BIO agrees with the COV about the importance of reviewers using evaluative, as opposed to descriptive, language in their reviews. Currently, DEB provides panelists with detailed guidance on how to craft effective reviews tailored for different categories of proposals. This guidance is sent by email to each panelist in the form of a PDF that accompanies their proposal assignments. Additionally, that same PDF provides panelists with a link to an NSF video titled "The Art and Science of Reviewing Proposals." Both resources focus on the need for evaluative language. In addition to materials for panelists, this information is reiterated in all requests for ad-hoc reviews. Program Officers tell panelists during panel to write evaluative statements in their panel summaries. Both Program Officers and other NSF staff also read and provide feedback on panel summaries during panel to ensure the highest quality summaries. In the past, DEB has also had DEBrief blog posts with guidance on how to write effective reviews. Despite these efforts, it can be challenging to ensure that reviewers carefully read and follow all the guidance provided to them.

DEB is currently exploring ways to better highlight these resources - specifically the PDF and NSF

video - in specifics of its email communications to panelists and in ad hoc review reminders to indicate the importance of this guidance. DEB will also explore other ways to communicate with the scientific community about the need for substantive and evaluative proposal review; these could include the DEB Brief blog, webinars, and outreach at meetings of major scientific societies relevant to the science that DEB supports.

Recommendation 2.

DEB should monitor this issue [inclusion of ad hoc reviews in panel discussions and panel summaries] closely and consider devising a mechanism to ensure that ad hoc reviews are fully and fairly incorporated into the panel summary. One possibility would be to designate one panelist as the "ad hoc proxy" (see section II), with the role of representing the viewpoints expressed in the ad hoc reviews.

BIO Response:

Clusters are currently experimenting with this approach and the Division will maintain an active discussion on this topic. The Divisional Best Practices Working Group has been charged with tracking results and offering guidance on the representation of ad hoc reviews during panel.

Recommendation 3.

In cases where the ultimate funding decision does not align with the recommendation in the Panel Summary, the COV suggests that it is essential that the Review Analysis contain sufficient explanation of this disparity.

BIO Response:

DEB will review the templates used for Review Analyses, and the guidance and training provided to Program Officers to ensure that there is adequate explanation for any proposals where the ultimate funding decision does not align with the panel recommendation.

Recommendations Concerning Section II: Questions concerning the selection of reviewers.

Recommendation 4.

We recommend that DEB invest in a system that would send automated reminder emails to ad hoc reviewers. Journals use this approach and overburdened reviewers have grown to rely on these reminders to structure their work time. This same approach could increase rates of reviewer follow-through and thereby decrease variance in ad hoc reviewer number.

BIO Response:

While there is a system in place to facilitate sending reminder emails to ad hoc reviewers, it is not automated. Program Officers within the Division currently send reminders to ad hoc reviewers if they do not receive a review. While investing in an automated system would be beneficial, it would need to happen at the agency-level. BIO thanks the COV for this recommendation and will forward it to the appropriate office.

Recommendation 5.

We recommend that DEB consider assigning a panelist to act as an 'ad hoc proxy', whose role would be to represent and advocate on behalf of the ad hoc reviewer(s) comments during the panel

discussion. This would not entail reading the full proposal and reviewing it as well; the proxy would simply have read the reviews and make sure the points are discussed and concurs with the panel summary. This could be one strategy for improving incorporation of ad hoc reviews into the panel discussion, panel summary, and ultimately the funding decision.

BIO Response:

As mentioned above in Recommendation 2, this practice is currently being explored by clusters and the Divisional Best Practices Working Group will track the issue and offer guidance on the representation of the viewpoints expressed in the ad hoc reviews during panel.

Recommendations Concerning Section III: Questions concerning the management of the program under review.

Recommendation 6.

The COV recommends that the DEB receive resources and support to reduce delays in filling vacant support staff positions, and to centralize the desk and office space of all Division personnel. The COV feels that these issues are critical to maintain the management and human resource strengths of the Division.

BIO Response:

BIO appreciates and agrees with the COV's recommendations to maintain a full staff and locate them within their division's space. In the time since the COV met, DEB has made substantial progress in filling vacant staff positions and most DEB staff are now located within the DEB floor space. Some space allocation issues at the time of the COV were associated with a hiatus on space reconfiguration associated with the recent move to the new building, and we are currently working on reconfiguring space now that divisions' specific needs in the new building are better understood.

Recommendation 7.

Continued assessment of "boundary breaking" efforts (e.g., BEE, LTER oversight), as well as identification of specific goals and timelines for judging the success of these efforts, is needed.

BIO Response:

DEB will continue to assess "boundary breaking" efforts and the success of those efforts, including both the perspectives of Program Officers and reflections from community members in panels and professional society meetings. DEB regularly discusses these topics, including special programs and tracks, during weekly staff meetings and at bi-annual retreats. This allows for transparency of decisions throughout the Division and for all voices to be heard. Based on future discussions and feedback, DEB will reassess these "boundary breaking" activities as appropriate. Specific upcoming activities include the LTER program decadal review in 2020, by a subcommittee of the BIO Advisory Committee.

Recommendation 8.

Continue efforts to break down scientific silos and barriers through input from across divisions and cross-directorate and interagency programs and through flexibility with co-review and co-funding and inclusion of other divisions in either formal or informal working groups.

BIO Response:

BIO thanks the committee for their endorsement of the Directorate's initiatives to break down scientific barriers and increase integrative research across BIO divisions. DEB is an active participant in the Biological Directorate's Rules of Life (RoL) track, which encourages collaboration and co-review across the Directorate. DEB core programs routinely use co-review, co-funding, and other mechanisms to break down scientific silos and barriers. In FY19, DEB implemented the Bridging Ecology and Evolution (BEE) track within the DEB solicitation to encourage co-review across programs within the Division. DEB participates in or co-manages a number of cross-directorate convergent initiatives and will continue to explore such partnership opportunities within NSF, and with other agencies, to help break down scientific silos.

Recommendation 9.

The COV notes that co-funded grants are managed only within one division, reducing the information obtained and bragging rights of the division that is not managing the co-funded grant. We recommend that DEB work with other divisions to make sure co-funded projects that are not managed by DEB are tracked and shared annually with the co-funded program, and to see results from these projects.

BIO Response:

DEB sees the value of this recommendation and will explore mechanisms to facilitate communication with co-funding partners to share outcomes of co-funded awards.

Recommendation 10.

Encourage scientific community to use workshops to identify emerging areas, especially at the interfaces among disciplines, and to use creative approaches such as Ideas Labs to solve recalcitrant problems and generate novel programs.

BIO Response:

DEB understands the value of the scientific community's input to identify emerging areas, as well as using creative approaches to solve recalcitrant problems. DEB will continue to encourage submission of workshop proposals to help stimulate new ideas. DEB has gained experience in working with organizations such as KnowInnovation (which runs Ideas Labs for NSF) that can help facilitate these types of workshops. DEB is also increasing its outreach efforts by working with societies to identify emerging areas. DEB uses input from these activities to draft new Dear Colleague Letters or create new tracks within our core solicitation. Emerging areas are communicated to the scientific community via NSF notifications, our blog, discussions with panelists, outreach events, and most recently through our new virtual "office hours".

Recommendation 11.

Identify opportunities to facilitate interactions at disciplinary boundaries of core and special programs. The committee appreciates the efforts over the last 4 years in emphasizing and achieving more co-reviews of proposals and co-funding as well as participation in interdisciplinary programs and creation of new tracks such as BEE and Rules of Life. However, there continues to be concern about the handling and openness of dealing with proposals and ideas that cross the traditional or newly established boundaries via participation in cross directorate programs and in co-review and co-funding.

BIO Response:

DEB welcomes opportunities to facilitate interactions at the disciplinary boundaries of both core and special programs and will continue to seek out such opportunities. For example, DEB recently

partnered with IOS on their EDGE solicitation in order to increase interactions between these divisions. DEB understands that the process of handling and dealing with co-reviewed proposals and ideas may be unclear to people outside NSF. In the time since this COV, DEB took steps to try to de-mystify the co-review and co-funding process to the scientific community via dedicated blog posts and discussing the process at a recent virtual "office hour". Program Officers will continue to discuss the co-review process with relevant PIs to address any concerns they might have. Panel summaries from co-reviewing programs are available to the PI once funding decisions have been made.

Recommendation 12.

There should be continued efforts to facilitate interactions at the many disciplinary boundaries and that DEB make an effort to seek out issues or projects that are good science but fall between the cracks. Some of these may be appropriate for EAGER projects.

BIO Response:

The "no deadline" model offers flexibility for co-review among programs for those proposals that cross scientific boundaries, and DEB Program Officers currently participate in a number of ongoing and emerging cross-divisional and cross-directorate initiatives that serve boundary spanning science for the research community. DEB will continue to participate in programs and initiatives at disciplinary boundaries, including use of the EAGER mechanism where appropriate, to ensure that good science does not "fall between the cracks."

Recommendations Concerning Section IV: Questions about Portfolio.

Recommendation 13.

The next DEB COV might benefit from an analysis of the BIO classification form, which is a rich data set and could reveal the presence (or suggest an absence) of subtler biases in the characteristics that affect a proposal's chance of being funded.

BIO Response:

The BIO Classification form has no equivalent in Research.gov or Grants.gov, so moving forward, the BIO classification form is no longer required. However, we are optimistic in the potential to address this recommendation through other means. NSF is investing in tools that will help with text mining of submitted proposals and/or other datasets to better understand the diversity of projects being proposed by the DEB scientific community. These tools will help DEB provide a high-level portfolio analysis for the next COV.

Recommendation 14.

All budget cuts above 10% should be justified in writing to the contracts and grants office of the submitting institution, as well as to the PI. By making the rationale explicit, the hope is that submitted budgets will become realistic.

BIO Response:

BIO recognizes the spirit of this recommendation is to educate PIs and their grants offices about reasonable budget requests. There are many reasons that a proposed budget might be reduced at the stage of an award recommendation, but our sense is that it is rarely the case that the original budget was unrealistic. NSF policy is that program officers' budget recommendations are normally

made on a “bottom line” basis (i.e. not line by line), and that for budget reductions of 10% or greater, a budget impact statement is required from the awardee organization. This statement describes how changes to particular budget categories will impact the scope and objectives of the project. While program officers communicate directly with the PI, it is the joint role of the PI and their grants office to craft and submit that budget impact statement along with the revised budget to NSF, which should be an activity that helps to educate PIs and their SROs about the relationship between budget and scope of work.

Recommendation 15.

NSF should provide clear, transparent, and consistent guidelines on what can and what cannot be funded (specific items mentioned were computers, second month summer salaries, and funds for foreign institutions). This would be best communicated in FAQ, DEBrief, or other media beyond traditional NSF publications.

BIO Response:

The [PAPPG](#) describes how NSF budgets should be constructed and how Federal funds can and cannot be used. However, BIO appreciates the committee’s recommendation to clarify and demystify this component of proposals. DEB is committed to communicating “clear, transparent, and consistent guidelines” to their investigator community. DEB agrees with the COV that FAQs and the DEBrief can be excellent avenues for communication. DEB also agrees that budgetary questions are a consistent point of confusion within the scientific community it serves and has taken steps (blog posts and outreach) to help educate the community and will continue these efforts moving forward.

Recommendation 16.

DEB should continue current programs and activities to encourage funding of innovative or transformative research and be alert to additional opportunities to encourage funding of innovative work.

BIO Response:

DEB will continue its core program offerings and as noted above in response to recommendation 12, will continue to participate in programs and initiatives at disciplinary boundaries, including use of the EAGER mechanism where appropriate to support innovative or transformative research. Through internal discussions, community workshops, and attendance at annual society meetings, DEB will identify leading-edge and innovative science to help inform programs and activities.

Recommendation 17.

DEB should consider doing an analysis of past funded work similar to that done by Wu et al. to identify innovative research and explore what factors if any (e.g., career stage of investigator, size of research group, whether proposal was funded through EAGER, special programs, or core programs, etc.) were most likely to be associated with innovative research.

BIO Response:

DEB notes that the definition of ‘innovative’ is difficult to determine and therefore to apply to previously funded work. NSF’s newly developed publication repository, which is compiled by PIs when submitting annual and final reports, together with text mining tools being developed at NSF

could help facilitate analyses of the award portfolio and answer questions such as these.

Recommendation 18.

DEB should continue to support inter- and multidisciplinary research through co-review, co-funding, and establishment of special programs.

BIO Response:

DEB will continue to support inter- and multidisciplinary research through current and any new special programs as noted in responses to prior recommendations. As mentioned previously, the “no deadline” model offers flexibility for co-review among programs for those proposals that cross scientific boundaries.

Recommendation 19.

As NSF continues its transition to a "no deadline" environment, it should monitor the participation of scientists across the geographic diversity of the US to ensure equitable success in NSF-sponsored science.

BIO Response: See Response to Recommendations 19-22 below.

Recommendation 20.

We recommend that DEB continue to track success rates of proposals from different kinds of institutions, continue procedures that help to balance awards across types of institutions, and consider providing training and support for institutions that do not have a strong history of NSF funding. We were pleased to hear about the efforts of DEB and BIO to support the Excellence in Research webinars being used to improve grant-writing skills at minority-serving institutions, as well as the common practice of including at least one panelist on each panel from a minority-serving institution, which should serve these goals.

BIO Response: See Response to Recommendations 19-22 below.

Recommendation 21.

Monitor trends in the success rate of early-career investigators following the discontinuation of the DDIGs program and develop tools for additional support if required.

BIO Response: See Response to Recommendations 19-22 below.

Recommendation 22.

As NSF continues its transition to a "no deadline" environment, it should monitor the participation of women and under-represented groups and monitor the success of these programs, to ensure the continued improvement of women and minorities achieving success in NSF-sponsored science.

BIO Response to Recommendations 19-22:

In 2019, a subcommittee of the BIO Advisory Committee made recommendations of metrics to track for the purpose of monitoring effects of transition to no-deadline on submission and funding

trends across the demographic groups mentioned above. BIO now has operationalized tracking of these and other metrics at the division level.

The current practice in DEB includes a Division Director review of planned award portfolios for a diversity of demographic factors, including investigators from groups under-represented in science, gender, career stage, types of organizations, and geographic location. DEB will continue to carefully monitor both the submission and success rates of these factors with the transition to a no-deadline model of proposal submission. Some of this tracking can be complicated because submission of demographic data is voluntary, and many researchers choose not to provide this information.

All BIO divisions participate in the Education and Interdisciplinary Research (EiR) track, which is part of the Historically Black Colleges and Universities (HBCU) program and is working to improve outreach efforts to under-represented institutions. DEB plans to continue participating in programs that support training at minority serving institutions and to increase outreach to institutions that do not have a strong history of NSF funding. DEB also monitors post-doctoral and graduate student budgetary support being included on funded awards, and will continue to carefully monitor the success rates of early-career investigators.

Recommendations Concerning Section V: Other Topics.

Recommendation 23.

The division should develop language other than “not competitive” for awards that won’t be considered further for funding (perhaps “not considered further for funding”). Although this is not within NSF control, outside bodies such as tenure committees and university administrators will use these as descriptors rather than categories as they are intended.

BIO Response:

BIO appreciates the committee’s concern about the optics of the “not competitive” panel recommendation category. DEB values being as transparent with the scientific community as possible and believes that sending a clear message to the investigators is an important part of that transparency. The Division will continue to provide transparent information to the scientific community about the panel recommendation ranking categories and will also investigate the language being used across the Foundation to ensure consistency.

Recommendation 24.

Criteria used to fund EAGER and RAPID awards should be made clear for each program. The rationale for every decision should be fully documented, including how other reviews (e.g., other PO) were used. The review analysis should indicate number and names of people consulted. We recommend a minimum of 3.

BIO Response:

The criteria for EAGERS and RAPIDs are NSF-wide standards that are articulated in the Proposal & Awards Policies & Procedures Guide (PAPPG), as is the internal review mechanism for such proposals. These criteria have been modified to improve clarity in the current (NSF 20-1) revision of the PAPPG. The required internal documentation for both types of proposals includes a Review Analysis to justify why a proposal is being awarded or declined. NSF policy is that EAGER and

RAPID funding decisions do not require review by more than the single managing Program Officer. It is common practice in DEB for multiple Program Officers to review EAGER and RAPID proposals but NSF policy requires only the name of the managing Program Officer in eJacket since that must be the individual who made the final funding decision and wrote the only documented review (i.e., the Review Analysis).