

The Role of Experimental Forests and Ranges for Facilitating Management-Research Partnerships: A Panel Discussion

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ABSTRACT.—Three years after the founding of the USDA Forest Service, Director Raphael Zon and Chief Gifford Pinchot initiated a plan to formally designate areas for research and demonstration. In addition to providing important scientific information needed by the Forest Service to practice silviculture, Zon and Pinchot envisioned that these areas would serve as the “meeting grounds” of researchers and managers to help catalyze, develop, and maintain management-research partnerships for the agency. For more than a century, many of them have served these purposes admirably. However, questions remain about their contemporary and future usefulness. This paper reports on the perspectives of a four-member panel of Forest Service experts on the strengths and weaknesses of Experimental Forests and Ranges. In this panel, we also contemplated their future role for providing information and facilitating relationships between research scientists and managers.

INTRODUCTION

In 1908, Raphael Zon presented to USDA Forest Service Chief Gifford Pinchot a novel plan for designating experimental areas on national forests and ranges to conduct research and demonstration for the emerging discipline of forestry in the United States. Zon wrote that “These areas will furnish the most valuable, instructive, and convincing lessons for the public in general, and for professional foresters...and technical and administrative officers.... They should be made the meeting grounds for supervisors, rangers, and guards, where demonstrations may be given...” (Zon 1908). Thus, the experimental forests and ranges (EFRs), as envisioned by Zon and Pinchot, were needed to both inform the fledgling agency and to help catalyze, develop, and maintain the critical management-research partnership that helped define the Forest Service.

For more than a century, research conducted on EFRs has led to the development of numerous outcomes and products that have made EFRs an irreplaceable asset. Countless scientific papers and reports containing management recommendations or lessons learned have been produced. In addition, students and managers of all backgrounds, policy makers, collaborative members, stakeholders, and the general public have gotten educational opportunities and research experience from EFRs. In turn, researchers have learned the value of identifying relevant questions gleaned by working side by side with forest managers. Hence, EFRs have played a critical role in addressing questions raised by important issues facing the USDA Forest Service, and, by extension, the profession of forestry.

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Over the past century, ecosystems and the disturbance drivers affecting them are being transformed, and land managers are increasingly focused on sustaining processes and resilience at multiple scales. As forested ecosystems and management approaches change, the outcomes of silvicultural practices also evolve, resulting in new questions that require scientific guidance. Given changes in management approaches and disturbance drivers, and to rapidly evolving information needs, many questions remain about the future relevance of EFRs and how they can continue to serve the needs of researchers and managers

The Experimental Forests and Ranges Panel is intended to provide a “grassroots” perspective to the National Experimental Forests and Ranges Working Group members and to Forest Service leadership about the future role of EFRs in addressing emerging information needs. These include (but are not limited to):

- Building foundational silvicultural research in the face of uncertainties that include changing conditions (climate or otherwise).
- Enhancing collaboration among researchers, managers, stakeholders, and supervisors.
- Providing relevant and innovative place-based experiments and demonstrations for new science investment .
- Providing field demonstrations for technology transfer to natural resource practitioners across ownerships.

One of the goals of this effort was to compile information for the National Experimental Forests and Ranges Working Group to be shared with Regional Foresters and Station Directors to guide the use and management of EFRs in the future.

PANELISTS

The four panel members consisted of representatives from both the National Forest System (NFS) and Research and Development (R&D). Panelists included Theresa Jain, research forester and Scientist-in-Charge of the Boise Basin Experimental Forest, Rocky Mountain Research Station; Don Bragg, Project Leader, research forester, and Scientist-in-Charge of the Crossett Experimental Forest, Southern Research Station; John Lampereur, District silviculturist, Chequamegon-Nicolet National Forest; and John Riling, forest silviculturist, Boise National Forest.

APPROACH

Panelists were asked to consider a number of topics (questions) and to provide their perspectives and insights about the future use of EFRs. At the panel discussion, audience members were given an opportunity to respond, ask questions, and offer their own experiences and perspectives on EFRs. The goal was to identify the strengths, limitations, and opportunities of conducting research on EFRs and facilitating management-research partnerships. This approach provided insight into what is working well and what needs to be improved to more fully utilize EFRs. The responses to questions below were paraphrased from notes taken during the panel and consequently are not exact transcriptions of the responses.

QUESTIONS AND PANELIST RESPONSES

Question 1. What are the strengths of using EFRs for fostering management-research partnerships and for facilitating the development of relevant research? In other words, what is working well now?

Working together and Sharing Ideas

Lampereur pointed out that research and management are their best when researchers and managers work together to share observations, ideas, and thoughts. Together, they are better able to identify the management issues and research questions than when working alone, as researchers bring critical and analytical thinking and managers are good observers. Riling added that working relationships between researchers and managers continue to make EFRs relevant. Working together forces managers to think critically and allow for growth and development of expertise when researchers introduce different ideas and concepts. The on-the-ground studies inform planning and implementation because managers can bring policy makers, decisionmakers, stakeholders, and collaborators to show possible management outcomes. Developing management activities that are supported or driven by science increases internal and external support and confidence in management direction. Jain, like Riling, noted that EFRs provide places to demonstrate methods and teach important concepts that are not easily grasped from a publication or formal presentation.

Enhanced Research Relevance

Jain noted that when researchers are working side-by-side with managers, the relevance of research increases. For example, when implementing a free-selection regeneration method study at the Priest River Experimental Forest, the study used timber sales and planting contracts. This made the treatment application more practical and, more importantly, more transferrable to National Forest land because the study used NFS standards and guides (Jain et al. 2008). Using an EFR model allows for different world views and perspectives to enhance the innovation and “art” of silviculture. Lampereur best captured the value of this researcher-manager interaction by stating that working together is essential for identifying and solving relevant problems and that relationships between researchers and managers should be fostered and strengthened through networking on EFRs.

Strength of Long-term Studies

Bragg noted that a real advantage to EFRs is the ability to conduct long-term studies and monitoring projects at larger operational scales, making silviculture studies more valuable over time. Also, managers can return to these sites and observe the changes that have occurred over longer periods—a critical requirement to understanding outcomes of forest management practices. It is through this observation and the face-to-face interactions between forest managers and research scientists that EFRs become an ideal place to learn.

Candid Interactions

Jain noted that another advantage with silviculture studies on EFRs lies in the responsibility for treatments being placed on the researcher, who is accustomed to critical evaluation and feedback. Thus, on these studies, managers do not feel they have to defend their actions, but they are able to be open, critical, and provide their opinion and feedback. Similarly, stakeholders and collaborators can also provide their opinion and feedback. These interactions are valuable for understanding different perspectives, values, and ultimately for gaining trust and respect.

Question 2: What are the limitations of using EFRs, especially with regard to agency relevance and to foster management-research partnerships? In other words, what is not working well?Logistical Issues

A primary challenge associated with EFRs are associated with implementing treatments. Many treatments applied on EFRs are implemented by NFS staff. This is not a major problem when NFS staff are nearby, but Bragg noted that the Crossett Experimental Forest in southern Arkansas is 3 hours from the Ouachita National Forest staff responsible for management. This distance creates enormous logistical challenges for implementing silvicultural treatments.

Differing Priorities and Challenges between NSF and R&D

To further complicate the logistical difficulties, Bragg observed that researchers and managers do not always share the same priorities. For example, prescribed fire treatments on a research study may not be applied in a timely manner due to forest burn prioritization schedules, particularly when burn windows are limited. Researchers working on EFRs also need the ability to implement nonstandard practices—even to install treatments that “break the system”—in order to understand cause-and-effect in natural ecosystems. However, EFRs often do not have the administrative capacity to implement those practices, making it hard to do certain experiments critical to the understanding of how an ecosystem works.

Similarly, Riling pointed out that NFS and R&D staff often have different challenges, objectives, and interpretations of policy. For example, the Boise National Forest is in the middle of an environmental assessment that includes the 8,740-acre Boise Basin EFR, where active management, such as thinning and burning for research purposes, are proposed. Multiple factors have contributed to delays in the National Environmental Policy Act (NEPA) planning process; contracting NEPA added another layer of complexity. Interpretation on NEPA policy has differed between NFS and R&D for the project, specifically whether experimental treatments on EFRs must be consistent with Forest Plan standards and guidelines or if a project-specific Forest Plan amendment is warranted.

Differing Funding Priorities

Some limitations are related to funding priorities and funding availability for research on EFRs. Lampereur observed that local research needs are not always considered essential on the national level. Often, national-level projects receive funding priority. However, national-level issues may not be as relevant to the day-to-day management needs, creating little incentive for managers to engage in this research. Locally, there may be insufficient funding to hire seasonal workers to gather the data on the EFRs. Good partnerships with NFS managers can help to resolve funding issues by sharing resources, but this requires that researchers and managers build good personal relationships and work together to identify and conduct studies that are of mutual interest.

Staffing and Workplace Turnover

Another limitation of EFRs relates to staffing and workforce turnover. Jain pointed out that EFRs were originally intended for long-term research. Personnel turnover, whether in R&D or NFS, makes maintaining long-term studies challenging. Turnover not only poses the risk for loss of institutional memory of long-term research projects, it also affects the development of critical researcher-manager relationships. For example, it is not always clear who to contact due to high personnel turnover, which can sever lines of communication between researchers and managers. Presently, many EFRs are understaffed and many rely on the NFS for assistance in the field. With high staff turnover at the Forest level, EFR scientists-in-charge may find

managing an EFR to be a burden rather than an asset, leading to loss of the value of the EFR. Although it is not possible to control agency turnover, it is possible to plan for it, starting with a shared vision for what is required in decisionmaking.

Question 3: What are some ways to overcome some of these limitations? What can be done to fix the problems?

Build Professional Relationships

Riling suggested that some of the limitations related to implementing studies on EFRs could be overcome if researchers and managers develop personal relationships. These relationships are strengthened with face-to-face conversations and time spent walking together in the woods. The value of these relationships needs to be recognized and there needs to be support for research that arises from management-research partnerships on EFRs. For instance, it is important to have an advocate for research in the NFS who helps build continuity and ensures that it is carried over from project to project through time. Other issues can be addressed by establishing a communication strategy that identifies points of contact, including interdisciplinary counterparts, between researchers and managers. It is more often the case that individuals from both sides establish connections, but it is rare that the whole interdisciplinary team works together as a group.

Foster Interdisciplinary Partnerships

Jain suggested that creating an interdisciplinary research team that matches those in the NFS (like wildlife biologist paired up with wildlife scientist) could help with establishing an interdisciplinary partnership. A major challenge is the lack of funding for implementing the interdisciplinary team's projects because funding is often focused on single-discipline studies (e.g., wildlife) and there is no established mechanism to fund interdisciplinary research. One possible solution is to think innovatively. An example of this is the "Region 4 Science Partner Program" (<https://www.fs.fed.us/rmrs/region-4-science-partner-program>), which was established to enhance collaboration opportunities between RMRS researchers and Region 2 NFS managers. Another way to get researchers and managers to work closer together is by writing the project proposals together, considering innovative ways of funding EFRs through NFS, working together to figure out how the work can be mutually beneficial, and helping each other to implement tasks (even with lack of funds).

Place Greater Emphasis at Local Levels

Lampereur recommended placing more emphasis on setting priorities at local levels to strengthen researcher-manager relationships. Lampereur noted that during the last 20 years, the centralizing of budgets in the Forest Service has reduced funding for research on EFRs. Thus, a lot of the influence in decisionmaking has moved from local levels to regional and national levels. Consequently, local personnel have less ability to set research priorities on EFRs, reducing manager engagement in studies. More trust is needed to empower employees at the lower level so that research priorities can be identified. Leadership that specifically encourages research and management to work together should be emphasized. As an example, annual meetings to discuss issues, concerns, and needs could help facilitate work on EFRs. When making connections between R&D and NFS staff is a priority, partnerships can be built more effectively.

Connect Managers and Researchers

Bragg noted that the Southern Research Station (SRS) has initiated efforts that may potentially fix some of the communication problems between managers and researchers. The SRS has

hired a liaison to interact among the Region and the Station and that person is also making connections between researchers at EFRs and managers in the NFS. There are also ongoing discussions at the SRS to determine how scientists can serve better the information needs of NFS managers. This includes face-to-face interactions and regular meetings to discuss joint research and Forest priorities.

ADDITIONAL CONSIDERATIONS

Put the Right People in Charge

David Gwaze, the National Silviculturist, responded to one of Jain's comments related to staffing EFRs with researchers who view EFRs as an asset. He asked the panelists how can the Agency ensure that a scientist-in-charge will be an advocate for their EFR? Jain echoed that there is a process needed to determine whether the scientist-in-charge will be a good fit when he or she is assigned to manage an EFR. Even during the hiring process, expectations and responsibilities should be clearly stated for researchers who have assigned responsibilities for EFRs. An important part of the interview process for these researchers could include searching for and selecting a person who believes in their use and will be an advocate for EFRs. Also, the career benefits associated with being a scientist-in-charge of an EFR should be made clear. Bragg observed that researchers in the Forest Service are career oriented and that working at a single location like an EFR may not be a good fit for some research interests, making it more imperative that the right person must be put in the right place. Furthermore, R&D administrators and scientists need to continually examine how EFRs can be used to address new ideas and future research questions that benefit both EFRs and scientists assigned to work on them.

Reward Staff for Working on EFRs

Jim Guldin, SRS Silviculturist, pointed out that R&D continues to get funds through the Forest Inventory and Analysis (FIA) program and that there may be opportunities to expand the relationship between FIA and EFRs. He also suggested that those "responsible" for the EFR may not be supportive of the work of "outside" scientists or feel like it infringes on their territory and that this barrier should be broken. Jain responded that this is a personnel issue rather than a resource issue, pointing out that scientists-in-charge are not recognized or compensated for investing in partnerships that do not lead rapidly to publications and scholarly outputs. Because it may take many years for long-term studies, such as those conducted on EFRs, to produce publishable results, a researcher may be reluctant to engage with others until the study begins to yield results. This could change if researchers are specifically rewarded for forming collaborative research on EFRs.

Clarify Roles and Responsibilities

Tom Schuler, the National Program Lead for silviculture in R&D, pointed out that there is greater clarification in the newly revised Forest Service Manual Chapter 4060 "Research Facilities and Areas" to aid with managing and using EFRs. Prior to the most recent update, this chapter had been largely the same since 2005 and provided very little guidance regarding who is responsible for maintaining the infrastructure of EFRs and how research is implemented. Thanks to the efforts of many people around the country, including members of the National Experimental Forest Working Group and many of the staff in the Washington Office, the proposed revision to the chapter greatly clarifies the roles and responsibilities and will help facilitate better cooperation among scientists and managers. This revision is still in review but it is anticipated to be available soon.

Keep Detailed Study Records and Make them Available

Greg Edge of the Wisconsin Department of Natural Resources suggested that collaborating with researchers on long-term studies can be frustrating at times, especially when data are not easily located, or plot boundaries are not properly marked, leading to treatments that may be compromised. He wanted to know how partners can help protect and maintain long-term research. Lampereur responded that there are cases when managers implement prescribed burns or timber sales without knowledge of a research site due to lack of communication between researchers and managers—something that is less likely to happen on the EFRs. Similarly, another reason EFRs are valuable is that establishment records were produced and archived for most studies providing documentation for reestablishing study plot boundaries even where they are not adequately marked on the ground. Bragg added that there is an ongoing process of data digitization on many EFRs. For example, in the SRS there are long-term datasets (such as 80 or 100 years of streamflow data or climate data) that remain in their original format (strip charts). The SRS has been investing in the translation of analog to digital forms, and then making it available and accessible for all to use. Detailed record keeping and data availability increase the likelihood that a long-term study will reach fruition and yield useful research products, making the investment in the collaboration more worthwhile for researchers and managers.

Recognize that Mutual Interests are Likely to be Funded Interests

One final observation was made by Jason Jerman, supervisory forester at Idaho Panhandle National Forests, who stated that if there are questions that need to be answered, there should be a will to find those answers and pull together limited resources to address them. It is important to advocate for EFRs so that researchers and managers each have a vested interest in studies conducted on them. Shared interests can create new opportunities in utilizing funding and resources.

SUMMARY AND CONCLUSIONS

The panelists each believed that EFRs are important for developing relevant information needed by managers and administrators, and for fostering management-research partnerships. It was noted that practicing foresters are keen observers in the field and that these observation skills lead to the development of testable hypotheses. Researchers possess high level analytical skills and the means for translating observations into experiments and research studies. Hence, working together, researchers and managers can answer questions that are meaningful and scientifically sound. It also was stated that knowledge about how forests respond to management often requires long-term studies and that EFRs are ideally suited for this purpose. In addition, many EFRs are of sufficient size that these studies can be conducted at operational scales. Where there are strong researcher-manager relationships, the associated studies that are conducted on EFRs tend to be highly relevant to practicing foresters. In turn, EFRs help strengthen management-research partnerships by providing a venue for candid conversations about the efficacy of specific management practices and a safe place for managers to provide honest feedback and test new questions.

Most of the limitations associated with the use of EFRs were related to logistics, differing priorities, funding, and staff turnover. Some EFRs are located 100 or more miles away from the scientist's duty station, making study development, installation, maintenance, and data collection more challenging. Most EFRs require collaboration with NFS foresters for implementing experimental treatments such as timber harvests or prescribed burns, which requires coordination between researchers and managers. This also means managers may have to alter their work plans to accommodate the researcher's in some instances by shifting priorities to meet

the rigorous timing of treatments required by most research studies. Additionally, researchers working on EFRs depend on assistance from District staff to navigate the NEPA process and prepare the necessary documentation. Proposed studies on an EFR may include treatments that are at odds with the objectives of the Forest Plan. For researchers to maintain this level of assistance from District staff, considerable time must be invested in nurturing relationships between researchers and managers. This is difficult where researchers have limited capacity in time and resources to invest in these relationships, or where NFS staff turnover requires the researcher to frequently begin new relationships with new staff members. Furthermore, for NFS staff to be engaged, studies on EFRs need to be relevant to current management questions.

Resolving the communication gaps, overcoming limitations, and thereby strengthening management-research partnerships will require commitments by Forest Service leadership, administrators, researchers, and managers. Administrators at all levels need to remain committed to supporting research on EFRs and support managers and researchers working *together* to develop science-based solutions to management problems. This includes both funding support to maintain infrastructure and by explicitly rewarding researchers and managers that work together. This also requires R&D leadership to set as a priority to hire some researchers that have an obligation to manage the EFRs in their jurisdiction, to conduct research on them that supports agency mission areas, and to advocate for wider use of EFRs. Similarly, NFS administrators need to ensure that District staff associated with local EFRs work in partnership with research staff.

The panelists believe that EFRs remain important places for experiments that support the mission of the Forest Service and other land management agencies and organizations. Though research questions continue to evolve, the need for scientifically supported management recommendations remains more important than ever. In an era of declining budgets, developing and maintaining strong working relationships between forest land managers and researchers is imperative to ensure smart, relevant, and effective studies are conducted on EFRs. Globally, these EFRs provide a unique opportunity to conduct long-term research that informs forest management and strong management-research partnerships helps ensure that research on EFRs is informed by the information needs of managers. Perhaps the greatest strength of EFRs is that they continue to provide, in Zon's words, a "meeting grounds for supervisors, rangers, and guards" (Zon 1908), thereby facilitating management-research partnerships in the USDA Forest Service.

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