



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

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OFFICE OF  
RESEARCH AND DEVELOPMENT

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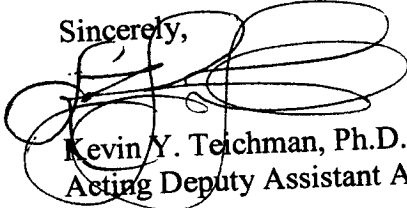
Dear Dr. Sayler:

On May 23, 2007, the Board of Scientific Counselors (BOSC) Mid-Cycle Subcommittee on Ecological Research met in Newport, Rhode Island, to evaluate the Office of Research and Development's (ORD) Ecological Research Program. Following that review, the Subcommittee presented a report of its findings and recommendations to the Executive Committee of the BOSC. After receiving a copy of the final report, dated August 23, 2007, the Ecological Research Program generated a response to the report, which is attached.

The program benefited a great deal from the insight and advice offered by the Subcommittee, and the recommendations were greatly appreciated. The attached narrative identifies specific recommendations made by the Mid-Cycle Subcommittee, provides a brief comment in response, and indicates how the Ecological Research Program will incorporate the findings of the Subcommittee into its activities. A table summarizing each recommendation, the action to be taken, and a schedule for completion of the action is also attached.

As you know, ORD conducts periodic evaluations of progress for each of its research programs at intervals of 4-5 years. The date for the next full review of the Ecological Research Program is tentatively set for May, 2009. We look forward to demonstrating our progress at that time.

Sincerely,



Kevin Y. Teichman, Ph.D.  
Acting Deputy Assistant Administrator for Science

Attachment

cc: Dr. James Clark  
Dr. John Giesy  
Dr. Sue Thompson  
Dr. Robert Eugene Turner



Office of Research and Development's (ORD) January 2008 Response  
to the Board of Scientific Counselors (BOSC) August 2007 Mid-Cycle  
Report that Reviews ORD's Ecological Research Program

**BOSC Ecological Mid-Cycle Subcommittee:**

Dr. James Clark (Chair)  
Dr. John Giesy  
Dr. Sue Thompson  
Dr. Robert Eugene Turner

**Submitted by:**

Rick A. Linthurst, Ph.D.  
National Program Director  
Ecological Research Program  
Office of Research and Development

## ORD Response to Recommendations Made by the Board of Scientific Counselors (BOSC) at its May 2007 Mid-Cycle Review of the Ecological Research Program (ERP)

The U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD) relies on the Board of Scientific Counselors (BOSC) to conduct independent expert reviews of environmental research programs every four to five years. Mid-cycle reviews are scheduled approximately two years after the program review to obtain feedback on progress since the last review and advice on future directions and performance.

The BOSC Mid-Cycle Subcommittee for the Ecological Research Program (ERP) met by teleconference on April 26, and May 8, 2007, which was followed by a public meeting held on May 23, 2007. The mid-cycle review focused on ORD's detailed documentation of changes in the ERP, including a revised focus on ecosystem services and other changes in the scope and focus of research activities, metrics of performance, and adaptations to budgetary and other programmatic changes. A set of specific questions was used to guide the Subcommittee through the review.

The purpose of the following narrative is to respond to the recommendations made in the *Final Report of the Mid-Cycle Review of the Office of Research and Development's Ecological Research at the US Environmental Protection Agency*, dated August 23, 2007.

Beginning on page 2 of the *Final Report*, the BOSC found evidence that ORD demonstrated the ability to respond to concerns and recommendations from the BOSC. The report also noted that the BOSC recognizes that progressing development and refocusing of the ERP and meeting expectations generated in response to the 2005 review are significant accomplishments in light of budget reductions. The BOSC commended ORD for maintaining a long-term perspective and complimented the ERP staff for their perseverance in developing a program that is realistic in scope and consistent with the program's resources.

**Recommendation 1:** ORD is encouraged to sustain its commitment to action items and follow-ups developed as part of the 2005 program review and the 2007 mid-cycle review.

**Response:** *ORD appreciates the positive feedback concerning the new directions described at the mid-cycle review and will sustain its commitment to action items and follow-up activities to the greatest extent possible.*

On page 4, the BOSC comments on the number of efforts that the ERP is continuing to develop and notes that no specific commitment was evident for models and tools that could be used to develop and address ecosystem services assessments.

**Recommendation 2:** Eventually, decisions regarding the specific approaches that will be used to incorporate ecosystem services as key assessment and management approaches will have to be made and incorporated into a revised Multi-Year Plan (MYP). The Subcommittee recommends that this remain a high priority effort of the ERP.

**Response:** *Completion of the ERP Multi-Year Research Plan (MYP) and preparation of a research implementation plan (IP) for each major element of the new ERP remains a high-priority activity for the ERP.*

*In July and October, 2007, we held meetings in EPA Regions 8 and 4, respectively, to begin discussions of the implementation plans, where details on the approaches will be reported. The draft MYP expands upon the Strategic Directions document we provided to the BOSC in April, 2007 and will remain more of an overview of the program.*

*These meetings were attended by all ERP lead scientists; EPA Regional staff were also invited to improve our outreach to the user community, and the feedback has been positive. The MYP is due in February of 2008 as a draft and draft implementation plans are due in July of 2008, both then to be reviewed and revised.*

On page 5 of the report, the BOSC notes that there were some areas identified in the 2005 program review as action items that were not addressed in the mid-cycle review materials or panel discussions. Although these were considered lower priority items by the BOSC, they remain important for future consideration.

**Recommendation 3:** ORD is encouraged to continue to develop plans that address the following:

1. Document efforts to reach out to non-traditional stakeholders to enhance robustness of ecological assessments and provide greater diversity of input that will support decision-making.
2. Quantify the commitments and activities where R&D funds are leveraged with other agencies and stakeholders.
3. Document the variety of ORD procedures that are being followed and developed to communicate research results to stakeholders.
4. Incorporate a sufficient degree of external peer review into the ERP to ensure the science is defensible.
5. Follow through on commitments to technology transfer regarding the systems, tools, and approaches developed by ORD to assist stakeholders in ecological assessments and decision-making.

**Response:** *As we develop plans for the ERP research, we will incorporate the preceding suggestions.*

*We have added a new Outreach and Education component to our research plan that will be an integral part of the program. This new element—and the corresponding Outreach and Education Team that will implement it—will ensure that, in the future, we will be able to document our outreach to non-traditional stakeholders, the input we receive from stakeholders, and our procedures for communication, outreach, and technology transfer of our research results. The members of this group are from the many research teams to ensure close coordination and communication on this topic.*

*In addition, we will continue our existing practices for external peer review of our research plans and of our research products, beginning with an EPA Science Advisory Board review of the MYP, followed by an external review process for each of the ERP component implementation plans.*

On page 2 of the report, the BOSC noted that the metrics used by ERP for evaluating and communicating the effectiveness of the program are good, but are not yet being applied or appreciated to the extent that was recommended in the 2005 BOSC program review. This point was also made on page 6 of the report.

**Recommendation 4:** Additional performance metrics should be considered to supplement the current indicators used for regularly assessing research programs.

**Response:** *The need for performance metrics is undeniable. The program has such metrics that have been accepted by the Office of Management and Budget and are used at that level to measure progress. However, the Subcommittee is correct in that these metrics meet the requirements and little more. The ERP has developed some additional proposed metrics for the Program since the review and will work to have new metrics embedded in the implementation plans. We would appreciate any specific suggestions the Subcommittee may have on this matter.*

**Recommendation 5:** Although the metrics for evaluating the effectiveness of both the entire program and its parts are good, there is much room for improvement in the application of these metrics.

**Response:** *The application of the metrics has been a difficult issue for the ERP and many research programs with ORD. We will work to improve the metrics as noted in the previous response, while also determining what these metrics should be telling us and what actions relate to the changes in the metrics.*

On page 7, the BOSC described the need for the ERP to develop a formal process for sharing and disseminating research results with stakeholders.

**Recommendation 6:** BOSC recommends that ORD put greater emphasis on tracking and documenting applications of ERP research results by decision-makers.

**Response:** *We agree that ERP research results leading to better decision making and environmental improvement is the best measure of success. As part of its outreach and education efforts, and a new decision support team, the ERP is specifically targeting delivery of products for on-the-ground outcomes at local, regional, and national scales.*

*The ERP will seek out existing programs to highlight successes and limitations, create decision support and educational tools and products through national and regional ORD projects, and conduct outreach to encourage product use, as well as document decision outcomes. Using an iterative approach, we will identify how well ERP products support better decisions, how the environment changed, and what we need to do to improve our products for better application. Partnerships with decision makers and those who implement decisions are essential for our success.*

*A cautionary note to this endeavor is that there is frequently quite a delay between the research, the use by decision makers, and the evidence needed to demonstrate an environmental change.*

Also on page 7 of the report, the BOSC noted the bibliometric parameters that now are incorporated as two OMB PART (Program Assessment Rating Tool) measures are helpful in assessing ERP contributions, but reliance on these measures to assess future program accomplishments must take into account the new budget situation where contributions by extramural scientists may be diminished due to funding constraints.

**Recommendation 7:** The BOSC recommends that ORD closely assess the contributions of EPA and extramural scientists and find ways to continue to support and enhance collaborative research.

**Response:** *ORD in general, and ERP in particular, are both continuing to explore ways to assess the roles and contributions of EPA and extramural scientists. At present, the ERP still has limited funds to support any extramural activities (i.e., about \$1M of the \$68M annual budget for 2007), so collaborations that require extramural funding will necessarily be limited. However, EPA's in-house scientists continue to develop and implement their research in collaboration with other federal agencies, EPA regions, state and local governments, conservation organizations and other non-governmental organizations (NGOs).*

*Since the review, the ERP has begun negotiating, for example, a number of Memoranda of Understanding with academia and NGOs, and increased our efforts to develop more federal partnerships as well.*

**Recommendation 8:** The BOSC encourages ORD to continue discussions on developing ecological indicators among Agency researchers and decision-makers, as well as with the other stakeholder groups.

**Response:** *ERP will build on its success in the Environmental Monitoring and Assessment Program (EMAP) to create new ecological indicators related to ecosystem services, consistent with the redirection of the program.*

*The ERP began EMAP in the late 1980's to establish statistically-valid, scientifically defensible ecological indicators and monitoring frameworks to measure, assess, and communicate status and trends in ecosystem condition at regional and national scales. EMAP has successfully completed national assessments using this framework and has pioneered research to create landscape atlases depicting ecological indicators that have been widely used in government and by NGOs. The ERP will continue to analyze EMAP data and analyses as a starting point for developing ecological indicators useful for measuring, mapping, and monitoring ecosystem services. The challenge will be to move from indicators of condition to those of ecosystem function, and ultimately those that are representative of ecosystem services.*

*One of our planned research products will be a design for inventorying ecosystem services, using a variety of ecological indicators.*

On page 2 of the report, the BOSC indicated support for focusing a greater percentage of research and development effort on areas that support decision-making based on ecosystem services. This point was also made on page 9 of the report. During the course of the review, ORD offered insight into the rationale behind this approach. The BOSC noted that the next obstacle will be deciding how the revised LTGs and ongoing research programs will be altered to support the new focus.

**Recommendation 9:** ORD is encouraged to commit time and resources in strategically planning these changes, including gaining input from a variety of stakeholders, such as The Nature Conservancy and other land trusts that have a significant history in managing lands for valued ecosystem services.

**Response:** *The ERP has created two research teams to specifically address issues related to decision support and to outreach and education, and we have made decision support the ultimate goal of the program. This new goal is anticipated to be a primary driver for the research within the context of the Subcommittee's recommendation.*

*We have begun to interview a broad range of decision makers. Further, each team is to identify the decision makers they hope to influence with their findings. All teams are to include decision makers and policy experts on their projects to keep these interactions in the forefront of our research efforts. We believe the Subcommittee will see a greatly enhanced and successful effort in this area, including collaboration with those organizations with a history of managing lands both inside and out of the government.*

On pages 3 and 10 of the report, the BOSC noted that assistance in successfully addressing the emerging research in ecosystem services and the relationship to selected economic and

human health endpoints will most likely come in the course of interactions with the expanded partnerships and stakeholder community ORD is developing.

**Recommendation 10:** The ERP is encouraged to engage non-traditional EPA partners and stakeholders in discussions focusing on economic and human uses in addition to working with more traditional state and local stakeholders.

**Response:** *The ERP notes the importance of engaging non-traditional partners and stakeholders because of the importance of considering a much broader context inherent in ecosystem services. Multiple partnerships are required across economic and cultural contexts including industry, environmental groups, local municipalities and planners, and land owners. Understanding the values, concerns, and opportunities provided by diverse partners better ensures successful implementation of ERP products.*

*Since the review, the Program has begun working with the human health community, the private markets for ecosystem services, and ecological economists, and we hope to continue to expand this complex array of individuals and organizations that can add value to achieving our targeted goals.*

**Recommendation 11:** ORD should be prepared to deal with confusing, if not conflicting, information or advice on emerging issues, as the diversity of sources will reflect a broad diversity of perspectives and values. The BOSC suggests that ORD may benefit from an assessment of skills and areas of expertise among its current staff and subsequent efforts to fill identified gaps, including previously identified areas of need such as ecosystem valuation and economics.

**Response:** *We agree that under the ERP we must be prepared to address a broad diversity of perspectives and values. We have assessed the skills and expertise of ERP staff and have identified gaps in needed expertise. In addition, we have identified a funding mechanism whereby we can engage nationally recognized experts in economics, law, and spatial analysis to advise, assist, and work directly with our in-house scientists in the planning and early implementation stages of our work in ecosystem services.*

*In November 2007, we began the administrative process required to employ six such highly recognized experts on a part-time basis. We have also initiated a process for bringing ten post-doctoral appointments into the ERP over the next few years. These appointments will be drawn from disciplines needed to complement our in-house skills including, but not limited to, economics, law, policy, social sciences, and spatial analysis. These new post-doctoral positions will be brought into the ERP as current post-doctoral positions expire.*

*In addition, the Outreach and Education Team will seek out diverse expertise across multiple disciplines including communications specialists, psychologists, and cultural anthropologists in addition to more traditional partners in economics and health professionals.*



On pages 3 and 11 of the report, the BOSC noted that ERP has established productive collaborations on specific research projects, especially with clients within EPA. Yet, true partnerships that involve ongoing two-way communication are not as numerous.

**Recommendation 12:** ORD is encouraged to engage stakeholders and collaborators with communication strategies that allow for input and dissemination of information.

**Response:** *The ERP recognizes the importance of stakeholders, decision-makers, users, partners and clients' participation in our research program. Clients should help determine research direction, products needed for decision making, tools for implementation, and protocols to assess environmental success. To help ensure full participation by clients, the ERP will use the Outreach and Education Team charged to create an outreach strategy and communication plan, opportunities for national and project level participation, and determine the best pathway for engaging clients. The ERP Outreach and Education Team is currently developing a communication strategy to specifically find ways to engage a diverse array of clients, stakeholders and collaborators.*

**Recommendation 13:** The BOSC encourages ORD to be prepared to listen and integrate stakeholder input into the planning process.

**Response:** *The ERP has begun implementing outreach activities to listen to and integrate stakeholder input into the planning process. Each project is identifying stakeholders within the region where the research will be conducted and has been directed to ensure the user has the opportunity to influence the research by clearly articulating its needs. In addition, the Outreach and Education Team is conducting preliminary interviews with federal partners to determine how ecosystem services are viewed, and how they may best be incorporated into future federal decisions. Finally, the decision support team will be engaging a large array of decision makers in the development of the decision support system they are charged to create.*

**Recommendation 14:** Workshops, short courses, and field demonstrations should become core aspects of ERP's communication strategy.

**Response:** *We agree and are planning these types of activities. Our priority for outreach includes workshops during 2008 to identify key needs, concerns, and issues that must be addressed for the ERP. Such outreach efforts and others are expected to continue throughout the ERP. Our priority on education is to produce materials for clients that help them both understand ecosystem services and know about products available for their support, the value of incorporating ecosystem services into decisions, and the benefits from doing so. We plan to create on-line educational conceptual models and dynamic systems models for clients to use to explore the potential outcomes of their decisions and to better understand how ecosystem services may be influenced by what they do.*

*Such education is not only applicable to the external community but to EPA ORD and other staff. The ERP has initiated a regular seminar on ecosystem services topics aimed at our team and any others that could benefit from an improved understanding in the*

*many areas important to ecosystem services. These seminars are done by phone to reach a broad audience, supplemented with slides posted in advance on our newly established Science Connector site on the web.*

**Recommendation 15:** The ERP is encouraged to continue to expand its clients beyond the present core of other EPA offices. It will be especially important to increase partnerships with other natural resources agencies and with organizations (those concerned with the social sciences and educators) that can assist in translating ERP research into action.

**Response:** *We agree that a broad partner base is essential to success. Thus, the ERP is pursuing a strategy of leadership and collaborative partnerships in order to most effectively implement its research program. The EPA mandate to “protect human health and safeguard the natural environment” places us in a unique position to lead efforts to characterize the critical link between ecosystem services and human well-being. However to meet our research objectives, we must mobilize our own expertise and engage strong partners.*

*Some of our client base is non-negotiable, i.e., ORD has a responsibility to assist the Agency in meeting its mission and statutory requirements. With respect to our focus on ecosystem services, the ERP has already established partnerships with EPA Regions 4, 5, 7, 8, 10 and with EPA’s National Center for Environmental Economics (NCEE). We are benefiting from existing partnerships with the academic community via the extramural STAR grant program to help us address regional and state needs (this currently represents about 15 universities).*

*We are also currently developing non-traditional partnerships with NGOs and other organizations. Since June 2007, the ERP has established collaborative agreements with the Gund Institute for Ecological Economics, the Willamette Partnership (a consortium of NGO’s, federal agencies, and local conservation groups), the Natural Capital Project (comprising The Nature Conservancy, World Wildlife Fund, and Stanford University), National Geographic, and NSF’s National Ecological Observatory Network (NEON).*

*The ERP is also co-chairing, with USDA Forest Service, an Interagency Workgroup on Ecosystem Services under the auspices of OSTP’s Committee on Environment and Natural Resources (CENR) Subcommittee on Ecological Systems. Planning for this Workgroup began in summer 2007, and the inaugural meeting was held in November 2007. This Workgroup enables the ERP to work directly with federal land management agencies in developing a coordinated federal strategy for conserving and protecting ecosystem services.*

*In addition, the ERP has several individual collaborations underway with (1) NOAA related to coastal systems, and (2) USDA related to the effects of biofuels development on the sustainability of such ecosystem services such as cultural values, including sense of place, clean air, water, and habitat. In November 2007, the ERP and Regional Offices sponsored a workshop attended by non-traditional stakeholders in order to get their input to develop scenarios of future Midwestern landscapes and their corresponding ecosystem services.*

*In August 2007, the Outreach and Education Team began interviewing key federal partners, especially land owner agencies with strong influence over valued public lands, as well as talking with state partners working to protect critical resources. As the communication strategy is developed, we will broaden this discussion, likely through workshops, and will use these preliminary conversations to guide how this is done. We are especially interested in engaging social scientists and educators whose expertise will be particularly valuable.*

**Recommendation 16:** As possible, staff with communication and education experience should be hired. In addition, research teams should be encouraged to engage in outreach and activities relevant to their areas of research.

**Response:** *We agree. The Outreach and Education Team will be working with each of the ERP research teams to determine what resources are likely to be needed, and may be available locally among partners. We are currently reaching across EPA to see what communications and educational talent can be engaged to help us. Some of those that have come to our assistance have been the ORD communication experts, and we are getting interest from outside organizations with expertise in communication and outreach to participate at least as advisors on the team.*

**Ecological Research Program  
 Summary of Recommendations and Proposed ORD Actions and Timelines**

Recommendation	ORD Action	Timeline for Action
<b>Recommendation 1:</b> ORD is encouraged to sustain its commitment to action items and follow-ups developed as part of the 2005 program review and the 2007 mid-cycle review.	<b>Response:</b> ORD appreciates the positive feedback concerning the new directions described at the mid-cycle review and will sustain its commitment to action items and follow-up activities to the greatest extent possible.	Ongoing
<b>Recommendation 2:</b> A revised MYP with specific approaches that will be used to incorporate ecosystem services as key assessment and management approaches should remain a high priority effort of the ERP.	<b>Response:</b> Completion of the ERP Multi-Year Research Plan (MYP) and preparation of a research implementation plan (IP) for each major element of the new ERP remains a high-priority activity for the ERP.	Ongoing
<b>Recommendation 3:</b> ORD is encouraged to continue to develop plans for those recommendations made during the 2005 program review that were not addressed in the mid-cycle review.	<b>Response:</b> As we develop plans for the ERP research, we will incorporate these suggestions. The MYP is due in February of 2008 as a draft and draft implementation plans are due in July of 2008, both then to be reviewed and revised.	Ongoing
<b>Recommendation 4:</b> Additional performance metrics should be considered to supplement the current indicators used for regularly assessing research programs.	<b>Response:</b> The ERP has developed some additional proposed metrics for the Program since the review and will work to have new metrics embedded in the implementation plans. We would appreciate any specific suggestions the Subcommittee may have on this matter.	Ongoing
<b>Recommendation 5:</b> Although the metrics for evaluating the effectiveness of both the entire program and its parts are good, there is much room for improvement in the <i>application</i> of these metrics.	<b>Response:</b> The application of the metrics has been a difficult issue for the ERP and many research programs with ORD. We will work to improve the metrics as noted in the previous response while also determining what these metrics should be telling us and what actions relate to the changes in the metrics.	Ongoing
<b>Recommendation 6:</b> BOSC recommends that ORD put greater emphasis on tracking and documenting applications of ERP research results by decision-makers.	<b>Response:</b> The ERP will seek out existing programs to highlight successes and limitations, create decision support and educational tools and products through national and regional ORD projects, and conduct outreach to encourage product use, as well as document decision outcomes. Using an iterative approach we will identify how well ERP products support better decisions, how the environment changed, and what we need to do to improve our products for better application.	Ongoing
<b>Recommendation 7:</b> The BOSC recommends that ORD closely assess the contributions of EPA and extramural	<b>Response:</b> At present, the ERP still has limited funds to support any extramural activities, so collaborations that require	Ongoing

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<p>scientists and find ways to continue to support and enhance collaborative research.</p>	<p>extramural funding will necessarily be limited. However, EPA's in-house scientists continue to develop and implement their research in collaboration with other federal agencies, EPA regions, state and local governments, conservation organizations and other non-governmental organizations (NGOs).</p>	
<p><b>Recommendation 8:</b> The BOSC encourages ORD to continue discussions on developing ecological indicators among Agency researchers and decision-makers, as well as with the other stakeholder groups.</p>	<p><b>Response:</b> ERP will build on its success in the Environmental Monitoring and Assessment Program (EMAP) to create new ecological indicators related to ecosystem services, consistent with the redirection of the program.</p>	<p>Ongoing</p>
<p><b>Recommendation 9:</b> ORD is encouraged to commit time and resources in strategically planning these changes, including gaining input from a variety of stakeholders, such as The Nature Conservancy and other land trusts that have a significant history in managing lands for valued ecosystem services.</p>	<p><b>Response:</b> The ERP has created two research teams to specifically address issues related to decision support and to outreach and education, and we have made decision support the ultimate goal of the program. We have begun to interview a broad range of decision makers. Further, each team is to identify the decision makers they hope to influence with their findings. All teams are to include decision makers and policy experts on their projects to keep these interactions in the forefront of our research efforts.</p>	<p>Ongoing</p>
<p><b>Recommendation 10:</b> The ERP is encouraged to engage non-traditional EPA partners and stakeholders in discussions focusing on economic and human uses in addition to working with more traditional state and local stakeholders.</p>	<p><b>Response:</b> Since the review, the Program has begun working with the human health community, the private markets for ecosystem services, and ecological economists, and we hope to continue to expand this complex array of individuals and organizations that can add value to achieving our targeted goals.</p>	<p>Ongoing</p>
<p><b>Recommendation 11:</b> ORD should be prepared to deal with confusing, if not conflicting, information or advice on emerging issues, as the diversity of sources will reflect a broad diversity of perspectives and values. The BOSC suggests that ORD may benefit from an assessment of skills and areas of expertise among its current staff and subsequent efforts to fill identified gaps, including previously identified areas of need such as ecosystem valuation and economics.</p>	<p><b>Response:</b> In November 2007, we began the administrative process required to employ six such highly recognized experts on a part-time basis. We have also initiated a process for bringing ten post-doctoral appointments into the ERP over the next few years. These appointments will be drawn from disciplines needed to complement our in-house skills including but not limited to economics, law, policy, social sciences, and spatial analysis. These new post-doctoral positions will be brought into the ERP as current post-doctoral positions expire.</p>	<p>Ongoing</p>
<p><b>Recommendation 12:</b> ORD is encouraged to engage stakeholders and collaborators with communication strategies that allow for input and</p>	<p><b>Response:</b> To help ensure full participation by clients, the ERP will use the Outreach and Education Team charged to create an outreach strategy</p>	<p>Ongoing</p>

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dissemination of information.	and communication plan, opportunities for national and project level participation, and determine the best pathway for engaging clients. The ERP Outreach and Education Team is currently developing a communication strategy to specifically find ways to engage a diverse array of clients, stakeholders and collaborators.	
<b>Recommendation 13:</b> The BOSC encourages ORD to be prepared to listen and integrate stakeholder input into the planning process.	<b>Response:</b> The ERP has begun implementing outreach activities to listen to and integrate stakeholder input into the planning process. Each project is identifying stakeholders within the region where the research will be conducted and has been directed to ensure the user has the opportunity to influence the research by clearly articulating its needs. Further, the Outreach and Education Team is conducting preliminary interviews with federal partners to determine how ecosystem services is viewed and how it may best be incorporated into future federal decisions. Finally, the decision support team will be engaging a large array of decision makers in the development of the decision support system they are charged to create.	Ongoing
<b>Recommendation 14:</b> Workshops, short courses, and field demonstrations should become core aspects of ERP's communication strategy.	<b>Response:</b> Our priority for outreach includes workshops during 2008 to identify key needs, concerns, and issues that must be addressed for the ERP. Our priority on education is to produce materials for clients that help them understand both ecosystem services and know about products available for their support, the value of incorporating ecosystem services into decision, and the benefits from doing so. We plan to create on-line educational conceptual models and dynamic systems models for clients to use to explore the potential outcomes of their decisions and to better understand how ecosystem services may be influenced by what they do.	Ongoing
<b>Recommendation 15:</b> The ERP is encouraged to continue to expand its clients beyond the present core of other EPA offices. It will be especially important to increase partnerships with other natural resources agencies and with organizations (those concerned with the social sciences and educators) that can assist in translating ERP research into action.	<b>Response:</b> The ERP is pursuing a strategy of leadership and collaborative partnerships in order to most effectively implement its research program. The ERP has many current or planned partnerships underway. Please see the text for more detail.	Ongoing
<b>Recommendation 16:</b> As possible, staff with communication and education	<b>Response:</b> The Outreach and Education Team will be working with each of the	Ongoing

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<p>experience should be hired. In addition, research teams should be encouraged to engage in outreach and activities relevant to their areas of research.</p>	<p>ERP research teams to determine what resources are likely to be needed, and may be available locally among partners. We are currently reaching across EPA to see what communications and educational talent can be engaged to help us.</p>	
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