

# ROLE OF THE USDA FOREST SERVICE EXPERIMENTAL FOREST: AN EXTENSION POINT OF VIEW

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**Abstract**—The expansive network of experimental forests (EF) facilitated by the U.S. Forest Service (Forest Service) encompasses a fairly complete representation of the forest ecotypes in the nation. The network, 101 years old this year (2009), has provided researchers with a wealth of long-term data on silviculture, watershed protection, and restoration. However, our nation's needs and expectations have changed dramatically in the last 100 years. A number of structural, financial, and policy challenges must be overcome if the current EF model is to continue to exist. The Forest Service must consider how EFs fit the needs of the public in the 21st century.

## INTRODUCTION

The expansive network of experimental forests (EF) facilitated by the U.S. Forest Service (Forest Service) encompasses a fairly complete representation of the forest ecotypes in the nation. The network, 101 years old this year (2009), has provided researchers with a wealth of long-term data on silviculture, watershed protection, and restoration. More recently, research on many of these forests has been redirected toward climate change, greenhouse gas mitigation, and other nontraditional forest ecosystem services from local to global scale. However, our nation's needs and expectations have changed dramatically in the last 100 years. The World has changed. Numerous questions exist regarding the future of the EF concept; as well as the concept of forestry research within the Forest Service, universities, and private industry. In this article we reflect upon the Southern Research Station (SRS) EF design, its effectiveness, and potential strategies for ensuring remarkable work and relevance well into the 21st century. We pay particular attention to societal changes that push the need for changes in the EFs network architecture and present some marketing strategies to increase positive public perception and visibility.

## Section 1 Success Stories

The mission of the SRS is to create the science and technology needed to sustain and enhance southern forest ecosystems and the benefits they provide. They have done a remarkable job in this mission. However, after we present the following, it may become evident that key language that reflects the need for new direction and commitment is missing from the current mission statement.

The SRS, headquartered in Asheville, NC, has long made their network of EFs an integral part of the national infrastructure for scientific knowledge. Research conducted by the SRS 130 scientists, support staff, 19 EFs and partnerships with State forest services, universities, and industry across the 13 Southern States have made key discoveries with far reaching and significant impacts, if not appreciated, on environmental policy, resource management, and the well-being of public citizens. For the most part scientists in research units use these as sites for studies and

demonstration projects in conjunction with the management of national forest units. Each SRS EF purposely represents a specific ecosystem that presents unique opportunities to study different strategies for sustaining forested ecosystems and rehabilitation of deteriorated soil. Overall, SRS forestry research emphasizes measuring and monitoring forest resources; understanding ecosystem structure, function, and processes; managing resources for sustained and enhanced productivity; and protecting environmental quality.

Following are examples of areas of “cutting edge” research that too frequently have not been recognized as accomplishments by EF network. Among the experiments conducted on these forests are studies relating to regeneration and management of upland forest ecosystems as on the Crossett EF, to Appalachian ecosystems with Bent Creek EF. Studies on the Delta EF and nearby Sharkey Restoration Research and Demonstration Site (Gardiner and others 2008) have provided fundamental knowledge on watershed studies and bottomland hardwood ecosystem restoration. These studies have led to a major shift in forest management policy in that region and beyond. The effects of pollution, climate change, and timber harvest on Pine Management and Disturbance Science are a major focus at the Hitchiti EF. Research at the Palustris EF played a pivotal role in the development of early reforestation techniques for the four major southern pines that help convert a region of once decimated forests to one where forestry is of leading economic importance. The Stephen F. Austin EF focuses its efforts primarily to understanding and maintaining populations of wildlife species that have, or are becoming threatened, endangered, or sensitive.

These examples demonstrate how long-term, interdisciplinary studies in all 77 EFs throughout the United States are key to new discoveries and innovations that serve as the seedbed to continued health and productivity of our nation's forest ecosystems.

## A Record of Excellence

EFs have allowed researchers to excel in providing a wealth of long-term datasets instrumental to understanding

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the dynamics of trees, watersheds, and wildlife habitats; measuring and monitoring forest resources; understanding ecosystem structure, function, and processes; managing resources for sustained and enhanced productivity; protecting environmental quality; and a multitude of other areas and topics. From the knowledge gained from EFs, SRS researchers have also been able to develop many notable outreach efforts. For example, technical tools such as the Forest Inventory and Analyses Web site, field demonstrations and tours, well-maintained Web sites, well done and award-winning magazines, and the more than 26,000 online publications are all invaluable resources to forest researchers and practitioners.

In essence SRS scientists have done a noteworthy job in gaining new knowledge and making the knowledge available to other scientists and resource educators. However, the education/outreach component has not been well structured. As a result the “average” professional and general public is often unaware of these Forest Service efforts because Forest Service researchers have not adequately kept the chain of custody as materials are disseminated. In other words, researchers are not being recognized as the ones that developed the innovation or information and EFs are not recognized as the venue used by researchers to obtain the innovation.

### **The Big Question ... Relevant in the Future?**

What is the role of a network of Forest Service, university, and other EFs in the 21st century? How do EFs fit, if they do fit, as an element of southern forestry research in the future? Should the mission of EFs be expanded to include dissemination, outreach, evaluation, and marketing success? A number of structural, financial, and policy challenges must be overcome if the current EF model is to continue to exist. Perhaps the most obvious obstacle is the restructuring of forest industry into timberland investment management organizations (TIMO) and real estate investment trusts (REIT). This change has led to the elimination of research divisions and exchange of timberland. Even though new owners may participate in forest research, TIMOs and REITs are less likely to significantly contribute funding for long-term, traditional forest silvicultural studies (Berry 2008). A more critical challenge, however, lies with the U.S. Department of Agriculture and other related agency bureaucracy and restrictive regulatory formalities. A long list of laws restricts management of Federal lands, e.g., National Environmental Policy Act, Endangered Species Act, and Clean Water Act, etc. has diminished Forest Service’s ability to conduct research (Berry 2008). Another critical area resides with funding wildfire suppression efforts. Each year, a seemingly larger portion of Forest Service’s flat line budget is redirected to catastrophic wildfire management. The resulting ebbed research budgets are hardly adequate to accomplish the mission of SRS.

Serious discussion of the role of EFs in the 21st century is moot if policy reform does not occur. If adequate policy reform is anticipated, e.g., budgets are reworked so that research

budgets are not raided for wildfire suppression appropriations, additional challenges must still be addressed before the success and survival of the EF network is ensured.

The Forest Service must consider how EFs fit the needs of 21st-century public. Does the public see any value to EFs and the work being done? If sufficient value is not met or realized by overwhelming public backing, future funding and support will be difficult to obtain. This will be a daunting task because public desires and expectations have changed significantly since EF programs were established more than 100 years ago. In that short time the United States has gone from a rural agrarian economy, to an industrial economy, to an urban information and service-driven economy (Hammond 2003). It is very important to note that as of May 23, 2007, the World became urban (Wimberley and others 2007). More people now live in urban areas than in rural areas. With this “Urban Millennium Milestone” comes an unprecedented change in public attitude and understanding. Fewer and fewer people are aware of the existence of the EFs and the value they bring. People holding the purse strings and making policy decisions at the county, State, and Federal levels are likely not forest landowners and neither are their peers. The public does not “talk shop” about forestry and does not likely know about the complexities and necessities of well-managed forests. Much of the information they absorbed is probably not science based. Human nature makes it difficult to value and support what one does not understand. As the EF structure currently operates, the nonforest-owning public has few opportunities to know about the contributions and value of the Forest Service EF network. Politicians will only approve funding for EFs as long as their constituents support such expenditures.

With the proliferation of information and methods of receiving it, our clientele is too frequently inundated. The pressure to be more accessible, more useful, quicker, better, smarter, and cheaper grows seemingly exponentially. Evolving social issues and science questions call for increasingly broad scale and interdisciplinary research and different approach to how the message is delivered.

## **SOLUTIONS**

### **Extension Can Help!**

The common charge of each partner within the cooperative extension system is seemingly a simple one: improving the lives of people, businesses, and communities through high-quality, relevant education. Most have a vast network of county extension offices, agents, and subject-matter specialists to carry out this mission. Extension employees work very closely with communities. Because of this, each county extension agent, in counties with forested acres, likely knows and works with at least one large landowner who is willing to install and maintain long-term research/demonstration plots. Because of extension’s vast network, a well-devised, funded memorandum of understanding with extension could establish cooperative projects, joint appointments, and Forest Service station-based extension specialists that would serve as invaluable resources to

ensure the reform and relevance of EFs. This partnership could develop methods and strategies to make EFs useful to a large and diverse customer base, build capacity through nontraditional partnerships and collaborative efforts, develop effective ways to rapidly move research into practice, evaluate results, and convey value to individuals and organizations.

The Forest Service excels in identifying research needs on a national and global scale and conducting the research to produce an innovation or new knowledge ... two of the critical innovation process steps. A collaborative agreement with cooperative extension system would assist the current EF network in addressing the remaining crucial steps of an effective innovation process (Leonard and Sensiper 1998):

1. Dissemination of knowledge to practitioners
2. Implementation of the innovation
3. Evaluation of the innovation
4. Identification of concomitant needs and/or contemporary highly visible societal problems and needs
5. Conveyance of the accomplishments and importance of the EF network to the public (marketing)

The successful completion of each of these steps is crucial to the success of the EF network, and each must be carefully considered during the planning stage. None can be just an afterthought.

### **Marketing .... Who Needs It?**

The old adage of “the best marketing is excellence in research” is not enough and programs built around this philosophy are doomed. The need for marketing is a reality. Without it, we may not have the opportunity in the future to conduct research or practice our programmatic expertise. A strong, well-thought-out marketing plan offers many more benefits than just the obvious. For example, successful marketing can build a sense of team and pride. Morale and productivity is heightened, and a strong image is an effective recruiting tool. Marketing efforts also help secure public funds. Political audiences have to be “sold” on the value. A successful marketing plan will provide the compelling, easily absorbed stories and data required of time-constrained politicians. Marketing efforts are also essential to compete with the multiple information outlets encroaching on EF message and competing for the public’s time. The EF network must still satisfy the needs of clientele because as good as any marketing might be, it should not be used as a substitute for good research and program delivery.

### **Future Experimental Forests**

Extension’s network may be utilized to develop smaller but more frequent demonstration sites designed to tell a story. Unlike the original requirement of EFs to be strategically located in the representative ecosystem, these “story telling” sites should be strategically located for visibility on lands obtained through partnerships with State, city, or private lands. Future EFs should showcase high profile projects

that can tell the story in short, succinct bursts of information. Future EFs will serve as conduit where researchers and stakeholders can work collaboratively to answer and demonstrate pressing practical questions while, at the same time, developing a test bed to explore new techniques or theoretical developments. Future EFs will be located on neutral and secure area unrestrained by agency policies and red tape because neutrality attracts interest from and spawns collaboration between multiple organizations.

Future EFs will involve a wide range of stakeholders, i.e., scientists, managers and practitioners, forest landowners, woodlot owners, and general public, in the initial study design of research questions. This involvement promotes “buy in” by stakeholders and ensures that the resulting knowledge will be effectively and efficiently transferred. This is not a novel idea. The cooperative extension system has been employing this method since its conception. However, the idea does need a major renovation. Future EF outreach and evaluation efforts should implement information technology in order to reach a larger number of people, monitor the progress of research in real time, and capture and archive demonstrations for future use. Future EFs will use advisory groups made up of stakeholders who can help identify high profile issues for demonstrations to aid in adoption of appropriate policies. Sites should be representative of the problem and easily accessible on site or made virtually accessible on the Internet in a manner suitable to the way in which people currently use the Internet.

Future EFs will collaborate with other broad-scale observation programs, e.g., U.S. Geological Survey, National Aeronautic & Space Administration, Long-Term Ecological Research, to jointly study ecological issues, how they respond to human activities, and how humans respond to changing ecological pressure (Lugo and others 2006). In the future EF network, the push-pull dynamic that managers are currently imposing upon their scientists will no longer be directed specifically towards the practitioner (Rains 2006). Instead, the push-pull dynamics will be clearly defined between the Forest Service researcher and the extension specialists. Extension can repackage the message, disseminate the information or implement the innovation, evaluate the results, and provide feedback to the researcher. These are all the primary goals of extension.

### **CONCLUSION**

The discussion of the role of the EF network is just one of a long list of discussions about the need for effective ways to move research into practice and the proper role of scientists and managers to accomplish this goal. Many challenges exist in the current EF network. Some of which are policy driving and must be remedied within the U.S. Department of Agriculture system. Many other challenges, however, can be addressed through a well thought-out collaborative agreement with the expansive network of extension professionals.

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