Scope and Impact

A journalism student called to ask for a phone interview to help write a story on forestry employment for class. OK, I should be able to help with that.

Within two minutes I had covered that forests cover one-third of the earth's land surface and that many of the products we find on store shelves are derived from forests. We also rely on forests for water quality, wildlife habitat, and recreation opportunities. I then made note of our recent curriculum name change to Forest and Natural Resource Management to emphasize the full breadth of employment areas for our students. Further, our students are the only professionals trained for and fully capable of managing large forest and wildland areas for their many, often essential, benefits to society.

In the next few minutes I indicated our graduates can be found from in the Upper Midwest but also in many other parts of the country, e.g., from Florida to Oregon to Alaska and in numerous countries from Chile to Korea. There are unique and challenging economic, ecological, and social issues linked to forests in each of these regions. As society has urbanized, many communities find themselves increasingly dependent on the management of the surrounding forests, including parklands and urban forests, for their quality of life.

This journalism student, like many other young students when they discover it, was impressed with the scope and impact of the natural resource field. We continue to need forest and natural resource professionals for their management skills, but even more for the knowledge and education they can provide to society. Here at the UMN, we continue to train professionals who are uniquely equipped to fulfill those roles.

Alan Ek, Professor & Head, Forest Resources

Shaping our Future

Forests: Silviculture

Education & Research

The Cloquet Forestry Center (CFC) has a long history and remains the primary research and education forest for the University of Minnesota. Recently added to the Center's storied history is Dr. Linda Nagel, Professor in the Department of Forest Resources and Director of Operations at Cloquet. Linda's background and research emphasis is in silviculture and applied forest ecology, and she has already brought unique and valued projects in both research and education to CFC.

Dr. Nagel is currently the lead of one of the four core modules in the National Advanced Silviculture Program (NASP), an intensive certification program sponsored by the U.S. Forest Service. She is also a lead researcher on a nationwide research and management project called Adaptive Silviculture for Climate Change (ASCC). Both of these projects are shaping the direction of our forests; one through training the silviculturists who manage our public forests and the other through on-the-ground research to find real-world management solutions for adaptive forests.

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National Advanced Silviculture Program

The National Advanced Silviculture Program (NASP) is an ongoing training program developed by the U.S. Forest Service to certify silviculturists. Each district within the Forest Service is required to have a certified silviculturist on staff, and the certification is required in order to sign a silvicultural prescription. Dr. Linda Nagel now hosts the first part of the curriculum for two weeks at the Cloquet Forestry Center, and her module focuses on ecological systems.

Started in the 1980’s, NASP was a response to multiple controversies and public concerns about Forest Service management practices as well as the National Forest Management Act of 1976 requiring a management plan for each National Forest. The program recognized the need for continuing education in silviculture to prepare individuals to write complex, environmentally-sound prescriptions.

Today, NASP consists of four core modules that are each two weeks long and are hosted at multiple sites across the country over the span of one year. Currently the program accepts land managers employed by the U.S. Forest Service, Bureau of India Affairs, Bureau of Land Management, and sometimes state organizations. Individuals have to prepare an application packet and meet minimum requirements to be accepted into NASP.

The training required in NASP is rigorous and requires a substantial investment of time and energy from participants. The impact and benefits are apparent though. “This really shapes how silviculturists think about forest management and all the considerations that go into developing the most sound practices,” says Dr. Nagel. Over the course of the four modules, they learn about ecology, tree physiology, economics, monitoring, public considerations, pest management, and more at an advanced level. “It’s this huge gamut of skills they acquire through the program but also through the assignments and projects they have to do as part of the training. I think it has a huge impact on how these folks function in their jobs.”

Adaptive Silviculture for Climate Change

Dr. Linda Nagel is involved in another national project on silviculture called Adaptive Silviculture for Climate Change (ASCC). This is a network of sites across the U.S. being developed to test on-the-ground management decisions for adaptive forests in the context of climate change. The first site in the project was developed on the Chippewa National Forest and is a 500-acre study. Another site is being developed on the San Juan National Forest with additional sites being scouted in the southern, northeastern, and western U.S.

Each site begins as an idea; the ASCC team identifies a potential location and approaches managers to discuss the possible partnership. From there, a workshop brings the project scientists together with the site managers to complete basic climate change and adaptation training, field visits, and development of the experimental design and treatments specific to the location. The treatments for each site are resistance, resilience, transition, and no treatment and are designed to fit each site’s ecosystem type.

This process makes ASCC unique in how it is combining scientific and on-the-ground application goals. “It’s a science-manager partnership, but the managers are really driving what those treatments look like,” said Dr. Nagel. “They are the people who design those treatments from the ground up so that they make sense for that location and their overall management objectives.”

To make such a project feasible and effective, a scientific committee of climate change scientists, mostly from the Forest Service, spent more than a year to layout the framework for the experiment. Dr. Nagel explained, “We discussed what this experiment should look like, what are the definitions of the treatments, how many replicates should we have, what should a treatment unit size be, what kind of minimum data do we want to collect, and what are the questions that we want to address with this experiment?”

With the framework of the experiment set, ASCC began approaching managers to find viable locations for the project. “That effort we spent at the beginning was to ensure that, with this tremendous effort and resources going into the project, at the end of the day we have an experimentally and statistically sound design,” Dr. Nagel said. In the end, the project hopes to have scientifically rigorous and significant results that can add to the current literature on climate change and adaptive forest management. Additionally, the results will be shared in multiple ways to get that information to the managers who can put it to use, connecting the science to what happens on the ground.

The Adaptive Silviculture for Climate Change project is a collaboration among the U.S. Forest Service (Research and Development, National Forest System, and the Chippewa National Forest), University of Minnesota, Michigan Technological University, and the Northern Institute of Applied Climate Science.
Dr. Matt Russell

This fall, the Department was pleased to welcome our newest Assistant Professor and Extension Specialist, Dr. Matt Russell, to the Department team. Matt’s research and Extension work will focus on forest ecosystem health and informing management decisions. Before becoming a faculty member, Matt was a Research Associate here in the Department.

This is a new position for Matt and a new position within the Department. It is also a new position in the field because it combines forest management, entomology, forest pathology, and other areas of study into one. “If you look at the degree programs across the U.S., there isn’t one for forest ecosystem health,” said Matt. “This is really one of the first positions in the country devoted to researching broader forest ecosystem health issues. It merges a lot of different disciplines, and I think that’s how we manage our forests anyway. We don’t just manage for x,y, or z. It’s really about tackling the diversity of issues that we are managing for.”

As a new faculty member, Matt is working on building his research program. This means defining a research trajectory, building a research team and finding funding to initiate this research. “Part of it is understanding the needs across the state,” said Matt. “Also, what are the key forestry topics at the national level that we need to be concerned about here in Minnesota? The impacts of deer on forests, changing disturbance regimes, and relationships between forest carbon and climate are a few such issues.”

Matt’s current research project is in collaboration with the U.S. Forest Service. Specifically, this research is looking at forest deadwood across the eastern U.S. and how management scenarios and climate influence deadwood. Using forest inventory information across the US, forests are measured to evaluate the structure and composition of the forest as well as measuring the amount of deadwood. Initial findings show that a warmer climate will increase the rate of decay of deadwood in these forests.

In addition to research, Matt will be part of the University of Minnesota’s Extension efforts. He is looking forward to building relationships and sharing information with those interested in managing forests. Matt said, “I think it’s really valuable to have a specialist in the area of forest ecosystem health. It’s incredibly important to work with natural resource professionals, land managers, and others that value Minnesota’s forests.”

The Department is excited to have Matt on our team, and we look forward to all he will do for this program, both in expanding our knowledge of the forest and improving our ability to manage for healthy, productive forests.

Mike Reinikainen

This fall, Mike Reinikainen joined the crew at the Cloquet Forestry Center as the new Forest Manager. As Forest Manager he is currently developing the 10-year forest management plan, managing timber sales, preparing for spring planting, as well as planning, supporting, and implementing research projects. “My role as Forest Manager requires many hats,” said Mike. “We have a relatively small staff, so everybody here finds themselves doing something they didn’t quite expect from time to time.”

Two of these miscellaneous projects include establishing an automated weather station and setting up a designated trail system groomed for cross country skiing.

Before taking on this new challenge, Mike was a research fellow and project manager for the Department of Forest Resources. That provided him great training and exposure to forest research and management, and he was ready to jump for the new opportunity when it opened. “It’s such a great blend of job duties,” Mike said. “I was most excited about the responsibility of managing this unique forest and having the latitude to brainstorm, plan, and implement silviculturally related research.”

Aside from his main duties, Mike hopes to update the services and infrastructure at the Cloquet Forestry Center to be competitive. This includes the weather system, GIS, and record systems. Additionally, he hopes to help develop a new web presence to share data as well as help in advertising and engaging researchers, students, and educators.

The variety of projects is keeping Mike busy and engaged at Cloquet. Mike said, “I feel like I have picked up 10 years of experience in just my first year here. Plus, I get to interact with so many groups interested in the ecology and management of MN forests. I get to work with students of all ages, private landowners, and natural resource professionals. It’s a pretty cool job you can say all that about.”
Student Spotlight: Emmie Peters

Emmie Peters came into the University of Minnesota with her sights set on forestry and she hasn’t taken them off since. From clubs to research to on-campus internships, Emmie has utilized many of the great resources the University has to offer. Now, in her final year as an undergraduate student, she is setting her sights on the next stage.

Emmie first became interested in forestry through projects in 4-H, and decided that was what she wanted to major in. After touring other schools, she picked the University of Minnesota because of the small, welcoming forest and natural resource program. “When I came here they seemed really interested in their students,” she said. “I felt a sense of community, so I decided to come to the U.”

On the first day of her first year, Emmie joined the Forestry Club and has been involved ever since. Along the way she has been the treasurer of the club and is now the president of the club in her senior year. Reflecting on her role as president, she said, “I’m more invested in trying to get people to get the most out of it like I did. It’s a different perspective. As president, it makes you happy if people enjoy it. Compared to being a member when you’re happy if you enjoy it.”

As one of our top students in the Forest and Natural Resource Management program, Emmie has been the recipient of the Class of 1957 Scholarship for all four years. In fact, she was one of the first recipients of the scholarship after it was created. “I still work, but these scholarships allow me to experience a lot more than I would have. This scholarship shows that this program and this Department changed people, so they want to give back.”

Not only has the Class of 1957 helped students like Emmie, their scholarship has inspired gifts from other classes (1962-64), too. Alumni support lets students know that there is a community behind the program and a history to it. Emmie said, “It’s great to know that it’s a great program, it’s really strong, and it’ll be with you for a long time.”

The countdown to graduation is on for Emmie, and it brings anticipation along with some sadness. “It’s kinda sad,” she said. “Next weekend is going to be the my last weekend at Carl’s farm. I’ve been going for four years now.”

During her undergraduate career, Emmie was an intern in the Forest Ecology Lab on campus, worked for the City of St. Paul as an urban forestry intern, worked on a forest inventory project at the Cloquet Forestry Center, and is completing a directed study on forest soil compaction and regeneration. Emmie had hoped that a variety of experiences would help her figure out what she did and did not want to do as a career, and it turns out that she likes it all. If she had to choose, though, she would especially like to find work related to forest soils.

Emmie’s advice to future students in the program is to get involved. “You can make a little effort, and it will make a big impact,” she said. “You’ll meet a lot of great people. It’s a great community and lots of fun!”

Get Involved with the CFANS Mentor Program

The CFANS Mentor Program connects CFANS students with CFANS alumni and professionals in order to facilitate career exploration, giving students an opportunity to network and enhance their professional skills. Each year the program matches some 150 students with professionals willing to share their expertise and advice.

In order to be eligible as a mentor in the College of Food, Agricultural and Natural Resource Sciences, you must be able to have a conversation or meet with your student at least once a month for at least 1 hour throughout the program to help the student achieve their goals. We also ask that you provide a job-shadowing opportunity for the student during the Mentor Program for at least a half-day.

Please consider applying to be a mentor to a current Forest and Natural Resource Management student. Your insights and experiences are a valuable resource to our students that cannot be replicated. In addition, we hope you benefit from the experience, enjoy supporting young professionals, and benefit from reconnecting with the University.

Mentor-student matches are made in the fall of each school year, but mentors can apply year-round. For more information visit z.umn.edu/mentor or contact Masha Finn at 612-624-9957 or mfinn@umn.edu.
Life on Campus

We have some of the most active and successful student clubs on campus! Our students in the Forest and Natural Resource Management major are engaged in the program, excited about the field, and are great representatives of what this department is all about. Below are photos of recent club activities on campus and off!

The Forestry Club is developing new plots on St. Paul campus. [Top left] Lauren Stufft fits protective tree tubes over saplings. [Top center] Tom Burke plants the saplings. [Top right] Alumna Andrea Johnson and FNRM students Darin Erickson and Melissa Lenius at the fall CFANS Tree Planting event at Trout Brook Nature Sanctuary in St. Paul. [Bottom left] Kat LaBine, Melissa Lenius, and Danielle Ringle at the Forestry Club tree sale getting trees ready for President Kahler. [Bottom right] FNRM students at the CFANS Thanksgiving for Scholarships dinner.

Small Community Feel, World-Class Opportunity

This fall, the University of Minnesota’s Twin Cities campus was ranked 29th in the “Best Global Universities” by U.S. News & World Report, the first report of its kind by them. The UMN ranked number 9 among U.S. public institutions and number 3 in the Big Ten Universities. These rankings were based on schools' academic research and reputation.

We’ve always known we had a good thing going here, but it’s always great to see the recognition. Within the University itself, both our undergraduate and graduate programs are ranked as top programs of their kind in the field of natural resources. The U.S. News & World Report ranked the UMN as 17th in the world in the disciplines of environment and ecology.

Not only do we have top-notch programs with great reputations, our programs benefit from the small community feel of the St. Paul campus. It really is the best of both worlds; students often say that campus feels welcoming and homey but there are still the vast opportunities offered by the larger University. From field sessions to study abroad to research opportunities, it’s all available at the UMN.

Our Forest and Natural Resource Management undergraduate program specifically prepares students to work in many natural resource and environmental careers. It is an interdisciplinary program that provides the essential hands-on experience that employers want, and we have small class sizes to help engage students to excel. Our location in the Twin Cities helps solidify many connections to local, state, and federal agencies and the natural resource industry.

To learn more about the U.S. News & World Report, visit z.umn.edu/q9e
Our Forest and Natural Resource Management undergraduate program is often called a “discovery” major. This is because students often discover natural resources as a career choice later in life.

How did you first discover your major? What sparked your interest in a natural resource career? Do you know of someone who could use that spark or who could benefit from some support and encouragement?

The UMN's Forest and Natural Resource Management major is one of a kind. We have a small community feel on the St. Paul campus while still benefiting from the many opportunities and resources of a Big Ten university. Whether a student is interested in the environment, forestry, conservation, parks, or urban greenspace, this major provides the skills and knowledge necessary for a variety of careers. We also offer the only 4-year SAF accredited degree in Minnesota.

Pass on the spark and help that student find their path to a natural resource career. Visit z.umn.edu/FNRM for more information or to set up a campus visit.