

# National Advanced Silviculture Program: A Panel Discussion

David Gwaze, Marcella Windmuller-Campione, Tara Keyser, and Carrie Sweeney<sup>1</sup>

## FIRST PANEL – NASP DIRECTORS

### Panelists

- Marcella Windmuller-Campione, University of Minnesota
- Eli Sagor, University of Minnesota
- John Bailey, Oregon State University
- Kevin McGarigal, Northern Arizona University
- Wayne Clatterbuck, University of Tennessee

### Moderator: David Gwaze, National Silviculturist, USFS

Panel discussions began with Gwaze providing a general explanation and history of National Advanced Silviculture Program (NASP). NASP is a graduate-level training in silviculture and forest ecology for USDA Forest Service employees seeking to be certified as silviculturists. The training is open to employees of other Federal and State agencies. NASP is conducted in collaboration with four leading academic institutions. To become a certified silviculturist, a participant should possess 3 years of related experience, participate in the four NASP modules as well as appropriate local modules (regional courses), and write and defend a silvicultural prescription.

The Forest Service silviculture certification process began in the early 1970s as a result of forest management controversies of the 1960s. In the early days of certification, continuing education for silviculturists were met using regionally administered programs. From 2002 to 2004, the Washington Office of the Forest Service reviewed the regional modules and decided to standardize the training by creating the National Advanced Silviculture Program. The first NASP cohort began in 2007.

Gwaze introduced the coordinators of each module. Each coordinator described his or her module and answered three questions:

1. What are the goals and objectives associated with your module?
2. How has your module evolved since inception in 2007?
3. How have you integrated the relevant research results and instructors from Forest Service Research & Development (R&D) into the module?

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**Module 1: Ecological Systems, Marcella Windmuller-Campione and Eli Sagor**

The first module is the Ecological Systems Module and is co-directed by Marcella Windmuller-Campione and Eli Sagor, who took over this module from Linda Nagel in 2016. This module would not be possible without the support of the Department of Forest Resources and the College of Food, Agricultural and Natural Resource Science within the University of Minnesota. The broad goals of the module are to provide a solid foundation in silvics, ecosystem processes, disturbances, and the influence of scale on different processes. The aim is to connect foundational theory delivered through lecture material with application through multiple field trips, activities, and group discussions.

The big change that was implemented after 2016 was shifting some of the content into pre-NASP YouTube videos to allow greater time for active learning during face-to-face class time, increase ease of review of material compared to lecture notes, and allow sharing of material within and across agencies. The directors collaborate with Forest Service R&D, especially on topics related to climate change, about which Chris Swanston and Maria Janowiak of the Northern Institute of Applied Climate Science, along with Linda Nagel, present 6 to 7 hours of material. In addition, the participants spend a day learning how future climate may affect forests at the SPRUCE experiment site at Marcel Experimental Forest ([https://www.nrs.fs.fed.us/disturbance/climate\\_change/spruce/](https://www.nrs.fs.fed.us/disturbance/climate_change/spruce/)). This is a collaborative effort between university researchers and Forest Service scientists, including Randy Kolka and Stephen Sebestyen of the Forest Service's Northern Research Station. Finally, Morgan Varner (now with the Tall Timbers Research Station and Land Conservancy in Tallahassee, FL) teaches about fire ecology. There are also many other Forest Service R&D researchers that have influenced and shaped the national and local modules.

**Module 2: Inventory and Decision Support, John Bailey**

Goals and objectives are built around understanding the quantitative side of forestry and understanding the context of calculating and viewing data. The module includes the following topics at multiple scales: inventory, mensuration, sampling, statistics, monitoring, economics, tree growth, stand density, mortality, modeling, yield, forest planning, and policy and legal dynamics around decisionmaking. The module consists of pre-NASP work, lecture, computer lab work, and field work.

Additions throughout the years include additional pre-NASP work, additional material on statistics and economics, and more hands-on activities in addition to readings. Participants also use the Forest Vegetation Simulator (FVS; <https://www.fs.fed.us/fvs/>) so it can be used for multiple purposes, including the stand chosen for certification

Bailey collaborates with Erin Smith-Mateja (FVS staff member) in modeling exercises as well as Siuslaw National Forest silviculturists on field trips.

**Module 3: Landscape Ecology, Kevin McGarigal**

The purpose of this module is to enhance participants understanding of landscape ecology and theory as applied to the study and management of public lands. The participants gain a broad understanding of the methods for detecting and characterizing landscape pattern, the causes of pattern, the implications of pattern to populations, communities and ecosystems, the mechanisms by which pattern and process change through time, and the strategies by which humans manage landscapes. The module focuses on topics relevant to silviculturists including landscape definition (conceptual/analytical models of landscape structure), implications of pattern to populations, communities and ecosystems (connectivity, metapopulations, landscape genetics), drivers of landscape pattern (disturbance regimes), and landscape dynamics and range of variability modeling.

Since 2007, the module has evolved by reducing topic material by 30 percent, doubling half-day field trips, increasing time allocated to hands-on lab projects (8 half days), increasing laboratory focus on a local case study, and increasing lab emphasis on silviculture (pattern and process at the district, project, and stand levels).

The module partners with Forest Service's Rocky Mountain Research Station scientists Sam Cushman (landscape ecology and genetics), Bob Keene (disturbance regimes), and Northern Research Station's Eric Gustafson (landscape modeling). Field trips are coordinated with Coconino National Forest silviculturists Mark Nabel and Andy Stevenson. The main challenge is the logistics, including receiving approval of Forest Service personnel to participate.

#### **Module 4: Advanced Silviculture, Wayne Clatterbuck**

Through NASP, Clatterbuck has trained more than 400 silviculturists in the last 12 years. More than 85 percent of those who attended NASP have received silvicultural certification. The module's overall goal is to go beyond those practices in the silviculture and stand dynamics textbooks to evaluate practices that create complexity on the landscape, including uneven-age, crop tree release, two-age, deferment cuts, variable density thinning, and various retention levels. The general format of the module includes lectures in the mornings with field activities in the afternoon; the course cumulates with a stand prescription or capstone project. In the module, participants strive to understand pros and cons of various pathways to move from present conditions to desired future conditions. Adaptive silviculture is a primary topic since change is part of the process, whether from unplanned disturbances, forest health events, or climate variability. Silviculturists are disturbance engineers!

Speakers with silvicultural expertise from across the country serve as instructors to provide a variety of perspectives. This allows participants to connect with different instructors based on their region or expertise. In this manner, even though most of the exercises are in the oak-hickory forest type, the foundational silvicultural principals can be applied to the participant's locale.

Changes to course material over the last 12 years include coordinating harvesting systems with silvicultural practices, working in savannas and woodlands, changing timelines and travel so participants' lives are not interrupted for four consecutive weekends. Travel days to and from the module have been on Monday and Friday, rather than Sunday and Saturday. Adaptive silviculture prescription development has also been incorporated into the curriculum.

## SECOND NASP PANEL – FORMER NASP PARTICIPANTS

### Panelists

- Jason Jerman, Region 1, Idaho Panhandle National Forests
- Katherine Reynolds, Region 10, Tongass National Forest
- Chad Fitton, Region 9, Wayne National Forest
- Joshua Hanson, Region 9, Allegheny National Forest

### Moderator: Marcella Windmuller-Campione

Windmuller-Campione introduced four former NASP participants and each addressed the following questions:

1. Describe how you used research or researcher connections you gained during the NASP modules to develop your NASP project.
2. Describe how the research-management partnership in the national NASP modules allowed you to gain and share knowledge related to becoming a certified silviculturist.
3. Describe how you use these research connections in your career as a certified silviculturist.

#### Jason Jerman

Jerman took away multiple pieces from the NASP classes but one piece that resonated with him builds off of Clatterbuck's message: importance of the foundational or primary principles. In Module 4, there were multiple researchers from other regions and different systems who shared their perspectives and views. From this module and others, Jerman gained additional experience learning how to look at research and glean the principle of research not just the prescription that came out of it, figuring out how and when and where those principles apply in ecosystems he is working with. This has become especially important in his currently job to be able to communicate decisions to stakeholders and other Forest Service employees.

#### Katherine Reynolds

Reynolds used the local module training and local specialists to help guide her prescription work. She was always trying to apply national modules to her local needs. After NASP, Reynolds was able to connect things from classes back to her own forests. For example, the SPRUCE climate experiment at the Marcel Experimental Forest in Module 1 was impactful, as it made her think about how climate change will affect both forests and society in southeastern Alaska.

There is a great effort to coordinate a yearly silviculture workshop in Region 10 to foster relationships. It really helps bring the silviculturists and Forest Service researchers together and improve research-management connection.

#### Chad Fitton

Fitton focused on resource conditions that he developed during NASP. His project focused on developing a prescriptions for a shortleaf pine-oak stand. He enhanced his understanding of native pine and pine-oak stands by attending NASP and working with FVS staff member Chad Keyser. Also, he worked with scientists from the Northern Research Station, notably Todd Hutchinson, for ecological underpinnings in southeast Ohio, and Susan Stout, Joanne Rebbeck, and Pat Brose with utilizing the SILVAH-Oak program. To fine tune his shortleaf

prescription, he worked with Clatterbuck. Fitton has also worked with Forest Service geneticists Paul Berrang (Region 9) and Barb Crane (Region 8) for seed source and seedling selection.

### **Joshua Hanson**

Hanson greatly benefited from the research and management connections established during NASP. After completing his certification, he feels confident in his ability to describe alternatives and explain those alternatives to the public. This was highlighted in his prescription which involved a broadcast herbicide treatment. He credited research findings as the basis for the continuation of the use of herbicides as a tool.

In Hanson's opinion, the existing research-management partnership is the primary reason the NASP program has been so successful. Where else can you receive 9 weeks of graduate-level instruction from four different academic institutions? In addition to providing fantastic locations, facilities, and curriculum, the module directors bring in an incredible number of guest speakers—presenting science that ranges from established and accepted (tree physiology, stand dynamics, silvicultural principals, etc.) to cutting edge (SPRUCE, B4WarmED, oak savannahs, etc.). Hanson also feels the field tours are better than most, primarily because they include a mix of both experimental and operational treatments. These tours also encourage and allow time for lengthy discussions. NASP is a wonderful opportunity to meet people across the agency, to share ideas. Hanson believes that NASP is one of the best programs he has been part of, in part because of the partnership between rand management.

## **SUMMARY**

Discussions during this session included an overview and history of the National Advanced Silviculture Program. Panel members provided participants an opportunity to meet and learn from NASP directors about the content, importance, and changes associated with their respective modules. Former NASP participants discussed the importance of making connections with Forest Service R&D scientists through the program and how this relationship influenced them going through the certification process. Certifying silviculturists through NASP remains a top-priority training program for the Forest Service. As forest ecosystems and the practice of silviculture evolve, the importance of up-to-date science based research remains critical to assist silviculturists with decisionmaking tools they can use to manage the nation's forest lands. NASP provides an important link between Forest Service R&D and the National Forest System.

The content of this paper reflects the views of the authors, who are responsible for the facts and accuracy of the information presented herein.

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