



# MINNESOTA Forest Scene

Leading the way with education, research and outreach

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## Up to Cloquet

The spring semester may be over, but for the students of the Advanced Cloquet Field Session, the work has just begun! For five weeks each spring, we challenge another batch of juniors and seniors at the Cloquet Forestry Center. These students have already taken the Introductory Field Session where they learn the basics in northern forest ecology, forest plant identification, and measurements.

The advanced session provides field experience in remote sensing with GPS support, advanced measurement experience including appraisals, silvicultural practice for diverse landowner objectives, followed by harvesting and road planning. In the process, students get substantial doses of forest management and harvesting guidelines.

Typically the weather is great, the bugs haven't quite discovered it is spring yet, and it's a wonderful time to visit the Cloquet Forestry Center. One of my tasks is to start the session off by meeting with the students on the first day. Why have I done this for several decades? Because it is truly refreshing to get back out in the woods, to work with highly motivated students at a truly great facility, and because it is an extremely important time in the careers of students.

This is where the subject, people and trees, comes alive. Is the session easy? Not if you tally up long and grueling days in the field, lengthy evenings in the computer lab, and the challenging synthesis and reporting done by each student crew. But over the course of the session, students master teamwork, complex practical problems, and decision making with real consequences. Today, this is called experiential learning, and when it is all over, there are lifelong memories. It's one of my favorite parts of the year.

**Alan Ek**  
Professor & Head, Forest Resources

## An Element of Carbon

When Assistant Professor Tony D'Amato visits one of his many research sites, he sees several things. He may notice the regeneration happening on a harvested site. Perhaps the diversity of species will catch his eye. Or he may take note of productivity on site. But one feature that is sure to be in his peripheral? Carbon.

That is because there is an element of carbon in much of the research happening in the department these days. From silviculture to economics, from ecology to policy; carbon is a rising factor. "With interest in carbon markets as well as interest in using forests to either offset or mitigate atmosphere concentrations of CO<sub>2</sub>, there has been a recent ramp up in carbon related research," says D'Amato. "It's certainly a huge issue now and inlayed in most of what we do."

While science may have seen the connection between forests and carbon a long time ago, carbon was not elevated into the public consciousness until the mid-2000's. "Forests play a very key role in sequestering and managing carbon across the globe," says Assistant Professor Dennis Becker. "Environmentalists, conservationists, industry, and political interests all converged on forests and began to think about what role they should be playing."

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Becker and D'Amato are two researchers in the Department exploring these roles and discovering the place of forests in the carbon question. Their research focuses on two areas. One is trying to understand how traditional and experimental forest management affect carbon cycling in terms of sequestration (rate that carbon is pulled out of the atmosphere) and storage (net carbon accumulated in the forest). The other is seeking better insight into the option of forest biomass as an alternative energy or fuel source.

### Storage & Sequestration

The majority of terrestrial carbon stores are in forests, so what does forest management mean for the carbon cycle? "Silviculture is about understanding how different ways we manage forests satisfy certain objectives, and now carbon is being added to that list of objectives," says D'Amato. "I like to look at carbon as one viable objective and try to understand if you can manage for maximum carbon as well as other objectives or are you compromising other things such as native biodiversity by managing just for carbon."

For example, D'Amato has led projects across Minnesota studying the effects of disturbances on carbon. One study examined sites on the Gunflint Trail that had seen a mixture of blowdown, burn, and/or salvage logging, looking at regeneration and carbon storage. They found that salvage logging after these disturbances didn't have as big of an impact as people have seen elsewhere on the composition and stocking of vegetation, but that the removal of 'legacies' (downed wood) from the site reduced the above ground storage.

Other studies in D'Amato's lab look at more subtle disturbances; such as the effects of insects, disease, drought or other environmental events. "When we have a regional defoliation by tent caterpillars, it has a tremendous impact on the rates of carbon sequestration because those trees just aren't taking in as much carbon in that year or even multiple years," says D'Amato.

Another study on sequestration and storage was completed in 2010 by University researchers and the Minnesota Forest Resources Council. The Minnesota legislature tasked the group to identify one million new acres that could be converted into forest in the state. They hoped to understand the cost of a million new acres as well as the net carbon benefit of establishing those forests. With the set criteria, (land previously forested and potentially able to be converted from current use) the only scenario with large scale results depended on a carbon market of \$30 per metric ton. (Currently, the market is at \$5-10, but federal projections for 10-20 years hope for a \$30 market.) Under that scenario, 616,711 new acres with a net sequestration of 44 million tons of CO<sub>2</sub> over 100 years were identified.

Professor Becker, lead for the University on the project, notes, "That amount of reforestation amounts to approximately 2.2% of our current passenger vehicle emissions in MN annually. It's a lot of carbon in one sense, but in the other sense it's only 2.2%. That tells me two things. One, we emit a lot of carbon. Two, the maintenance of our current forested lands and keeping them forests is terribly important."

### Energy and Fuel

The role of forests in producing energy or fuels is another big question and one that, scientifically, the jury is still out on. Numerous projects in the department have been working to address this question, and Becker alone has several projects on the topic. In one study, Becker is looking across Minnesota to conduct a statewide evaluation of biomass



policies and programs to identify which are the most effective at incentivizing forest biomass. "One of the key things we are trying to identify is not only which policies exist and how they are arrayed," he says, "But how well do they coordinate and interact with each other for these desired objectives."

Becker and D'Amato are also collaborating on a project to scale up our knowledge of biomass, looking at Minnesota, Wisconsin, and Michigan. The study uses new field sites where they will deliberately remove certain levels of biomass along with information from a network of historical sites to provide long-term insights into the sustainability of biomass harvesting.

There are three main objectives of this study. First, using the field sites, they hope to better understand the ecological impacts of biomass, from the long-term nutrients available to the organisms that depend on such sites for habitat. Second is assessment of the carbon implications. "We don't have good locally calibrated or field-based estimates of carbon emissions from harvested areas. When people run life cycle assessments and compare carbon impact from using biomass to fossil fuel usage, we need really good information to feed those analyses," D'Amato remarks. Third, what is the availability of biomass in that region? The three states have large forest areas, but the range a mill would draw from and the willingness of landowners to sell biomass will affect availability.

"We have spot information around the country that's pretty good, but we don't have good information across landscapes or systems in the US," says Becker. "This research will help fill some major gaps."

### What's Next?

At the moment, information gaps are being filled in, methodologies for measuring carbon are becoming standardized, and our scale of understanding is increasing. But there is still a ways to go.

"There likely will be policy advances with the absence of good information over the next decade. Policy is usually ahead of the science. The science will catch up," says Becker. "The trick is, for me, to work with individuals to develop policy in a way that can grow with new information and be flexible enough so that we don't force ourselves down a road that turns into a dead end." ■

## Recreation Resource Management Class Partners with the National Park Service

Increasingly, experiential learning is being brought into the classroom to give students that indispensable real world experience. Managing Recreational Lands, RRM 4232, is one such course, taught in the department that has been including experiential learning for the past two years.

In the 2011 spring semester, the class partnered with the National Park Service (NPS) for its main project, focusing on two park areas in need of management plans. One site is the Stillwater Islands Area within the St. Croix National Scenic River located a few miles north of Stillwater, MN. The highly used island area currently has minimal management. The other area is the Coldwater Spring site located on the Mississippi River between Fort Snelling State Park and Minnehaha Park. This site, previously owned and operated by the Bureau of Mines as a research site, was recently acquired by the NPS and has sites of importance to both Native American and frontier settler history.

The second half of the semester for RRM 4232 was dedicated to this main management project. Students were split into groups, with sets of groups assigned to one of the two sites. Each group then worked to develop their own unique recreation management plan for the sites. The groups assessed the management goals for the site, the recreation opportunities, identified problem areas, and developed strategies and tactics to address those problems.

“The project used to be set up in a hypothetical situation, but I found there were too many unknowns,” says Professor Ingrid Schneider, instructor for the course. “I found these real world situations really grounded the students’ work, and it’s a really nice partnership as well.”

Lorna Brown, a senior in the Environmental Science, Policy and Management major, appreciated the openness of the project. “We really had room to be creative and come up with our own ideas about what could be done on the site,” she says. “They did give us some direction, but we had a lot of room to make our own decisions.”

The recommendations for these two sites were as varied as the students involved. For the Coldwater Spring site, ideas for education experiences on the site’s history varied from downloadable audio tours to kiosks and from brochures to iPod applications. The groups mapped out various options for parking lots, restrooms, trails, picnic areas, campsites, and historical markers to provide for an accessible and integrated recreational opportunity that connected to the neighboring parks. Access was an important issue for these groups, with the Minneapolis Veterans Affairs Medical Center directly next to the park.

Recommendations for the St. Croix National Scenic River area focused largely on educating the public, limiting use, and enforcement of

regulations. This is due to current issues of crowding, shoreline impacts, and improper waste disposal. To help the NPS better serve the public, groups on this project recommended various public involvement opportunities such as user surveys, open forum meetings, formal hearings, and engagement of a local environmental group. One recommendation also included use of the NPS’s Junior Ranger program to benefit both the park and the area’s youth.



Students of RRM 4232 share their recommendations with the visiting public at the course’s poster session.

For the final component of the project, each group’s management plan was made into a poster presented to a public audience, including the National Park Superintendents of the two areas. “The poster element is an added dimension, and the students are really excited about it. It adds a skill set to the project,” says Schneider.

“It was definitely a unique project and unlike anything I’ve done in any other class,” says Audrey Zahradka, a senior in the Forest Resources major. “Actually having a real site that we’re managing, making a whole management plan, and being able to present it to the actual staff and managers of the site is really interesting.”

Beyond the real world experience for the students in the class, some of the recommendations from this project will likely see real world application. Christ Stein, Superintendent of the St. Croix, will hang the students’ posters in the park headquarters and Paul Labovitz, Superintendent of Mississippi National River & Recreation Area, will share the information online as well as present it to his staff for consideration. Labovitz says, “You’ll see some of these things weave themselves into the actual management of the site.” ■

# ALUMNI SPOTLIGHTS

## WILLIAM MORRISSEY

Each spring, the College of Food, Agricultural and Natural Resource Sciences holds a Borealis Night of Excellence to honor an array of individuals for their contributions to the University. This year, we congratulate William Morrissey, an alumnus of our program, for receiving the Lifetime Achievement Award.

Morrissey, a 1972 graduate, has made many contributions from his time as a student to his work as Director of the Division of Parks and Recreation with the Minnesota Department of Natural Resources (MN DNR). As a student, he was an active Forestry Club member, including serving as the Sergeant at Arms for the club, and was the Gopher Peavey Editorial Manager.

Morrissey worked for the MN DNR for 30 years, becoming the Director of the Division of Parks and Recreation in 1986. As Director, he added nine new units and 46,000 acres to the state park system. These new parks include the Mystery Cave, Soudan Underground Mine, Hill Annex Mine, and Grand Portage. Morrissey was also part of creating the new State Recreation Area classification for Minnesota parks. Cuyuna Country State Recreation Area is an example of one such park that is set to become a prime mountain bike recreation area. Upon retirement, he immediately joined the board of the Parks & Trails Council of Minnesota, continuing his commitment to our state's natural resource management. He has also been generous with his time and attention as a member on the college's alumni board and serving as its president for a period.

Bill, congratulations on your Lifetime Achievement Award, and thank you for your many contributions!



## PATTY THIELEN

Program alumnus, Patty Thielen, was recently promoted to Assistant Northeast Regional Manager with the Minnesota DNR Forestry division. In her new position, she will be supervising the region's program managers while managing the budget, recruiting potential employees, and working to make sure everything is in place for proper management of the forest lands in northeast Minnesota.



Thielen first became interested in a career in natural resources when she was looking to move into the rural part of the state. "My love of the outdoors and of the forested parts of the state of Minnesota sealed the deal," she says. "I love being involved in the field of natural resource management and making decisions about Minnesota's forests."

At the U, Thielen earned a B.A. in Philosophy, a B.S. in Natural Resources and Environmental Studies, along with a minor in Forest Resources. She credits her advisor, Tom Burk, for directing her toward classes she may not have taken otherwise that gave her valuable "cross training."

Thielen has this advice for students, "Use the great resources available to you at the University of Minnesota, learn everything you can, and have as much fun as you can!"

## JEREMY BARRICK

Jeremy Barrick, a 2003 alumnus, has reached the big time in the big city. Barrick was recently promoted to Deputy Chief of Forestry, Horticulture, and Natural Resources Group for the City of New York's Parks and Recreation where he will oversee the forestry and horticulture programs in the city. Barrick will play a role in Mayor Mike Bloomberg's PlaNYC, which includes a Million Trees initiative. New York has already planted almost 500,000 in the last four years and is also continuing a partnership with the U.S. Forest Service focused on research to better inform urban forest and ecology management decisions. "New York City is in a bit of a renaissance," says Barrick. "It is exciting and an honor to be a part of the leadership of this great movement."



At the University, Barrick explored different majors but ultimately found himself majoring in Urban & Community Forestry with a minor in Forest Resource Management. Barrick points to his advisor, Gary Johnson, for helping him succeed. He says, "Gary really opened my eyes to the possibilities in urban forestry and encouraged me to pursue opportunities that were beyond my comfort bubble."

Barrick's advice for students: "Don't be afraid to take chances. Go get the internships, even if it means a pay cut for the time being. Look for jobs across the country, and put yourself out there."

## Student Spotlight: Natalie Meyer

After transferring from a small college in Portland, OR, Natalie Meyer is making use of the many resources available to her here at a large research university. From study abroad to research opportunities, she plans to make the most of her undergraduate experience.

A sophomore in the Forest Resources major, Meyer just finished her first full year at the University of Minnesota. While always drawn to natural resources, she was unsure of what area she wanted to go into. During a school trip to Washington, Meyer spent two weeks working with the U.S. Forest Service on an experimental forest, and that sparked her interest in forest resources.

"I started thinking about it, and it just didn't leave my mind," Meyer says. "So I started doing research on schools, and the University of Minnesota kept popping up at the top of the list." She visited campus and was impressed by both the department faculty and the variety of opportunities available. One year in, and she is seeing much success on her new campus.

This summer, Meyer is attending the Introductory Cloquet Field Session where she is looking forward to hands-on experience and getting to know her faculty better. "It's a really great aspect of the forest resources program, and it's really cool that it's made such a priority here," she comments. "Other schools I was looking at didn't really have anything like it."

Meyer was also one of our students to receive scholarship support for the Cloquet field session. "It's money you have to spend during the summer and less time you can work, so it can be a bit of a burden," says Meyer. "Scholarships really can make a difference." Receiving the scholarship support not only helped financially, but Meyer said it was a great way to start out at a new school and to feel welcomed.

This fall, Meyer will be making good use of another of the University's many opportunities: study abroad. The program she will be a part of is spending three months studying in Queensland, Australia where the focus will be on the quickly diminishing rainforests of the north. The program brings together both the ecological side of restoration but also the social dynamics and policy involved in restoration. "It is exactly what I'm interested in," says Meyer. "There is a lot of community work in it, and it is giving me the full range of what I'm interested in to see if I can really figure out how I want to focus my education."

Her future goals include graduate school and continued work and research in the rainforest, and to help propel her toward those goals she is using the many resources provided her by the University. "I keep getting blown away by how much there is to do here," she says. "It's been awesome to be so welcomed here, and then also to have all of these choices and things that I can do that you really can't do very many other places – especially as an undergraduate student." ■



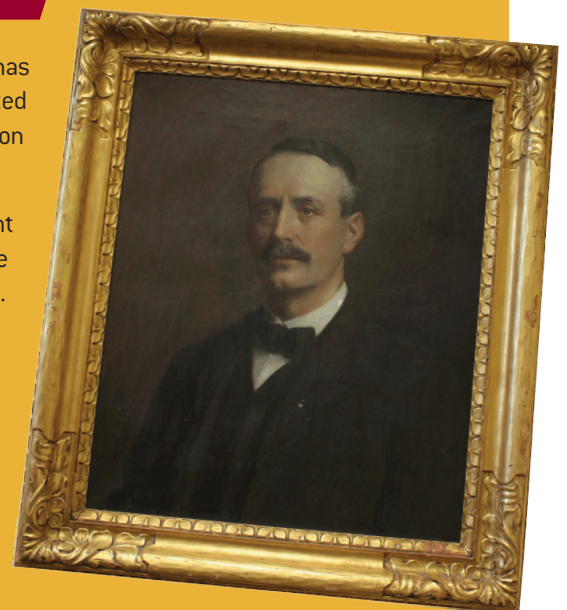
## Clean up, Sam Green!

The portrait of Professor Samuel Green, founder of the University's forestry curriculum, has graced the halls of his namesake building for many decades now. The portrait, painted in 1910, has spent recent years outside Green Hall's main classroom, keeping an eye on students as they finish assignments and cram for exams.

Those watchful years have taken their toll on Sam Green, though, and the Department is seeking donations for the restoration of the painting. Your donation will help restore and preserve our historic portrait, maintaining its presence for continued generations. An estimate from a restoration specialist quoted the project at \$2,000.

If you would like to contribute to this project, please send a check made out to the University of Minnesota, Department of Forest Resources, care of Janelle Schnadt, 115 Green Hall, 1530 Cleveland Ave North, Saint Paul, MN 55108. For questions, please contact Janelle at [jschnadt@umn.edu](mailto:jschnadt@umn.edu) or 612-624-2799.

Thank you for your help in cleaning up Sam Green!





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## JOIN US AT THE CLOQUET FORESTRY CENTER

You are invited to a fun-filled day at the 3,506 acre Cloquet Forestry Center—Minnesota's oldest forest reserved for research and education. Come enjoy tours of forestry and wildlife research, updates from the college, and a wonderful barbecue dinner and social.

Cloquet Alumni and Friends Event  
Saturday, July 30 - 12:30 p.m.- 6:30 p.m.  
Cloquet Forestry Center, Cloquet, Minnesota  
Please RSVP by July 22

For more information or to register, visit [z.umn.edu/cloquetalumniandfriends](http://z.umn.edu/cloquetalumniandfriends)

## HEADS UP!

The classes of 1962, 1963, and 1964 have begun planning for a combined 50th class reunion to coincide with the annual Cloquet Alumni and Friends Event in the summer of 2013. Details are in the works, but consider this your heads up!

Class of 1962 contact: Robert Pokela at 218-879-6207  
Class of 1963 contact: Darrel Kenops at 208-884-1076 or [dkenops@msn.com](mailto:dkenops@msn.com)  
Class of 1964 contact: Alan Ek at 612-624-3400 or [aek@umn.edu](mailto:aek@umn.edu)

Official invites will be coming, but we encourage you to encourage classmates to attend! For questions, contact Jenna Williams at 612-310-4787 or [jwill@umn.edu](mailto:jwill@umn.edu).