

**Response to Recommendations from the Committee of Visitors (COV) for the
Division of Environmental Biology (DEB),
June 21-23, 2006**

The Division of Environmental Biology (DEB) expresses its sincere appreciation to the members of the Committee of Visitors (COV) for their incisive observations and constructive recommendations. It was evident that all the members of the COV were deeply interested in the welfare and development of the diverse programs in the division and the science communities that they serve.

In general, the Report of the Committee of Visitors is favorable with respect to the operations and management of the various programs and activities of DEB although a number of important recommendations were given to improve upon current activities and practices.

In addition to several specific recommendations that can improve upon current DEB science programs and broadening participation of underrepresented groups, we are appreciative of recommendations on ways to improve management activities such as staffing and recruitment, long-term strategic planning, and division-specific metrics to assist both self-planning and future COVs.

Progress since the 2003 COV Report

The COV stated “DEB responded positively to a number of points made in the prior COV review.” These included both scientific emphasis areas as well as management practices. In particular, the COV appreciated the self study. BIO/DEB thanks the COV for the positive feedback. The self-study was a learning process for the Division and we will continue to examine our operations and work and make improvements to the self-study, especially in the areas of data capture that accurately reflects the question (i.e. reporting of actual participation by minority groups, women, persons with disability, EPSCoR states and territories, and undergraduate and master’s institutions).

Several recommendations from the 2003 report continue to need attention from the Division including: enhancing postdoctoral training opportunities; increasing participation of under-represented groups; increasing RUI submissions; increasing CAREER awards; increasing award duration; strengthening post project evaluation; enhancing mechanisms for communicating with young investigators; and providing strategic planning outlines and processes to the COV. The COV made specific recommendations relating to several of these, many of which are addressed in the responses below. DEB is committed to continue working on these issues and integrating the COV recommendations into its business operations as fully and timely as possible. DEB senior managers have already taken several steps to more comprehensively address these lingering issues, which include a comprehensive incentive program to target specific groups of researchers and students; strategic outreach coordination and training at the Divisional level; and streamlining staffing workflows to better manage and analyze awards.

PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

A.1 Questions about the quality and effectiveness of the program's use of merit review procedures.

Recommendation 1: (A.1.1., pg 4) *“In order to encourage PIs to become more active in the NSF review process, the COV suggests NSF consider listing PIs previous service to NSF on their CV or directly on the proposal cover sheet.”*

Response: BIO shares the COV's concern about the need to continue to improve the return rate of ad hoc reviews. This is a problem affecting not only DEB but all scientific programs at NSF and we defer this recommendation to the BIO-AC for their consideration.

Recommendation 2: (A.1.4., pg 5) *“COV feels there is a need to develop more objective methods of assessing the broader impacts of a research proposal. Perhaps a more detailed description of how these are evaluated would be helpful.”*

and

(C.3., pg 22) *“...the COV believes that a review of how PIs address Criterion 2 and how it affects funding could benefit NSF and be used to direct prospective PIs towards “best practices.””*

Response: All NSF proposals are evaluated through use of two National Science Board approved merit review criteria, of which Criterion 2 Broader Impacts is one. Guidance and instructions for the contents of a proposal is freely available to both reviewers and Principal Investigators (PIs) in the Grant Proposal Guide (GPG) Chapter III.A. Review Criteria http://www.nsf.gov/pubs/gpg/nsf04_23/ and includes links to examples illustrating activities likely to demonstrate broader impacts available on the NSF Website at <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>. The Proposal Review Instructions in FastLane provides guidance to reviewers on the evaluation of merit review criteria and is freely available to both reviewers and PIs at https://www.fastlane.nsf.gov/NSFHelp/flashhelp/fastlane/FastLane_Help/fastlane_help.htm#proposal_review_introduction.htm.

In addition, explicit guidance relative to the Programs is provided to panelists by DEB Program Directors during the advisory panels. DEB will continue to reinforce to staff the importance of appropriately addressing Criterion 2 in panel discussions and all relevant documentation associated with proposals (i.e. panel summary, Form 7 Review Analysis) and emphasize to Program Director's the critical role they play in this endeavor. DEB also plans to change the template of its panel summaries as follows: The current template includes a section for panel comments on the results of prior support. We will subdivide this section into “intellectual merit” and “broader impacts” in order to draw more attention by both panels and PIs to this criterion.

Recommendation 3: (A.1.4., pg 5) *“In cases where the panel recommendation varies significantly from the ad hoc reviews, the panel summaries should more clearly address the divergent reviews.”*

Response: BIO agrees with the COV and recognizes this as an issue with specific regard to panel summaries and will charge DEB with pursuing a two-pronged effort to mitigate this deficiency. First, DEB staff will emphasize to panelists the importance of addressing this situation appropriately within the panel summaries and provide better instructions to them. Second, DEB will continue and enhance its practice of having Science Assistants perform an editorial role for panelists during the drafting of panel summaries by emphasizing the importance of checking for this component in panel summaries during the course of their editing.

Recommendation 4: (A.1.6., pg 5) *“COV notes that the time required to notify PIs about unsuccessful proposals might be made shorter. Is it possible to notify investigators as soon as the panel has made a decision, at least for those rejected proposals that have no probability of being funded in that particular funding cycle? COV is also concerned that the % of proposals for which decisions were in the range of 6-9 months from review to decision has been increasing every year and was > 20% in FY05.”*

Response: BIO/DEB recognizes the COVs concern over notification time spans and notes that panels only make recommendations to the NSF and actual decisions are made later in the merit review process. COV is correct in its observation that the proportion of proposals for which decisions were in the range of 6-9 months is increasing. The GPRA goal is 70% of proposals processed within 6 months, and DEB is still well above this target despite an increase in proposal loads of 22% during the FY03-FY05 period (see the Dwell Time table of the Self Study Report (p9)). DEB continues to be committed to meeting or exceeding the GPRA goals in this area.

Recommendation 5: (A.1.6., pg 6) *“In order to enhance the efficiency of the review process and reduce the overall burden on the review community, the COV suggests that the DEB consider developing a preliminary ‘triage’ panel to determine which proposals go out for review. Proposal to be examined by a triage panel would be selected by program officers.”*

Response: BIO/DEB has considered the possibility of triage panels and concluded that the additional time required to run such panels would only be worthwhile if they reduce the proposal loads by 20% or more. Currently, DEB is conducting exit surveys with panelists for all of its Fall panels, coupled with data analyses of review scores and panelist recommendations, to establish whether or not triage panels would be a viable option for DEB in the future.

Recommendation 6: (A.1.6., pg 6) *“DEB should continue to allow program officers the discretion to make strategic/opportunistic awards (e.g., SGER) without ad hoc or panel reviews.”*

Response: BIO/DEB concurs with the COV that program officer discretion in making strategic/opportunistic awards is an excellent strategy and will continue this practice.

A.2 Questions concerning the implementation of the NSF Merit Review Criteria (intellectual merit and broader impacts) by reviewers and program officers.

Recommendation 7: (A.2.4. pg 7) “DEB should be more proactive and aggressive in encouraging the community of investigators to actively seek minority postdocs, predocs, and undergraduates.”

Response: DEB concurs with the COV on this point and is considering ways of using Divisional supplemental funding to address this matter. This could include increasing availability of supplements to the programs coupled with incentives for the Program Directors to make such awards.

A.3 Questions concerning the selection of reviewers

Recommendation 8: (A.3.5. pg 8) “If such does not already exist, COV recommends DEB establish a database for potential new reviewers.”

Response: BIO/DEB agrees with COV that there is a need to harvest new reviewers. DEB feels that rather than using valuable staff time to create and maintain additional databases we should instead focus on better leveraging existing tools such as ISI and Google Scholar. NSF is currently exploring prospects for how this can be done at the Foundation level and BIO has two representatives providing expertise on this working group, one of which is a DEB Program Officer. DEB will continue to actively support NSF initiatives to improve the merit review management tools available to us.

DEB will also continue its support of NSF’s ongoing efforts to improve internal and external information systems and will suggest to the appropriate body that a mechanism for reviewers to self-update their profiles is needed.

Recommendation 9: (A.3.5. pg 8) “...the COV suggests DEB consider establishing a committee of subject specialists that could suggest reviewers.”

Response: BIO feels that our 6 month dwell time precludes us from establishing separate subject specialist committees. DEB has recently successfully contracted out the assignment of ad hoc reviewers to former Program Officers, and is developing methods to enlist this form of assistance most effectively in the future. DEB staff also continuously recruits new reviewers on outreach trips, at professional meetings and conferences, from existing panelists and reviewers, and with incoming rotator Program Officers. We are currently developing core outreach slides and will include instructions on how to become a reviewer in our standard outreach presentations.

Recommendation 10: (A.3.5. pg 8) “...an automated electronic reminder should be sent to reviewers when reviews are due.”

Response: BIO/DEB does use electronic reminder letters in eCorrespondence, our electronic correspondence module of eJacket. This is, however, a manual process so that we can target only those proposals with insufficient reviews due to concerns over overburdening our reviewer community. NSF’s IT specialists are currently working on upgrades to the eCorrespondence system so that these types of manual tasks can be automated in the future.

A.4 Questions concerning the resulting portfolio of awards under review

Recommendation 11: (A.4.1. pg 9) “The COV strongly supports the concept of SGER grants and would encourage that larger SGER awards be given. In the future, the DEB Self Study should examine the effectiveness and innovation of SGER grants as far as new ideas realized, ability to react to sudden scientific needs, etc. Examples of major successes would be useful.”

Response: The size of SGER awards are capped by NSF policy at a maximum of \$200,000 for 2 years. For COV 2009, BIO has charged DEB with providing examples of major successes in its self-study along with an examination of the effectiveness and innovation of SGER grants.

Recommendation 12: (A.4.11. pg 11) “Increasing participation is a challenge. COV encourages DEB to develop a Division strategy to deal with this.”

Response: BIO concurs with the COV that this is an important issue and that current efforts in this area are not as productive as desired. Within DEB officials continue to initiate new efforts in this area as budgets permit. The Division is currently exploring an idea that would involve incentives to programs to bring additional underrepresented groups into research teams. BIO is currently working with EHR to develop a cross-Directorate strategy to address the problems of broadening participation of underrepresented groups.

Recommendation 13: (A.4.12. pg 11) “These workshops are a very forward-looking activity to ensure DEB remains ‘ahead of the curve’. One of the key recommendations of the COV is to extract future directions from the Annual Reports and Frontier Workshops and include summaries of these as part of the DEB self-study.”

Response: BIO/DEB concurs with this COV recommendation to extract future directions from Cluster Annual Reports and reports from Frontier workshops, and to include materials from these reports in future COV self-studies.

A.5 Management of the program under review

Recommendation 14: (A.5.1. pg 12) *“COV recommends DEB work to reach the 50% level of permanent program officers versus rotators in order to increase the efficiency of the review process and reduce the workload on program officers. Efforts should be made to name a permanent director and to add additional program officers”.*

Response: BIO concurs with this COV recommendation, noting that two recruitment searches for permanent Program Officers have been activated since the COV met. BIO does not wish to recruit for a permanent Division Director for DEB at this time.

Recommendation 15: (A.5.2. pg 12) *“In terms of educational opportunities, the COV is interested in DEB exploring group-specific postdoctoral opportunities.”*

Response: BIO concurs with this COV suggestion and is exploring post-doc opportunities. BIO has recently given permission to the Divisions to establish autonomous postdoctoral programs within their existing budgetary authority and DEB is actively considering this option.

PART B. RESULTS OF NSF INVESTMENTS

B.1 OUTCOME GOAL for PEOPLE: Developing “a diverse, competitive and globally engaged workforce of scientists, engineers, technologists and well-prepared citizens.”

Recommendation 16: (B.1. pg 14) *“A source of concern to this COV is that there has been no increase in the rate of submission of proposals by underrepresented groups including minorities and women (see section C3). This indicates that DEB should be more proactive in addressing this deficit. However, the COV also reiterates the observation of the 2003 COV that it is difficult to assess whether representation of these groups is sufficient because no benchmarks have been set.”*

Response: See response to Recommendation 12.

Recommendation 17: (B.1. pg 14) *“The 2003 COV also urged DEB to consider new mechanisms to provide postdoctoral opportunities to forge innovative links between research and education, and to allow researchers to “retool” to pursue investigations in new directions.”*

Response: See response to Recommendation 15.

B.2 OUTCOME GOAL for IDEAS: Enabling “discovery across the frontier of science and engineering, connected to learning, innovation, and service to society.”

(No specific recommendations articulated by the COV).

B.3 OUTCOME GOAL for TOOLS: Providing “broadly accessible, state-of-the-art S&E facilities, tools and other infrastructure that enable discovery, learning and innovation.”

(No specific recommendations articulated by the COV).

B.4 OUTCOME GOAL for ORGANIZATIONAL EXCELLENCE: Providing “an agile, innovative organization that fulfills its mission through leadership in state-of-the-art business practices.”

(No specific recommendations articulated by the COV).

PART C. OTHER TOPICS

C.1 Please comment on any program areas in need of improvement or gaps (if any) within program areas.

Recommendation 18: (C.1. pg 20) “COV encourages continued attention to the breadth of intellectual and heuristic facets of environmental biology, keeping up to date their relation to emerging environmental national and international problems. Gaps and areas for improvement include:

- Low number of proposals from undergraduate and masters institutions**
- Low number of proposals submitted by women or minority PIs**
- Low number of proposals submitted by EPSCOR states/territories**
- Funding for Post-docs – problem for the pipeline**
- Funding for mid-career scientists, especially for re-tooling.”**

Response: (See also responses to Recommendations 12, 15, and 23). BIO thanks COV for its suggestions. DEB senior managers have already initiated a comprehensive incentive program to strategically use Division reserve funds to foster educational, broadening participation, programmatic and strategic goals. Four of the five types of proposals eligible for this additional funding target postdocs, educational and broadening participation supplements (to established PIs), strategic support for the human resources in our community, and enhanced flexibility on award durations. We anticipate continued improvements in all these areas as DEB Program Officers have already responded positively and quickly to these new opportunities, and DEB has already begun the comprehensive data collection and analyses needed to inform and track this program’s success.

BIO notes that limitations in current data reporting of certain proposal categories i.e. RET and ROA grants, is not truly reflective of the participation in these programs by

underrepresented groups and BIO will explore better ways to analyze this data in the future. COV's recommendation to improved funding opportunities for mid-career scientists, especially for re-tooling, is taken under advisement although BIO notes that federal budgetary considerations for FY07 and beyond will greatly impact any proposed new initiatives and other NSF activities.

Recommendation 19: (C.1. pg 20) *“Encouraging partnerships between primarily undergraduate and research institutions is one approach that can lead to greater number of submissions for the RUI funding component of each DEB cluster.”*

Response: BIO thanks COV for this good suggestion and will continue to encourage Program Officers to support inter-institutional dialogue in support of ROA activities that frequently result in RUI submissions.

Recommendation 20: (C.1. pg 20) *“This COV and two previous COVs identified the need for funding postdoctoral fellowships and mid-career awards...we continue to recommend very strongly that DEB consider meeting these two needs simultaneously...”*

Response: DEB concurs with the need for funding postdoctoral fellowships and is exploring options in this area.

C.2 Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

Recommendation 21: (C.2. pg 21) *“The COV sees strategic and innovative funding allocation patterns (in view of no increase in overall funding) as the crucial issue to address problems alluded to in the above questions.”*

Response: BIO has asked DEB to consider how funding allocations across clusters could more effectively address these issues.

C.3 Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

Recommendation 22: (C.3. pg 21) *“In the long-term, DEB should incorporate studies of why women and minorities are not more proportionately represented, and seek to identify actions that it might take within its purview to positively affect this issue.”*

Response: See response to Recommendation 12.

Recommendation 23: (C.3. pg 21) *“Current emphasis on visits to Minority Serving Institutions (MSI) needs better structuring. Lack of increase of proposals from such institutions during the past six years suggests that current practices are not*

effective. Visits or workshops structured around the strengths and weaknesses of such institutions may result in a greater recruitment of underrepresented scientists.”

Response: BIO/DEB sees this as a valid suggestion and sees BIO’s recent partnership with Quality Education for Minorities (QEM) as a model for planning these types of workshops and is moving toward these types of outreach activities at the Division level.

Recommendation 24: (C.3. pg 22) *“... COV believes that a review of how PIs address Criterion 2 and how it affects funding could benefit NSF and be used to direct prospective PIs towards “best practices”.... Directing PIs towards “best practices” will both make for better proposals and better implementation of Criterion 2. (See additional suggestions for improvement under other C section questions and under section A, for ways to address the above problems.)*

Response: (See also response to Recommendations 2 and 30) BIO understands the COVs concerns about the need to clarify for PIs where the expectations lie for the broader impacts component of proposals. NSF has already developed such a document called “Merit Review Broader Impacts Criterion: Representative Activities,” available to PIs and reviewers at <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf> and through links in the Grant Proposal Guide on NSF’s website.

C.4 Please provide comments on any other issues the COV feels are relevant.

Recommendation 25: (C.4. pg 22) *“As briefly noted above, current parental leave practices for NSF-supported projects need to be considered and examined since the lack of parental leave can hinder participation of women as PI’s in projects. In addition, this reinforces the impression of early-career scientists, both male and female, undergraduate and graduate students, that academia is not a family-friendly environment.”*

Response: BIO understands the COVs concerns over the impact of awardee institutions’ parental leave policies and practices on scientific research and education. As this is a topic of concern for all of NSF’s community, BIO will forward this recommendation on to the appropriate parties.

Recommendation 26: (C.4. pg 22) *“... a future concern of DEB may be a focus on the science underlying “ecosystem services” The COV encourages DEB to review and evaluate its program practices (or programs with which it frequently is involved in its support of interdisciplinary research) in this context.”*

Response: BIO concurs and has requested that DEB review and evaluate current program practices in the context of how current funding patterns of biological research are integrating with research on ecosystem services.

C.5 NSF would appreciate your comments on how to improve the COV review process, format and report template.

Recommendation 27: (C.5. pg 22) *“It is essential for DEB to keep conducting its self-study, and we recommend DEB also include in the future:*

- *A table of awards by gender, per program category*
- *The geographic distribution of RUI awards to help the COV understand how to increase their proportion of total proposal submissions*
- *Information on EPSCOR funding and other programs contributing to funding of DEB proposals, and in the areas where funding is awarded*
- *Percentage change in number of proposals by women and minorities.”*

Response: BIO thanks COV for these suggestions to improve the self-study and has already implemented mechanisms to better track this data in preparation for COV 2009.

Recommendation 28: (C.5. pg 23) *“COV commends DEB for including two members from the previous COV. This allows for continuity and efficiency in the review process. DEB is encouraged to continue this practice.”*

Response: BIO thanks COV for its positive feedback on this practice and will continue to include prior COV members in future COVs.

Summary Recommendations:

Recommendation 29: Recommendation for maintaining a balanced portfolio (pg 24) *“If current trends continue (i.e. low success rates), the COV recommends that DEB create a task force including members of the scientific community and NSF staff.”*

Response: BIO concurs with this recommendation and acknowledges that this trend reaches beyond the scope of DEB. The BIO-AC would be well-positioned to create such a task force.

Recommendation 30: Recommendations for Criterion 2 (pg 24) *“Clarify for the scientific community the scope, expectations, and possible costs appropriate in proposals for addressing broader impacts.”*

Response: (See also response to Recommendation 2) BIO feels that it is beyond the scope of DEB to clarify the scope, expectations, and possible costs of addressing broader impacts for the entire scientific community. Within the community DEB serves, the review panels serve as an important feedback mechanism about broader impacts to the research community and accurately reflect the evolving nature of broader impacts through the participation of both panelists and the PIs submitting proposals.

Recommendation 31: Recommendations for Criterion 2 (pg 24) *“Begin a larger DEB level effort to determine how advances in environmental biology are meeting*

NSF-wide goals for broader impacts and how effectively these impacts are being communicated to the public.”

Response: BIO enthusiastically supports new directions and strategies coming forth from NSF’s Office of Legislative and Public Affairs (OLPA). Recent staff additions at the Division level have enabled DEB to be more proactive in this area and BIO has charged the division with continuing its efforts.

Recommendation 32: Recommendations for Criterion 2 (pg 25) *“In addition, DEB appears to be much more proactive in establishing links between science and its importance to society. Nevertheless, the COV sees the value for increased emphasis on conveying the impacts and significance of environmental biology to non-scientists.”*

Response: BIO concurs with COVs observation and will continue efforts to produce and support products and tools that enhance the profile of the environmental biology community.

Recommendation 33: (pg 25) *“Fully staff program positions and increase permanent staff to 50% as currently targeted; increase size of DEB program staff to: adequately support crosscutting initiatives, incorporate rapidly developing scientific opportunities, and increase analysis of the outcomes of NSF-supported research.”*

Response: BIO/DEB concurs with this recommendation and is working toward this end.

Recommendation 34: (pg 25) *“Establish programs, initiatives, and partnerships specifically targeted to increase participation in environmental biology by (1) minorities, (2) women, and (3) faculty and students from predominantly undergraduate institutions.”*

Response: See responses to Recommendations 12, 16, 18, 19, 22, and 23.

Recommendation 35: (pg 25) *“Evaluate the COV template to reduce number of questions, eliminate redundancy, and add a brief analysis of strengths, weakness, opportunities and impediments to the self-study.”*

Response: BIO thanks COV for these valuable recommendations for improving the COV process and will forward them to the NSF team responsible for revising the COV template. DEB appreciates COV’s suggestions and plans to incorporate many additional inclusions in the self-study so that future COV’s might be even more effective and efficient.

Questions Specific to DEB

Q1. Has DEB sufficiently supported integrative research within and beyond environmental Biology?

Recommendation 36: (pg 26) *“...the COV observes that additional resources will be needed to sustain and support these initiatives. Hence, there is a need to increase staffing and to provide incentives to support integrative science.”*

Response: BIO concurs with COV’s observation and recognizes the limitations of DEB’s control over these objectives.

Q2. Success rate has been dropping within DEB and BIO. This is largely due to an increased number of proposals being submitted to each panel cycle, combined with flat or declining budgets. So far, DEB has made no changes to the submission and review process (other than increasing efficiency to maintain timeliness of the decision). Should changes be considered?

Recommendation 37: (pg 26) *“We were concerned in our discussion with DEB program officers that there might be resistance to change because of well-meaning concerns about undesirable consequences. Nevertheless, the COV feels a hard-nosed look at this problem is warranted.”*

Response: BIO concurs with this recommendation and believes that the BIO-AC would be in the best position to create a task force to address these issues.

Q3. The programs within DEB have the flexibility to devote program funds to workshops that identify research frontiers or initiatives. Do you feel that DEB programs should be more proactive or have a more consistent plan for funding such workshops within the communities they serve?

(No specific recommendations articulated by the COV).

Q4. Please comment on the proposed data sharing policy that was developed within DEB and being considered for adoption as a BIO-wide requirement on all proposals?

Recommendation 38: (pg 27) *“The COV was concerned that making data sharing and management truly successful will require additional funding and it is possible that the actual cost will be substantial....The COV also feels the scientific community needs preparation and an opportunity for input before requirements are implemented.”*

Response: BIO appreciates the feedback and issues raised by the COV relating to data sharing and access. BIO will consider these points as it develops its policies in this area.