
Introduction - forest ecology

2019 US Forest Service National Silviculture Workshop: Forest Management and Research Partnerships

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The 27th US Forest Service National Silviculture Workshop was held May 21–23, 2019 in Bemidji, MN. The theme of the workshop was *Forest Management–Research Partnerships*. The workshop series began in 1973 and was held annually until 1979, when it went on a biennial schedule. The main purpose of the workshop has been to provide a forum for US Forest Service managers and scientists to come together to share knowledge, approaches, and insights on practical issues facing the National Forests. The workshop location has been near a National Forest to facilitate a field day to review regional management practices, problems, and research on the National Forests. It has been held in 19 states over the years. Beginning in 2007, a concerted effort has been made to invite silviculture professors from university forestry programs across the nation to join in the workshop, as they also are important partners of Forest Service management and research. The objectives of the workshop were to:

- Provide a forum to showcase successful partnerships and shared stewardship between forest managers and researchers.
- Enhance forest management and research relationships within the US Forest Service and with external partners to meet shared goals and objectives.
- Build on the US Forest Service strategic objectives to improve the condition of forests through innovative silviculture and active forest management.
- Identify emerging forest-management needs to guide future research investment.

The workshop consisted of keynote speakers and expert panels, and offered oral and poster presentations. Eric Davis (Assistant Director of Forest and Range Management and Vegetation Ecology, National Forest Systems [NFS], Washington, DC) and Toral Patel-Weynand (Director of Sustainable Forest Management Research, Research and Development [R&D], Washington, DC) gave a keynote on perspectives and examples of research-management partnerships at the national level. Forest Supervisor Paul Strong of the Chequamegon-Nicolet National Forest presented a keynote on partnerships from National Forest perspectives drawing upon his decades of experience in forest and research management. Linda Nagel, Professor and Head, Department of Forest and Rangeland Stewardship, Warner College of Natural Resources, Colorado State University and Brian Palik, Research Ecologist, US Forest Service, Northern Research Station gave a keynote with emphasis on US Forest Service and University partnerships in research, education, and professional training. Anthony D’Amato, Professor, University of Vermont gave an example of University and US Forest Service NFS and R&D partnerships by example of a collaboration on increasing resilience in black ash forests of the northern Great Lakes Region.

Three concurrent sessions representing 36 offered papers and 36 posters were delivered by US Forest Service managers and scientists and university researchers. Presentations included topics on:

- Silviculture partnerships.
- Forest management and planning.
- Ecosystem services, products and management.
- Fire ecology and management.
- Lessons learned from the Long-term Soil Productivity International Study.
- Adaptive silviculture and monitoring.
- Genetics, forest threats, and reintroductions.
- Shared stewardship and collaborative research.
- Partnerships in restoration.

Approximately 300 attendees and presenters spent a day touring on the Chippewa National Forest

and Cutfoot Experimental Forest (Figure 1) where they reviewed and discussed management-research collaborations on:

- Challenges in reforestation of northern conifer and hardwood forests.
- Managing black ash forests for resilience to emerald ash borer attack.
- Managing forests with variable retention harvesting.
- Evaluating adaptive silviculture approaches to climate change.
- Developing blight resistance in American elm-reintroduction of an iconic species.



Figure 1. Upper right: panel on forest management and research collaboration today and in the future. Panel members included, in order left to right, Nehalem Clark (video connect), Jarel Bartig, Beth Larry, Mark Bethke, Eric Davis and Toral Patel-Weynand, with Tom Schuler at the podium. Upper left: Brian Palik leads a group on a review of the Adaptive Silviculture for Climate Change national study installation on the Chippewa National Forest. Lower left: close university and Forest Service partnerships are important to research collaboration. Here Dan Dey (USFS NRS) and Tom Schuler (USFS WO) visit with Linda Nagel (Colorado State University) at the Raphael Zon memorial on the Cutfoot Experimental Forest. Lower right: recipients of the National Excellence in Silviculture award—standing left to right, Keith Moser, Linda Nagel, Melissa Jenkins, Jim Youtz, Richard “Fitz” Fitzgerald (Lifetime Achievement Award), Steve Koehn—Master of Ceremonies, Gary Swanson, Brian Palik, David Gwaze (Award Coordinator); kneeling, Deborah Page-Dumroese, Shelagh Fox, not present—Bill Leak (Lifetime Achievement Award).

- Managing red pine for growth and yield and to meet other resource objectives.
- Operational timber sale considerations on the National Forest.

The Workshop planning committee designed six expert panels on the following topics:

- The business aspects of silviculture in the delivery of forest products: implementing designation by prescription (DxP).
- Innovations in partnerships and Tribal forest management.
- The role of experimental forests and ranges for facilitating management–research partnerships.
- National Advanced Silviculture Program (NASP): forging unique partnerships to train silviculturists.
- Forest products modernization.
- Capstone panel on forest management and research collaboration today and in the future.

Panels were made up of individuals who had diverse backgrounds and careers in forestry. They presented brief overviews on the specified topics above, which were then followed by an interactive period in which the audience could comment on panel member statements or question the panel to further the conversation. Papers from oral and poster presentations and panel summaries are published in this special issue and in a companion US Forest Service General Technical Report (Pile et al. 2020).

The idea of *Forest Management–Research Partnerships* is not novel, but rather it arises from deep in the roots of American Forestry. Gifford Pinchot, the first chief of the US Forest Service, and Raphael Zon, early leader of US Forest Service research and architect of the modern-day network of experimental forests and ranges, stressed the need for scientists and managers to work together “in the best interests of all the people,” “utilizing forestlands for the benefit of the greatest number of citizens,” and to “safeguard and perpetuate our forests for all the needs of our country” (Pinchot 1947, Schmaltz 1980a, b, Lewis 2000, Young 2008). To Pinchot and Zon, research had a noble calling to serve forest administrators, policy-makers, resource managers, and the public. Research was to solve technical and practical problems and deliver results that can be put to use (Schmaltz 1980a). The scientist was a member of a greater community, and hence had a social responsibility to improve the welfare of society, and this could only be achieved by working with forest managers, policymakers, industry, other forest users, and the general public (Schmaltz 1980a, b).

To begin implementing research in the US Forest Service, Raphael Zon proposed a national system

of experimental forests and ranges in 1908 to Chief Gifford Pinchot. The idea had been developing since the late 1800s, introduced by Bernhard Fernow and others based on examples observed in Europe (Schmaltz 1980a). Experimental forests and ranges were to be located on National Forests and serve as a place where forest managers and administrators could meet with scientists to receive the latest research results to current forestry problems, to foster working relationships, and to identify future issues together. In this way, science informs management, and management shapes future research direction and priorities. Experimental forests and ranges were places where permanent, long-term studies could be conducted to discover the “full and exact knowledge of American silviculture” and address issues related to forest use and economics, and where the full range of indirect forest benefits could be explored (Pinchot 1947, Young 2008). They would serve as places where management of model forests could be demonstrated and used to instruct professionals, forest industry, forestland owners, and the public.

Today, strong and active relationships among scientists and managers continue to address pressing management issues. Examples include restoration of the Colorado Front Range forests and sustainably managing Allegheny hardwoods in Pennsylvania. These efforts occur more naturally when researchers are colocated with or near to National Forests, when scientists and managers are approachable and engaging, when relationships engender respect and trust, and when each partner has an attitude of service and teamwork and shares a common mission. However, as retirements occur and problems become more complex, place-based joint ventures can be more difficult to initiate. To overcome modern-day logistical challenges, a new program is actively pairing scientists with managers to work on specific management-driven projects. Meetings are facilitated, modest funding is provided, and plans for coproducing results are developed. As a result, scientists and managers from disparate locations and organizations are developing long-term collaborations to address emerging management challenges.

Other recommendations also were identified at the workshop to foster collaboration among the nation’s forest managers and researchers. The key findings included:

- Leadership and role models are essential in validating the needed investments to form and maintain collaborative efforts within an organization and with external partners.
- Use forest, regional, and national advisory teams to identify emerging science needs and management issues.

- Recognize that collaboration takes place at local, regional, and national levels and take steps to facilitate relationship building.
- Facilitate development of personal relationships by promoting meetings, workshops, and conferences that staff from all organizational units attend along with stakeholders.
- Feature collaboration success stories to share lessons learned.
- Use competitive funding to facilitate coproduction of knowledge that is deemed a high priority and responsive to emerging needs.
- NFS and State and Private Forestry can involve R&D scientists in program and forest planning and environmental assessments.
- Encourage R&D scientists participation in professional training such as NASP modules and certification panels for silviculturists.
- Promote details (temporary work assignments) of staff across US Forest Service Deputy (NFS, R&D, and S&PF) boundaries and at all levels of the agency.
- Promote collaborations between R&D, S&PF, and NFS to coproduce management guides.
- Research administrators emphasize the importance of coproduced science and management that contributes to practical science solutions, science delivery, and application of science in best management practices.

Most of these key findings are rooted in the idea that working across boundaries, both internal and external, produces more impactful results. The concept of coproduction of science is increasingly highlighted in the forestry literature (Beir et al. 2017). It defines the process whereby scientists work together with managers, policymakers, and stakeholders from the beginning, to identify the problems, conduct the research, and deliver the results to practitioners and science users. This approach is similar to what Pinchot, Zon, and other forestry leaders advocated a century ago. It leads to increased relevance of research results and increased acceptance and adoption by managers and landowners. Hence, the purpose of this National Silviculture Workshop was

to provide a significant management-research forum where US Forest Service personnel from all branches in the agency, and their important external partners in academia, can come together to celebrate ongoing collaborative successes, strengthen existing relationships, make new friendships, and set the stage for those who will be working together to solve tomorrow's problems in forestry. We thank the US Forest Service Washington Office Forest and Range Management and Vegetation Ecology, Washington Office Sustainable Forest Management Research, the Eastern Region, Chippewa National Forest, and Northern Research Station for hosting and contributing to the success of this workshop. It truly was a collaborative, coproduced event.

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