

QUIET CORNER

BROUGHT TO YOU BY THE YALE FORESTS

A Note from the QCI Manager

A fresh layer of snow settled on Yale-Myers Forest this week, and it is clear that winter is here to stay. The thunderstorms and heat waves of the summer feel far away now, but Emily Sigman's article in this issue of the Quiet Corner newsletter reminds us that the lessons students learn on Forest Crew stay with them forever.

The most meaningful moment of the year for me was when twelve of our students presented the forest management plans they had developed over the course of the fall. Each team worked tirelessly on everything from tree inventory to spell-checking, and the final products were incredible. This is the tenth year that students have worked with landowners in the Quiet Corner, and I look forward to many more.

Students also spent time at Yale-Myers harvesting Christmas trees and wreaths, planting understory medicinal herbs, and stringing maple lines. This spring we will be introducing a whole new set of programs to our neighbors in the Quiet Corner, and in the meantime, we hope you enjoy the winter!

Adam Houston

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The Quiet Corner Initiative (QCI) supports local livelihoods, sustainable forest management, and rural economic development by building relationships between local landowners, conservation and forestry professionals, and students and faculty of The Forest School at the Yale School of the Environment. Thank you to our alumni and the rest of the Yale community for their support.

YALE FORESTS WELCOMES TWO NEW AGROFORESTRY PROJECTS

Adam Houston, QCI Manager, '21 MEM

Two new agroforestry projects took root at Yale-Myers Forest (YMF) this fall. Dr. Joe Orefice, director of forest and agricultural operations at Yale Forests, was awarded a grant from the USDA Acer Access and Development program to set up a demonstration sugarbush at YMF. Orefice, Emma Broderick '23 MF, Mary Katherine DeWane '23 MF, and YMF caretaker Steve Prinn worked tirelessly throughout the fall to string lines between sugar maple trees, build a sugaring shack, and install an evaporator. Orefice kicked off a workshop series with a field exercise on maple silviculture, which was attended by several neighboring landowners interested in promoting sugar maples on their own properties. More workshops will be held this spring during sugaring season and will cover every aspect of syrup production from tree to bottle.

Karam Sheban '20 MF received a grant from the USDA Sustainable Agriculture Research and Education (SARE) program to set up a region-wide project on understory medicinal herb cultivation, also called forest farming. While at Yale, he studied ginseng cultivation in the Catskills and was inspired to start a community group for New England forest farmers. Relying on the model of the Appalachian Beginning Forest Farming Coalition, the Northeast Forest Farmers Coalition will bring together forest farmers to share ideas, build connections, and create more opportunities for growth in the market.

In addition, Sheban and a team of forestry graduate students set up research plots across the region to test different methods of cultivation for five important herbs: ginseng, goldenseal, bloodroot, black cohosh, and ramps. At Yale-Myers, the team spent several weekends planting seeds and rootlets in a site where survival, growth, and yield of the plants will be monitored in order to better inform forest farmers about the impacts of different planting strategies. Sheban was a post-graduate Forest Fellow at The Forest School at the Yale School of the Environment and is now the Director of Forestry at Rural Action, a community development non-profit in Athens,



Emma Broderick '23 MF (left) and Mary Katherine DeWane '23 MF set an anchor point to link together arterial lines of sugaring tubes in the new Yale-Myers maple operation. Photo: Joe Orefice.

Ohio. Forest farming is an important aspect of Rural Action's work with landowners in Ohio, where it helps generate sustainable income from forests. We look forward to seeing this project grow at Yale-Myers Forest and beyond.

Workshops on maple syrup production and understory herb cultivation will be held this spring. Sign up for the QCI mailing list at qci.yale.edu for workshop announcements. For questions on maple, you can reach out to Joe Orefice, Director of Forest and Agricultural Operations (joseph.orefice@yale.edu). For questions on understory herbs and the Northeast Forest Farming Coalition, you can reach out to Walker Cammack '22 MF (walker.cammack@yale.edu).

FORESTRY STUDENTS CREATE CONSERVATION MANAGEMENT PLANS FOR QCI LANDOWNERS

Adam Houston, QCI Manager, '21 MEM

This fall, twelve Yale School of the Environment students spent their weekends measuring trees, digging soil pits, and wading in wetlands around northeastern Connecticut. Each student team worked with a forestland owner whose property neighbors Yale-Myers Forest to develop a detailed biophysical survey, social assessment, and management plan for the longstanding “Management Plans for Protected Areas” course, taught by Dr. Mark Ashton. These plans, which often range from 100 to 200 pages, are developed over three months and require all the skills that students learn during their time at The Forest School at the Yale School of the Environment.

“It has been a heavy lift, but an enjoyable one,” said Genevieve Tarino '22 MF. “This has been the culmination of everything I have learned here at Yale so far.” Tarino worked with Hannah Andrew '22 MF to create a plan for a 40-acre property in Eastford, CT. The owners were interested in creating a meadow for pollinators, promoting wildlife habitat, and establishing long-term conservation of the property. After completing an in-depth survey of the property’s geology, soils, and vegetation, Andrew and Tarino recommended changing mowing strategies in the property’s meadows, protecting riparian areas, and exploring several different long-term conservation strategies.

Andrew, who also has a degree from the Vermont Law School, hopes to combine her experience in “dirt forestry” with her knowledge of law to offer all-in-one consulting services to landowners interested in conserving their forestlands. “This experience



Musa Joko, '22 MF amongst the pines at her Management Plans client's property near Yale-Myers Forest. Photo: Ryan Smith.

was perfect for me, because it allowed me to try out forestry consulting with the guidance of one of the experts in New England forests.”

Mark Ashton, the Morris K. Jesup professor of silviculture and forest ecology, has been teaching Management Plans since 1993. The course has been around in some form since the 1960s, when Thomas Siccama, who previously held the professorship of forest ecology at the School, began connecting forestry students to landowners and land trusts

across New England. However, since 2011, Management Plans has been focused on working with forest landowners in the three watersheds surrounding Yale-Myers Forest.

This area is part of the Quiet Corner, a uniquely undeveloped region that is the last vestige of rural land in the Boston to Washington, D.C. urban corridor. Over the past ten years, Yale students have completed 58 plans covering 4,593 acres of the Quiet Corner.

Past plans have been written for private land, public parks, and land trusts. Students in this cohort worked with private landowners interested in a variety of goals including food production, water quality protection, and wildlife habitat enhancement. Ashton spent the first half of the course training students in the “science of place,” including soils, geology, and more than 150 plant species. Understanding these biophysical characteristics allows students to figure out what happened on their client’s land in the past, such as logging, farming, and grazing. Each team combined that knowledge with historical photos, maps, and in-depth deed surveys to look back at the history of the land, in order to make recommendations moving forward.

The student teams then spent nearly every weekend sampling their client’s property, incorporating their landowner’s values and



Walker Cammack '22 MF (left) and Brad Ward '22 MF pour over land records in the Ashford Town Clerk's office to reconstruct the history of their client's property over the past two hundred years. Photo: Brad Ward.

MANAGEMENT PLANS (CONT.)



Brad Ward '22 MF counts seedlings at a survey plot. A complete vegetation analysis is a key part of each management plan. Photo: Walker Cammack.

their own skills into the process. Bryce Powell '22 MEM and Kyle Lemle '22 MF were paired with a client whose property has an incredible diversity of plant and animal life. The client was interested in wildlife habitat, and Powell used his past experiences as a park ranger to develop a comprehensive list of wildlife that he and Lemle observed while in the field. This included beavers, great horned owls, long-tailed weasels, and more.

Eudora Miao '22 MF incorporated new skills from Professor of Meteorology Xuhui Lee's course on drones into her management plan. Miao and her partner Sawyer Cresap '22 MEM borrowed a drone and photographed several of their classmate's properties from the sky, providing clients with incredible aerial imagery and practicing a valuable skill for foresters. Miao and Cresap's property fronted the Still River Marsh, so in addition to flying high above the landscape they also waded into it. After some chilly days in waders, Cresap and Miao had a complete vegetation survey of the marsh boundary.

Although most of the students in Management Plans are in the Master of Forestry program, Cresap enrolled to bring more field skills to her Master of Environmental Management curriculum. In her previous career working in land trust stewardship, Cresap had spent time updating management plans for nature preserves, "but I was always curious about the fieldwork required to create the soil

maps and plant lists. Now I understand how different plants are linked to the soils, land use history, and geologic history, and I'm able to ask deeper questions about the land." In the future, Cresap is "hoping to go back to working with land trusts, thinking about what properties should be conserved and using what tools, and thinking long-term about how stewardship decisions are made."

For Walker Cammack '22 MF, all the hard work was worth it because the course was more than just an educational experience for himself. "It felt great to work on a project that really mattered to our client," said Cammack, who wrote a management plan along with Brad Ward '22 MF that will be used to secure a conservation easement for their client's property.

The Management Plans course culminated with a marathon session where each team gave an hourlong presentation to their landowners. The session also gave the clients a chance to convene with the other landowners, many of whom are their neighbors. This kind of cross-pollination has led to collaborations between Quiet Corner landowners in the past, such as stream protection plans that span multiple properties.

"After today, I feel like real forester," concluded Miao after the presentations were over – a sentiment that was shared by everyone in this year's class, and for every Management Plans student in the past.

We are currently looking for Management Plans candidates for the fall of 2022. Ideal properties are located in Eastford, Ashford, Westford, or Union, and have at least 20 acres of forestland. If you are interested in finding out more, contact Adam Houston (adam.houston@yale.edu).



Dr. Mark Ashton teaches students how to identify some of the 150 plants required for Management Plans outside Marsh Hall. Photo: Brad Ward.

FROM FERNS TO FEMELSCHLAGS: A SUMMER OF FORESTRY, FUN, AND FRIENDSHIP

Emily Sigman, '21 MF, '21 MA

For decades, intrepid forestry students at Yale have taken part in a time-honored tradition: spending the summer working at the Yale-Myers Forest camp.

To be sure, summertime at Yale-Myers hasn't always been as structured as it is today. Prior to the early 2000s, a more relaxed tradition existed, in which Master of Forestry (MF) students lived and worked under doctoral student supervision in Yale's roughly 8,000-acre tract of forestland in Eastford, Connecticut. In the span of the last twenty years, the tradition has evolved into a more formal education curriculum, officially termed the Yale Forests Summer Apprenticeship. Yet to all those who have had the pleasure and the privilege of spending the summer honing their field skills in the Yale Forests—whether in 1947 or 2021—their time is perhaps best and most affectionately remembered by the simple shorthand “Forest Crew.”

For all its varied appellations and manifestations, the quintessence of crew has long remained the same. Forest Crew immerses students in a hands-on learning environment, offering a first-rate field practicum on the science—indeed the art—of land stewardship. This year, under the impressive coordination of Forest Manager Jessica Lloyd '20 MF, nine students (and five dogs) got the opportunity to spend the summer in the woods of New England and discover what it's like to be a real-life forester.

Following a safety course in chainsaw use and tree felling at the historic Yale Camp at Great Mountain Forest, the crew reported to the celebrated Yale-Myers Forest camp where they would remain for the next two months. After more than a year of remote learning, the group was more than happy to trade in their laptops for hardhats and head out for a week of laborious roadwork and trail maintenance. Digging ditches, whacking water bars, and clearing culverts were not easy tasks, but silly songs and copious amounts of post-work popsicles kept the group in good spirits, even as torrential rains repeatedly washed out their progress and necessitated repeated work days.

During the next week of Crew, the foresters-in-training got a daily deep dive into a



Forest Crew members visit a Yale-Myers harvest site to learn about log scaling from Hull Forest Products experts. Photo: Brad Ward '22 MF.

diverse array of disciplines. Dr. Marlyse Duguid led a daylong foray into the forest, equipping the Crew with the ability to identify key plants and trees, and teaching them how to decipher different species of ferns—a useful skill for intuiting soil moisture and predicting how an understory might respond to changes in the canopy. Dr. Kealoha Freidenburg gave a crash course in wetland ecology, treating students to an expert view into the many vernal pools they would encounter throughout the wet summer. Dr. Mark Ashton went all-in on site classification, sharing with students the secrets of soils and land use history, and familiarizing them with no fewer than 63 distinct bird calls.

The following week, Dr. Joseph Orefice and PhD student Reid Lewis '21 MF unpacked the mechanics of sampling design, walking the crew through the ins-and-outs of forest inventory. Group members with GIS skills adeptly created geo-referenced maps that the Crew used to generate and find randomized plot points. In no time, the Crew was out in the field putting all of their accumulated knowledge to the task of collecting vital information about the forest.

Recognizing that forests are more than data, the group also integrated one minute

‘centering exercises’ into each of their plot points. Prior to spinning an angle gauge or estimating log heights, each team would pick from a list of ten prompts meant to provide space for reflection, stimulate non-linear thought, and foster a more emotional and intuitive connection to the landscape.

The group also spent time reflecting on the profession of forestry broadly, especially as it sits within a wider conversation about restoration and environmental justice. Several crew members endeavored to read Dr. Lisa Brooks' book *Our Beloved Kin: A New History of King Phillip's War*. The book's contents stimulated repeated discussions and explorations of the relationships between forests, Indigenous nations of the Northeast, and European colonists, and gave the group a more complex and nuanced understanding of the landscapes in which they were studying, working, and living.

Additionally, the Crew grappled with questions of inclusivity, both within the apprenticeship and throughout the field of forestry writ large. Conversations in particular centered on the need for forest crew—and other aspects of forestry education—to evolve in order to be accessible and attractive to aspiring foresters with a range of different physical abilities. The

FROM FERNS TO FEMELSCHLAGS (CONT.)

rigorous fieldwork component is, for many, one of the most rewarding aspects of the apprenticeship. By the same token, Forest Crew can be intensely physically demanding, severely restricting who can—and who wants to—participate in this formative program. The vast majority of activities during Forest Crew are prohibitive to wheelchair users and other mobility-restricted people; even the library at camp is not wheelchair accessible.

Many central and requisite components of the forestry degree are similarly restrictive, including the mandatory school-wide Summer Orientation Modules known as MODs, which follows on the tail end of Forest Crew. As a keystone experience, the Yale Forests Summer Apprenticeship has the potential to act as a locus of meaningful intervention and a vehicle through which the Yale Forests and the forestry curriculum can be made more welcoming to a diversity of talents, backgrounds, and experiences. Creativity and continued reflection can hopefully guide future crews towards interventions that allow space for—and even enhance—the existing field components of the summer program.

The depth of these conversations and the intensity of the learning experience were held within a collective and continued commitment to group care. As part of this ethic, the Crew invested energy in co-creating an atmosphere

that felt expansive and joyous. Uproarious laughter, spontaneous singing, and mischievous merriment were staples of the Crew's daily activities, contributing to a palpable air of elation, exuberance, and gratitude. A childlike sense of wonder pervaded time in the field, where the Crew gaped at profuse fungal flushes, admired arboreal abnormalities, and paused to take in the beauty of bird calls. After-work outings to refreshing swimming holes and quaint local creameries quickly became common and cherished rituals.

In no time, the camp transformed into a near-magical refuge, and the group spent their down-time sharing stories in a not-so-secret treehouse, reading books from the well-curated shelves of the library, and standing in wide-eyed rapture on the porch of the dining hall as the drama of near-daily thunderstorms played out against the silhouette of a sea of trees. The night sky offered itself to constellation-spotting, and the crewmates fell asleep counting their lucky stars.

A balance of seriousness and levity sustained the Crew as they carried out their culminating assignments at Yale-Myers: select stands in the forest deemed appropriate for immediate active

management, write comprehensive silvicultural prescriptions, consider operational mechanics, and mark trees for inclusion in timber sales. These were not trivial tasks; the decisions the Crew made would not only dictate which trees would live and which would die, but moreover would set those forest stands on a course that would affect their growth for decades or even centuries.

One of the more remarkable aspects of forestry as it is practiced in the Yale Forests is that foresters typically avoid planting any trees. Instead, foresters become highly attuned to the existing flows of a given site, taking heed of the abiotic and biotic factors present and classifying where a given forest sits within a cycle of stand dynamics. Foresters look for the natural disturbances to which the forest is inherently adapted—such as hurricanes and blow down events in the Yale-Myers Forest—and they work within these adaptations to prescribe treatments that will provoke a regenerative response.

In so doing, trained foresters can promote both ecological and financial sustainability, harvesting marketable timber while also increasing the age-class diversity—and thus resilience—of otherwise fairly homogenous secondary growth forests. Funds from timber sales enable educational programs, such as Forest Crew, while managed forest holdings provision research opportunities in diverse disciplines.

Following in this tradition, the group relied on their extensive data collection and qualitative assessments, as well as repeated visits to the stands—often in the company of Dr. Ashton, Dr. Orefice, and Jessica Lloyd—to draw up plans and mark timber in ways uniquely suited to each site. In some stands, for example, the group prescribed a silvicultural treatment known as a crown thinning, in which some trees of marketable value are harvested in order to let other, often more desirable trees grow larger. This treatment accelerates the self-thinning that occurs naturally as a result of light competition.

In other stands, the group chose to use a Femelschlag approach. This technique, sometimes translated from German as an 'expanding gap shelterwood,' mimics and exaggerates the effect of a large tree or



Forest Crew, researchers, Yale College interns, and their dogs spent the summer in the forest and created a community in their pod at Yale-Myers Forest Camp. Photo: Joe Orefice.

FALL 2021 QCI PHOTOS

group of trees crashing down during a storm event. The Crew looked for existing forest canopy gaps where advance regeneration was present in the understory and expanded these gaps outward such that some marketable timber and firewood logs could be harvested, while simultaneously releasing the understory and letting it grow up into the now-open sky.

After completing their work at Yale-Myers, the Crew was put to one final test: condense everything they'd learned that summer into a ten-day intensive trip to Yale's northern forests. In early August, the Crew bid a fond farewell to their beloved summer home, packed up their tools, and headed north to Vermont and New Hampshire. There, they delineated boundaries, designed a sampling method, and completed a thorough inventory of the Bowen and Crowell Forests in Vermont.

Their sharpened skills in observation and analysis served them well and enabled them to write an updated management plan for these forests. Splitting time between camping in Bowen Forest and staying in rustic accommodations at the historic Yale-Toumey property in New Hampshire, the crew was able to weather unexpected challenges in the field, survive swarms of unrelenting mosquitos, and navigate an unprecedented heat wave to finish the summer with integrity and confidence.

For the crew members involved, the summer of 2021 was more than memorable. The Yale Forests Summer Apprenticeship served each participant as a formative experience, endowing them with new ways of understanding and interacting with both forests and people, and preparing them to thrive in forested landscapes throughout their lives and careers. Once again, the decades-old and yet ever-evolving tradition of Forest Crew saw a new cohort of students graduate, leaving in their wake a new architecture in the forest as a signature and living memory of all they learned and accomplished.

So long as new and diverse students are welcomed into the Yale Forests as apprentices, collaborators and stewards, Forest Crew can continue to make a lasting impact for decades more to come.



A volleyball game in the early fall sunlight during a retreat at Yale-Myers Forest. Photo: Claudia Ochoa.



Students spent a rainy day harvesting Christmas trees and wreaths to support their student chapter of the Society of American Foresters. Photo: Genevieve Tarino.

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