YALE UNIVERSITY
School of Forestry &
Environmental Studies

Yale Forests News

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Yale School Forests

Annual Report 2010

Mark S. Ashton, Director of School Forests

The year behind….

This past year I believe we have finally turned the corner regarding our budget deficit. Timber prices have stabilized, and our costs contained such that this last year we made more than we spent. The profit was used to reduce our deficit with the university. Our research programs continue to grow, and we have also begun significant new efforts in education and outreach.

Thanks to generous internal funding, we were able to select eight students for the apprentice forester program. This was the largest number of students we have ever managed to admit (because of funding limitations we normally take 4-6). Using the Plusnin Division to learn their management skills and tools, the apprentice foresters marked 602 Mbf , comprising 45 acres of irregular shelterwood and 44 acres of crown thinning for oak hardwood, and 5 acres of seed tree and crown thinning for white pine (see Forest Crew report for details). In addition to our summer management crew, we had four FES master's students, several Yale college students, a post doctoral fellow, and three doctoral students using the forest for their research along with five F&ES faculty, and a host of research students and faculty from other universities and institutions. In terms of both diversity and abundance, research programs were as usual productive in publications and new endeavors (see Research Report).

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New barn at Yale Myers!

Richard Campbell, Forest Manager

Yale Myers Forest suffered a sad blow this winter with the loss of our white barn. Heavy melting snow became too much for the venerable structure to bear, and the building collapsed without warning on a February evening to be discovered by deliverymen the following morning.

The loss of such a useful building would be bad enough, but far more serious than the building itself was the damage to the research equipment it contained. Researchers working for professors David Skelly and Os Schmitz had spent years amassing a store of cages, tanks, boxes, and traps, and had stored them in the barn between field seasons. The materials may have been relatively inexpensive, but the equipment's true value lay in the months of labor required to design, learn, and build each device.

R.I.P.

Work to salvage any surviving equipment and parts is ongoing. We wish the research labs our very best in their reconstruction efforts, and look forward to building a sturdy home for their equipment very soon.

The Quiet Corner Initiative

Nathan Rutenbeck, student

It was a cold evening on December 17 when Richard Campbell, Meredith Cowart, and I bundled into the Ashford Town Hall bearing muffins, coffee, and high hopes. We were there to draw together the initial stages of research and organizational work on the Quiet Corner Woodland Partnership in a meeting with our first partner landowners, and hoped for a good turnout.

A part of the broader Quiet Corner Initiative, which also includes a small-scale agricultural endeavor and wind energy project at Yale-Myers Forest, the impetus behind the Woodland Partnership is a desire on the part of the School Forests and the School of Forestry and Environmental Studies to improve community outreach, increase educational and research opportunities for students, and support working forest conservation in northeastern Connecticut.

It has long been understood that maintaining working forests is essential for ecological conservation, and necessary to supporting resource-based livelihoods in rural New England, yet keeping these working forestlands becomes increasingly difficult in the face of progressing land-use change as the landscape is fragmented and developed. Our hope is that the Quiet Corner Woodland Partnership will help to ameliorate these challenges by building knowledge among small forest landowners, helping them obtain forest management plans, connecting them with conservation planning options, and enabling them to collaborate with one another

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Student activities at Yale Myers

Alex Barrett, Erin Clark, Dan Constable, Max Piana, students

Yale Myers Forest is busy enough with research, field trip, and management activities. Despite all that activity, several student groups found the time and space to use the forest for some very interesting and valuable trainings and experiences:

Wreath making

On a Thursday in early December, a lusty crew of SAF members and friends caravanned up to Yale Myers Forest for an evening of wreath-making and revelery. Around a blazing fire, our wreath makers crafted more than 25 beautiful holiday wreaths that SAF then sold during its annual Christmas tree sale at Marsh Hall.

Friend of the Forest Rich Dezso brought a creative spark and helped us novices learn the ins and outs of wreath making. By the end of the night we were all proficient, even experimenting with using just boughs as frames to make the wreaths. Especially cool and marketable were the wreaths that combined mountain laurel and spruce boughs in an intimate mixture to create a finely textured menagerie of holiday green! In the morning, we packed up and made our way back to school to sell our wares on the first day of the Christmas tree sale.

The SAF Christmas tree sale this year relied on trees sourced from various operations ranging from our own tree farm to FES alums with tree farms in Connecticut, as well as friends of the School who operate tree farms in the area. Our Christmas tree farm has been understocked over the past few years and while there is a new crop coming on, we need to redouble our efforts in order to bring supply in line with demand until our new trees are ready.

This year the sale of wreaths helped make the Christmas tree sale more profitable and allowed us to make use of the overgrown trees that now inhabit some of our field. This spring, we plan to continue our planting efforts in hopes of securing a future supply of trees from our farm. Given the success of the wreaths this year, we will continue this proud tradition next year, and in the meantime, we look forward to a tree planting work day this spring, and pruning in the summer.

Tree Climbing

Earlier this year, the Yale School of Forestry and Environmental Studies (FES) hosted author Richard Preston to speak about his new book, *The Wild Trees*. In this book, Preston Chronicles the stories of two researchers ascending hundreds of feet skyward into a largely unknown world—a redwood canopy in northern California—to research the biota. This spring, thanks to a Technical Skills Workshop, a group of FES students will learn how to do the same in the Northeast.

Canopy research is crucial to advance our understanding of forest ecosystems. However, few schools in the world teach this skill. Fortunately, after many years of consideration, F&ES has agreed to fund a short course that will provide students with an introduction to the skills to safely conduct research in a forest canopy. The workshop will be held at the Yale Myers Forest in April, 2011 and will focus on teaching students how to safely climb and move about the tree canopy.

Wilderness First Responder Course

On an early January afternoon, four crumpled bodies lay moaning and crying for help behind the Morse House at Yale Myers. One was wrapped around the base of a large maple tree, and blood dripped slowly from his forehead. It was gruesome, but if you'd happened by and had the gumption to taste the blood you would have found that it tasted like peppermint! In fact, none of the four were actually injured, but were acting out roles as victims of a simulated heli-skiing accident intended to

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Outreach and Extension

Richard Campbell, Forest Manager

2010 was a busy year for outreach and extension at the School Forests. Thanks to great efforts in publicizing and staffing, we were able to host a wide diversity of walks and talks for many educational, professional, and community groups.

The seminar series again enjoyed great popularity, with the classroom filed to capacity for each one, and many attendants forced to listen from the porch. Denise Burchsted, a doctoral student at UConn, kicked off the series with a lecture on the effects of beaver work on river form and processes, and their applications for restoration work. Following that, postdoctoral researcher Dror Hawlena gave an entertaining talk on interactions between predators and prey that go far beyond just hiding from and eating one another. Recent masters student (and newly accepted PhD!) Marlyse Duguid brought to light the incredible diversity of our forest's understory, and explained the patterns that shape these beautiful but little-noticed communities. Finally, Dr. Robert Goodby from Franklin Pierce University provided fascinating insights on the patterns of Native American settlements throughout New England. With over 60 attendants at each seminar, the pre-and post-seminar receptions were filled with lively conversation that often lasted long into the night.

On four occasions during 2010, Yale Myers Forest had the privilege of hosting groups of visiting forest supervisors from the Indian Forest Service. The IFS groups spent a full day at the forest out of their two-week tour, and were led through several of our demonstration areas to learn about our management philosophy and techniques, and to discuss ways in which our paradigms might apply to their own systems.

In mid-July, the forest became a living classroom for twelve high-

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Research in review

Brent Frey, Research Coordinator

We continue to see a diversifying level of research activity at the forest. A broad range of studies, both by researchers from Yale and external institutions, are addressing questions ranging from to ecosystem dynamics and patterns, to historical ecology and global change impacts. These studies span different ecosystems and scales, from ephemeral ponds, to old pasture fields, to regenerating forest stands, from the landscape to the molecular level.

To begin, two of our newest projects address impacts of browsing animals on forest structure. Ed Faison (Highstead) and collaborators Steve DeStefano (Mass. Fish and Wildlife) and David Foster (Harvard Forest) have initiated a long-term, regional study on impacts of moose and deer on forest regeneration. In recent years, moose have been recolonizing their prehistoric range in southern New England. The effects on forest development is uncertain, as little is known about their historic role in shaping temperate forest regeneration. Expanding moose populations in Massachusetts and Connecticut, coupled with high populations of white-tailed deer, could alter forest regeneration through selective browse pressures. While moose are relatively rare in and around Yale-Myers, deer and moose exclosures set up here and at other forests in the region will allow them to assess regional impacts of this shift in browse pressures.

Invasive Japanese barberry is no match for intrepid researcher Torjia Karimu

In a similar vein, Kevin Barrett (MFS'12), has initiated a study investigating how forest structure mediates browsing behavior through effects on availability and diversity of browse. High deer populations are thought to result from forest fragmentation and edge habitat, which provide thermal and hiding cover adjacent to areas of high forage production. He is testing the hypothesis that silvicultural treatments will mediate browsing pressure by affecting habitat structure.

On the invasive species front, Torjia Karimu (MFS '11) initiated a study investigating control methods for Japanese barberry (*Berberis thunbergii*). This regionally problematic shrub has established vigorously in some parts of the forests, and the concern is that it is excluding other species. While mechanical removal methods are perceived as more desirable than chemical application, they are difficult to apply over large areas. This study tests potential of combinations of mechanical and spot herbicide treatment to determine more efficient, but low-impact means of control.

As for news from ongoing projects, Roland DeGouvenain (Rhode Island College) has continued to work on the edges of forest gaps

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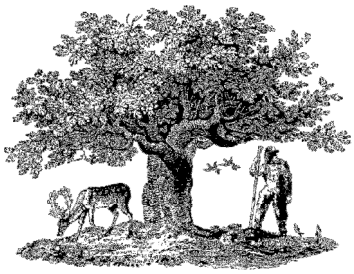
school students working with the Solar Youth, and environmental education group in New Haven. Led by School Forests alumna Rachel Holmes (MDIV '09, MF '11), the group toured our new demonstration area and visited timber sales and research sites to learn the various jobs to be found in natural resource management. A campfire and night hike proved to be very exciting activities, and while sleep was difficult to come by for their first night's camping, the kids were thrilled with the opportunity to get out to the woods, and students and staff alike found their energy and perspective refreshing.

The forest again co-hosted a walking weekend with neighbors Art and Sherry Talmadge, and used the opportunity to introduce guests to ox-logging and sugarbush management. On a wet Friday morning soon after, the Ashford Conservation Commission toured our new demonstration area and came away with some newfound knowledge and techniques to apply to their own woodlots.

Looking northward, the new pine silviculture demonstration area was visited by two professional groups, the first a working group of loggers and forest contractors, and the second representatives from the Vermont and New Hampshire state forestry departments.

This year, we unveiled our new website format that we hope will make our work and research more accessible. Check it out at http://environment.yale.edu/forests/.

We were very pleased to be able to once again publish a calendar, and will continue to distribute materials (including this newsletter) in electronic format. Please send updated contact information to richard.campbell@yale.edu.



Yale School Forests Summer Seminar Series

The 2011 summer seminar series will be held on the following dates:

- June 16
- June 30
- July 14
- July 28

Stay tuned for information on this year's speakers. Refreshments are served at 7 PM, with talks beginning at 7:30.

Student projects abound at Yale Myers Forest

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provide a training situation for thirteen students at the forest.

This training scenario was the culmination of a joint effort between Yale Outdoors and FES's 100% Club that brought a licensed SOLO instructor to teach a nine day, 80-hour intensive backcountry first aid course known as Wilderness First Responser (WFR). Seventeen students - all hearty enough to agree to take the course in the unheated Yale Myers classroom in January - learned how to treat injuries ranging from broken bones to punctured lungs. The students have intentions to put their WFR knowledge to use teaching wilderness education from the tropics (Costa Rica) to the sub-boreal (Minnesota and Ontario). Others will deploy the skills as needed while conducting summer research and internships in wilderness, field settings. Since the course, one student has even had to perform real-life patient assessment when a runner slipped and fell down a flight of icy, snowy stairs in East Rock, hitting her head as she fell. Luckily, the runner sustained no injuries. Beyond the invaluable course material, WFR allowed 17 outdoor-minded Yale students to visit Yale Myers who otherwise would not have had the chance.

'Woofers' brave the cold at Yale Myers Forest

Roundwood Building Workshop

This spring Yale Myers Forest will be hosting a small-diameter roundwood building workshop, which will culminate in the raising of a roundwood camping frame near the Morse reservoir. The concept of the workshop and building project originates from a group of F&ES graduate students and their development of a business plan focused on utilizing small-diameter roundwood byproducts from forest management. The workshop will explore the challenges and opportunities of working with roundwood. Over the course of 6 days, students will be introduced to all phases of roundwood construction, including: tree selection, building design, the various methods of joinery, appropriate tools, and frame raising.

The workshop is to be funded by the Class of 1980 fund as well as the Sobotka Venture seed grant, which the developers of the project received in recognition of their business proposal.

On the Plus-nin side

Brea Kroeker, student

In contrast to the previous year, 2010 at Yale Myers was characterized more by perspiration than precipitation. Led once again by Richard Campbell (MF '07), the 2010 forest crew accomplished their summer tasks riding in style in their stripped down baby blue 1970's van. Fortified with numbers, the eight crew members of 2010 made a mark, exploring more acreage and tallying more Mbf than ever before. The adventurous and determined crew consisted of five graduating students - Benjamin Blom, Peter Caligiuri, Ian Cummins, Jacob Holzberg-Pill, and William Lynam - and three returning students - Meredith Cowart, Benjamin Fryer, and Brea Kroeker - who bravely set forth to battle with the spiteful mountain laurel in the 1,078 acre Plusnin Division.

Eager to apply their recently acquired silvicultural knowledge base, the 2010 crew boldly marked 49 acres of regeneration and 44 acres of thinning treatments, tallying 528 Mbf and 74 Mbf respectively. Special attention was paid to a few forest critters – crew members risked life and limb by scaling trees to ensure the safety of frightened porcupines, and took pains to secure the survival of bats and flying squirrels. Crew members honed their chainsaw skills felling pole-sized trees, and cultivated blisters creating snags. Dean Crane made a guest appearance, accompanying the crew into the field to marvel at their skillful work, and to inspire them to even greater triumph in the weeks ahead.

The forest crew of 2010 was up for any challenge

With New England's wilderness at their fingertips, crew members regularly struck out at the crack of dawn to enjoy pre-work birding, or spent free time wading out on a nearby bog to marvel at the rare plants. The crew also enjoyed watching the World Cup and the international presence at the camp this summer made for some very lively evenings! As some crew members had to move onto new opportunities, the summer was brought to a close at Yale Toumey by only part of this dream team. Small but fierce, the group established ten new Continuous Forest Inventory (CFI) plots on land acquired since the last inventory. We hope that next year's crew will live up to our high standards as they take on the Myers Division.

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studying structure and regeneration patterns. Steve Brady (PhD '12) continues to investigate habitat quality in the urban-forest interface, most recently comparing assessing difference in waterfowl habitat between wetlands in suburban and forested areas. We have also been observing heavy acorn and seedling establishment the past two years. This is based on regional survey work by Michael Gregonis (CT DEP), who samples acorn production each fall in Yale-Myers, and ongoing studies by Mark Ashton and Brent Frey (PhD '11) on oak seedling establishment. These studies are contributing to a growing awareness of the extreme variability in regeneration patterns of our oak species, and how we may have to adjust silvicultural treatments to perpetuate oak in our future stands.

Finally, it has been a productive year for publishing. Dave Ellum (PhD '07), along with Mark Ashton and Tom Siccama, recently published findings from a study examining forest-wide patterns in herb diversity (Forest Ecology and Management). They have shown how forest cover type determines diversity of understory plants, knowledge we can use to help better manage and maintain our understory plant diversity. Dave Skelly (with M.F. Benard) addressed some of the uncertainty surrounding missing limbs in deformed amphibians (J. Experimental Zoology), attempting to disentangle the role that disease and pollution play in amphibian health. Oswald Schmitz and his post-doc Dror Hawlena continue to gain new insights on how predation risk affects prey behavior and in turn ecosystem nutrient dynamics (PNAS, Functional Ecology). Likewise, Brandon Barton (PhD '10) recently published his work at the forest examining potential impacts of climate change on insect behavior (Ecology). Finally, Denise Burchsted (U.Connecticut) has published on some of her work at Yale-Myers examining streambed conditions and the impacts of beavers (BioScience). Her work has highlighted the high variability in streambed conditions associated with beaver activity, and the need to increase complexity of conditions within river restoration efforts.

Generous gift raises the roof

Kristofer Covey, Student

After years of rainy barbeques and indoor picnics, a generous gift from the Class of 1980 Fundwill support the construction of a timber framed pavilion and outdoor-kitchen facility at the Myers Forest Camp. The gift will be augmented with labor and funds from the School Forests and the Yale Student Chapter of the Society of American Foresters. Targeted for completion sometime this spring, the pavilion will be designed and built by the gifted framers at Blue Line Barn (bluelinebarn.com), who have agreed to donate all labor and design fees associated with project.

The new facility will provide a much needed weather-shielded outdoor cooking and gathering space for the many large gatherings held at the forest. Be on the lookout for more news on this exciting project. When the frame is ready to go up, the forest will be hosting a frame raising party; we hope to see you all there!

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We held our usual research seminar series - which again set attendance records with over 250 guests – at Yale Myers this summer, and continued with our "dinner with a forester" program, which gives students at the forest the chance to interact with professionals dealing with a range of resource management issues. We created a new demonstration trail near the camp at Yale-Myers, aimed at introducing walkers to the land-use history, dendrology, and forest ecology of southern New England, and all told, had twenty-seven extension functions at our forests this year for a host of different groups including professional foresters, high school students from New Haven, citizen groups, town officials, and four groups (and counting) from the Indian Forest Service. All the tours were led by faculty, staff, and students working at the forest.

The year ahead……

In addition to our normal activities, we are embarking upon a new program that we have termed the "Quiet Corner Initiative" (see Quiet Corner). The Quiet Corner Initiative is an effort to integrate the forest and the School more fully into the larger landscape, and to provide research and educational opportunities that address real-world conservation and management problems for our students and faculty. Included in this initiative, we are forming a partnership for private landowners near the forest. We will be working to construct stewardship plans, conservation easements, regional conservation strategies and assessments, and implementing silvicultural prescriptions for the plans, all through student courses and projects mentored and overseen by faculty. Professor Rob Mendelsohn and I have also received funding from the Center for Business and Environment from the F.K. Weyerhaeuser Fund to assess the public value of ecosystems services provided by private lands around Yale Myers. Apart from the services offered by the students, we will be conducting a series of progressive workshops for landowners over the next three years on the history, ecology, and management of their forests. We currently have over forty participating landowners and seek to build the membership to 100 within the next five years. Building new initiatives and strengthening our core activities, the forest looks to be in good shape for 2011.

The Quiet Corner Initiative

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on scale-appropriate harvesting operations. The ideal end result will be a network of committed forest owners with greater access to markets, sustained timber yields and incomes, and a long-term social investment in working lands conservation. To these ends, over the past eight months the School Forests office has been reaching out to private landowners, state government, forest industry, and NGOs near Yale-Myers Forest in hopes of building interest in this partnership effort. On December 17th, we were at last gathering together with neighboring landowners to begin to implement the vision. Needless to say, this was an exciting moment for us.

People began arriving around seven o'clock – we directed them to the muffins and coffee, and began chatting. This was a great opportunity to get to know and spend some time with our neighbors, and after our presentation on the program, a lively conversation developed around the table about the challenges of long-term planning in forestland ownership and management. We also discussed the opportunities that our neighbors see for Yale School Forests and the School of Forestry and Environmental Studies to reach out in positive ways to the landowner community for our mutual benefit. In the end, the contingent from the School Forests Office left with some fresh perspectives, feeling encouraged to continue our work, and so have spent the intervening time developing a plan for moving ahead with the program.

As a part of Professor Brad Gentry's Strategies for Land Conservation class, students Alex Barrett (MF 2012) and Jessamine Fitzpatrick (MEM/MBA 2011) are building upon prior USFS-funded analysis conducted by the Green Valley Institute in the Natchaug River Basin to investigate and plan a multi-property conservation easement along Bigelow Brook in the towns of Ashford and Eastford. The character of these properties has high impact on water quality in the region, and conserving them as non-developed working lands will create a protected corridor around Bigelow Brook, connecting the river from Yale-Myers Forest to Natchaug State Forest. This particular conservation project will hopefully serve as a pilot for similar types of efforts, which will be shaped as our landowner partners express interest.

The School Forests will be employing two interns this summer (2011) to conduct a valuation study measuring the worth of ecosystems services provided by the forestlands that are part of the Woodland Partnership. This baseline data will be incorporated into future student projects and coursework researching the viability of joining (or creating) markets for ecosystem services.

An educational workshop is planned during the summer of 2011 to be held at Yale-Myers Forest, focusing on forest ecology and techniques for wildlife habitat management in southern New England. Potential topics for subsequent workshops include financial incentives for forest owners, estate planning, non-timber forest product management, and payments for ecosystem services, with the final topics and schedule to be determined by landowner interest.

In the fall semester of 2011, two teams of graduate students will write management plans for some participating landowners as a part of the Management Plans for Protected Areas class taught by Professor Mark Ashton. These plans will be driven by landowner goals for long-term forest management including wildlife habitat maintenance and improvement, timber harvesting, invasive species management, and enhancing recreational potential, among others. Where possible, the projects will consider abutting or nearby properties, for which both individual and 'neighborhood' plans will be written. Following the management plan recommendations, students in the Advanced Silviculture class will write and mark prescriptions on these same properties during the spring semester.

Based on the final shape of management plans and silvicultural prescriptions, landowners will have the option to contract with local forest industry for harvesting operations. Where appropriate, timber harvesting will be aggregated to reduce operational costs and impacts. Combining timber sales and harvesting across property lines will not only allow for more competitive prices at the mill, it will also allow silvicultural prescriptions to more accurately reflect ecological boundaries.

All management plans and silvicultural activities will be carried out to standards consistent with the possibility of group certification through the Forest Stewardship Council, and going forward we hope to support student projects to assess landowner interest, potential benefits, and the legal, financial, and managerial aspects of group certification.

To conclude, our aim is that the Quiet Corner Woodlands Partnership becomes an example of the best that cooperation between diverse participants can accomplish. Carrying this theme forward, our hope is that the Quiet Corner Woodland Partnership becomes connected to a wider network of open space and working land conservation projects throughout New England and the broader region. Given land ownership patterns in the Northeast, efforts of this kind are essential for achieving landscape-scale conservation of working forestlands and ensuring the health and wellbeing of the people and communities that depend on them for goods, services, and livelihoods. We welcome your thoughts and ideas as we embark on this exciting new program.